December 13, 2023
Sacramento, California

CONTRACTORS STATE LICENSE BOARD

2024 Draft Sunset Report

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CONTRCTORS STATE LICENSE BOARD
BACKGROUND INFORMATION AND OVERVIEW OF THE CURRENT REGULATORY PROGRAM
As of DECEMBER 13, 2023

Section 1 – Background and Description of the Board and Regulated Profession

Provide a short explanation of the history and function of the board. Describe the occupations/professions that are licensed and/or regulated by the board (Practice Acts vs. Title Acts).

The Contractors State License Board (CSLB or Board) was established in 1929 by the Legislature as the Contractors' License Bureau (Bureau) under the Department of Professional and Vocational Standards. The Bureau was formed to regulate the state's construction industry and protect the public from irresponsible contractors. In 1935, the Bureau's mission and duties were placed under the auspices of a seven-member board.

In 1938, the Legislature mandated contractor license applicants to be examined for competence in their designated field. By 1947, the Board had been given authority to establish experience standards and to adopt rules and regulations to classify contractors in a manner consistent with established practice and procedure in the construction business.

Now classified as a board within the Department of Consumer Affairs (DCA or Department), CSLB operates with a 15-member board and upholds its mission to protect consumers by regulating the construction industry through licensure, enforcement, and education.

CSLB issues licenses to contractors to practice their trade(s). CSLB issues four distinct license types: 1) "A" general engineering; 2) "B" general building; 3) "B-2" residential remodeling; and 4) "C" specialty contractor. The "C" license type includes 42 specialty classifications. As of December 2023, there were approximately 284,300 licensed contractors (in active and inactive status) and 28,900 registered home improvement (HIS) salespersons in California.

CSLB enforces the Contractors State License Law (Business and Professions Code sections 7000 through 7191)) through investigating complaints against licensed and unlicensed contractors, issuing citations, suspending or revoking licenses, and seeking administrative, criminal, and civil sanctions against violators.

CSLB also has a duty to inform consumers, contractors, and the industry about CSLB enforcement actions through posting on its license lookup. To support its consumer protection and education objectives, CSLB provides public access to contracting and construction-related information, including a license lookup, industry bulletins, forms and applications, Frequently Asked Questions pages (by topic), online complaint submission, and license workshop videos on its website, www.cslb.ca.gov. CSLB also staffs a toll-free phone number, (800) 321-CSLB. CSLB's call center staff are available Monday-Friday from 8:00 a.m. to 5:00 p.m. A separate toll-free number, (800) 962-1125, is dedicated to providing information to disaster survivors and operates during these same times.

BOARD COMPOSITION

The board is comprised of 15 members who serve four-year terms. Membership includes:

- One "A" General Engineering contractor,
- Two "B" General Building contractors,
- Two "C" Specialty contractors,
- One labor organization representative,
- One local building official, and
- Eight public members, one of whom must represent a statewide senior citizen organization.

The Governor appoints 11 members, including four public members (one of whom represents a statewide senior citizen organization), a local building official, a labor organization representative, and five licensees. The Senate Rules Committee and Assembly Speaker each appoint two public members.

1. Describe the make-up and functions of each of the board's committees (cf., Section 12, Attachment B).

CSLB currently has five standing committees: Executive, Enforcement, Legislative, Licensing, and Public Affairs.

The Executive Committee, comprised of the board chair, vice chair, secretary, and most recent past chair, focuses on organizational effectiveness and improving the quality of service in all divisions within CSLB. The Executive Committee reviews issues of concern to the Information Technology Division and Administrative Division. The Enforcement Committee seeks best methods to reduce, eliminate, or prevent unlicensed activity and unprofessional conduct that pose a threat to public health, safety, and welfare. The Legislative Committee develops proposed changes to statutes, regulations, policies, and procedures to strengthen CSLB operations to support meeting its consumer protection mandate as industry and the policy landscape evolve. The Licensing Committee helps ensure that all applicants and licensees meet minimum qualifications to provide construction services. The Public Affairs Committee educates consumers about making informed choices related to construction services and provides information to unlicensed contractors about licensing requirements and how to get licensed, and to licensed contractors so they can improve their technical, management, and service skills.

Committees discuss various policy matters to formulate recommendations for consideration by the full board, which reviews and takes formal action based on those recommendations. Board and committee meetings are open to the public to give stakeholders an opportunity to comment. These meetings are also webcasted to allow greater public access to committee recommendations and board actions.

Table 1a. Attendance

FRANK ALTAMURA, JR.			
Date Appointed: January 4, 2019			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	January 8, 2019	Sacramento, CA	N
Board Meeting	March 21, 2019	San Diego, CA	Y
Public Affairs Committee Meeting	May 13, 2019	Sacramento, CA	N
Licensing Committee Meeting	May 13, 2019	Sacramento, CA	N

Table 1a. Attendance			
FRANK ALTAMURA, JR.			
Board Meeting	June 6-7. 2019	South Lake Tahoe, CA	Y
Board Meeting	September 24, 2019	Chico, CA	Y
Enforcement Committee Meeting	November 7, 2019	Sacramento, CA	Y
Public Affairs Committee Meeting	November 7, 2019	Sacramento, CA	Y
Board Meeting	December 12, 2019	Sacramento, CA	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Licensing Committee Meeting	November 4, 2020	Teleconference	Y
Legislative Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Legislative Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	N
Board Meeting	November 29, 2021	Teleconference	N
Legislative Committee Meeting	January 26, 2022	Teleconference	Y
Licensing Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y

Table 1a. Attendance			
JOËL BARTON – CURRENT MEMBER			
Date Appointed: June 21, 2023			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2022	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
RODNEY COBOS – CURRENT MEMBER			
Date Appointed: September 11, 2020			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Licensing Committee Meeting	November 4, 2020	Teleconference	Y
Legislative Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y

Table 1a. Attendance			
RODNEY COBOS – CURRENT MEMBER			
Board Meeting	February 4, 2021	Teleconference	Y
Legislative Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Enforcement Committee Meeting	January 26, 2022	Teleconference	Y
Public Affairs Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	N
Enforcement Committee Meeting	August 3, 2022	Teleconference	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	N
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
DAVID DE LA TORRE – CURRENT MEMBER			
Date Appointed: May 6, 2015		Reappointed: September 16, 2016, and May 19, 2020	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	December 13, 2018	San Francisco, CA	N
Board Meeting	January 8, 2019	Sacramento, CA	N
Board Meeting	March 21, 2019	San Diego, CA	Y
Public Affairs Committee Meeting	May 13, 2019	Sacramento, CA	Y
Licensing Committee Meeting	May 13, 2019	Sacramento, CA	Y
Board Meeting	June 6-7, 2019	South Lake Tahoe, CA	Y
Executive Committee Meeting	August 5, 2019	Sacramento, CA	Y
Licensing Committee Meeting	August 6, 2019	Sacramento, CA	Y
Legislative Committee Meeting	August 6, 2019	Sacramento, CA	Y
Board Meeting	September 24, 2019	Chico, CA	N
Licensing Committee Meeting	November 7, 2019	Sacramento, CA	Y
Legislative Committee Meeting	November 7, 2019	Sacramento, CA	Y
Board Meeting	December 12, 2019	Sacramento, CA	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y

Table 1a. Attendance			
DAVID DE LA TORRE – CURRENT MEMBER			
Board Meeting	September 9, 2020	Teleconference	Y
Executive Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	N
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Executive Committee Meeting	January 26, 2022	Teleconference	Y
Enforcement Committee Meeting	January 26, 2022	Teleconference	Y
Public Affairs Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	N
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Licensing Committee Meeting	February 16, 2023	Teleconference	Y
Legislative Committee Meeting	February 16, 2023	Teleconference	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	N
Public Affairs Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
MIGUEL GALARZA – CURRENT MEMBER			
Date Appointed: July 23, 2020		Reappointed: June 13, 2023	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	September 9, 2020	Teleconference	Y
Licensing Committee Meeting	November 4, 2020	Teleconference	Y
Legislative Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Legislative Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y

Table 1a. Attendance			
MIGUEL GALARZA – CURRENT MEMBER			
Board Meeting	November 29, 2021	Teleconference	Y
Legislative Committee Meeting	January 26, 2022	Teleconference	Y
Licensing Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Licensing Committee Meeting	February 16, 2023	Teleconference	Y
Legislative Committee Meeting	February 16, 2023	Teleconference	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	Y
Public Affairs Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
AMANDA GALLO – CURRENT MEMBER			
Date Appointed: March 29, 2023			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	N
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
DON GIARRANTANO			
Date Appointed: August 12, 2020		Reappointed: June 25, 2021	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	September 9, 2020	Teleconference	Y
Enforcement Committee Meeting	November 4, 2020	Teleconference	Y
Public Affairs Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Enforcement Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y

Table 1a. Attendance			
DON GIARRANTANO			
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Enforcement Committee Meeting	January 26, 2022	Teleconference	N
Public Affairs Committee Meeting	January 26, 2022	Teleconference	N
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Enforcement Committee Meeting	November 4, 2020	Teleconference	Y
Public Affairs Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Enforcement Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Enforcement Committee Meeting	January 26, 2022	Teleconference	N
Public Affairs Committee Meeting	January 26, 2022	Teleconference	N
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y

Table 1a. Attendance			
SUSAN GRANZELLA – CURRENT MEMBER			
Date Appointed: October 13, 2014		Reappointed: June 2, 2016, and July 23, 2020	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Public Affairs Committee Meeting	March 2, 2018	Sacramento, CA	Y
Legislative Committee Meeting	March 2, 2018	Sacramento CA	Y
Board Meeting	April 12-13, 2018	San Diego CA	Y
Board Meeting	June 7-8, 2018	Las Vegas, NV	Y
Legislative Committee Meeting	August 3, 2018	Sacramento CA	Y
Enforcement Committee Meeting	August 3, 2018	Sacramento CA	Y
Board Meeting	August 14, 2018	Sacramento CA	Y
Board Meeting	September 20, 2018	Sacramento CA	Y
Board Meeting	December 13, 2018	San Francisco CA	Y
Board Meeting	January 8, 2019	Sacramento CA	Y
Board Meeting	March 21, 2019	San Diego CA	Y
Enforcement Committee Meeting	May 13, 2019	Sacramento CA	Y
Legislative Committee Meeting	May 13, 2019	Sacramento CA	Y
Board Meeting	June 6-7, 2019	South Lake Tahoe, CA	Y

Table 1a. Attendance			
SUSAN GRANZELLA – CURRENT MEMBER			
Executive Committee Meeting	August 5, 2019	Sacramento, CA	Y
Board Meeting	September 24, 2019	Chico, CA	Y
Enforcement Committee Meeting	November 7, 2019	Sacramento, CA	Y
Public Affairs Committee Meeting	November 7, 2019	Sacramento, CA	Y
Board Meeting	December 12, 2019	Sacramento, CA	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Executive Committee Meeting	November 4, 2020	Teleconference	Y
Licensing Committee Meeting	November 4, 2020	Teleconference	Y
Legislative Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Legislative Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Executive Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y
Enforcement Committee Meeting	August 3, 2022	Teleconference	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Public Affairs Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
ALAN GUY – CURRENT MEMBER			
Date Appointed: March 2, 2022			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y
Enforcement Committee Meeting	August 3, 2022	Teleconference	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y

Table 1a. Attendance			
ALAN GUY – CURRENT MEMBER			
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Public Affairs Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
JACOB LOPEZ – CURRENT MEMBER			
Date Appointed: June 29, 2022			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Enforcement Committee Meeting	August 3, 2022	Teleconference	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Board Meeting	March 21, 2023	Teleconference	N
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	N
Board Meeting	November 15, 2023	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	Y
Public Affairs Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
DIANA LOVE – CURRENT MEMBER			
Date Appointed: October 7, 2019		Reappointed: June 24, 2022	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Enforcement Committee Meeting	November 7, 2019	Sacramento	Y
Public Affairs Committee Meeting	November 7, 2019	Sacramento	Y
Board Meeting	December 12, 2019	Sacramento	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Enforcement Committee Meeting	November 4, 2020	Teleconference	Y
Public Affairs Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Enforcement Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y

Table 1a. Attendance			
DIANA LOVE – CURRENT MEMBER			
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Executive Committee Meeting	January 26, 2022	Teleconference	Y
Enforcement Committee Meeting	January 26, 2022	Teleconference	Y
Public Affairs Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento	Y
Board Meeting	August 30-31, 2022	San Diego	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Licensing Committee Meeting	February 16, 2023	Teleconference	Y
Legislative Committee Meeting	February 16, 2023	Teleconference	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
MICHAEL MARK – CURRENT MEMBER			
Date Appointed: September 30, 2020			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Enforcement Committee Meeting	November 4, 2020	Teleconference	Y
Public Affairs Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Enforcement Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	y
Enforcement Committee Meeting	January 26, 2022	Teleconference	Y
Public Affairs Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y
Enforcement Committee Meeting	August 3, 2022	Teleconference	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y

Table 1a. Attendance			
MICHAEL MARK – CURRENT MEMBER			
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2018	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	N
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
STEVEN PANELLI – CURRENT MEMBER			
Date Appointed: September 29, 2021			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	November 29, 2021	Teleconference	Y
Legislative Committee Meeting	January 26, 2022	Teleconference	Y
Licensing Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento	Y
Board Meeting	August 30-31, 2022	San Diego	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Licensing Committee Meeting	February 16, 2023	Teleconference	N
Legislative Committee Meeting	February 16, 2023	Teleconference	N
Board Meeting	March 21, 2023	Teleconference	N
Board Meeting	June 22, 2023	Las Vegas	N
Board Meeting	June 23, 2023	Las Vegas	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Public Affairs Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
CINDI RICH			
Date Appointed: September 29, 2021			
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	November 25, 2021	Teleconference	Y
Enforcement Committee Meeting	January 26, 2022	Teleconference	Y
Public Affairs Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y/N

Table 1a. Attendance			
JIM RUANE – CURRENT MEMBER			
Date Appointed: September 27, 2019		Reappointed: June 13, 2023	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	December 12, 2019	Sacramento, CA	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Licensing Committee Meeting	November 4, 2020	Teleconference	Y
Legislative Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Legislative Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22, 2021	Teleconference	Y
Board Meeting	September 23, 2021	Teleconference	N
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Legislative Committee Meeting	January 26, 2022	Teleconference	Y
Licensing Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y
Board Meeting	August 30-31, 2022	San Diego, CA	N
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Licensing Committee Meeting	February 16, 2023	Teleconference	Y
Legislative Committee Meeting	February 16, 2023	Teleconference	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	Y
Board Meeting	November 15, 2023	Teleconference	Y
Enforcement Committee Meeting	November 29, 2023	Teleconference	Y
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1a. Attendance			
JOHNNY SIMPSON			
Date Appointed: February 25, 2015		Reappointed: July 8, 2015, and June 5, 2019	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Licensing Committee Meeting	February 23, 2018	Sacramento, CA	Y
Enforcement Committee Meeting	February 23, 2018	Sacramento, CA	Y
Board Meeting	April 12-13, 2018	San Diego, CA	N
Board Meeting	June 7-8, 2018	Sacramento, CA	Y

Table 1a. Attendance			
JOHNNY SIMPSON			
Executive Committee Meeting	August 3, 2018	Sacramento, CA	Y
Legislative Committee Meeting	August 3, 2018	Sacramento, CA	Y
Enforcement Committee Meeting	August 3, 2018	Sacramento, CA	Y
Board Meeting	August 14, 2018	Sacramento, CA	Y
Board Meeting	September 20, 2018	Sacramento, CA	Y
Board Meeting	December 13, 2018	San Francisco, CA	Y
Board Meeting	January 8, 2019	Sacramento, CA	N
Board Meeting	March 21, 2019	San Diego, CA	Y
Enforcement Committee Meeting	May 13, 2019	Sacramento, CA	Y
Legislative Committee Meeting	May 13, 2019	Sacramento, CA	Y
Board Meeting	June 6-7. 2019	South Lake Tahoe, CA	Y
Executive Committee Meeting	August 5, 2019	Sacramento, CA	Y
Board Meeting	September 24, 2019	Chico, CA	Y
Board Meeting	December 12, 2019	Sacramento	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Executive Committee Meeting	November 4, 2020	Teleconference	Y
Enforcement Committee Meeting	November 4, 2020	Teleconference	Y
Public Affairs Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Enforcement Committee Meeting	February 4, 2021	Teleconference	Y
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 3, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Legislative Committee Meeting	January 26, 2022	Teleconference	Y
Licensing Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	Y
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y

Table 1a. Attendance			
MARY TEICHERT – CURRENT MEMBER			
Date Appointed: September 27, 2019		Reappointed: June 24, 2022	
Meeting Type	**Meeting Date**	**Meeting Location**	**Attended?**
Board Meeting	December 12, 2019	Sacramento, CA	Y
Board Meeting	June 5, 2020	Teleconference	Y
Board Meeting	July 24, 2020	Teleconference	Y
Board Meeting	September 9, 2020	Teleconference	Y
Executive Committee Meeting	November 4, 2020	Teleconference	Y
Licensing Committee Meeting	November 4, 2020	Teleconference	Y
Legislative Committee Meeting	November 4, 2020	Teleconference	Y
Board Meeting	December 10, 2020	Teleconference	Y
Board Meeting	February 4, 2021	Teleconference	Y
Legislative Committee Meeting	February 4, 2021	Teleconference	N
Board Meeting	March 25, 2021	Teleconference	Y
Board Meeting	June 1, 2021	Teleconference	Y
Board Meeting	July 27, 2021	Teleconference	Y
Board Meeting	September 22-23, 2021	Teleconference	Y
Board Meeting	September 29, 2021	Teleconference	Y
Board Meeting	November 29, 2021	Teleconference	Y
Executive Committee Meeting	January 26, 2022	Teleconference	Y
Legislative Committee Meeting	January 26, 2022	Teleconference	Y
Licensing Committee Meeting	January 26, 2022	Teleconference	Y
Board Meeting	February 23, 2022	Teleconference	Y
Board Meeting	March 30, 2022	Teleconference	Y
Board Meeting	June 16, 2022	Sacramento, CA	N
Board Meeting	August 30-31, 2022	San Diego, CA	Y
Board Meeting	December 8, 2022	San Francisco/Sacramento, CA	Y
Board Meeting	March 21, 2023	Teleconference	Y
Board Meeting	June 22-23, 2023	Las Vegas, NV	Y
Board Meeting	September 14, 2023	Sacramento, CA	N
Board Meeting	November 15, 2023	Teleconference	Y
Public Affairs Committee Meeting	November 29, 2023	Teleconference	N
Board Meeting	December 13, 2022	Sacramento, CA	Y/N

Table 1b. Board/Committee Member Roster					
Member Name (Include any vacancies and a brief member biography)	Date First Appointed	Date Re-appointed	Date Term Expires	Appointing Authority	Type (public or professional)
Joël Barton	June 21, 2023	N/A	June 1, 2027	Senate Rules	Public
Rodney M. Cobos	September 11, 2020	N/A	June 1, 2024	Assembly Speaker	Public
David De La Torre	May 6, 2015	May 19, 2020	June 1, 2024	Assembly Speaker	Public
Miguel Galarza	July 23, 2020	June 13, 2023	June 1, 2023	Governor	Public
Amanda Gallo	March 29, 2023	N/A	June 1, 2024	Governor	Public
Susan Granzella	October 13, 2014	July 23, 2020	June 1, 2024	Governor	Public
Alan Guy	March 2, 2022	N/A	June 1, 2026	Governor	Professional
Jacob Lopez	June 29, 2022	N/A	June 1, 2025	Senate Rules	Public
Diana Love	October 7, 2019	June 24, 2022	June 1, 2026	Governor	Public
Michael Mark	September 30, 2020	N/A	June 1, 2024	Governor	Professional
Steven Panelli	September 29, 2021	N/A	June 1, 2025	Governor	Public
James Ruane	September 27, 2019	June 13, 2023	June 1, 2023	Governor	Professional
Mary Teichert	September 27, 2019	June 24, 2022	June 1, 2026	Governor	Professional
VACANT				Governor	Public
VACANT				Governor	Professional

2. In the past four years, was the board unable to hold any meetings due to lack of quorum? If so, please describe. Why? When? How did it impact operations?

CSLB has had a quorum at all scheduled meetings during the reporting period.

3. Describe any major changes to the board since the last Sunset Review, including, but not limited to:

- **Internal changes (i.e., reorganization, relocation, change in leadership, strategic planning)**

Reorganization

In August 2018, the Norwalk Investigative Center (IC) divided into two units, the Norwalk IC and Orange County IC to ensure timely completion of consumer complaints as seventeen direct reports were too many for one Enforcement Supervisor I (ES I) to manage efficiently. This occurred because the Norwalk IC workload steadily increased and caseload averaged more than double the number of cases in other southern IC offices. Prior to the reorganization, seventeen employees reported directly to the ES I in the Norwalk IC, which was nearly double the direct reports of other southern IC offices.

In 2021, the Public Information Center (PIC), which includes the call center and public counter, both public-facing units, was transferred from the Licensing Division to the Public Affairs Office (PAO) to improve oversight and direction. Moving the PIC units to the PAO was intended to support CSLB's 2019-2020 Strategic Plan goals by centralizing and coordinating information being provided to both internal and external stakeholders. The reorganization was completed in December 2022 with nineteen Public Information Unit positions redirected to the Public Affairs and Information Office.

In 2022, the Solar Energy System Restitution Program (SESRP) was added to the Executive Division. CSLB established two retired annuitant (RA) positions for the Unit to carry out Assembly

Bill (AB) 137 (Committee on Budget, Chapter 77, Statutes of 2021), which created SESRP to implement a $5 million appropriation. SESRP provides restitution to homeowners who are financially harmed by solar contractors. SESRP is discussed in several sections throughout this report.

In March 2022, CSLB reorganized the Enforcement Division's Case Management unit by merging its Enforcement Services Section into the Disciplinary Services Section (DSS) to increase management efficiency. Eight positions were redirected to the DSS bringing the total positions within the DSS to fifteen. The reorganization required one less manager position, which was redirected to the Special Investigations Unit (SIU) and reclassed to a Supervising Special Investigator I (Peace Officer).

In July 2021, the Enforcement Division's Quality Assurance Unit was reorganized to consolidate specialized functions related to the high-priority investigations. Four positions were added to the unit by redirecting and reclassifying one vacant Special Investigator (SI) position to a Supervising Special Investigator I (Non-Peace Officer) and redirecting two Special Investigators and one Office Technician from the SIU.

In August 2021, the Career Executive Assignment A (CEA) concept was revised to include the direction and supervision of the Public Information Units. The Public Information Units (call center and public counter) were previously within the Licensing and Examination Division.

In August 2021, the License Modifications unit and Renewals unit were split to create a third unit, the Bond/Workers Compensation Unit. The new unit processes bonds and workers compensation insurance required by SB 216 SB 607 (Min, Chapter 367, Statutes of 2021) and SB 216 (Dodd, Chapter 978, Statutes of 2022), respectively.[1]

In July 2022, the Examination Administration Unit outsourced license examinations to a third party. This transition was in response to an objective in the Board's 2019-2021 Strategic Plan to research the feasibility of outsourcing test administration to reduce costs, reallocate resources, and expand testing options for licensees. The Board determined outsourcing examination administration would achieve cost savings while increasing candidate access from eight examination locations to 17 locations within California and 22 out-of-state locations, and expanded examination availability to nights and weekends. Test center staff were given two years' notice of the office closures while CSLB worked to implement the plan to outsource examinations. Sixteen permanent and two intermittent staff were impacted and attrition was achieved through staff being redirected to other units, retirements, or accepting positions elsewhere.

Relocation

There were no CSLB office relocations during the reporting period; however, all test centers were closed July 1, 2022. Five of the test centers, located in Berkeley, Norwalk, San Bernardino, San Diego, and San Jose, have leases terminated. Negotiations to end the lease for two other centers, located in Oxnard and Fresno, are underway.

Changes in Leadership

The board annually elects a chair, vice chair, and secretary at a publicly noticed board meeting. Officers serve a one-year term beginning at the start of each fiscal year. The chart below reflects board officers from FY 2018/19 through present.

[1] Full descriptions of these bills are on pages 19 and 20.

Board Officers			
Date	Title	Name	Member Type
FY 2018-2019	Chair	Marlo Richardson	Public Member
	Vice Chair	Johnny Simpson	Public Member
	Secretary	Linda Clifford	"A" General Engineering Contractor
FY 2019-2020	Chair	Johnny Simpson	Public Member
	Vice Chair	David De La Torre	Public Member
	Secretary	Susan Granzella	Public Member
FY 2020-2021	Chair	David De La Torre	Public Member
	Vice Chair	Susan Granzella	Public Member
	Secretary	Mary Teichert	"A" General Engineering Contractor
FY 2021-2022	Chair	Susan Granzella	Public Member
	Vice Chair	Mary Teichert	"A" General Engineering Contractor
	Secretary	Diana Love	Public Member
FY 2022-2023	Chair	Mary Teichert	"A" General Engineering Contractor
	Vice Chair	Diana Love	Public Member – Senior Citizen Organization
	Secretary	Michael Marks	Public Member – Labor Organization
FY 2023-2024 (current)	Chair	Diana Love	Public Member – Senior Citizen Organization
	Vice Chair	Michael Marks	Public Member – Labor Organization
	Secretary	Miguel Galarza	"B" General Building Contractor

There have also been several leadership changes among the CSLB executive team since the last Sunset Review. CSLB's current executive leadership consists of:

CSLB Executive Leadership		
Incumbent	Position	Appointment Date
David Fogt	Registrar of Contractors	May 2, 2017
Michael Jamnetski	Chief Deputy Registrar	July 1, 2022
VACANT	Chief of Administration	VACANT
Steve Grove	Chief of Enforcement	March 4, 2022
Jason Perez	Chief of Information Technology	January 13, 2020
Yeaphana La Marr	Chief of Legislation	January 3, 2023
Carol Gagnon	Chief of Licensing	September 14, 2023
Katherine White	Chief of Public Affairs	October 3, 2022

Strategic Planning

The board engaged in the strategic plan development process in 2021. Board members, management, staff, and external stakeholders provided input through an environmental scan, which enabled participants to identify strengths and weaknesses in the following areas: 1) Licensing and Testing, 2) Enforcement, 3) Legislation, 4) Public Affairs, and 5) Executive – Administration and Information Technology.

The board evaluated environmental scan survey results to develop goals, objectives, and timelines for each area and formally approved the 2022-24 Strategic Plan at its meeting on November 29, 2021.

- **All legislation sponsored by the board and affecting the board since the last sunset review.**

  The Board's Legislative Division sponsors legislation with Board approval and reviews all bills introduced by the Legislature for potential impact to the Board, consumer protection, and the construction industry. Over the last five years, CSLB sponsored, provided technical assistance, or was impacted by the following bills that were signed into law (CSLB-sponsored and partnered legislation is indicated with an asterisk).

  2019 Legislation

  - Senate Bill (SB) 610 (Glazer, Chapter 378, Statutes of 2019) extended the CSLB sunset date from January 1, 2020, to January 1, 2024. SB 610 also requires CSLB to study the efficacy of the $15,000 contractor license bond (at the time) and report its findings to the legislature by January 2021. The bill authorizes CSLB to automatically suspend the license of a contractor who is subject to an unsatisfied construction-related civil judgment if that licensee is named in the civil action as either an individual or entity and set the C-10 electrical contractor renewal fee, which funds enforcement of electrician certification requirements, at $20.

  2020 Legislation

  - AB 2210 (Aguiar-Curry, Chapter 128, Statutes of 2020)* authorizes disciplinary action against a licensed contractor for violations of tree worker safety regulations administered by the Division of Occupational Safety and Health. This bill also extends the time for the CSLB registrar to bring disciplinary action against a licensed contractor for violations of the Labor Code or the specified tree safety regulations from 180 days to 18 months.

  - AB 2471 (Maienschein, Chapter 158, Statutes of 2020)* defines "senior citizen" as an individual who is 65 years of age or older and extends the right to cancel a home improvement contract executed on January 1, 2021, or after from three days to five days for senior citizens.

  - AB 3087 (Brough, Chapter 295, Statutes of 2020)* authorizes the CSLB registrar to contract with a public or private organization to administer, and provide services and materials for, CSLB's contractor license exams.

  - SB 1189 (McGuire, Chapter 364, Statutes of 2020)* creates a new "B-2 Residential Remodeling Contractor" license classification who may make improvements to, on, or in an existing residential wood frame structure that requires at least three unrelated building trades or crafts for a single contract (aside from framing). The bill also updates the definition of "home improvement" to add reconstruction, restoration, or rebuilding of residential property damaged or destroyed by a disaster for which either the governor or president has declared a state of emergency. SB 1189 also expands the type of home improvement in a declared disaster zone for which a person without a contractor license can be prosecuted.

  - SB 1474 (Committee on Business, Professions and Economic Development, Chapter 312, Statutes of 2020) requires retroactive reinstatement of an expired contractor license when all renewal requirements are met within 90 days of the license expiration date. SB 1474 also makes several minor, technical, and non-substantive changes to the Contractors State License Law.

2021 Legislation

- AB 137 (Committee on Budget, Chapter 77, Statutes of 2021) created SESRP within CSLB and granted a one-time $5 million General Fund appropriation to administer the program through June 30, 2024. SESRP makes restitution available for any consumer who experienced financial loss or injury, as defined, as a result of using a contractor to install a solar energy system on a single-family residence on or after January 1, 2016.

- AB 246 (Quirk, Chapter 46, Statutes of 2021)* makes a licensed contractor's unlawful dumping of construction debris cause for disciplinary action. The bill also reorganized Business and Professions Code (BPC) section 7110 to provide clarity and improve readability.

- AB 569 (Grayson, Chapter 94, Statutes of 2021)* increases the maximum civil penalty CSLB can assess against a licensed contractor from $5,000 to $8,000 for most violations and from $15,000 to $30,000 for the most serious violations. This bill also authorizes CSLB to issue a Letter of Admonishment for more than one violation at a time.

- AB 830 (Flora, Chapter 376, Statutes of 2021) specifies the Board's authority to require a duty statement of the qualifier's employment for the construction operation as information how the qualifier will be exercising supervision and control. This bill also reduced license qualifier responsibility by allowing "supervision and control" to be delegated.

- SB 607 (Min, Chapter 367, Statutes of 2021) increases licensing maintenance and service fees for support of CSLB effective January 1, 2022. This bill also increases the CSLB license, qualifier, and disciplinary bonds from $15,000 to $25,000, effective January 1, 2023. In addition, this bill requires DCA boards and bureaus to waive application and license fees for military family members, effective July 1, 2022.

- SB 757 (Limon, Chapter 249, Statutes of 2021) updates the definition of "home improvement" to include solar energy systems when installed on a residential building or property for the purposes of the home improvement contract requirements. This bill requires a HIS to inform the homeowner of the name of the contractor on whose behalf they are soliciting and makes it a misdemeanor for a HIS to connect a homeowner to a contractor unless the HIS is registered as such for that contractor. This bill extends an existing prohibition from contractors accepting payment from consumers for work not performed or materials not delivered to any such payments from lenders or financiers. Finally, this bill requires representations made to a consumer about a solar energy product or performance to be included in the home improvement contract.

- SB 826 (Committee on Business, Professions and Economic Development, Chapter 188, Statutes of 2021) made technical changes to the Contractors State License Law to clarifying that: CSLB employs investigators and special investigators, not enforcement representatives; the C-22 Asbestos Abatement Contractor license is an appropriate license classification to engage in asbestos related work; and the right to cancel a home improvement contract must be consistent with existing cooling off timelines in BPC section 7169 (three days or five days for contracts with a senior citizen).

2022 Legislation

- AB 1747 (Quirk, Chapter 757, Statutes of 2022)* extends CSLB's authority to impose a civil penalty of up to $30,000 for willful disregard of specified California laws, including failure to

comply with home solicitation requirements, and violations of health and safety laws, water laws, safe excavation requirements, pest control requirements, illegal dumping, and other state laws related to building, labor, and insurance requirements.

- AB 2105 (Smith, Chapter 156, Statutes of 2022) reduces the initial license fee for a veteran of the United States Armed Forces by 50 percent when the applicant demonstrates a qualifying discharge grade.

- AB 2916 (McCarty, Chapter 293, Statutes of 2022) authorizes CSLB to disclose a letter of admonishment for one or two years based on existing factors, including the gravity of the violation, good faith of the licensee or applicant, and history of previous violations.

- SB 216 (Dodd, Chapter 978, Statutes of 2022)* requires C-8 (Concrete), C-20 (Warm-Air Heating, Ventilating and Air Conditioning), C-22 (Asbestos Abatement), and D-49 (Tree Service) licensees to have a current and valid Certificate of Workers' Compensation or Certification of Self Insurance on file with CSLB as a condition of licensure, effective January 1, 2023, and effective July 1, 2023, authorizes classification removal or license suspension for failing to meet workers' compensation filing requirements. Effective January 1, 2026, this bill will require all license classifications to meet the workers' compensation insurance filing requirement.

- SB 1443 (Roth, Chapter 625, Statutes of 2022) postpones the Board's sunset review from 2024 to 2025 by extending sections of the Contractors State License Law that would have been repealed on January 1, 2024.

- SB 1495 (Committee on Business, Professions and Economic Development, Chapter 511, Statutes of 2022) limits CSLB license lookup disclosure requirements for actions that resulted in a payment under the SESRP to contractors who have had their license revoked or are in the process of having their license revoked.

2023 Legislation

- AB 336 (Cervantez, Chapter 323, Statutes of 2023) requires licensees to provide the top three workers' compensation classification codes on the licensee's workers' compensation policy at renewal for posting on the CSLB license lookup. This bill also prohibits renewal without the codes, but provides for retroactive renewal if the licensee complies within 30 days after receiving notice of the renewal denial. This bill does not require CSLB to investigate or verify the validity of the codes.

- AB 1204 (Holden, Chapter 568, Statutes of 2023) prohibits specialty contractors from subcontracting with more than one subcontractor in the same specialty classification on the same jobsite unless specific conditions exist.

- SB 601 (McGuire, Chapter 403, Statutes of 2023) increases the misdemeanor statute of limitations from one year to three years after discovery of a licensed contractor who allows unlawful use of their license by an unlicensed person. This bill also requires courts to assess the maximum civil penalty for specified home improvement contract violations in declared disaster areas.

- SB 630 (Dodd, Chapter 153, Statutes of 2023)* requires CSLB applicants and licensees to provide an email address, if available, at the time of initial licensure and renewal and specifies that licensee email addresses are not subject to disclosure under the California

Public Records Act. Additionally, this bill would authorize the registrar to revoke a license when probationary conditions placed upon that license are not met.

- **All regulation changes approved by the board since the last sunset review. Include the status of each regulatory change approved by the board.**

Pending Rulemaking Proposals Approved by the Board

- On September 22, 2021, the board approved initiation of the rulemaking process to amend section 872 ("Disclosure of General Liability Insurance") Title 16 of the California Code of Regulations (16 CCR).

  As of December 2023, the regulatory package was under review by the Department of Consumer Affairs prior to filing with the Office of Administrative Law.

- On June 16, 2022, the board approved initiation of the rulemaking process to amend 16 CCR sections 832.10 ("Class C-10–Electrical Contractor") and 832.46 ("Class C-46–Solar Contractor"), to clarify the scope of C-10 electrical contractors and C-46 solar contractors relating to Battery Energy Storage Systems (BESS) installation.

  This proposed rulemaking was posted for public comment on June 16, 2023. As of December 2023, CSLB staff are responding to comments received during the 45-day comment period and preparing a Final Statement of Reasons.

- On August 30, 2022, the board approved initiation of the rulemaking process to amend 16 CCR section 811 ("Fees"), to conform to fees to those set by SB 607 (Min, Chapter 367, Statutes of 2021).

  As of December 2023, the regulatory package was under review by the Department of Consumer Affairs prior to filing with the Office of Administrative Law.

2019 Adopted Regulation Changes

- *Renewal Fee Increase – Emergency Regulations – Approved and Effective December 19, 2019*

  On December 19, 2019, the Office of Administrative Law approved CSLB's emergency regulations amend 16 CCR Section 811 to increase license and HIS renewal fees. While this emergency regulation made the fee increases effective immediately, in order to provide reasonable notice for licensees, CSLB did not begin to collect the increased fees until February 1, 2020.

2020 Adopted Regulation Changes

- *Renewal Fee Increase – Emergency Regulations – Approved and Effective November 10, 2020*

  The December 2019 emergency increase to address CSLB's budgetary structural imbalance was extended twice by the Governor twice in 2020 due to the COVID-19 pandemic. On November 10, 2020, CSLB extended the emergency regulations, allowing CSLB to continue to collect the new fees until June 8, 2021, by which time the regular rulemaking to increase the fee would be in place.

2021 Adopted Regulation Changes

- *Update to Checklist for Homeowners – Approved and Effective November 22, 2021*

  CCR Title 16, Section 872.1, "Checklist for Homeowners," was repealed to conform with existing law because Section 872.1 was adopted under the authority of BPC section 7159.3, which was repealed in its entirety by AB 316 (Nakanishi, Chapter 385, Statutes of 2005).

- *Blanket Performance and Payment Bond Requirements and Application – Approved and Effective November 10, 2021*

  This rulemaking without regulatory effect amends Section 858.1, which sets forth performance and payment bond requirements for licensees seeking approval of a blanket bond, including completing for 13B-39. The technical amendments make minor revisions the form and change the revision date to "07/22."

- *Increase Civil Penalties – Approved November 10, 2021, and Effective January 1, 2022*

  CCR Title 16, Section 884, which sets the fine ranges for each violation of the Contractors State License Law, was amended to conform with AB 569 (Grayson, Chapter 94, Statutes of 2021). This bill raised the maximum civil penalty for most violations from $5,000 to $8,000 and raised the maximum for the most serious violations from $15,000 to $30,000.

- *Condition of Licensure for C-47 (General Manufactured Housing Contractor) – Approved and Effective September 30, 2021*

  To comply with the U.S. Department of Housing and Urban Development's (HUD) Manufactured Home Installation Program, Section 825.5 was added to 16 CCR to mandate completion of HUD's required installer training as a condition of licensure for applicants for a C-47 (general manufactured housing contractor) license.

- *Fee Increase Regular Rulemaking – Approved and Effective May 20, 2021*

  This rulemaking is the "certificate of compliance" required by Government Code 11349.6, which refers to the regular rulemaking that an agency is required to file within specified time frames after the filing of an emergency regulation. The OAL approved this rulemaking on May 20, 2021, which had the effect of making permanent the December 19, 2019 and November 10, 2020 emergency rulemakings described above.

- *Substantial Relationship and Rehabilitation Criteria – Approved and Effective May 3, 2021*

  CCR Title 16, Sections 868, 868.1, 869, 869.5, and 869.9 set forth CSLB substantial relationship criteria and rehabilitation criteria for crimes or acts considered substantially related to the qualifications, functions, or duties of a contractor licensee; criteria for inquiring into criminal convictions; and criteria for setting the earliest date on which a denied applicant may reapply for licensure. These sections were amended to conform to requirements of AB 2138 (Chiu, Chapter 995, Statutes of 2018), including a requirement for licensing programs within DCA to consider the nature and gravity of the offense and the number of years elapsed when making licensing decisions. In addition, this rulemaking modifies the existing rehabilitation criteria for use when considering whether to deny, suspend, or revoke a license in response to a conviction of a crime substantially related to the qualification, functions, or duties of a licensee.

- *Update to CSLB Renewal Application Form – Approved February 8, 2021, and Effective April 1, 2021*

  The description of the renewal application form in Section 853 of CCR Title 16 was revised to conform to legislative changes to BPC sections 7137 and 7141 relating to renewal deadlines and processing incomplete renewals.

2022 Adopted Regulation Changes

- *Blanket Performance and Payment Bond Form Reference Update – Approved and Effective September 6, 2022*

  This rulemaking without regulatory effect amends Section 858.1, which sets forth performance and payment bond requirements for licensees seeking approval of a blanket bond, including completing for 13B-35. The technical amendments make minor revisions the form and change the revision date to "09/22."

- *Repeal Definitions: Bona Fide Employee and Direct Supervision and Control – Approved and Effective June 2, 2022*

  CCR Title 16, Section 823, "Definitions: Bona Fide Employee; Direct Supervision and Control" was repealed on June 2, 2022. AB 830 (Flora, Chapter 376, Statutes of 2021) codified and expanded the definitions of bona fide employees and direct supervision and control. Therefore, there is no need to define these terms in regulation.

- *Define Specialty Contractor C-49 (Tree and Palm Contractor) Scope – Approved March 30, 2022, and Effective January 1, 2024*

  This rulemaking adds Section 832.49 to CCR Title 16 and defines the scope of specialty classification C-49 (Tree and Palm Contractor). This regulation also makes conforming amendments to Section 832, which lists each specialty classification under the board's regulatory authority.

2023 Adopted Regulation Changes

- *Civil Penalty Increase for Disciplinary Action – Approved and Effective August 17, 2023*

  The California Code of Regulations (CCR), Title 16, Division 8, Section 884, was amended to increase the fine range for specified violations to conform to AB 1747, which amended BPC section 7110 to establish that a contractor's willful or deliberate disregard for state and local building permit laws is a violation of the Contractors State License Law. Further, AB 1747 amended BPC section 7099.2 by adding section 7110 to the list of violations for which a maximum penalty amount of $30,000 may be assessed for willfully and deliberately violating the building permit requirement and other violations as identified in section 7110.

4. Describe any major studies conducted by the board (cf. Section 12, Attachment C).

Since the last sunset review, CSLB has conducted or commissioned six major studies, which inform CSLB policy and strategic goals or respond to legislation. In chronological order, they are:

2019 Major Studies Conducted by the Board[2]

- *Energy Storage Systems Report*

  At its March 2019 meeting, the Board reviewed a report prepared by staff that addressed questions about which licensing classification(s) is/are most appropriate for installation of ESS systems based on research and stakeholder input submitted to the Board up to that date.

2020 Major Studies Conducted by the Board

- *Staff Report on Mandated Workers' Compensation for Certain License Classifications*

  At its September 2020 meeting, the Board reviewed a report prepared by the Legislative Division which included background, legislative history, research and data on workers' compensation insurance enforcement efforts at CSLB. The report included recommendations from industry groups and insurance regulators following industry meetings hosted by the Legislative Division in 2018, 2019, and early 2020.

  The report was accompanied by a legislative proposal for Board consideration and possible sponsorship of a legislative bill that would require three new contractor license classifications to obtain workers' compensation insurance in 2022, with all license classifications required to obtain it by 2025. The Board approved the proposal, and the Staff Report was found beneficial in securing an author of a legislative bill based on the Board's proposal. The legislative measure was introduced in 2021 (Senate Bill 216, Dodd).

- *Senate Bill 610 (Glazer) License Bond Study*

  At its December 2020 meeting, the Board reviewed a policy research study prepared by the Legislative Division to evaluate whether the $15,000 contractor bond amount is sufficient to protect consumers or whether an increase was necessary. The Legislature required this study in SB 610 (Glazer, Chapter 378, Statutes of 2019) and required the study to be submitted to the Legislature by January 1, 2021.

  The study analyzed decades of legislative history, barriers to licensure introduced when increasing bond amounts, underwriting of bond products, the cost of projects in a typical home, and bond payment-of-claim data. The study concluded the $15,000 contractor bond was not sufficient and an increase was necessary. The Board approved the study and the Legislative Division formally submitted it to the Legislature on December 23, 2020. The bond was subsequently raised to $25,000 by SB 607 ((Min, Chapter 367, Statutes of 2021).

- *Fee Study*

  In March 2020, CSLB contracted with Cooperative Personnel Services HR Consulting Services (CPS HR) to conduct a study of its fees to determine if fees were adequate to support CSLB operations for the next five years and appropriate considering the work required to perform various licensing processes. The goal of the study was to research whether there is justification to raise fees that would increase the reserve to four to five months over the next five years.

[2] All studies described in this section are attached to this report as Attachment C in the order listed except the 2023 report, which is still in progress.

The fee study recognized the need to increase most license and renewals fees across the Board, added a new fee, and reorganized fee statute by tiered fee types (i.e., sole owner vs other entities). The Board approved the recommended fee increases as outlined in the study and immediately pursued legislation, SB 607 (Min, Chapter 367, Statutes of 2021) to implement the increases by next year.

2021 Major Studies Conducted by the Board

- *Battery Energy Storage Systems (BESS) – Evaluation of Alternative Contractor License Requirements for Battery Energy Storage Systems*

  In response to recent technological developments and the increase of Battery Energy Storage Systems (BESS) installations alongside photovoltaic solar energy system installations, this study was conducted by UC Berkeley at the request of the Board. The study evaluates proposals that would establish which contractor license(s) are required to install BESS when installed in conjunction with a solar photovoltaic system, specifically C-10 (electrical) contractors, C-46 (solar) contractors, or both.

  The viability of four options were researched: 1) to preclude C-46 (solar) contractors from installing BESS under any circumstance; 2) permit C-46 contractors to install BESS on residential dwellings up to 20 kWh and when installed with a solar energy system; 3) permit C-46 to install BESS without kWh restriction on residential dwellings when installed with a solar energy system; and 4) permit C-46 to install BESS without any restriction. The study concluded that C-46 (solar) contractors should not be permitted to install BESS under any circumstance unless they also hold a C-10 (electrical) contractor license.

2022 Major Studies Conducted by the Board

- *Battery Energy Storage Systems (BESS) – CSLB Staff Report in Consultation with Expert Consultants*

  Board staff also prepared a report that discussed CSLB findings regarding the extent to which C-46 (solar) contractors should be permitted to install BESS. The study was conducted to determine whether a proposed rulemaking was appropriate or necessary to add BESS to the scope of the C-46 (solar) contractor classification or whether BESS installations should be performed exclusively by C-10 (electrical) contractors.

  The report concluded that BESS installation is safe and appropriate for the C-46 (solar) contractor to perform when the BESS capacity is no more than 80 kWh. The report is currently being used to support a pending rulemaking proposal to authorize contractors to install BESS up to 80 kWh under their C-46 (solar) contractor license classification.

2023 Major Studies Conducted by the Board

- *Enforcement Division Processes and Complaint/Investigation Handling Objectives*

  In July 2023, CSLB entered into a contract with CPS HR Consulting to conduct a study of the Enforcement Division's complaint handling and investigative processes. The purpose of the study is to examine the efficiency of these processes to identify opportunities for improvement and recommend compliant/investigation handling objectives and processes, workload goals, and staffing needs. This report is still in the research phase and is not anticipated to be finalized in time to be attached to this report.

5. **List the status of all national associations to which the board belongs.**

CSLB is a member of the National Association of State Contractors Licensing Agencies (NASCLA), which is dedicated to the mutual assistance of its members in striving for better construction industry regulation to protect the health, welfare, and safety of the general public. NASCLA's membership consists of state and local contractor licensing agencies, construction firms, construction trade associations, and others associated with the construction industry.

- **Does the board's membership include voting privileges?**

  CSLB's registrar currently serves as the President of the NASCLA and has served on the board of directions for the past six years. He has voting privileges as President and as a director.

- **List committees, workshops, working groups, task forces, etc., on which the board participates.**

  The CSLB registrar serves on the Executive Committee and the CSLB Chief of Licensing serves on the NASCLA Acccredited Examination Committee.

- **How many meetings did board representative(s) attend? When and where?**

  Over the past six years, Registrar Fogt has attended 12 board of directors and executive committee meetings and six annual conferences with travel paid from personal funds.

CSLB Attendance at National Board Meetings		
Date(s)	Meeting	Location
August 27-30, 2018	NASCLA Annual Conference	Nashville, TN
August 26-29, 2019	NASCLA Annual Conference	Baltimore, MD
Aug. 30-Sept. 3, 2020	NASCLA Annual Conference	Coronado, CA
Aug. 30-Sept 2, 2021	NASCLA Annual Conference	Boston, MA
Aug. 29-Sept. 1, 2022	NASCLA Annual Conference	
November 15, 2022	NASCLA Events Task Force Zoom Meeting	Teleconference
November 30, 2022	NASCLA Strategic Planning Meeting	South Carolina
January 13, 2023	LSLBC Letter of Response to NASCLA Copyright Infringement Letter	Teleconference
March 1, 2023	NASLCA 2023 Mid-Year Meeting	Phoenix, AZ
March 8, 2023	NASCLA Scholarship Winner Vidal Madrigal	Teleconference
March 28, 2023	NASCLA Events Task Force	Teleconference
May 8-10, 2023	NASCLA Executive Committee Meeting	Phoenix, AZ
July 19, 2023	NASCLA 2023 Annual Conference Prep	Teleconference
August 27, 2023	President, Treasurer and Executive Director Meeting	Teleconference
August 28-30, 2023	NASCLA Annual Conference	San Antonio, TX
October 12, 2023	State Member Call	Teleconference
November 14, 2023	NASCLA Mission Discussion and CSLB Participation	Teleconference
November 16, 2023	Strategic Planning Meeting Agenda/Report review	Teleconference
November 27, 2023	Accredited Examination Program Committee	Teleconference
December 5-7, 2023	NASCLA 2023 Strategic Planning and Annual Mission	Napa, CA

- **If the board is using a national exam, how is the board involved in its development, scoring, analysis, and administration?**

  CSLB does not use a national exam.

Section 2 – Fiscal and Staff

Fiscal Issues

6. **Is the board's fund continuously appropriated? If yes, please cite the statute outlining this continuous appropriation.**

   The Contractors License Fund (Fund) is not continuously appropriated. The Department prepares the Board's annual budget for inclusion in the Governor's proposed budget and an appropriation is enacted in the Budget Act each year.

7. **Describe the board's current reserve level, spending, and if a statutory reserve level exists.**

   CSLB currently maintains a healthy reserve level of 3.7 months, which has been increasing since FY 2019/20 and is projected to continue increasing. By the end of FY 2023/24, the Fund is projected to have $32.5 million (4.5 months) in reserve.

   The Contractors State License Law requires CSLB to fix fees at a level that supports a maximum of six months of reserves (BPC section 7138.1). Although the reserves are increasing, they are not anticipated to meet or exceed the six-month threshold in the near term.

8. **Describe if/when a deficit is projected to occur and if/when fee increase or reduction is anticipated. Describe the fee changes (increases or decreases) anticipated by the board.**

   During the last sunset review, reserves were declining and the Fund was close to a structural imbalance. CSLB contracted with CPS HR in May 2020 to conduct a fee study, which recommended changes to the structure and fees charged by CSLB. Table 2 shows the fund as close to insolvency in FY 2019/20, but back to expected levels in FY 2022/23.

Table 2. Fund Condition

(Dollars in Thousands)	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Beginning Balance	$7,884	$(448)	$3,402	$9,654	$25,820	$32,486
Revenues and Transfers	$64,524	$73,265	$79,852	$96,799	$91,521	$93,606
Total Resources	$72,408	$73,265	$83,254	$106,453	$117,341	$126,092
Budget Authority	$70,102	$70,333	$74,922	$79,897	$78,520	$80,876
Expenditures	$71,781	$70,952	$74,201	$80,633	$84,855	$87,211
Loans to General Fund	$0	$0	$0	$0	$0	$0
Accrued Interest, Loans to General Fund	$0	$0	$0	$0	$0	$0
Loans Repaid From General Fund	$0	$0	$0	$0	$0	$0
Fund Balance	$627	$1,865	$9,053	$25,820	$32,486	$38,881
Months in Reserve	0.1	0.3	1.3	3.7	4.5	5.0

Emergency regulations were adopted to temporarily increase fees, which allowed the Fund to remain solvent until SB 607 (Min, Chapter 367, Statutes of 2021) permanently raised fees and the

statutory maximums by approximately 25 percent, effective January 1, 2022. Because the Fund is healthy and reserves are increasing, there are no plans to increase fees in the foreseeable future.

9. **Describe the history of general fund loans. When were the loans made? When have payments been made to the board? Has interest been paid? What is the remaining balance?**

   The Contractor's License Fund has not issued a loan since FY 2008/09 to California's General Fund. In FY 2011/12, the Fund received final repayment, along with $737,000 in interest. There are no outstanding general fund loans.

10. **Describe the amounts and percentages of expenditures by program component. Use *Table 3. Expenditures by Program Component* to provide a breakdown of the expenditures by the board in each program area. Expenditures by each component (except for pro rata) should be broken out by personnel expenditures and other expenditures.**

    The board does not incur expenditures related to education or diversion because these components are not a requirement for licensure with CSLB. Details of CSLB expenditures by program component are as follows:

Table 3. Expenditures by Program Component (list dollars in thousands)

	FY 2019/20		FY 2020/21		FY 2021/22		FY 2022/23	
	Personnel Services	OE&E	Personnel Services	OE&E	Personnel Services	OE&E	Personnel Services	OE&E
Enforcement	$24,023	$14,685	$22,429	$15,673	$26,041	$13,328	$28,347	$13,516
Examination	$2,560	$1,110	$2,431	$797	$2,613	$1,496	$1,367	$2,710
Licensing	$9,038	$1,881	$8,534	$1,764	$9,773	$1,672	$8,952	$1,212
Administration *	$4,913	$2,610	$4,593	$2,769	$4,871	$2,596	$5,808	$4,238
DCA Pro Rata	N/A	$6,802	N/A	$7,579	N/A	$7,148	N/A	$8,933
Diversion (if applicable)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTALS	$40,534	$27,088	$37,987	$28,582	$43,298	$26,240	$44,474	$30,609

*Administration includes costs for executive staff, board, administrative support, and fiscal services.

Noteworthy changes in year over year expenditures in a given area include:

- *Enforcement* – The board's personnel services expenditure increases in FY 2020/21 and FY 2021/22 are attributed to Budget Change Proposals (BCPs) that added four total PYs to implement legislation (SB 1465 and AB 2138, respectively). Additionally, in FY 2021/22, a significant increase in Enforcement personnel service expenses is a result of reclassifying 146 Enforcement Representatives to the more widely used, but higher paid Special Investigator classification.

- *Examinations* – The Examination component saw an increase in operating expenditures in FY 2022/23 as CSLB contracted with PSI for testing services while simultaneously shutting down CSLB testing centers. This transition is also reflected in a corresponding decrease in Examination personnel services as examination centers closed.

- *Licensing and Administration* – Licensing expenditures decreased in personnel services and operating expenditures from FY 2021/22 to FY 2022/23 after the CSLB public information center

was transferred from the Licensing Division to the Public Affairs Office, which is included in the Administration line item. Consequently, there are corresponding increases in personnel services and OE&E in the same year.

11. Describe the amount the board has contributed to the BreEZe program.

CSLB contributed a total of $4,030,555 to the BreEZe program, but has not contributed since FY 2017/18.

12. Describe license renewal cycles and history of fee changes in the last 10 years. Give the fee authority (Business and Professions Code and California Code of Regulations citation) for each fee charged by the board.

CSLB does not receive General Fund support and is solely funded by fees collected from licensees and applicants and civil penalties from unlicensed contractors. Active contractor licenses expire two years from the last day of the month in which the license was issued. Renewal fees, which constitute the largest source of revenue, are then collected every two years from contractors with active licenses. Inactive licenses are valid for four years. For ease of review, license, renewal and delinquent fees follow on separate tables:

Table 4. Fee Schedule and Revenue (list revenue dollars in thousands)

Fee	Current Fee Amount	Statutory Limit	FY 2018/19 Revenue	FY 2019/20 Revenue	FY 2020/21 Revenue	FY 2021/22 Revenue	% of Total Revenue
Original Contractor License Application	$450	$563	$7,121	$7,703	$9,508	$11,532	11.7%
Initial License (Sole)	$200	$250	$2,824	$3,075	$2,918	$1,208	3.3%
Initial License (Corp/Partners/JV/LLC)	$350	$438	N/A	N/A	$1,741	$3,734	1.8%
Additional Classification (initial application)	$150	$188	$158	$164	$205	$278	0.3%
Re-Exam Application	$100	$125	$870	$829	$1,843	$1,730	1.7%
Supplemental Class & RME/RMO (existing license)	$230	$288	$984	$1,015	$1,334	$1,657	1.6%
Add New Personnel/Office Change	$125	$157	$209	$209	$221	$305	0.3%
Business Name Change	$100	$125	N/A	N/A	$123	$265	0.1%
Home Improvement Salesman (HIS) Registration	$200	$250	$797	$966	$1,561	$2,785	2.0%
Reactivate License (Sole)	$450	$563	$552	$637	$575	$463	0.7%
Reactivate License (Corp/Partners/JV/LLC)	$700	$875	N/A	N/A	$63	$276	0.1%
Hazard Certification	$125	$157	$10	$11	$13	$17	0.0%
Asbestos Certification	$125	$157	$5	$3	$4	$6	0.0%
Licensee Pocket Card/Wall Replacement	$25	$25	$98	$110	$124	$152	0.2%
Dishonored Check	$25	$25	$5	$4	$6	$10	0.0%

Table 4. Fee Schedule and Revenue							(list revenue dollars in thousands)
Renewal Fees	Current Fee Amount	Statutory Limit	FY 2019/20 Revenue	FY 2020/21 Revenue	FY 2021/22 Revenue	FY 2022/23 Revenue	% of Total Revenue
Active Renewal Contractor (Sole)	$450	$563	$42,345	$46,937	$34,288	$24,043	48.0%
Active Renewal Contractor (Corp/Partners/JV/LLC)	$700	$875	N/A	N/A	$14,264	$30,450	14.6%
Inactive Renewal Contractor (Sole)	$300	$375	$2,749	$2,997	$2,580	$2,752	3.6%
Inactive Renewal Contractor (Corp/Partners/JV/LLC)	$500	$625	N/A	N/A	$215	$545	0.2%
Home Improvement Salesman (HIS) Renewal	$200	$250	$433	$453	$672	$1,108	0.9%
Electrician Certification	$20	$20	$98	$248	$238	$247	0.3%

Table 4. Fee Schedule and Revenue							(list revenue dollars in thousands)
Delinquent Fees	Current Fee Amount	Statutory Limit	FY 2019/20 Revenue	FY 2020/21 Revenue	FY 2021/22 Revenue	FY 2022/23 Revenue	% of Total Revenue
Delinquent Active Renewal Contractor (Sole)	$225	$281	$3,013	$5,443	$5,221	$4,156	5.8%
Delinquent Active Renewal Contractor (Corp/Partners/JV/LLC)	$350	$437.50	N/A	N/A	$1,899	$3,769	1.8%
Delinquent Inactive Renewal Contractor (Sole)	$150	$187.50	$249	$522	$546	$467	0.6%
Delinquent Inactive Renewal Contractor (Corp/Partners/JV/LLC)	$250	$312.50	N/A	N/A	$69	$134	0.1%
Delinquent Home Improvement Salesman (HIS) Renewal	$100	$125	$64	$216	$325	$471	0.4%

Over the last 10 years, CSLB implemented three fee increases. The following fee increases occurred in 2017 through legislation, in 2020 through emergency and regular rulemakings, and in 2022 by legislation:

2017 Fee Increase

In 2016, the Board sponsored SB 1039 (Hill, Statutes of 2016), which authorized a fee increase effective July 1, 2017, on all fees except the additional classification original application with waiver fees and re-exam fees. This bill increased the statutory maximums and implemented immediate fee increases without requiring regulations.

2020 Fee Increase

On December 19, 2019, CSLB amended CCR Title 16 Section 811 to increase renewal fees. This emergency rulemaking was adopted to address CSLB's budgetary structural imbalance. While this emergency regulation made the fee increases effective immediately, CSLB provided reasonable notice to licensees and did not collect increased fees until February 1, 2020. The emergency fee increase was extended twice by the Governor in 2020 due to the COVID-19 pandemic until a regular rulemaking to increase those fees was adopted on May 20, 2021.

2022 Fee Increase

In December 2020, the Board contracted with CPS HR to conduct a fee study, as recommended by the Legislature. The Board was simultaneously experiencing reduced license renewals, while expenditures significantly increased. These factors contributed to a rapidly shrinking fund balance reserve and made a structural imbalance imminent.

SB 607 (Min, Chapter 367, Statutes of 2021) implemented recommendations from the fee study effective January 1, 2022. The fees were increased to a rate commensurate with the work required to process an application by SB 607 without the need for implementing regulations.

13. Describe Budget Change Proposals (BCPs) submitted by the board in the past four fiscal years.

Over the last four fiscal years, CSLB submitted six BCPs. Through two of those BCPs, CSLB requested 4.0 permanent staff to address workload required by newly enacted legislation. Table 5 details all BCPs that CSLB submitted over the past four fiscal years.

Table 5. Budget Change Proposals (BCPs)

BCP ID #	Fiscal Year	Description of Purpose of BCP	Personnel Services				OE&E	
			# Staff Requested (include classification)	# Staff Approved (include classification)	$ Requested	$ Approved	$ Requested	$ Approved
1111-013	2019/20	Leg. BCP SB 1465 (Balcony Bill)	2 (ERII & OT)	2 (ERII & OT)	$191,000	$191,000	$26,000	$26,000
1111-034	2020/21	Facilities Operations Funding Augmentation	N/A	N/A	$ -	$ -	$238,000	$238,000
1111-036	2020/21	Leg. BCP AB 2138 (Criminal Conviction)	2 (PT IIs)	2 (PT IIs)	$149,000	$149,000	$351,000	$351,000
1111-078	2020/21	IT Classification Consolidation Augmentation	N/A	N/A	$124,000	$124,000	$ -	$ -
1111-061	2021/22	CMEA Fund Authority Annual Augmentation	N/A	N/A	$ -	$ -	$ -	$ -
1111-023	2023/24	OAH Budget Augmentation	N/A	N/A	$ -	$ -	$78,000	$78,000

The above BCPs include:

- BCP 1111-013-2019 that added two permanent staff in the Enforcement Division to review and investigate applicable judgment, settlement payment, or arbitration awards, which SB 1465 (Hill, Chapter 514, Statutes of 2018) requires to be submitted to CSLB, for potential disciplinary action when the licensee is named as a defendant or cross-defendant in a civil action relating to construction defects.

- BCP 1111-036-BCP-2019 that added two permanent staff to review and process documentation submitted by applicants, the DOJ, and others to determine whether an applicant's convictions are substantially related to the qualifications, functions, or duties of a licensee. Other work includes reviewing evidence of rehabilitation to determine whether the applicant is fit for licensure. These processes are required to comply with AB 2138 (Chiu, Chapter 995, Statutes of 2018).

The other BCPs, which did not create positions include: 1) a facilities augmentation to cover increasing lease costs, 2) an Information Technology (IT) BCP to cover the costs of transitioning from outdated IT classification series to the new IT classification series to adhere to the Classification Consolidation Plan approved by the State Personnel Board, and 3) a BCP to cover increasing Office of Administrative Hearings (OAH) costs.

Staffing Issues

14. Describe any board staffing issues/challenges, i.e., vacancy rates, efforts to reclassify positions, staff turnover, recruitment and retention efforts, succession planning.

Staffing Issues/Challenges

The Enforcement Division, Intake and Mediation Units (Sacramento and Norwalk) have historically had staffing challenges. For example, the Consumer Services Representative (CSR) classification, which receives/processes complaints and makes up a large portion of the units, is a hard to fill class for several reasons. A CSR is a Department-specific classification and candidates must take an exam that is only offered twice a year, which limits the candidate pool. Training and development assignments are regularly used to fill vacancies so candidates do not stay in the position long, creating significant turnover. Finally, this position is not included in a promotional ladder, which simultaneously deters candidates from applying and encourages existing staff to lateral to positions that have greater promotional opportunity. Over the past five years, both Intake and Mediation Units have consistently had at least one vacant CSR.

CSLB has also seen a higher turnover than normal due to factors influenced by the COVID pandemic, such as an increase in transfers, retirements, resignations, promotions, small or not viable candidate pools, or candidates declining interviews or offers because 100 percent telework is not offered for most positions. Significant turnover in leadership and a temporary hold on hiring staff during the pandemic combined to cause further delays in the recruitment process early in the pandemic, however vacancies have stabilized.

Vacancy Rates

CSLB is authorized to have 425 staff (PYs) located throughout the state and dedicated to accomplishing its consumer protection mandate. CSLB's Personnel office successfully works with the DCA Office of Human Resources to address recruitment and/or retention challenges.

The number of authorized positions fluctuated throughout the reporting period, which impacts the vacancy rate. This variance is due to BCPs that created positions and CSLB response to Budget Letter 20-37, which required CSLB to eliminate five positions as a cost savings action during COVID.

Vacancy Rates

	Date	Authorized PYs	Vacancies	Vacancy %
FY 2019/2020	July 1, 2019	428	20.0	5%
FY 2020/2021	July 1, 2020	428	41.0	10%
FY 2021/2022	July 1, 2021	430	41.5	10%
FY 2022/2023	July 1, 2022	430	51.5	12%
FY 2023/2024	July 1, 2023	425	37	9%
Current	December 1, 2023	425	36.5	9%

Vacancies initially increased due to COVID related retirements, resignations, and transfers to 100 percent telework. In FY 2021/22, CSLB vacancies were as high as 12 percent. The Executive Division performed an audit of several months of recruitments and determined that management were waiting several weeks, and in some cases months, to contact applicants for interviews. In September 2022, the Executive Division issued a statewide policy that all interviews are to be scheduled within 10 days of receiving the applications from the Office of Human Resources. After implementing this new policy, vacancies decreased to 9 percent.

Over the previous four fiscal years, CSLB averaged 39 staff vacancies for a vacancy rate of 9 percent. In the year following COVID, CSLB experienced a higher vacancy rate than expected. From March 2020 to March 2021, 20 employees retired and four employees separated/resigned from state service, which contributed to the higher vacancy rate. Process improvements in CSLB's Personnel office and coordination with DCA have allowed the average vacancy rate to stabilize and CSLB currently has 36.5 vacancies.

The average number of retirements and separations between the years 2018-2021 was 47 employees. These increased to 75 in 2022 due, in part, to the outsourcing examination administration and closing CSLB's Testing Centers. Of the 75 employees who left, 26 were retirements and 49 either separated from state service or sought promotions or transfers to other state agencies. Another 28 employees promoted within CSLB in 2022, which simultaneously created new vacancies.

Special Investigator (SI) vacancies have become quicker to fill due to a process change made by CalHR in July 2022. Prior to the change, the medical and background clearances required for SI positions could take up to six months. Since the change, clearance time has been reduced to three to four weeks.

Reclassified and Redirected Positions

The Board has reclassified positions to ensure appropriate civil service classifications are used to meet operational needs. CSLB reclassified and redirected multiple positions to meet its workload demands more effectively, provide pathways to promotion, or increase the volume and quality of candidate pools.

In the Executive and Administration Divisions, Office Technician (OT), Staff Services Analyst (SSA), and Associate Governmental Analyst (AGPA) positions were reclassed to meet operational needs, provide clerical and analytical support to the Executive and Administrative Divisions, and serve as leads to lower level-staff in the Warehouse and Cashier's office. The positions that were redirected were available as a result of Testing Center closures. Reclassifications and redirects impacted seven positions in the Executive and Administrative Divisions between FY 2019/20 and FY 2022/23:

- In February 2019, an Office Assistant (OA) was reclassed to an Office Technician (OT) within the mail room to meet needs of the unit to assist and train lower-level staff and serve as a lead in the absence of the supervisor.

- In May 2019, an OA was reclassed to a TV Specialist within the Public Affairs Office to increase CSLB's capacity for producing outreach and education videos, as well as support CSLB's public meeting audio and video accessibility.

- In June 2020, an OT was reclassed to a limited term Staff Services Analyst (SSA) in the Cashier's office to train lower-level staff, review and monitor staff work, process the most complex cashier transactions, and provide backup supervision.

- In August 2022, a .5 Associate Governmental Program Analyst (AGPA) position was redirected from the Executive Division to the Enforcement Division. This position was previously temporarily redirected from the Enforcement Division to the Executive Division to address a nepotism issue.

- In January 2022, a Management Services Technician (MST) was reclassified to an SSA in the Executive Division to support the high level of expertise needed to perform the analytical tasks required of the Executive Office.

- In October 2022, an OT (Typing) from the Licensing and Examination Division's Northern Testing Center, which CSLB closed, was redirected to the Executive Division to provide clerical support to executive staff and Board members.

- In November 2022, a Warehouse Worker (WW) position in the Warehouse was redirected and reclassified to an OT (Typing) in the Administration Division to assist with clerical needs and serve as a roving OT to assist the Mailroom, Cashiers and IWAS units when needed. The remaining staff in the Warehouse absorbed the duties from the redirected WW position.

The Enforcement Division, CSLB's largest division at 243 PYs, underwent a reorganization in its southern California ICs, reclassified all Enforcement Representatives (ER) to Special Investigators (SI), and adjusted to changing workload demands in specific areas through the multiple position reclassifications and redirects.

- In July 2018, an OT (Typing) from the Berkeley IC was redirected to the Berkeley Test Center to meet operational needs. The incumbents' previous duties were absorbed by the remaining OT in the Berkeley IC.

- In October 2018, a vacant Enforcement Representative I (ER I) (Non-Peace Officer) in the Fresno Statewide Investigative Fraud Team (SWIFT) was reclassified to an ES I (Non-Peace Officer) and redirected to the Orange County IC to supervise in the Orange County IC after splitting the two offices during a reorganization.

- In March 2019, a vacant Enforcement Supervisor II (ES-II) (Non-Peace Officer) position over the Disciplinary and Enforcement Services Program (DESP) was reclassified to a Staff Services Manager III (SSM III) over the DESP and northern Special Investigations Unit (SIU). The SSM III position was needed when a former employee exercised a right of return after accepting a position at another agency. The SSM III position also absorbed the work of a vacant ER I to justify the higher rank.

- In June 2019, a vacant ER I was redirected from the Valencia IC to the Fresno IC due to the history of an inadequate candidate pool in Valencia, required time to travel to investigate cases in surrounding counties, and to address a need for additional staffing in the Fresno IC.

- In July 2019, a vacant ER I (Non-Peace Officer) position in the West Covina IC was reclassified and redirected to an Enforcement Representative II (ER II) (Non-Peace Officer) position in the San Diego IC. The IC needed a strong investigator to manage solar and other complex consumer complaints, criminal violations, and unfair business practices.

- In July 2019, reclassified and redirected vacant ES (Non-Peace Officer) position in the Special Investigations Unit (SIU), Norwalk, and transitioned a current ER II (Peace Officer) employee in SIU (San Francisco) into this position to move the incumbent from a blanket position.

- In September 2019, employees in the ER I classification who met the minimum qualification requirements of the ER II classification were promoted-in-place and by June 2020, 40 employees received promotions.

- In December 2019, a PT II was reclassed to a Supervising Program Technician II (SPT II) in the Norwalk IC to oversee the clerical unit, allowing the SSI I to focus on the Mediation Center and supervising investigative personnel.

- In July 2020, due to challenges in recruiting Enforcement Representatives (ERs), CSLB reclassified 142 ER positions to the more broadly used SI (Non-Peace Officer) and Investigator (Peace Officer) classifications. The reclassification has enabled CSLB to compete with other state agencies for the most qualified candidates when filling Enforcement Division vacancies.

- In July 2020, an ER II position was reclassified to an AGPA in the Subsequent Arrests/ Convictions Unit and the incumbent was transitioned into the new position. CSLB examined the workload of the incumbent and determined the duties performed aligned more closely with the ER II classification.

- In August and September 2020, five ER IIs were reclassed to SI positions due to the ER reclassification project. These positions were distributed throughout the Enforcement Division to provide investigative support where needed.

- Between August and December 2020, three CSR training and development assignments ended and the incumbents were reclassed to their original positions, two OTs and one PT II.

- In April 2021, an incumbent from the Sacramento IC North was reclassified to SIU North. The Sacramento IC had two OT (Typing) positions, but the SIU did not have one. Transition of the incumbent provided more efficient workload handling.

- In September 2021, an SI position in the Orange County IC was redirected to the West Covina IC and filled by the incumbent. The redirect bridged the gap in the disparity of case assignments between the ICs and helped ensure the increase in investigations in the large Los Angeles geographic territory were timely addressed.

- In November 2021, a vacant Program Technician (PT) position was reclassified to an OT (Typing) in the Division's DSS to provide the higher-level technical support needed for the approximately 500 complaints received annually within the unit. Prior to the reclassification, the unit experienced backlogs ranging from two to six months and risked the complaint action exceeding the statute of limitations.

- In March 2022, a vacant OT (Typing) position was redirected from the Norwalk SIU to the Norwalk Citation Enforcement Section (CES) and reclassified to an SSA position to ensure decisions from the Office of Administrative Hearings (OAH) are processed within its strict timelines and to monitor the progress of approximately 500 annual citation appeals referred to the Office of the Attorney General.

- In July 2022, a vacant Program Technician (PT) III position in the Supplementation Applications Unit in the Licensing Division was reclassified and redirected to an SI position in the QA Unit. The Supplemental Applications Unit was handling experience verification duties that were more suited to an investigator classification due to the broader knowledge of investigative techniques and procedures needed to conduct comprehensive field investigations.

- In August 2022, a vacant Supervising Special Investigator I (Non-Peace Officer) position in the Disciplinary Services Center was reclassified and redirected to an SSI I (Peace Officer) position in the Special Investigations Unit (SIU). The enforcement of criminal activity was inconsistent due to the investigators reporting directly to the supervisors for their respective office locations. Traditionally, there was a supervisor over the SIU and with this change the Peace Officers would have the same leadership, guidance and oversight needed for the SIU.

- In August 2022, a CSR in the Mediation Unit was returned to an MST after a training and development assignment expired.

- In December 2022, an OT (Typing) position in the San Francisco IC was reclassified and redirected to a Management Services Technician (MST) in the Administration Division's Personnel Unit. The OT position was moved to the San Francisco IC after the Berkeley Test Center closed, then redirected and reclassified to an MST to assist with the high volume of work produced by the Personnel Unit.

- In January 2023, a vacant Investigator position in SIU was reclassified and redirected to an SSI I (Non-Peace Officer) position in the QA Unit. The Chief of Enforcement was responsible for managing the QA Unit so assigning an SSI I to the QA Unit relieved the Chief of first-line supervisory responsibilities and promoted efficiency of the unit and distribution of assignments.

- In February 2023, a vacant OT (Typing) position was reclassified to an SSA in the DSS to provide needed analytical support. The duties of the vacant OT position were already absorbed by the other three OTs in the unit.

- In April 2023, a vacant OT (Typing) position in the Examination Administration Unit (EAU) was reclassified and redirected to an SI position in the QA Unit. PSI Exams assumed examination administration leaving a vacant position available to manage the more complex, sensitive or high priority and time-consuming investigations in QA, which allowed the field investigators to concentrate on their increasing caseloads.

- In May 2023, a vacant ER I (Non-Peace Officer) position in the West Covina IC was reclassed and redirected to an SI in the Norwalk IC to address a disparity of workload between the West Covina and Norwalk ICs. The reclassed ER was one of the last to change to an SI.

The Office of Information Technology (IT) has 26 PYs and reclassified or redirected positions since the last review as follows:

- In August 2019, a vacant Information Technology Specialist (ITS) I was reclassified to an ITS II within the Programming Unit to create and maintain more complex code needed to securely support data exchange and support the more complex change requests to the CSLB Mainframe Legacy Application.

- In January 2020, a vacant Information Technology Manager (ITM) I was reclassified to an ITM II to address classification compaction, as well as the increased responsibility related to the business modernization of CSLB's information technology systems. In January 2018, the California Office of Human Resources consolidated IT classifications by establishing a new series with nine service-wide classifications. The consolidation placed the IT Chief and the subordinate direct reports in the same classification, ITM I, eliminating the historical hierarchy. Reclassifying the ITM I position to an ITM II appropriately aligned the CSLB IT management team and properly restored the salary between the IT Chief and subordinate staffing.

- In October 2020, a vacant Information Technology Specialist I (ITS) I was reclassified to an ITS II within the Client Server Applications Unit to provide for a Database Administrator, which was needed to manage the Board's mission critical databases and support the more complex duties associated with re-architecting the Board's public website and Intranet.

- In December 2020, a vacant ITS I was reclassified to an ITS II in the Programming Unit. The reclass provides advanced technical support required for CSLB's mainframe infrastructure and performs the most complex tasks in the Programming and Data Services Units.

- In March 2022, a vacant ITS I was reclassified to an ITS II in the Client Server Applications Unit to provide the more complex support of the IT web applications, including the Board's mission critical public website and online services such as Instant License Check, Find My Licensed Contractor, and the ePayment portal.

- In October 2022, a vacant OT (Typing) position in the Testing Center was reclassified and redirected to an IT Technician. The OT was not refilled after the Licensing and Examination Division's Testing Centers were closed.

The Licensing and Examination Division is comprised of 158 PYs who perform three distinct services – license issuance, license maintenance, and examination development. The Licensing Division was also responsible for examination administration until July 1, 2022, when those duties were outsourced to PSI Exams and testing centers were closed.

- In June 2019, an MST was reclassed to an AGPA to lead the Records Unit and assist the SSM I and DCA Legal by serving as a custodian of records to address CSLB's increased Public Records Act (PRA) requests.

- In October 2020, an MST within Licensing Division was redirected from the Judgements Unit to Records Certifications Unit to provide additional support in processing PRA requests.

- In November 2020, a vacant OT (Typing) was redirected from the Testing Unit to a limited term OT. The limited term position was to staff the Berkeley Testing Center until it was closed.

- In December 2020, two Office Assistants (OA) were reclassed to an OT (limited term) to staff a test center that was planned to be closed.

- In August 2021, a PT II was reclassed an SPT II to create a supervisory position over the License Modifications unit after the new unit was created to process bonds and workers' compensation insurance.

- In November 2019, four Personnel Selection Consultant (PSC) positions were reclassed to the Research Data classification series in the Examination Development Unit (EDU). It is not known why the PSC positions were in place, but these reclasses were appropriate as the RDS series more accurately reflects the duties required by the EDU. Three positions were reclassed to Research Data Specialists and one was reclassed to a Research Data Supervisor.

- In July 2019, an OT (Typing) position was reclassified to an MST in a promotion-in-place for the incumbent to provide additional support in the Records Unit to process PRA requests.

- In September 2018, a PT III position in the Supplemental Applications Unit was reclassed to an OT (Typing) and redirected to the Experience Verification Unit to support case referrals for experience investigations and to coordinate with enforcement on application flags and specialized and complex applications and correspondence.

- In July 2020, CSLB reclassified a vacant AGPA in the EDU to a Research Data Analyst I/II position to assist with the new C-49 (tree service) and B-2 (residential remodeling) license examination development.

- In February 2021, an OT was redirected from the Examination Administration office located in Berkeley to the San Francisco Investigation Center due to the Berkeley office closure.

- In March 2021, a vacant Supervising Personnel Selection Consultant (SPSC) position in the Testing Division was reclassed to an RDA I/II position in the EDU.

- In April 2022, an MST in the EDU was reclassed to an SSA to perform more technical work associated with outsourcing examinations.

Staff Turnover
Historically, CSLB does not experience high rates of staff turnover. However, since COVID, there was an increase in retirements, resignations, promotions within CSLB or to other agencies, and transfers to other agencies that offer full-time telework schedules.

Recruitment and Retention
CSLB works closely with DCA and the California Department of Human Resources (CalHR) to partner with and participate in career fairs and recruitment/outreach events. CSLB has joined the CalHR's listserv to identify job fairs and other recruitment activities statewide to assist in recruiting new employees and promoting jobs and careers at CSLB.

In addition, CSLB increases public awareness public of job opportunities at CSLB through social media and recruiting platforms, such as LinkedIn. The CSLB Career Development and Mentoring Program Steering Committee hosted several "Career Development… Live!" online events. The events highlight each of the CSLB divisions, the work they do, and jobs available in those divisions.

CSLB recognizes that availability of telework is a key recruitment element that attracts applicants. To prepare for offering telework, CSLB obtained laptops, headsets, and other equipment needed to allow employees to be productive while working from home for positions that are eligible for telework. CSLB highlights the availability of telework when posting jobs for recruitment.

Succession Planning
CSLB leadership is committed to implementing processes that promote succession planning consistent with the principles identified by the DCA Workforce and Succession Plan 2022-2026.

For positions that are occupied by retiring employees, CSLB is proactive about early recruiting to ensure knowledge transfer for new employees. CSLB has advocated for promotions in place and reclasses to positions with greater promotional opportunity to reduce the attrition rate from staff who leave CSLB to advance their career and take their institutional knowledge with them. CSLB also promotes training and development assignments to transfer knowledge and prepare high performing staff for promotion opportunities within CSLB. CSLB also maintains and succession planning file that tracks CSLB demographics to anticipate and plan for retirements and implement associated and subsequent Board strategies.

15. Describe the board's staff development efforts and total spent annually on staff development (cf., Section 12, Attachment D).

The Department's Strategic Organizational Leadership and Individual Development (SOLID) training unit offers several classes and webinars available to CSLB staff at no cost to the Board. Staff are encouraged to take advantage of these courses, which include time management, Microsoft Office Suite program training, and manager leadership and personnel training, as well as a catalog of training focused on advancing the ideals of Diversity, Equity, Inclusion, and Accessibility. Most SOLID courses are offered online or in some form of a hybrid model to increase

availability to staff statewide and to those who have scheduled telework on the day of the training.

In addition, the Board focuses internal training efforts on the Enforcement Division. Staff receive training from internal and outside experts on administrative investigation methods, preparing a case for hearing, licensee disciplinary measures, and code training. Enforcement staff are also trained on laws pertaining to search and seizure, lawful arrest, and evidence procedures; testimony, which included Proposition 115 certification to provide hearsay testimony; and report writing practices.

There was a gap in training during COVID-related travel and in-person meeting restrictions, but CSLB's training returned to pre-COVID levels as demonstrated by the annual training expenses:

Training Data (Staff Development)				
	FY 19/20	FY 2020/21	FY 2021/22	FY 2022/23
Training and Development	$35,811	$4,205	$20,359	$47,055

Section 3 – Licensing Program

LICENSING PROGRAM OVERVIEW

CSLB's Licensing Division is responsible for processing all applications received to determine whether applicants meet minimum licensing and experience requirements to qualify for licensure. The Licensing Division also develops and maintains the examinations applicants must pass showing that they possess the necessary skill and knowledge to provide construction services in the classification for which they applied.

CSLB licenses, certifies, or registers the following classifications:

- "A" – General Engineering contractor license
- "B-1" – General Building contractor license
- "B-2" – Residential Remodeling contractor license
- "C" – Specialty contractor license (consisting of 43 subclassifications)
- Asbestos certification
- Hazardous Substance Removal certification
- Home Improvement Salesperson (HIS) registration

Currently, CSLB's population consists of approximately 284,300 licensed contractors (in active and inactive status) and 28,900 registered home improvement salespersons who may perform services in California.

In addition to processing new applications and renewals, adding/removing classifications, and performing license maintenance functions, the Licensing Division is comprised of several units responsible for performing important specialized functions:

- The Testing Unit is responsible for developing and administering 47 examinations. Staff work with subject matter experts to develop new examinations and perform occupational analyses every five to seven years to ensure examinations remain relevant and meet testing standards.

- The Public Information Center is responsible answering incoming telephone inquiries and responding to a variety of questions received from the public, such as consumers, licensees, applicants, or governmental agencies.

- The Military Application Assistance Program is responsible for providing priority services to the military personnel and spouses/ domestic partners by expediting their application through the licensing process and serving as a direct contact to educate and respond to questions when additional information is needed, as well as implement legislation that is directly related to licensing military, former military, and spouses or domestic partners of current members of the military.

- The Judgments Unit is responsible for processing all outstanding judgments, bond payment claims, and outstanding liabilities reported to CSLB by licensees, consumers, attorneys, credit recovery firms, bonding companies, CSLB's Enforcement Division, and other government agencies.

16. What are the board's performance targets/expectations for its licensing[3] program? Is the board meeting those expectations? If not, what is the board doing to improve performance?

CSLB established under 16 CCR section 827, new license applicants must be notified within 60 days of whether their application is considered complete and the applicant is referred for examination or their application is considered deficient and identify the information needed to complete the application. Title 16 of the CCR, section 827 also requires CSLB to notify waiver applicants within 50 days of receipt whether their application is considered complete and requirements that must be met to finalize license issuance or if the application is considered deficient and the information needed to complete the application. According to the data collected for FY 2022-23, CSLB is meeting these expectations. Original complete applications for a contractor's license were processed within 35 days, and waiver applications were processed within 36 days.[4]

CSLB established under 16 CCR section 828 that applicants for a HIS registration must be notified within 30 days of whether their application is considered complete and a registration was issued or the application is deficient and identify the information needed to complete the application. According to the data collected for FY 2022-23, CSLB is meeting this expectation. Complete applications for HIS registrations were processed within 23 days.

In addition, 16 CCR sections 827 and 828 establish timeframes for CSLB to notify applicants once a final determination is made considering all necessary requirements were satisfied. The following charts indicate CSLB's expectations and the average number of days reported until licensure.

Processing Times – Original Application for Contractors License				
	16 CCR section 827	FY 2020-21	FY 2021-22	FY 2022-23
Original Application	253	263	251	237
Waiver Application	48	104	104	111

Processing Times – Original Application for HIS Registration				
	16 CCR section 828	FY 2020-21	FY 2021-22	FY 2022-23
HIS Registration	8	69	68	62

CSLB's ability to meet processing expectations is dependent on internal factors and factors outside CSLB's control. After CSLB's initial review and the applicant has been referred for examination or notified of the application's deficiencies, CSLB relies on the applicant to complete the next step in the licensing process. These steps could include scheduling an examination with PSI Exams, correcting any deficient or missing information on the application, or fulfilling the bond and insurance requirements. Another factor that may cause delays is when the applicant schedules fingerprints and how long the California Department of Justice (DOJ) or the Federal Bureau of Investigation (FBI) need to send results to CSLB.

It should also be noted that that median processing time expectations indicated in the charts above were established by regulations adopted in 1984, 22 years before the contractor license and home improvement salesperson fingerprint requirements were put into place by SB 1953 (Figueroa, Chapter 744, Statutes of 2002). As it relates to the median processing time goal for HIS registrations, the additional timeframe (from 8 days to over 60 days) is a direct result of the

[3] The term "license" in this document includes a license, certificate, permit or registration.
[4] "Complete" in the response to question 16 refers to applications that are submitted with sufficient information for the applicant to sit for an examination. In this context, "complete," does not indicate fingerprints have been submitted or cleared, insurance has been submitted, bond requirements are met, or the examination passed.

criminal history requirement. Obtaining criminal offender record information can institute delays of weeks to months. Pursuant to BPC section 7074, applicants have 90 days to submit a copy of their completed live scan form (or complete hard cards if out of state) and return to CSLB for submission to the DOJ. Thereafter, a delay of several days to weeks can result depending on the contents of the criminal history or if the fingerprints cannot be read and need to be resubmitted. CSLB will prioritize a review of whether a rulemaking to amend the median processing timeframe goals is necessary to account for the time the DOJ or the FBI need to send results to CSLB.

Although CSLB is unable to control whether it meets expectations after the initial review, CSLB has seen improvement in the number of days until final determination is made over the last two fiscal years. The average number of days from the application receipt until license issuance improved by 26 days since FY 2020/21 and 14 days since FY 2021/22. The average number of days from application receipt until registration issuance improved by 7 days since FY 2020/21 and 6 days since FY 2021/22. The average timeframe to process the waiver applications increased by 7 days over the last two fiscal years, which CSLB attributes to increased vacancies within the unit during that reporting period.

To limit processing timeframes, CSLB holds interactive workshops twice a month to make the application process easier and more straightforward for applicants seeking licensure. The "Get Licensed to Build" workshops are provided virtually in English and Spanish. Topics discussed are the application process, experience needed to obtain a license, information needed to demonstrate work experience, and the fingerprinting process. The workshops intend to minimize common delays that are in the applicant's control.

An improvement made during the reporting period that contribute to reducing processing timeframes was to transfer examination administration to PSI Exams in July 2022. With this transfer, candidates are provided an increased number of examination locations throughout California, an increase in scheduling availability to include Saturdays and evenings, and expanded customer service hours.

In March 2020, licensing staff began conducting an online survey to measure the applicant's satisfaction with the licensing process and timeframe until licensure. Currently, CSLB has received a high satisfactory rating but will keep monitoring responses to determine where future improvements are necessary to make the process easier and understandable.

17. **Describe any increase or decrease in the board's average time to process applications, administer exams and/or issue licenses. Have pending applications grown at a rate that exceeds completed applications? If so, what has been done by the board to address them? What are the performance barriers and what improvement plans are in place? What has the board done and what is the board going to do to address any performance issues, i.e., process efficiencies, regulations, BCP, legislation?**

The data in table 7a shows an increase from 163 days in FY 2021 to 200 days in FY 22/23 from when an application is posted/received as complete to when it is issued, for both examination and waiver applications (table 7a combines original examination applications and original waiver applications). The increased processing times correspond directly to a steady increase in applications received over each FY for the same periods indicated.

Vacancies initially increased in FY 202/21 due to COVID related retirements, resignations, and transfers to agencies that offered 100 percent telework and CSLB vacancies were as high as 12 percent. The Executive Division performed an audit of several months of recruitments and determined that management were waiting several weeks, in some cases months, to contact

applicants for interviews. In September 2022, the Executive Division implemented a statewide policy that all interviews are to be scheduled within 10 days of receiving the applications from the Office of Human Resources. Vacancies have since decreased to 9 percent.

Additionally, CSLB implemented process improvements and training procedures for both remote and in-office staff, which have improved processing times. Through the changes implemented by the Licensing Division, which included standardizing staff review procedures for all incoming applications (where there was previously process variation among staff). This new process has reduced processing times by several days or weeks since June 2023. However, these times are not reflected during the timeframes reported on Table 7a.

The Licensing Division has also implemented electronic methods for license and renewal processing to improve efficiency. For example, staff have begun contacting applicants by email when an address is available instead of the traditional process of generating and mailing form letters to notify applicants of errors on their application. Notification by email allows applicants to receive notification of issues the day CSLB first handles their application rather than waiting for a letter to be issued and arrive in the mail. To expand electronic communication for *all* applicants and licensees, CSLB sponsored SB 630 (Dodd, Chapter 153, Statutes of 2023) to require an email address upon application or renewal. Further, CSLB's IT Division developed capability for online renewals, which updates the license immediately. While some licensees still submit paper renewals, the number of licensees who renew online is increasing each year, which is reflected by the decreasing cycle times for renewals.

CSLB believes these efforts have been successful and will continue evaluating processes and implementing changes to introduce efficiencies in license processing cycle times.

18. How many licenses or registrations has the board denied over the past four years based on criminal history that is determined to be substantially related to the qualifications, functions, or duties of the profession, pursuant to BPC § 480? Please provide a breakdown of each instance of denial and the acts the board determined were substantially related.

CSLB denied 43 applications over the past four years based on criminal history that is substantially related to the qualifications, functions, or duties of a contractor. CSLB reviews each criminal conviction record and uses the criteria established in 16 CCR sections 868 and 868.1 to determine whether any convictions are substantially related. CSLB also uses the criteria established in 16 CCR section 869 to determine whether the applicant made a showing of rehabilitation, as required by AB 2138, and may request that the applicant submit mitigating information for CSLB's consideration.

Comparing the overall number of applications received to the number with a criminal history, CSLB has denied licensure to fewer than 0.2% of applicants over the last four years.

Application Denials for Criminal Convictions				
	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Original Contractor and HIS Applications Received	31,082	33,843	36,419	39,630
Applicants with a Criminal History	9,279	9,150	15,024	14,102
Denied Applications	20	13	2	8
Percentage of Denials Based on the Total Number of Applications Received	0.1%	0.0%	0.0%	0.0%
Percentage of Denials Based on Total Number Applicants with Criminal History Denied	0.2%	0.1%	0.0%	0.1%

The following tables show the number of application denials for criminal convictions of substantially related crimes by the type of offense. An asterisk indicates an applicant's criminal history included more than one criminal conviction.

Violent Felonies				
Substantially Related Conviction	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Attempted Murder		1*		2*
Battery		1		
Child Cruelty: Injury/Death		2		
Gross Vehicular Manslaughter	1			
Robbery	3*			1*
Voluntary Manslaughter				1*

Sexually Related Crimes				
Substantially Related Conviction	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Activities Relating to Material Constituting/Containing Child Pornography			1*	
Aggravated Assault				1*
Arrange Meeting with Minor with Intent to Commit a Sexual Offense		1*		
Assault with Intent to Rape				1
Attempted Rape				1*
Lewd and Lascivious Acts with Child Age Specific	1			1*
Lewd and Lascivious Acts with Minor Child Under 14	3			2*
Oral Copulation with a Person Under 16	1			1*
Oral Copulation: Concert Force			1*	
Possession of Obscene Material Depicting Minor in Sexual Conduct		1*		
Rape/Assault	1	2		
Rape: Concert with Force/Violence			1*	
Sex with a Minor 3+ Years Younger	1*			
Sex with a Minor Perpetrator 21+/Victim Under 16				1*
Sexual Penetration: Foreign Object/Victim Drugged		1		
Sodomy with Person Under 18				1*

Other Crimes				
.	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Assault with a Deadly Weapon	1	1*	1*	1*
Assault with Semiautomatic Firearm: Gang Act		1*		
Burglary	1*	1*		
Conspiracy to Commit Mail and Wire Fraud				1*
Conspiracy to Launder Monetary Instruments				1*
Conspiracy: Commit Crime	1			
Domestic Violence				1*
Driving Under the Influence Causing Bodily Injury		1		
Felon with a Gun	1			
Fraud - Impersonation		1*		
Grand Theft	1*			
Hit and Run: Injury	2			
Importation of Methamphetamine and Heroin		1		

Other Crimes				
Inflict Corporal Injury on Spouse/Cohabitant				1*
Insurance Fraud	1	1*		
Larceny - Grand Theft		1*		
Mail Fraud	1			
Misappropriation of Public Funds		1*		
Obstruction/Resist Executive Officer	1			
Subscribing to a False Tax Return				1*
Take Vehicle Without Owner's Consent	1			
Theft by Misrepresentation as Credit Card Holder		1*		

Table 6. Licensee Population

		FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Contractor License	Active[5]	232,860	233,470	238,628	238,409
	Out of State	7,911	8,038	8,316	8,443
	Out of Country	30	23	29	29
	Delinquent/Expired	28,808	37,767	46,700	58,379
	Retired Status *if applicable*	N/A	N/A	N/A	N/A
	Inactive	54,255	52,570	50,812	49,182
	Other[6]	0	0	0	0
Home Improvement Salesperson Registration	Active	21,269	23,389	25,666	29,589
	Out of State	1,015	1,452	1,985	2,488
	Out of Country	0	1	1	1
	Delinquent/Expired	1,780	5,271	9,820	14,853
	Retired Status *if applicable*	N/A	N/A	N/A	N/A
	Inactive	N/A	N/A	N/A	N/A
	Other	0	0	0	0
Asbestos Certification	Active	974	969	950	904
	Out of State	56	52	49	41
	Out of Country	0	0	0	0
	Delinquent/Expired	326	294	144	276
	Retired Status *if applicable*	N/A	N/A	N/A	N/A
	Inactive	262	244	238	237
	Other	0	0	0	0
Hazardous Substance Removal Certification	Active	1,898	1,913	1,902	1,839
	Out of State	136	133	125	110
	Out of Country	0	0	0	0
	Delinquent/Expired	590	563	567	576
	Retired Status *if applicable*	N/A	N/A	N/A	N/A
	Inactive	496	477	459	463
	Other	0	0	0	0

Note: 'Out of State' and 'Out of Country' are two mutually exclusive categories. A licensee should not be counted in both.

[5] Active status is defined as able to practice. This includes licensees that are renewed, current, and active.
[6] Other is defined as a status type that does not allow practice in California, other than retired or inactive.

Table 7a. Licensing Data by Type

Contractors License		Received	Approved /Issued	Closed	Pending Applications			Cycle Times		
					Total (Close of FY)	Complete (within Board control)*	Incomplete (outside Board control)*	Complete Apps	Incomplete Apps	Combined, IF unable to separate out
FY 2020/21	(Exam)	23,383	17,879	6,360	6,289	2,271	4,018	50	90	
	(License)	17,879	13,082	4,797	11,760	3,909	7,851	133	164	
	(Renewal)	125,356	125,671	N/A	**	**	**			17
FY 2021/22	(Exam)	24,814	24,162	7,396	3,951	1,406	2,545	40	88	
	(License)	24,162	18,290	5,872	13,231	3,860	9,371	143	207	
	(Renewal)	118,776	116,856	N/A	**	**	**			8
FY 2022/23	(Exam)	25,628	23,740	6,737	3,708	1,018	2,690	36	75	
	(License)	23,740	15,598	8,142	16,583	3,988	12,595	151	201	
	(Renewal)	119,134	116,575	N/A	**	**	**			10

* Optional. List if tracked by the board.
** Renewals are either accepted or rejected without entering a pending status.

Table 7a. Licensing Data by Type

Home Improvement Salesperson Registration		Received	Approved /Issued	Closed	Pending Applications			Cycle Times		
					Total (Close of FY)	Complete (within Board control)*	Incomplete (outside Board control)*	Complete Apps	Incomplete Apps	Combined, IF unable to separate out
FY 2020/21	(Exam)	11,654	9,608	3,746	1,688	885	806	28	109	
	(License)	9,608	6,545	3,063	1,860	837	1,023	55	80	
	(Renewal)	6,420	6,673	N/A	**	**	**			9
FY 2021/22	(Exam)	11,707	10,668	4,967	1,614	961	653	28	74	
	(License)	10,668	7,113	3,555	1,628	855	773	64	100	
	(Renewal)	6,309	6,279	N/A	**	**	**			3
FY 2022/23	(Exam)	14,003	13,341	4,458	1,173	688	485	23	70	
	(License)	13,341	9,341	4,000	1,975	980	995	57	97	
	(Renewal)	7,054	7,059	N/A	**	**	**			2

* Optional. List if tracked by the board.
** Renewals are either accepted or rejected without entering a pending status.

Table 7a. Licensing Data by Type

Asbestos and Hazardous Substance Removal Certifications		Received	Approved /Issued	Closed	Pending Applications			Cycle Times		
					Total (Close of FY)	Complete (within Board control)*	Incomplete (outside Board control)*	Complete Apps	Incomplete Apps	Combined, IF unable to separate out
FY 2020/21	(Exam)	178	156	100	12	6	6	69	2	91
	(License)	156	98	58	89	16	73	98	69	59
	(Renewal)	***								
FY 2021/22	(Exam)	142	114	74	20	12	8	60	6	67
	(License)	114	71	43	78	6	72	71	60	61
	(Renewal)	***								
FY 2022/23	(Exam)	132	114	68	25	17	8	8	8	55
	(License)	114	59	55	78	9	69	59	45	55
	(Renewal)	***								

* Optional. List if tracked by the board.
*** Certifications are renewed with the license.

Table 7b. License Denial			
	FY 2020/21	FY 2021/22	FY 2022/23
License Applications Denied (no hearing requested)	8	7	0
SOIs Filed	13	8	12
Average Days to File SOI (from request for hearing to SOI filed)	211	258	187
SOIs Declined	N/A	N/A	N/A
SOIs Withdrawn	7	1	2
SOIs Dismissed (license granted)	0	0	0
License Issued with Probation / Probationary License Issued	131	208	233
Average Days to Complete (from SOI filing to outcome)	280	165	351

19. How does the board verify information provided by the applicant?

All applicants are required to designate their business entity on each application and CSLB staff uses the Secretary of State's (SOS) website to verify the names of the businesses, officers, members, and personnel of record against the Statement of Information registered with SOS. In addition, CSLB staff review the SOS website to ensure the applicant's registration with SOS is in good standing before they are considered for a CSLB license or registration.

CSLB staff determine the validity of claims made on the Certification of Work Experience forms by requiring the applicant to submit supporting documents, which may include copies of city and/or county building permits, contracts, construction inspection reports, itemized bills, etc. CSLB staff may also corroborate statements made on the form by interviewing the applicant's employer or the certifier listed of the certification for which they must sign under penalty of perjury. Military applicants may submit the Certificate of Release or Discharge from Active Duty (DD214) as evidence of their military service.

a. What process does the board use to check prior criminal history information, prior disciplinary actions, or other unlawful acts of the applicant? Has the board denied any licenses over the last four years based on the applicant's failure to disclose information on the application, including failure to self-disclose criminal history? If so, how many times and for what types of crimes (please be specific)?

All new applicants are required to submit a full set of fingerprints as part of the application process. CSLB relies on criminal offender record information received from the DOJ and the FBI to determine whether reported criminal convictions are substantially related to the duties, qualifications, or functions of a contractor.

All applications for a new license or registration, waiver applications, and applications to add or replace qualifiers or other personnel contain a question requiring the applicant to disclose any previous disciplinary actions taken and whether they have failed to resolve any outstanding liabilities, taxes, final judgments, or claims against a bond or cash deposit. Licensing staff review CSLB's databases to verify whether or not any previous history was documented in these areas. CSLB staff also research the NASCLA database, which maintains records of disciplinary actions reported by other state regulatory agencies.

Applicants who hold a similar license in another state are required to return the License Verification Request form completed by the out-of-state licensing agency in a sealed

envelope. The verification form provides CSLB information about the applicant's history of disciplinary action taken against their license in the licensing agency's jurisdiction.

No applications have been denied over the last four years based on an applicant's failure to disclose information on the application. CSLB returns the application and notifies applicants that they have 90 days to supply the missing or incomplete information or to make corrections to the information originally submitted. Should the applicant fail to return the requested information within this timeframe, CSLB staff will void, not deny, the application.

b. Does the board fingerprint all applicants?

Yes, CSLB requires all new applicants to submit a full set of fingerprints to the DOJ and FBI to conduct a criminal background check. Fingerprints required are those for each officer, member, partner, owner, qualifier, and responsible managing employee. In addition, CSLB requires individuals who request to be added to an existing license or registration to be fingerprinted. This type of change may be requested due to a change in officer, member, partner, or a new qualifier that is not associated with an existing license or registration.

c. Have all current licensees been fingerprinted? If not, explain.

CSLB does not have authority to require individuals licensed or registered prior to January 1, 2005, to submit fingerprints. CSLB obtained fingerprint authority by SB 136 (Figueroa, Chapter 909, Statutes of 2004), which requires all new applicants for a contractor's license or HIS registration who applied on or after January 1, 2005, to submit fingerprints and authorized CSLB to receive subsequent arrest records. In addition, all new applicants who have submitted applications to add or replace personnel or classifications on existing licenses or registrations have been subject to the fingerprinting requirement effective January 1, 2005. However, SB 136 did not authorize CSLB to require fingerprints from contractors and personnel who had a license prior to January 1, 2005.

d. Is there a national databank relating to disciplinary actions? Does the board check the national databank prior to issuing a license? Renewing a license?

CSLB searches the NASCLA disciplinary database, which is updated by participating out-of-state regulatory agencies, to verify the applicant's response provided on the applications prior to issuing, reactivating, or renewing a license.

e. Does the board require primary source documentation?

Yes, CSLB requires primary source documentation, such as certified court records, which are used to provide proof of disposition related to applicant's criminal conviction. CSLB also requires the applicant to submit official sealed transcripts, which are used to determine whether training or education claimed by an applicant can be applied toward meeting the experience requirements for licensure. Lastly, CSLB requires applicants who hold a similar license in another state to return a License Verification Request form completed by the out-of-state licensing agency in a sealed envelope. The verification request form provides CSLB information on whether the applicant had any disciplinary actions taken against their license in licensing agency's jurisdiction.

20. Describe the board's legal requirement and process for out-of-state and out-of-country applicants to obtain licensure.

CSLB's licensing requirements and processes for out-of-country and out-of-state applicants remain the same as provided for applicants from California. BPC section 7065.4 authorizes CSLB to consider granting licensure to qualifying applicants who are licensed in another state where the licensing requirements meet or exceed CSLB's requirements. Applicants who apply from a state that holds a reciprocity agreement with CSLB may bypass CSLB's trade examination, but will still be required to take and pass the California law and business examination before gaining licensure. CSLB currently holds reciprocity agreements with Arizona, Louisiana, and Nevada.

21. Describe the board's process, if any, for considering military education, training, and experience for purposes of licensing or credentialing requirements, including college credit equivalency.

CSLB implemented the Military Application Assistance Program where past and present military personnel and their spouses/domestic partners have direct contact with CSLB's licensing staff who review and expedite the processing of their application. Staff are specifically trained to evaluate military training and experience and evaluate college transcripts to apply transferable experience toward minimum licensure requirements. CSLB has webpage dedicated to providing information exclusively about the program and has a dedicated email address for military applicants to communicate directly with CSLB licensing staff.

a. **Does the board identify or track applicants who are veterans? If not, when does the board expect to be compliant with BPC § 114.5?**

Yes, CSLB complies with BPC section 114.5 by identifying and tracking applications submitted by veterans. CSLB is in the process of adding capability to track applications for which experience gained in the military is used to meet experience requirements for licensure.

b. How many applicants offered military education, training or experience towards meeting licensing or credentialing requirements, and how many applicants had such education, training or experience accepted by the board?

CSLB tracks the number of applications received on which the applicant indicated their military status; however, CSLB database does not have the capability to track applications where military education, training, or experience was offered and/or accepted. CSLB intends to request data programming and has begun to collect this information manually in order to gather this information for future reporting.

c. What regulatory changes has the board made to bring it into conformance with BPC § 35?

No regulatory changes were necessary to conform with BPC section.

d. How many licensees has the board waived fees or requirements for pursuant to BPC § 114.3, and what has the impact been on board revenues?

CSLB has not waived renewal fees pursuant to BPC § 114.3 since 2019. CSLB is not aware of an instance in which a request was made and denied.

e. How many applications has the board expedited pursuant to BPC § 115.5?

CSLB expedited one application pursuant to BPC § 115.5 since 2019.

22. Does the board send No Longer Interested notifications to DOJ on a regular and ongoing basis? Is this done electronically? Is there a backlog? If so, describe the extent and efforts to address the backlog.

No Longer Interested notifications are sent electronically on a monthly basis. CSLB has no backlog as of September 2023.

Examinations

CSLB performs an occupational analysis for all 47 examinations every five to seven years by collaborating with subject matter experts, compiling statistical analyses, and considering input received from applicants who were surveyed after completing their examination. CSLB is committed to ensuring the quality of each examination is developed according to the highest level of professional testing standards.

Following are data for each examination:

Table 8. Examination Data

California Examination (include multiple language) if any:				
	License Type	Contractor	Contractor	Contractor
	Exam Title	A – General Engineering	B – General Building	B-2 – Residential Remodeling*
FY 2019/20	Number of Candidates	489	6363	-
	Overall Pass %	58%	40%	-
	Overall Fail %	42%	60%	-
FY 2020/21	Number of Candidates	770	7109	-
	Overall Pass %	66%	53%	-
	Overall Fail %	34%	47%	-
FY 2021/22	Number of Candidates	1066	10642	421
	Overall Pass %	52%	41%	44%
	Overall Fail %	48%	59%	56%
FY 2022/23	Number of Candidates	696	7243	812
	Overall Pass %	60%	44%	42%
	Overall Fail %	40%	56%	58%
	Date of Last OA	June 2019	February 2019	March 2021
	Name of OA Developer	CSLB	CSLB	CSLB
	Target OA Date	2024	2024	2026

* The B-2 (residential remodeling) license was not implemented until January 1, 2022, which leaves zero values for FY 2019/20 and FY 2020/21. Additionally, the number of candidates nearly doubles from FY 2022/23 because a full year of data collection is represented, unlike FY 2021/22, which is a half year.

Examination pass rate tables for the specialty trade ("C" license), certifications, and Law and Business examinations continue on the following pages.

Table 8. Examination Data (continued)

California Examination (include multiple language) if any:

	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-2 Insulation and Acoustical	C-4 Boiler, Hot Water Heating and Steam Fitter	C-5 Framing & Rough Carpentry	C-6 Cabinet, Millwork, and Finish Carpentry
FY 2019/20	Number of Candidates	118	29	105	357
	Overall Pass %	42%	41%	34%	47%
	Overall Fail %	58%	59%	66%	53%
FY 2020/21	Number of Candidates	123	33	136	359
	Overall Pass %	26%	45%	43%	46%
	Overall Fail %	74%	55%	57%	54%
FY 2021/22	Number of Candidates	189	42	203	503
	Overall Pass %	24%	67%	52%	44%
	Overall Fail %	76%	33%	48%	56%
FY 2022/23	Number of Candidates	131	33	130	332
	Overall Pass %	24%	45%	51%	44%
	Overall Fail %	76%	55%	49%	56%
	Date of Last OA	September 2021	November 2021	March 2019	February 2020
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2026	2026	2024	2025

Table 8. Examination Data (continued)

California Examination (include multiple language) if any:

	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-7 Low Voltage	C-8 Concrete	C-9 Drywall	C-10 Electrical
FY 2019/20	Number of Candidates	417	560	398	1453
	Overall Pass %	49%	43%	31%	52%
	Overall Fail %	51%	57%	69%	48%
FY 2020/21	Number of Candidates	404	619	460	1845
	Overall Pass %	54%	47%	30%	56%
	Overall Fail %	46%	53%	70%	44%
FY 2021/22	Number of Candidates	498	945	602	3169
	Overall Pass %	49%	42%	36%	46%
	Overall Fail %	51%	58%	64%	54%
FY 2022/23	Number of Candidates	332	835	473	2326
	Overall Pass %	53%	33%	31%	49%
	Overall Fail %	47%	67%	69%	51%
	Date of Last OA	August 2021	December 2020	August 2020	September 2018
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2026	2025	2025	2023

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-11 Elevator	C-12 Earthwork and Paving	C-13 Fencing	C-15 Flooring and Floor Covering
FY 2019/20	Number of Candidates	22	168	184	492
	Overall Pass %	41%	46%	45%	39%
	Overall Fail %	59%	54%	55%	61%
FY 2020/21	Number of Candidates	21	176	146	556
	Overall Pass %	29%	52%	53%	49%
	Overall Fail %	71%	48%	47%	51%
FY 2021/22	Number of Candidates	24	235	275	787
	Overall Pass %	33%	42%	39%	46%
	Overall Fail %	67%	58%	61%	54%
FY 2022/23	Number of Candidates	31	234	228	555
	Overall Pass %	32%	43%	39%	49%
	Overall Fail %	68%	57%	61%	51%
	Date of Last OA	December 2019	March 2022	March 2023	February 2020
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2024	2027	2028	2025

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-16 Fire Protection	C-17 Glazing	C-20 Warm-Air Heating, Ventilating & Air-Conditioning	C-21 Building Moving/ Demolition
FY 2019/20	Number of Candidates	165	333	952	147
	Overall Pass %	35%	41%	41%	42%
	Overall Fail %	65%	59%	59%	58%
FY 2020/21	Number of Candidates	209	285	1181	152
	Overall Pass %	35%	46%	50%	41%
	Overall Fail %	65%	54%	50%	59%
FY 2021/22	Number of Candidates	266	419	1865	188
	Overall Pass %	32%	34%	43%	37%
	Overall Fail %	68%	66%	57%	63%
FY 2022/23	Number of Candidates	187	327	1229	187
	Overall Pass %	30%	44%	46%	36%
	Overall Fail %	70%	56%	54%	64%
	Date of Last OA	April 2021	February 2021	April 2020	February 2021
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2026	2026	2025	2023

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-22 Asbestos Abatement	C-23 Ornamental Metal	C-27 Landscaper	C-28 Lock & Security Equipment
FY 2019/20	Number of Candidates	13	81	1317	34
	Overall Pass %	77%	42%	31%	50%
	Overall Fail %	23%	58%	69%	50%
FY 2020/21	Number of Candidates	21	88	1305	33
	Overall Pass %	71%	44%	35%	42%
	Overall Fail %	29%	56%	65%	58%
FY 2021/22	Number of Candidates	23	108	1946	49
	Overall Pass %	74%	45%	34%	31%
	Overall Fail %	26%	55%	66%	69%
FY 2022/23	Number of Candidates	29	74	1389	32
	Overall Pass %	41%	47%	38%	44%
	Overall Fail %	59%	53%	62%	56%
	Date of Last OA	November 2018	October 2019	December 2020	November 2019
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2023	2024	2025	2024

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-29 Masonry	C-31 Construction Zone Traffic Control	C-32 Parking & Highway Improvement	C-33 Painting and Decorating
FY 2019/20	Number of Candidates	137	38	53	1455
	Overall Pass %	37%	42%	38%	36%
	Overall Fail %	63%	58%	62%	64%
FY 2020/21	Number of Candidates	130	50	30	1534
	Overall Pass %	38%	64%	43%	40%
	Overall Fail %	62%	36%	57%	60%
FY 2021/22	Number of Candidates	196	61	48	2668
	Overall Pass %	39%	46%	46%	35%
	Overall Fail %	61%	54%	54%	65%
FY 2022/23	Number of Candidates	153	64	36	1485
	Overall Pass %	38%	47%	39%	46%
	Overall Fail %	62%	53%	61%	54%
	Date of Last OA	December 2020	January 2021	December 2020	March 2021
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2025	2025	2025	2026

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-34 Pipeline	C-35 Lathing and Plastering	C-36 Plumbing	C-38 Refrigeration
FY 2019/20	Number of Candidates	41	179	922	92
	Overall Pass %	37%	30%	56%	54%
	Overall Fail %	63%	70%	44%	46%
FY 2020/21	Number of Candidates	47	158	1214	88
	Overall Pass %	38%	41%	56%	55%
	Overall Fail %	62%	59%	44%	45%
FY 2021/22	Number of Candidates	62	256	1905	151
	Overall Pass %	44%	33%	48%	47%
	Overall Fail %	56%	67%	52%	53%
FY 2022/23	Number of Candidates	31	178	1469	125
	Overall Pass %	45%	43%	47%	47%
	Overall Fail %	55%	57%	53%	53%
	Date of Last OA	June 2018	March 2019	August 2019	June 2023
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2023	2024	2024	2028

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-39 Roofing	C-42 Sanitation System	C-43 Sheet Metal	C-45 Sign
FY 2019/20	Number of Candidates	563	83	51	41
	Overall Pass %	38%	42%	53%	76%
	Overall Fail %	62%	58%	47%	24%
FY 2020/21	Number of Candidates	717	74	72	55
	Overall Pass %	43%	45%	71%	64%
	Overall Fail %	57%	55%	29%	36%
FY 2021/22	Number of Candidates	1051	63	81	55
	Overall Pass %	38%	60%	63%	62%
	Overall Fail %	62%	40%	37%	38%
FY 2022/23	Number of Candidates	777	55	72	57
	Overall Pass %	42%	49%	42%	58%
	Overall Fail %	58%	51%	58%	42%
	Date of Last OA	April 2021	April 2022	April 2020	May 2018
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2026	2027	2024	2023

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-46 Solar	C-47 General Manufactured Housing	C-50 Reinforcing Steel	C-51 Structural Steel
FY 2019/20	Number of Candidates	127	45	44	154
	Overall Pass %	47%	36%	41%	45%
	Overall Fail %	53%	64%	59%	55%
FY 2020/21	Number of Candidates	164	53	33	128
	Overall Pass %	45%	62%	52%	59%
	Overall Fail %	55%	38%	48%	41%
FY 2021/22	Number of Candidates	157	49	46	164
	Overall Pass %	36%	22%	48%	49%
	Overall Fail %	64%	78%	52%	51%
FY 2022/23	Number of Candidates	115	27	38	140
	Overall Pass %	35%	30%	29%	54%
	Overall Fail %	65%	70%	71%	46%
	Date of Last OA	April 2022	June 2023	June 2018	February 2019
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2027	2028	2023	2024

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Contractor	Contractor
	Exam Title	C-53 Swimming Pool	C-54 Ceramic and Mosaic Tile	C-55 Water Conditioning	C-57 Well Drilling
FY 2019/20	Number of Candidates	175	541	14	26
	Overall Pass %	51%	45%	36%	69%
	Overall Fail %	49%	55%	64%	31%
FY 2020/21	Number of Candidates	241	522	21	32
	Overall Pass %	49%	48%	43%	53%
	Overall Fail %	51%	52%	57%	47%
FY 2021/22	Number of Candidates	393	764	34	69
	Overall Pass %	40%	39%	29%	36%
	Overall Fail %	60%	61%	71%	64%
FY 2022/23	Number of Candidates	346	465	15	47
	Overall Pass %	42%	45%	47%	4%
	Overall Fail %	58%	55%	53%	96%
	Date of Last OA	February 2021	March 2021	March 2018	February 2022
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2026	2026	2023	2027

Table 8. Examination Data (continued)					
California Examination (include multiple language) if any:					
	License Type	Contractor	Contractor	Certification	Certification
	Exam Title	C-60 Welding	HAZ Hazardous Substance Removal	ASB Asbestos Certification	Law & Business
FY 2019/20	Number of Candidates	108	66	18	14844
	Overall Pass %	46%	68%	33%	52%
	Overall Fail %	54%	32%	67%	48%
FY 2020/21	Number of Candidates	86	94	28	16724
	Overall Pass %	60%	56%	46%	58%
	Overall Fail %	40%	44%	54%	42%
FY 2021/22	Number of Candidates	149	97	33	25061
	Overall Pass %	60%	51%	39%	54%
	Overall Fail %	40%	49%	61%	46%
FY 2022/23	Number of Candidates	122	66	22	17737
	Overall Pass %	61%	62%	36%	57%
	Overall Fail %	39%	38%	64%	43%
	Date of Last OA	August 2018	September 2022	December 2020	August 2020
	Name of OA Developer	CSLB	CSLB	CSLB	CSLB
	Target OA Date	2023	2027	2025	2025

National Examination (include multiple language) if any:				
	License Type	N/A	N/A	N/A
	Exam Title	N/A	N/A	N/A
FY 2019/20	Number of Candidates	N/A	N/A	N/A
	Overall Pass %	N/A	N/A	N/A
	Overall Fail %	N/A	N/A	N/A
FY 2020/21	Number of Candidates	N/A	N/A	N/A
	Overall Pass %	N/A	N/A	N/A
	Overall Fail %	N/A	N/A	N/A
FY 2021/22	Number of Candidates	N/A	N/A	N/A
	Overall Pass %	N/A	N/A	N/A
	Overall Fail %	N/A	N/A	N/A
FY 2022/23	Number of Candidates	N/A	N/A	N/A
	Overall Pass %	N/A	N/A	N/A
	Overall Fail %	N/A	N/A	N/A
	Date of Last OA	N/A	N/A	N/A
	Name of OA Developer	N/A	N/A	N/A
	Target OA Date	N/A	N/A	N/A

23. Describe the examinations required for licensure. Is a national examination used? Is a California specific examination required? Are examinations offered in a language other than English?

BPC sections 7065 and 7068 require CSLB to administer examinations to test applicants' knowledge and experience in the classification for which they applied. Applicants are also tested on their general knowledge of California's building, safety, health and lien laws and administrative principles of the contracting business. CSLB developed and maintains 47 examinations to include 44 license classifications, two certification examinations, and the law and business examination. All examinations are closed book with the exception of the examination regarding handling and disposal of asbestos, which is required by BPC section 7058.5, subd. (b), to be open book and given to all new license candidates (separate from examinations for the C-22 (asbestos abatement) contractor's license and ASB – asbestos certification).

NASCLA administers a Commercial General Building Contractor Examination, as well as electrical trade examinations within its Accredited Electrical Examination Program. However, CSLB does not accept these national examinations because they are open-book examinations, which do not adequately evaluate a candidate's knowledge in the specific area being tested and are strongly opposed by specialty contractor associations. CSLB's trade examination may be waived when an applicant shows their license is in good standing in another state that holds a reciprocity agreement with CSLB, but waivers are not provided for the California law and business examination as it is required for all applicants.

In April 2022, CSLB began translating several examinations into Spanish. Effective August 1, 2023, the Law and Business, "B" General Building, and "C-8" Concrete trade examinations are offered in Spanish at the PSI Exams test centers. CSLB is translating seven more examinations to be available by January 1, 2024. In addition, study guides for every examination have been translated into Spanish and are available on CSLB's website. Until all examinations are translated into Spanish, applicants may bring a translator to their examination upon CSLB's approval.

24. What are pass rates for first time vs. retakes in the past 4 fiscal years? *(Refer to Table 8: Examination Data)* Are pass rates collected for examinations offered in a language other than English?

Applicants are passing the examinations at a higher rate during their first attempt than those who retake the examination. The pass rate has been between 62 percent to 76 percent during the past four fiscal years for first time examination takers, while those retaking the examination passed between 32 percent to 40 percent of the time.

Examination Pass Rates – First Time and Retakes						
	Number of First Attempts	Pass Count	First Time Pass %	Number of Retakes	Retake Pass Count	Retake Pass %
FY 2019/20	17,944	13,208	74%	6,851	2,614	38%
FY 2020/21	23,705	17,917	76%	6,937	2,542	37%
FY 2021/22	30,212	22,378	74%	11,999	4,822	40%
FY 2022/23	24,536	17,454	71%	7,497	2,778	37%

CSLB began collecting the examination pass rates as each Spanish version became available, beginning August 1, 2023. Between August 1 and November 1, 2023, PSI Exams administered 631 Spanish examinations (589 Law and Business, 33 "B" license, seven C-08 (concrete) trade, and two C-33 (painting)). Of those, 96 previously failed an exam in English. Upon retake in Spanish, 42 passed, which brings the Spanish speaker retake pass rate equal to the overall retake pass rate.

25. Is the board using computer based testing? If so, for which tests? Describe how it works. Where is it available? How often are tests administered?

Yes, CSLB has provided computer-based testing for all examinations since 1990. CSLB administered the examinations in Berkeley, Fresno, Norwalk, Oxnard, Sacramento, San Bernardino, San Diego, and San Jose, and until July 2022, the applicant's examination was automatically scheduled based on their zip code. The test centers were available Monday through Friday and during normal work hours, however, examination schedules varied and depended on the demand for the examination in a particular area.

In July 2022, CSLB outsourced administration of all 47 examinations to PSI Exams. All examinations remain computer based and are self-scheduled by the applicant at a location and date of their choice. PSI Exams proctors the examinations in the following locations in California:

- Agoura Hills
- Atascadero
- Bakersfield
- Carson
- Diamond Bar
- El Monte
- Fresno
- Irvine
- Lawndale
- Redding
- Riverside
- Sacramento
- San Diego
- San Francisco
- Santa Clara
- Santa Rosa
- Union City
- Ventura
- Visalia
- Walnut Creek

Candidates may also schedule an exam at 22 out-of-state PSI Exams locations. PSI Exams locations are available up to six days a week, including evening hours.

26. Are there existing statutes that hinder the efficient and effective processing of applications and/or examinations? If so, please describe.

There are several statutes that hinder efficient and effective application and examination processing. The statutes, which apply to the hazardous substance removal certification scope, duty statement submission requirement for qualifiers, in-house examination fee processing, and a lack of authority to license tribes and tribally owned businesses are explained summarized as follows and each has a corresponding New Issue.

Limits of Hazardous Substance Removal Certification
BPC section 7058.7 defines the scope of work for those holding a hazardous substance removal certificate, which includes engaging in the removal or remedial action if the action requires digging into the surface of the earth and removing the dug material from hazardous sites. The existing definition is unclear as to whether the contractor holding the certificate is authorized and qualified to conduct similar work in disaster areas.

Clarification should be added to the definition to include construction related digging in disaster areas. CSLB includes a proposal in this report addressing this further in New Issue 3. Without this clarification, contractors who have a certification are required to obtain the a "B" General Contractors license or a C-61/D-64 (limited specialty/non-specialized classification) license, which creates unnecessary barriers to licensees and additional workload for staff.

Duty Statement Requirement
BPC section 7068.1 was amended by AB 830 (Flora, Chapter 376, Statutes of 2021), to state a duty statement could be required to establish a qualifier's responsibility to exercise supervision and control over the applicant's projects. This amendment created confusion as to whether employers are required to submit a duty statement to demonstrate the qualifier's supervision and control over projects. Prior to this amendment, CSLB had existing authority to collect detailed information on the qualifying individual's duties and responsibilities, including a duty statement when warranted.

The Licensing Division has fielded calls from applicants, new qualifiers, licensees, and construction law attorneys during renewal who believe section 7068.1 requires a duty statement as a condition of licensure. Additionally, the Licensing Division has received duty statements from licensees and applicants who believe a duty statement is required to renew their license. AB 830 created an additional, unnecessary workload and added a burden to employers who believe they must create a document to satisfy this requirement. The needed clarifying amendment is technical and is, therefore, included in CSLB's technical bill proposal.

Examination Fee Processing by CSLB
CSLB transferred the administration of examinations to PSI Exams in July 2022 creating administrative and funding inefficiencies: 1) CSLB does not charge nor collect initial examination fees from the applicant, but processes the necessary workload and pays the required fee charged by PSI Exams for each initial examination conducted; 2) BPC section 7137 requires the applicant to pay CSLB a one-hundred-dollar fee for the rescheduling of the examination, but CSLB pays PSI Exams a flat fee for each examination, including each rescheduled examination. The amount charged by PSI Exams is less than that required by BPC section 7137.

By CSLB receiving and processing examination fees on behalf of a third-party vendor, additional work is created for CSLB Licensing and Administrative staff. Additionally, processing the applicant or licensee's payment then notifying PSI Exams adds delays that could be avoided if applicants were to pay the vendor directly. CSLB includes a proposal addressing this further as New Issue 4.

Lack of Authority to License Tribes
There is no authority in the Contractors State License Law to issue a license to a tribe because the law does not reference tribes in any capacity that authorizes licensure. Rather, the Contractors State License Law only authorizes licenses issued to individual sole proprietorships, corporations, or partnerships.

This limitation creates a licensing barrier for tribes and tribally owned businesses who have applied for a license so they can act in the capacity of a contractor outside tribal and federal boundaries. CSLB includes a proposal in this report to address this lack of authority as New Issue 5.

27. When did the Board last conduct an occupational analysis that validated the requirement for a California-specific examination? When does the Board plan to revisit this issue? Has the Board identified any reason to update, revise, or eliminate its current California-specific examination?

CSLB conducted an occupational analysis in August 2020 for the Law and Business Examination that all applicants for a license must pass. CSLB will conduct another occupational analysis in 2025 to determine whether any changes to safety, health or lien laws, or contracting principles call for an update or revision to the existing examination. Despite occupational analyses, BPC section 7065 requires applicants to pass an examination that includes questions relating to the laws of this state. Therefore, there is no comparable national examination.

School approvals

28. Describe legal requirements regarding school approval. Who approves your schools? What role does BPPE have in approving schools? How does the board work with BPPE in the school approval process?

CSLB's licensing requirements do not include a mandatory education component so there is not a school approval process.

29. How many schools are approved by the board? How often are approved schools reviewed? Can the board remove its approval of a school?

Not applicable; CSLB does not approve licensing schools.

30. What are the board's legal requirements regarding approval of international schools?

Not applicable; CSLB does not approve international schools.

Continuing Education/Competency Requirements

31. Describe the board's continuing education/competency requirements, if any. Describe any changes made by the board since the last review.

CSLB does not have a continuing education or continuing competency requirement. Therefore, each follow up question below is not applicable to CSLB.

a. How does the board verify CE or other competency requirements? Has the Board worked with the Department to receive primary source verification of CE completion through the Department's cloud?

b. Does the board conduct CE audits of licensees? Describe the board's policy on CE audits.

c. What are consequences for failing a CE audit?

d. How many CE audits were conducted in the past four fiscal years? How many fails? What is the percentage of CE failure?

e. What is the board's course approval policy?

f. Who approves CE providers? Who approves CE courses? If the board approves them, what is the board application review process?

g. How many applications for CE providers and CE courses were received? How many were approved?

h. Does the board audit CE providers? If so, describe the board's policy and process.

i. Describe the board's effort, if any, to review its CE policy for purpose of moving toward performance based assessments of the licensee's continuing competence.

Table 8a. Continuing Education

Type	Frequency of Renewal	Number of CE Hours Required Each Cycle	Percentage of Licensees Audited
N/A	N/A	N/A	N/A

Section 4 – Enforcement Program

ENFORCEMENT PROGRAM OVERVIEW

Complaint Handling
CSLB's Intake and Mediation Centers (IMCs), located in Sacramento and Norwalk, review all incoming complaints, prepare unlicensed complaints for field investigation, and attempt to settle consumer complaints against licensed contractors. If a resolution can be reached and is complied with, CSLB closes the complaint. The IMC's goal is to settle 30 percent of complaints against licensees that do not involve a serious violation of law. The IMC annually exceeds the board set goal.

If there is a technical violation, the IMC may issue an advisory notice, which is not publicly disclosed and is used to inform the licensee that CSLB is aware of the violation, provides information on complying with the particular provision violated, and notes that another occurrence of the same violation may result in more stringent actions by the board.

Investigations
CSLB maintains ten Investigative Centers (ICs), located in Fresno, two in Norwalk, two in Sacramento, San Bernardino, San Diego, San Francisco, Valencia, and West Covina. Additionally, CSLB maintains four satellite offices in Bakersfield, Oxnard, Redding, and Santa Rosa. Cases are referred for investigation when settlement cannot be reached, the investigation required is complex, or an egregious violation is suspected.

During investigations, CSLB contracts with licensees who use their expertise to assess and report workmanship issues, including departures from trade standards and/or project specifications as an "Industry Expert." The Industry Experts also assess the cost to repair or redo the work, thus quantifying financial damages incurred by the consumer. These reports are used to promote dispute resolution and in disciplinary actions or citations when CSLB requests restitution to be paid. This report includes New Issue 1 on page XX, which addresses the costs of sending an IE to a job site.

An investigation that reveals a violation of any law enforced by CSLB may result in the following actions by the Enforcement Division:

- Referrals to Local Prosecutors. Criminal investigations target egregious offenders, licensed and unlicensed, and those who financially injured consumers. Many criminal investigations involve unlicensed operators, including those caught during stings.

- Accusations. The most egregious violations of the Contractors' State License Law may result in an accusation to revoke a license through the Office of the Attorney General (AG). The AG may negotiate a stipulated agreement before the case is heard by an administrative law judge (ALJ). In these instances, the licensee may agree to a settlement whereby the license is revoked and stayed with probationary conditions imposed from two to five years. If those terms are not met, CSLB reimposes license revocation.

- Citations. When an investigation shows a licensee has committed any act or omission for which disciplinary action is not warranted, CSLB may issue a citation. CSLB also has authority to issue a citation when an investigation reveals unlicensed activity. A citation may include a civil penalty of up to $30,000, an order of correction, or an order of restitution to the financially injured party. If a licensee does not comply with the terms and conditions of a citation, the license may be automatically suspended and subsequently revoked.

Citations are disclosed to the public from the date of issuance and for five years after compliance. Disclosure can be longer if the licensee is subject to any other disciplinary action during that five-year period.

- Letters of Admonishment. The letter of admonishment is an intermediate corrective action between an advisory notice and a citation that CSLB began issuing on July 1, 2018. Recipients may appeal a letter of admonishment, which is heard by CSLB without a formal hearing.

  Letters of admonishment are subject to public disclosure of the violation for one or two years, depending on the gravity of the violation, the good faith of the licensee or applicant being charged, and the history of previous violations.

32. What are the board's performance targets/expectations for its enforcement program? Is the board meeting those expectations? If not, what is the board doing to improve performance?

BPC section 7011.7 sets CSLB's statutory goal to complete a routine investigation is six months (180 days) from receipt of the complaint. Complaints that involve complex fraud issues or contractual arrangements have a statutory goal for completing the review and investigation at one year.

CSLB's Enforcement Division averages 108 days for all investigation outcomes in FY 2022/23, 110 days in FY 2021/22, and 97 in FY 2020/21. Additionally, the more complex cases have investigation times of 338 days in FY 2022/23, 306 days in FY 2021/22, and 273 days in FY 2020/21. Both metrics meet the applicable statutory requirement.

In addition to statutory expectations, the Board adopted goals directly related to resolving consumer complaints. CSLB's Intake and Mediation Centers (IMC), located in Sacramento and Norwalk, receive and review all incoming complaints. The IMCs focus on settling most consumer complaints against licensed contractors and prepare unlicensed complaints for field investigation. If a resolution is reached and complied with, CSLB closes the complaint. If there is a technical violation, CSLB can issue an advisory notice or a letter of admonishment.

The IMCs have a Board-adopted goal to close licensee complaints that do not require further investigation within 60 days through mediation and negotiation. The IMCs have met the Board's goal by closing complaints that are not referred to the field in 50 days in FY 2022/23, 51 days in FY 2021/22, and 51 days in FY 2020/21.

33. Explain trends in enforcement data and the board's efforts to address any increase in volume, timeframes, ratio of closure to pending cases, or other challenges. What are the performance barriers? What improvement plans are in place? What has the board done and what is the board going to do to address these issues, i.e., process efficiencies, regulations, BCP, legislation?

Enforcement trends have not changed from the previous sunset. CSLB continues to experience an increasing volume of complaints, participation in disaster response, and solar complaints. Collectively, these increases are becoming more challenging to manage with CSLB's limited enforcement resources.

Consumer Complaints
The majority of complaints CSLB receives are filed by residential property owners who contracted for home improvement and repair projects. CSLB also receives complaints from other members of the public, licensees, industry groups, governmental agencies, and others. These complaints cover all aspects of the construction industry and are investigated for violations of the Contractors State License Law, building standards, and Labor Codes relevant to workers' compensation

insurance, workplace safety, and unemployment insurance requirements. Most Enforcement division staff work directly on consumer complaints.

During the reporting period, the number of consumer complaints decreased in FY 2020/21, likely as a result of COVID, but has since surpassed the previous historical high of 19,687 in FY 2017/18 to 20,522 in FY 2022/23. Based on complaint data for the current fiscal year, particularly September and October, that upward trend is continuing and CSLB anticipates another record in FY 2023/24.

Table 9a. Enforcement Statistics			
	FY 2020/21	FY 2021/22	FY 2022/23
COMPLAINTS			
Intake			
Received	15,098	18,288	20,522
Closed without Referral for Investigation	314	360	403
Referred to INV	14,784	17,928	20,119
Pending (close of FY)	1,561	2,074	2,136
Conviction / Arrest			
CONV Received	718	870	637
CONV Closed Without Referral for Investigation	0	0	0
CONV Referred to INV	718	870	637
CONV Pending (close of FY)	155	226	198
Source of Complaint			
Public	13,542	15,985	18,175
Licensee/Professional Groups	320	327	287
Governmental Agencies	41	66	106
Internal	1,089	1,288	1,447
Other	106	622	507
Anonymous	0	0	0
Average Time to Refer for Investigation (from receipt of complaint / conviction to referral for investigation)	3 days	2 days	3 days
Average Time to Closure (from receipt of complaint / conviction to closure at intake)	51 days	51 days	50 days
Average Time at Intake (from receipt of complaint / conviction to closure or referral for investigation)	4 days	3 days	4 days
INVESTIGATION			
Desk Investigations			
Opened	7,283	7,902	9,484
Closed	7,968	8,247	10,721
Average days to close (from assignment to investigation closure)	45	44	43
Pending (close of FY)	1,561	2,074	2,136
Non-Sworn Investigation			
Opened	7,801	10,479	10,934
Closed	8,479	10,770	11,097
Average days to close (from assignment to investigation closure)	141	135	161
Pending (close of FY)	3,074	3,537	4,109
Sworn Investigation			
Opened	418	417	338
Closed	404	380	363
Average days to close (from assignment to investigation closure)	178	220	229
Pending (close of FY)	81	136	116
All investigations			
Opened	15,502	18,798	20,756
Closed	16,851	19,397	22,181

Average days for all investigation outcomes (from start investigation to investigation closure or referral for prosecution)	99	100	108
Average days for investigation closures (from start investigation to investigation closure)	143	138	163
Average days for investigation when referring for prosecution (from start investigation to referral for prosecution)	273	306	338
Average days from receipt of complaint to investigation closure	97	110	108
Pending (close of FY)	4,716	5,747	6,361
CITATION AND FINE			
Citations Issued	1,231	1,536	1,574
Average Days to Complete (from complaint receipt / inspection conducted to citation issued)	222	200	247
Amount of Fines Assessed	$3,992,200	$4,292,750	$6,701,051
Amount of Fines Reduced, Withdrawn, Dismissed	$594,000	$549,530	$991,270
Amount Collected	$1,672,657	$1,871,545	$2,379,856
CRIMINAL ACTION			
Referred for Criminal Prosecution	683	895	861
ACCUSATION			
Accusations Filed	152	204	200
Accusations Declined	0	0	0
Accusations Withdrawn	7	11	3
Accusations Dismissed	0	2	0
Average Days from Referral to Accusations Filed (from AG referral to Accusation filed)	180	138	88
INTERIM ACTION			
ISO & TRO Issued	0	0	0
PC 23 Orders Issued	0	2	0
Other Suspension/Restriction Orders Issued	N/A	N/A	N/A
Referred for Diversion	N/A	N/A	N/A
Petition to Compel Examination Ordered	N/A	N/A	N/A
DISCIPLINE			
AG Cases Initiated (cases referred to the AG in that year)	202	331	323
AG Cases Pending Pre-Accusation (close of FY)	331	331	363
AG Cases Pending Post-Accusation (close of FY)	0	0	0
DISCIPLINARY OUTCOMES			
Revocation	252	203	205
Surrender	0	0	0
Suspension only	1	1	1
Probation with Suspension	0	0	0
Probation only	115	93	88
Public Reprimand / Public Reproval / Public Letter of Reprimand	4	3	0
Other	51	52	38
DISCIPLINARY ACTIONS			
Proposed Decision	80	35	37
Default Decision	134	121	110
Stipulations	109	95	77
Average Days to Complete After Accusation (from Accusation filed to imposing formal discipline)	345	267	250
Average Days from Closure of Investigation to Imposing Formal Discipline	606	465	395
Average Days to Impose Discipline (from complaint receipt to imposing formal discipline)	831	729	698
PROBATION			
Probations Completed	81	52	63

Probationers Pending (close of FY)	0	272	260
Probationers Tolled *	N/A	N/A	97
Petitions to Revoke Probation / Accusation and Petition to Revoke Probation Filed	2	7	8
SUBSEQUENT DISCIPLINE			
Probations Revoked	9	18	24
Probationers License Surrendered	N/A	N/A	N/A
Additional Probation Only	0	0	0
Suspension Only Added	0	0	0
Other Conditions Added Only	0	0	0
Other Probation Outcome	0	0	0
SUBSTANCE ABUSING LICENSEES **			
Probationers Subject to Drug Testing	N/A	N/A	N/A
Drug Tests Ordered	N/A	N/A	N/A
Positive Drug Tests	N/A	N/A	N/A
PETITIONS			
Petition for Termination or Modification Granted	N/A	N/A	N/A
Petition for Termination or Modification Denied	N/A	N/A	N/A
Petition for Reinstatement Granted	N/A	N/A	N/A
Petition for Reinstatement Denied	N/A	N/A	N/A
DIVERSION **			
New Participants	N/A	N/A	N/A
Successful Completions	N/A	N/A	N/A
Participants (close of FY)	N/A	N/A	N/A
Terminations	N/A	N/A	N/A
Terminations for Public Threat	N/A	N/A	N/A
Drug Tests Ordered	N/A	N/A	N/A
Positive Drug Tests	N/A	N/A	N/A

* CSLB did not track this data until FY 2022-23.
** CSLB licensees and registrants are not subject to drug testing or diversion.

The above data do not directly reflect the increase in solar and disaster response participation, but these factors significantly impact case volume and case aging.

Solar Complaints

When problems occur in solar energy system installations, the harm to consumers can be severe. Paying for a system up front is cost prohibitive for many consumers who rely on loans to invest in a solar energy system. This practice contributes to common complaints received by CSLB about solar energy systems, e.g., the system is not installed correctly, damage is caused to the roof/home, the job was abandoned, or the system was installed but not connected to the electrical grid. These complaints can be attributed to loan providers paying for the entirety (or majority) of the contract before work commences.[7]

The volume and egregiousness of solar complaints particularly create a strain on enforcement resources. With the exception of FY 2019/20, complaints against solar companies have increased each year during the reporting period for a total increase of 1,365 complaints (or 176 percent) since FY 2018/19. Additionally, when comparing complaint data from FY 2018/19 to FY 2022/23, the increase in solar consumer complaints is double the increase of all consumer complaints. The increase in solar complaints approximately equates to work that would be completed by five Consumer Service Representatives *and* two Special Investigators.

[7] It is a violation of BPC section 7159.5 when a contractor to accept more than $1,000 (or 10%, whichever is less) and to accept progress payments in excess of the materials and services provided.

FY 2018/19 – FY 2022/23 Complaint Comparison[8]				
	FY 2018/19	FY 2022/23	Increase	% Increase
All Consumer Complaints	16,937	18,175	1,238	7%
Non-Solar	16,160	16,033	-127	-1%
Solar	777	2,142	1,365	176%

The egregiousness of solar complaints further contributes to a workload issue. These cases often include elder abuse, fraud, and other high priority complaint types that require these cases to be prioritized over other complaints.[9] These additional elements also make investigating these complaints more complex and time consuming to investigate.

For each of these complaints, CSLB can take enforcement or disciplinary action. However, consumers are accountable for continued loan payments for the solar energy system that does not work correctly (or at all) while CSLB investigates the complaint. Meanwhile, the solar contractors frequently wait for CSLB to send an Industry Expert to inspect the job and write a report before correcting their substandard work, repairing damage caused during installation, or paying for another contractor to do so. In cases where the contractor does not agree to mediation, the consumer must continue to be patient while CSLB files an accusation requesting restitution, for the case to be heard, and the decision to be ordered in their favor. Even when restitution is ordered, consumers are not guaranteed payment.

Additionally, CSLB staff report they are finding home improvement salespersons who are arranging loans to pay for the solar energy systems they are selling under their CSLB registration. CSLB can, and does, remove HIS registrations for violations; however, enforcing improper or illegal practices when a home improvement loan is brokered does not fall within CSLB's enforcement authority.

Liens may be placed on consumer's homes, which are also outside CSLB's jurisdiction and can only be removed by the consumer filing a civil action showing the loan payments are up to date. CSLB has discussed with Department of Financial Protection and Innovation (DFPI) Management the up-front payments by loan providers and CSLB registrants who broker loans without the proper license from the DFPI, under whose jurisdiction these issues fall. CSLB looks forward to resolving these issues of mutual concern to decrease the risk of consumer financial harm when installing solar energy systems.

Enforcement Division Disaster Response

Severe storms, wildfires, and other significant disasters resulted in numerous emergency declarations in FY 2022/23, with some counties experiencing more than one disaster. Staff from CSLB's proactive enforcement unit – SWIFT – primarily attend events hosted by the Governor's Office of Emergency Services (CalOES) and the Federal Emergency Management Agency (FEMA). Although SWIFT personnel can be called upon to reduce investigative backlogs when needed, disaster response has limited their availability for this duty. The staff hours that were dedicated to disaster response in FY 2022/23 nearly equal those that would be worked by several PYs. If those staff were available to fill in, aged and pending cases could be much lower.[10]

[8] "All Consumer Complaints" and "Solar" include 629 solar restitution claims, which require investigation.
[9] A full description of CSLB's complaint prioritization guidelines is in the response to Prior Issue 8 on page XX.
[10] CSLB's staffing concerns regarding participation in disaster response are discussed in detail in Prior Issues 1 and 9 on pages XX and XX, respectively.

Addressing Performance Barriers

In July 2023, CSLB entered into a contract with CPS HR Consulting to conduct a study of the Enforcement Division's complaint handling and investigative processes. The purpose of the study is to examine the efficiency of these processes to identify opportunities for improvement and recommend compliant/investigation handling objectives and processes, workload goals, and staffing needs.

As of December 1, 2023, CPS has completed the following:

- A thorough review of process documentation and compliant/investigation data, e.g., aged cases, complaints/investigations received and closed, etc.

- More than 20 interviews and focus groups with line level staff, supervisors, and management in the Intake and Mediation Centers, Investigative Centers and the Special Investigation Units.

CPS is in the process of consolidating the process improvement opportunities and recommendations gained from the focus groups and establishing recommendations for complaint/investigation handling objectives. CSLB will respond with process changes, legislation, or a BCP after reviewing the recommendations of the study.

Table 10. Enforcement Aging

	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	Cases Closed	Average %
Investigations (Average %)						
Closed Within:						
90 Days	14,411	11,998	13,190	14,776	54,375	69%
91 - 180 Days	2,575	1,823	2,663	2,629	9,690	12%
181 - 1 Year	3,131	2,890	3,192	4,281	13,494	17%
1 - 2 Years	154	137	341	490	1,122	1%
2 - 3 Years	1	1	10	5	17	0%
Over 3 Years	0	2	1	0	3	0%
Total Investigation Cases Closed	20,272	16,851	19,397	22,181	78,701	100%
Attorney General Cases (Average %)						
Closed Within:						
0 - 1 Year	242	170	175	168	755	66%
1 - 2 Years	101	118	42	30	291	25%
2 - 3 Years	31	25	19	7	82	7%
3 - 4 Years	2	8	0	1	11	1%
Over 4 Years	2	0	1	0	3	0%
Total Attorney General Cases Closed	378	321	237	206	1142	100%

34. What do overall statistics show as to increases or decreases in disciplinary action since last review?

The number of accusations filed substantially decreased during FY 2020/21. This decrease is due to COVID travel restrictions that prevented field investigations, during which CSLB obtains critical evidence necessary to support an accusation. Because of that decrease, the majority of CSLB disciplinary metrics are also lower in FY 2020/21. However, an anomaly exists where disciplinary outcomes were higher in FY 2020/21, which is attributed to those cases being initiated during FY

2019/20. In FY 2021/22 and FY 2022/23, the number of disciplinary cases initiated and disciplinary outcomes have rebounded and are approaching pre-COVID levels.

35. How are cases prioritized? What is the board's compliant prioritization policy? Is it different from DCA's *Complaint Prioritization Guidelines for Health Care Agencies* (August 31, 2009)? If so, explain why.

CSLB uses criteria in the Department's Complaint Prioritization Guidelines for Health Care Agencies when applicable to CSLB complaint prioritization. Although CSLB's complaint prioritization guidelines are not identical to the guidelines developed for DCA's healing arts programs, CSLB's complaint prioritization processes are fundamentally consistent with the healing arts program guidelines by putting consumers first and prioritizing investigations of the most egregious violations those involving public safety concerns.

In May 2019, CSLB revised its prioritization criteria, replacing the complaint prioritization matrix discussed during the previous sunset review. While mostly reflective of CSLB's enforcement priorities, the matrix was considered visually confusing and appeared to consider the source of the complaint, e.g., elected officials, consumers, anonymous tips, etc., over the type of complaint, which actually dictates priority in practice.

The revised criteria were memorialized in a chart developed by Enforcement Division staff to help managers prioritize workload and include 21 complaint types, which are grouped into four prioritization categories: Urgent, High, Routine, and Low. The chart's design was inspired by the Complaint Prioritization and Referral Guidelines published by the Department of Consumer Affairs in late 2017. These criteria place a higher priority on complaints of violations that have a greater negative impact on consumer protection and public safety, including predatory contractors, those committing elder abuse, and repeat offenders. The complete chart is included in the response to Prior Issue 8.

36. Are there mandatory reporting requirements? For example, requiring local officials or organizations, or other professionals to report violations, or for civil courts to report to the board actions taken against a licensee. Are there problems with the board receiving the required reports? If so, what could be done to correct the problems?

Effective January 1, 2019, SB 1465 (Hill, Chapter 514, Statutes of 2018) requires licensees named as a defendant or cross-defendant in a civil action judgment, executed settlement agreement, or arbitration award for construction defects in residential structures that meet specified criteria to report that judgement, agreement, or award to CSLB within 90 days. Additionally, general liability insurance providers are required to report any payment, in part or total, of a judgement, settlement, or arbitration award meeting the same criteria, to CSLB within 30 days.

SB 1465 was drafted in cooperation with CSLB in response to the 2015 collapse of an apartment building balcony in Berkeley that killed six people and injured seven others. CSLB is not aware of challenges associated with receiving the reports.

a. What is the dollar threshold for settlement reports received by the board?

Executed settlement agreements (and civil action judgments and arbitration awards against contractors) valued at a total of $1,000,000 or more must be reported to CSLB (BPC section 7071.20). This value does not include the cost of investigation or repairs or to individual contractors named as a defendant or cross-defendant when that contractor's liability is determined to be less than $15,000.

b. What is the average dollar amount of settlements reported to the board?

CSLB has not received any reported settlements.

37. Describe settlements the board, and Office of the Attorney General on behalf of the board, enter into with licensees.

The Office of the Attorney General will often seek a stipulated settlement of CSLB's administrative cases. In many cases, settlement terms include a stipulated revocation of a contractor license and/or home improvement salesperson registration. When appropriate, and if consumer protection is not compromised, CSLB will stipulate to a stayed revocation and place the registration and/or license on probation with specific terms and conditions that must be met. In addition, CSLB will often elect to stay a revocation in lieu of outright revocation if there is opportunity for consumer restitution as a condition of probation completion.

Additionally, CSLB conducts informal mandatory settlement conferences (MSCs) for cases where a licensee was issued a citation. During these conferences, license history and the gravity of the violation are considered. In most cases, the respondent's civil penalty assessment was reduced. As noted above, in December 2017, the Office of the Attorney General assumed responsibility for the program while CSLB pursued statutory authority to conduct these settlement conferences in-house. Conducting mandatory settlement conferences saved CSLB $5.7 million in legal fees between 2014 and 2017.

Per SB 1042 (Monning, Statutes of 2018), effective January 1, 2019, CSLB will conduct in-house informal citation conferences. In accordance with the legislation, citation conferences will be conducted by CSLB staff, and are intended to serve the same function as the MSCs. After the citation conference, CSLB may affirm, modify, or dismiss the respondent's citation. The licensee may appeal the registrar's decision.

a. What is the number of cases, pre-accusation, that the board settled for the past four years, compared to the number that resulted in a hearing?

There are none. If a violation is serious enough to warrant license suspension or revocation, CSLB will not settle the case prior to the issuance of an accusation.

b. What is the number of cases, post-accusation, that the board settled for the past four years, compared to the number that resulted in a hearing?

An "entity" can be an individual (natural person), such as an owner, officer, qualifier, HIS, and it can include a company (license number). These entities and individuals are joined onto a single accusation by authority of BPC sections 7098, 7122, and 7122.5, which allow CSLB to discipline licenses that include common personnel without regard to knowledge and participation. Consequently, each accusation can include one *or more* entities under the same accusation case number.

Thus, a one-to-one relationship does not exist between the number of accusations filed and the number of settlements. An accusation may result in one settlement, more than one settlement, or no settlements because each entity joined on the accusation can be subject to a different decision type, e.g., default, hearing, or stipulation. Additionally, each entity can be subject to a different decision result, whether it is revocation, a stayed revocation with probationary conditions, withdrawal, or dismissal.

With that context, the data for accusations compared to the number of settlements and hearings is as follows:

Accusations Filed and Resulting Settlements and Hearings					
	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	Total
Accusations Filed *	323	152	204	200	879
Stipulated Settlements	143	123	117	103	486
Administrative Hearings	99	87	55	44	285

* Accusations filed in one fiscal year may not be dispositioned until a later year.

c. What is the overall percentage of cases for the past four years that have been settled rather than resulted in a hearing?

The number of accusations that resulted in one or more settlements is 332 (versus 486 individual settlements reported on the previous table), which is 38 percent.

38. Does the board operate with a statute of limitations? If so, please describe and provide citation. If so, how many cases have been lost due to statute of limitations? If not, what is the board's policy on statute of limitations?

Yes, CSLB operates within several statutes of limitations, depending on the violation being alleged and whether the violation is administrative or criminal.

Administrative Statutes of Limitations
BPC section 7091 sets the statute of limitations for administrative actions depending on the issues present. Complaints alleging any patent actions or omissions must be filed within four years after the alleged act or omission (BPC section 7091 (a)(1)). A disciplinary action resulting from such a complaint must be filed or referred to arbitration within four years of the act or omission, or within 18 months from the date the complaint is filed, whichever is later (BPC section 7091 (a)(2)).

Complaints alleging any latent act or omission regarding structural defects must be filed within 10 years after the latent act or omission (BPC section 7091 (b)(1)). A disciplinary action resulting from such a complaint must be filed within 10 years of the act or within 18 months from when the complaint is filed, whichever is later (BPC section 7091 (b)(2)).

Other statutes of limitations in BPC section 7091 include two years for: 1) omissions or misrepresentation while obtaining or renewing a license or adding a classification (subd. (c)); 2) when a licensee is convicted of a crime substantially related to the qualifications, functions and duties of a contractor (subd. (d)); and 3) breach of an express, written warranty (subd. (e)).

Criminal Statutes of Limitations
CSLB also operates within the applicable statute of limitations when making criminal referrals. Specific to misdemeanor violations by contractors, Penal Code section 802, subd. (d) sets the statute of limitations for certain violations, which can be one, two, or three years from commission of the offense.

CSLB partnered with Senator McGuire on SB 601 (McGuire, Chapter 403, Statutes of 2023) to extend the statute of limitations against any contractor who allow their license to be used by an unlicensed contractor or knowingly allows any other unlawful use of their license. Before SB 601, CSLB had one year from the commission of the offense to prove a violation. Effective January 1, 2024, CSLB will have three years from the date the violation was discovered or completed, whichever is later.

For fiscal years 2018/19 through 2022/23, 981 cases were closed because the applicable statute of limitations had expired. In almost all of these cases, the statute of limitations expired before the complaint was filed with CSLB.

39. Describe the board's efforts to address unlicensed activity and the underground economy.

Unlicensed activity and the underground economy continue to present challenges for CSLB, its partners, and the construction industry. Unlicensed and unscrupulous contractors who disregard legal requirements unfairly compete against those who comply with licensing laws and regulations.

Proactive Enforcement
CSLB's SWIFT unit investigates and enforces construction-related laws and requirements through sweeps and stings. In sting operations, investigators use a simulated construction site for one or more days and invite suspected unlicensed contractors to provide bids for a construction job. Those who provide a bid that is in violation of the Contractors State License Law are issued a notice to appear or are referred for criminal prosecution.

Sweeps are operations during which SWIFT staff visit active construction sites to ensure compliance with California laws. SWIFT also conducts enforcement sweeps concentrated in disaster zones around the state to provide an increased enforcement presence, assist consumers with hiring a law abiding contractor, and curtail illegal activity in these areas.

During the state's COVID related shutdown, staff were prohibited from conducting field work. Consequently, the average number of stings and sweeps are lower than the 67 stings performed annually during the last sunset review. Proactive enforcement has been increasing since SWIFT investigators were allowed to return to the field despite demands placed on them to attend Local Assistance Centers and Disaster Recovery Centers.

Proactive Enforcement Operations					
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Stings	78	52	12	17	27
Sweeps	354	216	34	337	346

Over the past three fiscal years reported on Table 9, stings and sweeps have resulted in 1,443 citations and 776 criminal referrals, which constitute 81 percent of the unlicensed activity citations and 32 percent of all criminal referrals during the reporting period.

Investigating Unlicensed Activity Leads
CSLB investigates referrals of unlicensed activity, or "leads," submitted by consumers, public agencies, other contractors, subcontractors, and employees of contractors engaged in unlicensed activity. A lead referral form is available on CSLB's website. CSLB has received 3,204 leads since the last sunset review (July 1, 2018-June 20, 2023) and as a result, issued 293 citations and made 232 criminal referrals to local jurisdictions.

Collaboration with other State Agencies
Contractors who ignore license laws are likely to be uncompliant with laws outside CSLB's regulatory authority, such as payroll tax, workplace safety, and other labor laws. To leverage resources and information of the agencies that enforce laws that contractors must comply with, CSLB partners with those state agencies to more effectively enforce unlicensed activity. This combined enforcement effort is implemented when SWIFT investigators participate in two specialized task forces established to address unlicensed activity:

- The Joint Enforcement Strike Force (JESF) derives its authority from California Unemployment Insurance Code section 329 and is led by the Employment Development (EDD) to enforce tax, labor, and licensing laws.

  Inter-agency membership includes: DCA and its programs –Bureau of Automotive Repair, Bureau of Security and Investigative Services, and CSLB; the Department of Industrial Relations (DIR) and its programs – Bureau of Wage, Safety, and Work Violations, Division of Labor Standards Enforcement (DLSE), and Division of Occupational Safety and Health (DOSH); California Department of Insurance (CDI); Franchise Tax Board; Department of Tax and Fee Administration; Department of Justice (DO); Department of Alcoholic Beverage Control (ABC); United States Department of Labor; and the Internal Revenue Service. The JESF's goals are to improve economic stability, working conditions, and consumer and worker protections in California.

  The JESF On the Underground Economy 2022 Report presents the following data that result from CSLB and JESF joint enforcement operations[11]:

CSLB-JESF Enforcement Operations				
Calendar Year	2020	2021	2022	Total
Stings	16	18	20	54
Sweeps	63	160	364	587

CSLB-JESF Legal Actions[12]				
Calendar Year	2020	2021	2022	Total
Citations – Non-Licensee	283	318	380	981
Criminal Referrals – Non-Licensee	253	208	288	749
Total Legal Actions	756	757	1,065	2,578

- The Labor Enforcement Task Force (LETF) is a coalition led by the Department of Industrial Relations that works with local and state agencies to ensure employees are paid according to labor law and have safe working conditions and that law abiding businesses have fair competition by enforcing licensing laws.

  LETF membership includes CSLB, DIR, DOSH, DLSE, EDD, CDI, CDTFA, BAR, DOJ, and ABC. LETF members conduct sweeps at active job sites to verify employee wages and compliance with licensing, insurance, tax, and job safety requirements.

  The May 2023 Labor Enforcement Task Force Report to the Legislature shows joint LETF enforcement activity data as the following:

LETF Enforcement Operations				
	2012-2020*	2021	2022	Total
Businesses Inspected	3,310	87	25	3,647
% Businesses Out of Compliance	38%	41%	42%	39%
Civil Penalties Assessed	$1,763,400	$26,250	$119,000	$1,908,650

* Totals for 2012 followed different methodology than totals for the other years, which both reflect joint inspection results when CSLB partnered with at least one other LETF enforcement partner

[11] Data for both tables are reported by calendar year, consistent with the source document.
[12] The source table also includes licensee data, which was removed to preserve relevance to the question.

Cite and Fine

40. Discuss the extent to which the board has used its cite and fine authority. Discuss any changes from last review and describe the last time regulations were updated and any changes that were made. Has the board increased its maximum fines to the $5,000 statutory limit?

CSLB has authority to issue citations for violations of the Business and Professions Code that would otherwise be cause for denial, suspension or revocation of a license. The fines for these violations are specified by 16 CCR Section 884, which sets the minimum and maximum civil penalty assessments for contracting violations.

There are 62 violations with fine ranges set by Section 884. During the previous sunset review, the maximum for 24 of those violations was set at $5,000 by BPC section 7099.2, subd. (b). In addition, BPC section 7099.2 sets the maximum fine for aiding and abetting an unlicensed person to violate the Contractors State License Law (BPC section 7114) and entering into a contract with an unlicensed contractor (BPC section 7118) at $15,000.

Since the last review, AB 569 (Grayson, Chapter 94, Statutes of 2021) made three substantive amendments to BPC section 7099.2, subd. (b): 1) raised the maximum administrative fine for most violations from $5,000 to $8,000; 2) raised the maximum fine for violations of BPC sections 7114 and 7118 to $30,000; and 3) added a violation of BPC section 7125.4 (fraudulently filing a false workers' compensation insurance exemption with CSLB) to the violations for which a $30,000 fine could be issued. CSLB updated regulations to implement these changes by amending Section 884 to raise the maximum fine to $8,000 for 23 of the most egregious violations, effective January 1, 2022.

The following year, AB 1747 (Quirk, Chapter 757, Statutes of 2022) amended BPC section 7110 to specify that willful or deliberate disregard for state or local building permit laws is a violation. Additionally, AB 1747 further amended BPC section 7099.2 (b) to add violations of BPC section 7110 to the sections for which the maximum penalty of $30,000 may be assessed.[13] CSLB followed up with a rulemaking, which was approved and effective on August 17, 2023, to reflect this fine maximum increase in regulation.

41. How is cite and fine used? What types of violations are the basis for citation and fine?

BPC section 7099 authorizes the registrar to issue a citation for violation that would be grounds for disciplinary action in lieu of pursuing that action. A typical citation imposes a civil penalty for the violation(s) and may contain a correction order, which may include an order for the contractor to pay restitution to the project owner, perform corrective work, or acquire a building permit. Fine ranges and the charging codes are set by 16 CCR Section 884 (a). The fine range is based on the nature of each violation with most having a $100 minimum and the highest fine ranges maximums at $30,000.

Citations may be issued when a consumer complaint exposes unlicensed activity, i.e., disciplinary action is not an option. Citations may also be used when an offense is egregious, but not severe enough to warrant criminal referral or license revocation, including complaints where there were

[13] BPC section 7110 also includes violations of BPC sections 8550 and 8556 (acting as structural pest control operator without a license); Civil Code sections 1689.5 to 1689.15 (home improvement contract cancelation); workplace safety and employee compensation requirements in the Labor Code; the Unemployment Insurance Code; the Subletting and Subcontracting Fair Practices Act; Health and Safety Code requirements relating to digging, boring, or drilling water wells; Government Code section 4216 et seq. (failure to follow notification and delineation requirements when excavating); and Penal Code section 374.3 (illegal dumping).

technical home improvement contract violations or health and safety issues, such as failing to adhere to building codes or pull permits.

42. How many informal office conferences, Disciplinary Review Committees reviews and/or Administrative Procedure Act appeals of a citation or fine in the last 4 fiscal years?

CSLB does not have a disciplinary review committee. However, the Chief of the Enforcement Division or a designee may conduct an information citation conference after which the citation may be affirmed, modified, or dismissed (BPC section 7099.8). Over the last four fiscal years, there have been 742 informal appeals filed by cited licensees and 889 non-licensee informal appeals.

Formal appeals are those conducted according to the Administrative Procedure Act. During the same four years, there were 211 formal appeals of citations issued to licensees and 58 for citations issued to non-licensees.

43. What are the five most common violations for which citations are issued?

CSLB finds licensees and non-licensees violate different code sections. Consequently, these are reported separately for each population. The five most common violations for which CSLB issues citations to a licensee are:

Licensee Cited Violations						
Violation	Description	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	Total
BPC § 7159.5	Home improvement contract requirements *	2,488	2,072	2,079	2,347	8,986
BPC § 7109a	Willful Departure from Workmanship Standards	2582	217	232	284	985
BPC § 7125.4	Filing a False Workers' Compensation Exemption	240	142	229	236	847
BPC § 7117	Acting as Contractor Under Name or Personnel Inconsistent with CSLB Records	232	181	219	221	853
BPC § 7110	Willful or Deliberate Violations of Building Laws	125	143	156	155	579

* Home improvement contract violations include excessive down payments (subd. (a)(3)) and progress payments (subd. (a)(5)), which of the total, were separately cited 579 and 416 times, respectively.

Not complying with home improvement contract requirements of BPC section 7159 is the most comment violation found among licensed contractors who are cited. These violations include not providing the consumer with a written contract that includes the contract price, not distinguishing between finance charges and charges for the contracted work, charging a down payment of greater than $1,000 or 10 percent (whichever is less), failing to provide a schedule of payments, charging excessive progress payments, failing to furnish a conditional release from lien when payment has been made to the contractor, and not charging a salesperson's commission on a pro rata basis determined by the value of the contract completed. However, the most common violations within that code section are charging excessive down payments and failing to comply with progress payment requirements.

Unlicensed Contractor Violations
Logically, unlicensed contractors and unregistered home improvement salespersons are cited most often for operating while unlicensed/unregistered. The other most frequent violations by

unlicensed contractors and unregistered salespersons include failure to comply with workers' compensation insurance requirements, advertising violations, and misuse of contractor's license.

Non-Licensee Cited Violations						
Violation	Description	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	Total
BPC § 7028	Unlicensed Contracting	366	506	658	613	2,143
BPC § 7027	Advertising Violations	209	428	463	396	1,496
BPC § 7125.2 (d)	Unlicensed / Violating Workers' Compensation Requirements	144	135	212	212	703
BPC § 7153	Unregistered HIS	26	21	14	26	87
BPC § 7114	Aiding or Abetting an Unlicensed Person	10	12	18	10	50

44. What is average fine pre- and post- appeal?

In CSLB administrative cases, citations are often reduced by ALJs. CSLB issued $18,091,356 in fines on 5,597 citations in FY 2019/20 through FY 2022/23.[14] During this time, the average pre-appeal fine was $3,232. ALJs reduced 2,014 fines on appeal by $3,706,540, making the average post-appeal fine $1,840.

The minimum fines that are set in regulation at $100, have not been increased in 15 years, and fines are frequently reduced to the minimum. These reductions make the fines not commensurate with the violation, do not support Enforcement Division activity, and do not provide a disincentive to commit additional violations. CSLB addresses fine minimums in New Issue 2 on page XX.

45. Describe the board's use of Franchise Tax Board intercepts to collect outstanding fines.

The Franchise Tax Board (FTB) administers an Interagency Intercept Collection Program (IIC) on behalf of the State Controller's Office to intercept funds an individual's funds and transfers the funds to pay the individual's debts to state agencies. When citations are past due, CSLB sends letters to delinquent licensees on a 90-day, 60-day, and 30-day schedule to request payment before CSLB submits the account to the Franchise Tax Board.

CSLB has utilized the Franchise Tax Board's (FTB) intercept program to collect outstanding civil penalties. CSLB began making referrals on January 29, 2020, and since then, has made 4,444 referrals and collected $27,000 through the FTB IIC.

This collection method is limited because the FTB intercept program does not offset corporation, limited liability company, or partnership funds (State Administrative Manual, Section 8293.4) because those business types are not required to submit an SSN during the licensing process. Additionally, CSLB does not have authority to collect SSNs from unlicensed individuals so the FTB Intercept program also is not applicable in cases when an unlicensed contractor is cited and does not pay their fine.

Cost Recovery and Restitution

46. Describe the board's efforts to obtain cost recovery. Discuss any changes from the last review.

CSLB seeks cost recovery in most disciplinary cases where an investigation leads to an accusation recommending license suspension, revocation, or a stayed revocation with probationary

[14] $3,105,355 in fines were issued for 1,256 citations in FY 2019/20, which Table 9 does not capture.

conditions. In these cases, CSLB may request that an ALJ direct a licensee found in violation of Contractors' State License Law to pay a sum not to exceed the reasonable costs of the investigation and enforcement of the case (BPC section 125.3).

In FY 2019/20 through FY 2022/23, ALJs ordered $9,115,000 in cost recovery to CSLB for cases referred for disciplinary action. During that same period, CSLB has collected $2,594,000, a 28.5 percent collection rate, which is a slight improvement over the prior review. During the previous sunset, CSLB reported $5,940,000 in ordered restitution and $1,337,000 collected for a 24 percent collection rate.

47. How many and how much is ordered by the board for revocations, surrenders and probationers? How much do you believe is uncollectable? Explain.

When CSLB files an accusation for disciplinary action, it may request cost recovery to be ordered by the ALJ. Cost recovery includes the cost of hours worked on the case by staff in CSLB's IMCs and ICs, the cost of any services provided by an industry expert, and all costs for services provided by the Office of the Attorney General to represent CSLB on the case.

Over the last four fiscal years, $9,115,000 in cost recovery has been ordered and of that, CSLB has collected $2,594,000, a collection rate of 28 percent. The average cost recovery ordered in each case is $2,360. If a license is revoked, CSLB does not anticipate collecting any outstanding ordered cost recovery. Based on data reported in Table 9 (and accounting for 274 revocations in FY 2019/20, which is not included on the table) and the average cost recovery order, there were 934 revocations during the last four years for which CSLB estimates $2,204,240 is uncollectible. However, if a licensee whose license was revoked were to apply for a new license, 100 percent of the costs incurred to revoke the previous license is pursued and a new license will not be issued until these costs are paid in full. CSLB does not have a method to predict how many licensees may seek a future license.

48. Are there cases for which the board does not seek cost recovery? Why?

CSLB does seek cost recovery for citations, unlicensed activity investigations, or statements of issues that involve license denial because CSLB lacks authority to do so.

49. Describe the board's use of Franchise Tax Board intercepts to collect cost recovery.

CSLB does not use FTB intercepts to collect cost recovery. Because cost recovery is often a result of an accusation to revoke a license, CSLB assumes the former licensee does not have the income to make FTB intercept an effective form of collection. Instead, CSLB contracts with a private collection agency to collect cost recovery from disciplined licensees.

Table 11. Cost Recovery (list dollars in thousands)

	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Total Enforcement Expenditures	$38,708	$38,102	$39,369	$41,863
Potential Cases for Recovery *	1,147	1,099	1,078	1,030
Cases Recovery Ordered	1,037	1,041	942	847
Amount of Cost Recovery Ordered	$2,145	$2,854	$2,074	$2,042
Amount Collected	$457	$567	$925	$645

* "Potential Cases for Recovery" are those cases in which disciplinary action has been taken based on violation of the license practice act.

50. Describe the board's efforts to obtain restitution for individual consumers, any formal or informal board restitution policy, and the types of restitution that the board attempts to collect, i.e., monetary, services, etc. Describe the situation in which the board may seek restitution from the licensee to a harmed consumer.

Formal Restitution Policies – Ordered by Criminal and Civil Courts[15]
The Contractors State License Law authorizes criminal courts to order restitution for misdemeanor violations of unlicensed activity (7028); and defrauding an owner or tenant in connection with repairs for damage caused by a natural disaster under a home improvement contract (7159.5), a service and repair contract (7159.14) and misleading consumers (7161).

If petitioned by CSLB, with approval of the DCA director, a superior court may order a person subject to the Contractor's State License Law to make restitution to someone injured by that person's actions (125.5, subd. (b)).

Formal Restitution Policies – Ordered in Disciplinary Action Proceeding
If an accusation is filed, restitution may be ordered in an administrative hearing to suspend, revoke, or stay a revocation with probationary terms for violations of specific sections of the Contractors State License Law. These violations are included in CSLB's Disciplinary Guidelines, which recommends restitution when warranted if a licensee is found to have done the following: not complied with disciplinary bond requirements (7071.11); failed to obtain building permits (7090); failed to comply with a citation (7099.6); abandons a job (7107); diverts funds (7107); failed to pay a subcontractor within seven days after a progress payment is received (7108.5); departed from accepted trade standards (7109 (a)); departed from plans and/or specifications (7109 (b)); committed willful or deliberate violations of laws listed under 7110; failed to complete a project at the price on the contract (7113); avoided or settled obligations for less than the full amount (7113.5); willfully committed a fraudulent act (7116); failed to use reasonable diligence (7119); served in any supervisory or decision-making capacity after being denied a license (7121); convicted of a substantially related crime (490 and 7123); participated in price gouging during a declared state of emergency (7123.5); filed a false workers' compensation exemption (7125 (b)); issued a false completion certificate (7158); and failed to install goods or materials represented by trademark or brand name as stated in contract or specifications (7162).

Table 12. Restitution (list dollars in thousands)

	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Amount Ordered	$5,393	$4,190	$22,950	$2,901
Amount Collected	$52,960	$31,883	$45,955	$54,955

Solar Restitution Fund (SESRP)
AB 137 (Committee on Budget, Chapter 77, Statutes of 2021) created a Solar Energy System Restitution Program (SESRP), effective July 16, 2022, through June 30, 2024. The program is designed to provide financial restitution to owners of single-family residences who were financially harmed by a solar contractor through fraud, misrepresentation, or another unlawful act, such as poor workmanship or abandonment. To be eligible, a homeowner who used a licensed or unlicensed contractor after January 1, 2016, to contract for the installation of a solar energy system on a single-family residence, could demonstrate to CSLB a financial loss or injury as result of specified acts may be eligible for restitution from the fund.

[15] The relevant BPC section follows each violation in parenthesis.

To pay for the restitution program, AB 137 provided a one-time $5 million appropriation to CSLB from the state's general fund with up to $1 million for CSLB administrative costs. The program became fully operational in late 2021. SESRP has been extremely well received by the victims of solar-related fraud, many of whom had given up any hope of recovering their lost funds. Although CSLB freed up an additional $600,000 for consumer restitution by efficiently managing the SESRP program and incurring only $400,000 in administrative costs, CSLB received claims exceeding the funds available by December 2022. As of December 1, 2023, restitution payments have been distributed to consumers as follows:

SESRP Restitution Program Payments to Consumers				
	FY 2021/22	FY 2022/23	FY 2023/24	Total
Amount Ordered	$766,735	$2,790,731	$644,847	$4,202,313
Number of Consumers	65	182	102	349
Average per Consumer	$11,796	$15,334	$6,322	$12,041

Mediation and Arbitration

The CSLB IMCs attempt to mediate routine complaints without referring to the field. Through mediation, the licensee and complainant may agree to finish the job, correct poor workmanship, or have the contractor pay the complainant the cost to complete and/or correct the job. If a settlement cannot be reached, if a case is complex, or if the contractor is a repeat or egregious offender who may pose a threat to the public, the IMC refers the case to the Investigation Center for further investigation.

BPC sections 7085-7085.9 set requirements for CSLBs arbitration program. CSLB administers voluntary and mandatory arbitration programs to encourage settling consumer-contractor and contractor-contractor disputes in lieu of disciplinary action. Complaints referred to arbitration are those that could not be mediated by the IMC, were referred to an investigator who recommends resolution by arbitration, and must meet several other criteria, including:

- There are reasonable grounds to believe that the public interest would be better served by arbitration than by disciplinary action.
- The licensee does not have a history of repeated or similar violations.
- The license was in good standing at the time of the alleged violation.
- The licensee has no outstanding disciplinary actions filed against them.
- The parties have not previously agreed to private arbitration of the dispute.

Disputes about material damages worth $25,000 or less and meeting arbitration criteria are referred to mandatory arbitration. Disputes involving damages greater than $25,000, but less than $50,000, may be referred to voluntary arbitration with the concurrence of both the complainant and the contractor. The amount of material damage is assessed by an industry expert who is paid for by CSLB and provides a report to both parties. The decision is binding with limited methods of appeal. Orders to pay are issued more frequently than an order to fix the project because by time arbitration is reached, many consumers have lost trust in the contractor's work.

Citations

If a citation is issued, the citation may include an order of abatement to correct the work. CSLB can also order payment of "a specified sum to an injured party" rather than require the contractor to fix the work, pursuant to BPC section 7099. However, this amount is determined based on what was paid toward an agreed contract, and what is left to be done to correct the work. This is not considered "restitution" in terms of making someone "whole" again, but is a form of financial redress.

Licensing Compliance Statutes

Additionally, CSLB's licensing processes ensures licensees pay civil judgment restitution. For new applicants, BPC section 7071.17 requires a bond to be filed if the contractor was previously found to have failed to pay a judgment. This bond must be filed as a condition precedent to licensure or maintenance of a license. Any suspension for failing to maintain this bond is by operation of law and can be lifted only if the judgment is satisfied.

To motivate unlicensed contractors to pay money owed to a consumer, their name is flagged in CSLB's licensing system. Any subsequent attempt by that person to become a licensed contractor will first require resolution of the financial injury.

Through these additional methods of seeking consumer restitution and obtaining payment, $195,798,000 was paid to harmed consumers during the past four fiscal years. The following table demonstrates the additional methods of financial redress collected on behalf of consumers.

Other Consumer Restitution Collected/Refunded					(dollars listed in thousands)
	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	Total
Arbitrations	$3,492	$2,886	$2,987	$3,658	$13,023
Citations	$923	$1,549	$1,032	$1,066	$4,570
Complaints	$27,264	$22,578	$22,578	$31,348	$103,769
Judgements	$20,512	$17,819	$18,197	$18,009	$74,537
Total *	$52,191	$44,832	$44,794	$54,081	$195,898

* Includes corrections with rework

Section 5 –
Public Information Policies

51. How does the board use the internet to keep the public informed of board activities? Does the board post board meeting materials online? When are they posted? How long do they remain on the board's website? When are draft meeting minutes posted online? When does the board post final meeting minutes? How long do meeting minutes remain available online?

CSLB maintains a "Public Meetings" page on its website to publicize agendas and meeting materials for all committee and board meetings. Agendas are posted to the website at least 10 days prior to the meeting in compliance with the Bagley-Keene Open Meetings Act. Board and committee meeting materials are posted online within one week of a meeting. Draft meeting minutes are typically included in the materials for the following meeting then posted as a standalone document once the board approves the minutes. All meeting documents, as well as links to archive videos of meeting webcasts on YouTube, remain the website indefinitely.

52. Does the board webcast its meetings? What is the board's plan to webcast future board and committee meetings? How long to webcast meetings remain available online?

All CSLB board and committee meetings are webcast, with the exception of any meeting or agenda item that is held in closed session. All webcasts are posted to CSLB's YouTube Channel and remain online indefinitely.

53. Does the board establish an annual meeting calendar, and post it on the board's web site?

The board's next meeting date is included as an agenda item at each board meeting. CSLB's "Public Meetings" website page is updated with upcoming meeting information as soon as it becomes available.

54. Is the board's complaint disclosure policy consistent with DCA's *Recommended Minimum Standards for Consumer Complaint Disclosure*? Does the board post accusations and disciplinary actions consistent with DCA's *Web Site Posting of Accusations and Disciplinary Actions* (May 21, 2010)?

The Board's disclosure provisions are governed by statute (BPC section 7124.6) and regulation (CCR 16 § 863) and predate DCA's Recommended Minimum Standards for Consumer Complaint Disclosure and Web Site Posting of Accusations and Disciplinary Actions.

CSLB is authorized to disclose the date, nature and status of all complaints on file against a licensee that have been referred to accusation or that are still under investigation but regard serious violations that, if proven, would be grounds for accusation. Separate provisions govern the disclosure of citations and accusations that result in suspension, revocation, or stayed revocation, which CSLB regulations define as "legal action."

Licensee citations are disclosed to the public from the date of issuance and for five years from the date of compliance. Accusations that result in suspension or stayed revocation of the contractor license are disclosed from the date the accusation is filed and for seven years after the accusation has been settled (including any terms and conditions of probation). All revocations that are not stayed are publicly disclosed indefinitely from the effective date of revocation. All disclosures shall be accompanied by a disclaimer that states that the complaint is an allegation.

CSLB's disclosure statutes and regulations generally align with DCA's Recommended Minimum Standards with respect to the following principles: a probable violation of law has occurred; a substantiated transaction has occurred; the complaint will be referred for legal action; the business has been provided an opportunity to respond; a complaint will not be disclosed that is resolved in favor of the contractor.

CSLB Is also compliant with the Public Records Act and Information Practices Act when responding to requests for complaint information.

Additionally, effective July 1, 2018, CSLB began to disclose letters of admonishment on license records for one year . On January 1, 2023, AB 2916 (McCarty, Chapter 293, Statutes of 2022) allows CSLB to disclose a letter of admonishment for one or two years, depending on the gravity of the violation, good faith of the licensee or applicant, and history of previous violations.

The CSLB has several "compliance suspensions" authorized by statute that are not associated with formal discipline and may be disclosed, including: 1) failing to comply with an arbitration award; 2) being subject to a civil judgement; 3) when restitution payments are made under SESRP; 4) not complying with workers' compensation requirements; 5) failing to maintain a contractor's bond; 6) not maintaining good standing with the Secretary of State; 7) qualifier suspensions; and 8) failing to comply with a child support order.

55. What information does the board provide to the public regarding its licensees (i.e., education completed, awards, certificates, certification, specialty areas, disciplinary action, etc.)?

CSLB provides licensee information to the public through the "License Check," feature on its website and toll-free automated phone system. Available information includes the following:

- Name/address of record
- Entity type
- License issue date
- License expiration date
- Current license status
- Complaint disclosure information, including violations committed, letters of admonishment, accusations, and orders
- License classifications and certifications held
- Bond information
- Workers' compensation insurance information, with the policy number, effective and expiration dates, and workers' compensation history or an exemption
- Personnel list
- Registered salesperson list
- Other CSLB licenses held by or associated with personnel of record

To comply with AB 336 (Cervantes, Chapter 323, Statutes of 2023), the license lookup will include the top three workers' compensation classification codes according to payroll and as reported by the licensee at time of renewal for licensees who do not have an exemption on file beginning July 1, 2024.

CSLB's website also includes a "Find My Licensed Contractor" tool. This feature allows users to search for licensed contractors by classification within a specific geographic area using a city or zip code. Randomly displayed and downloadable results include a link to the licensee information page and are based on a licensee's address of record.

56. What methods are used by the board to provide consumer outreach and education?

CSLB uses several methods to provide consumer outreach and education, including written publications, responding to media inquiries, in-person outreach, and social media to educate consumers about California laws, ways to avoid becoming a victim of a scam, and steps to take if they have an issue with their contractor. CSLB also has a specialized outreach plan for disaster response that includes enforcement-focused activity.

Website, Written Publications, Guides, Bulletins
The CSLB Public Affairs Office issues news releases, industry bulletins, and consumer alerts to provide information about CSLB activities, new laws, undercover sting operations, and consumer protection messages, including its "Most Wanted," to inform consumers about unlicensed contractors who have active arrest warrants. CSLB posts these outreach materials to the CSLB website and notifies its interested parties of the posting through its listserv. CSLB also develops and posts educational guides and publications directed at consumer protection on its website, from which the materials can be downloaded. CSLB will also mail materials upon request.

Media Responses
Responding to requests from media is a key component of outreach, which provides an opportunity to expand CSLB's exposure to consumers. For example, media inquiries have been integral to getting solar issues out to the greater public in CSLB's efforts to better inform the public and industry. Additionally, many media responses provide tips consumers should take before selecting a contractor and guidance when consumers encounter issues with a contractor, which further CSLB's consumer protection mission.

In-Person Outreach
CSLB staff present information to consumers to protect themselves from becoming a victim of fraud at statewide Senior Scam Stopper℠ educational seminars and Consumer Scam Stopper℠ seminars. These events are sponsored by legislators, state and local agencies, law enforcement, and community-based organizations and are intended to reach the sponsor's constituents.

Senior Scam Stopper℠ events are the most popular and frequently held, with CSLB participating in 184 seminars during the reporting period. The number of seminars dramatically decreased during the pandemic and the majority of seminars were held virtually. In 2022-23, more Senior Scam Stopper℠ seminars are being held with only a small portion still being held virtually.

Senior Scam Stopper℠ Events Attended				
FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
60	65	19	27	33

CSLB also has its Speakers Bureau program where appropriate CSLB staff speak to various consumer and industry-related groups, providing information about a wide variety of related topics as requested. Like Senior Scam StopperSM events, the aforementioned outreach at industry and consumer shows, along with Speakers Bureau requests, saw a sharp decline due to the pandemic, but requests have been increasing.

Industry/Consumer Show and Speaker Bureau Events Attended				
FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
84	20	0	2	8

Additionally, staff attend industry and consumer shows, including home shows, resource fairs, and conferences to inform the consumers in attendance of licensing requirements, home

improvement contract requirements, and to answer any questions the public may have. The number of speaking engagements is not tracked unless the request was received through the Speaker Bureau, but is estimated to be about 50 per year.

Social Media
The Public Affairs Office uses social media to distribute information to consumers through daily/weekly posts. Social media sites used by CSLB include X (@CSLB), Facebook (Contractors State License Board) Instagram (@cacontractorsboard), and LinkedIn (Contractors State License Board). Videos are also posted to CSLB's YouTube channel (@ContractorsBoard) in English and Spanish as they become available to inform consumers about license requirements and the importance of obtaining multiple bids, etc., as well as containing archived board meeting videos.

Disaster Response and Outreach
CSLB works with media outlets, legislators, building departments, and chambers of commerce to distribute information to consumers after a disaster. Additionally, CSLB partners with the Governor's Office of Emergency Services (CalOES) and the Federal Emergency Management Agency (FEMA) to staff their Local Assistance Centers and Disaster Recovery Centers, respectively. A detailed description of CSLB's coordinated disaster response and partnerships with local, state, and federal agencies is included in this report as the response to Prior Issue 9.

CSLB recently revised its Disaster Response Plan to place increased focus on enforcement in disaster areas. SWIFT unit employees staff disaster recovery centers to provide face-to-face interactions with disaster victims and distribute information to help consumers avoid being taken advantage of by unscrupulous contractors. CSLB also staffs a toll-free disaster hotline at (800) 962-1125 during business hours and created a Disaster Help Center page on its website to enable consumers, contractors, and media to easily find information relevant to disaster recovery.

57. Discuss the prevalence of online practice and whether there are issues with unlicensed activity. How does the board regulate online practice? Does the board have any plans to regulate internet business practices or believe there is a need to do so?

Online practice by unlicensed contractors remains a significant issue. Websites, apps, and referral sites are significant resources for consumers in search of a contractor. Many of these websites allow unlicensed contractors to advertise, usually for free, alongside legitimately licensed contractors. The availability of no-cost customer acquisition has historically created challenges for CSLB in curtailing unlicensed activity, but CSLB's SWIFT unit uses online advertisements as a source to locate targets for stings, the proactive enforcement operations that target unlicensed activity (see response to question 38).

BPC section 7030.5 requires a license number to be included in all forms of advertising, as prescribed by the registrar of contractors. The forms of advertising are prescribed by 16 CCR Section 861, which in relevant part, includes, "any electronic transmission, and any form of directory under any listing denoting "Contractor" or any word or words of a similar import or meaning requesting any work for which a license is required by the Contractors License Law."

A violation of advertising requirements can result in a fine ranging from $100 to $1,000, depending on factors specified in 16 CCR Section 884 (b). Additionally, an administrative citation for unlicensed activity may be issued for $200 to $15,000 (BPC section 7028.7 (c)) and if charged criminally, a fine of *up to* $5,000 with an increasing maximum for subsequent violations (BPC section 7028).

License Verifications
Most online sources do not require advertisers to include a contractor's license number in advertisements even though it is required by the Contractors State License Law to do so. However, there has recently been a change to a few widely used websites that offer a license verification service. For a fee (paid by the contractor), the websites will verify the contractor's license and indicate that status to the consumer, along with the license number and verification date. Before this feature was added, it was nearly impossible for consumers to determine if a contractor was licensed, especially for those unfamiliar with license requirements.

License verification may prove beneficial, but not all websites (or other online platforms) offer this service. Additionally, a website's license verification may not be valid shortly after the day of verification or a contractor may have a license, but not the *correct* license, i.e., the classification that allows the work to be performed. Including a link to CSLB's license lookup could improve these systems because CSLB's lookup provides real-time information, however, CSLB recognizes the value of websites including a license verification that alerts consumers that a license is necessary.

Solar Online Activity Using Lead Generators, Brokers, and Partnered Advertising
Online practice is especially effective for solar contractors as consumers research benefits of solar, the process to install, and for reputable contractors. Lead generators market solar energy systems to consumers and sell the list of interested customers to a particular solar contractor or even to multiple contractors. The lead generators do this through advertisements on social media and banner advertisements for the consumer to enter their email address or telephone number for more information. Lead generators and brokers serve as a referral source for contractors, provide contractor contact information to prospective customers, and set up appointments for

contractors or their salespersons. However, solar lead generators and brokers cannot lawfully provide quotes or offers for the sale and installation of solar energy systems. Only a licensed contractor or a registered salesperson who is an employee of the licensed contractor, can lawfully engage in this activity. Thus, companies and individuals who do not intend to install a solar energy system are also engaging in unlicensed activity.

Additionally, CSLB has found online applications that are used by consumers for other purposes, e.g., to search for real estate, that have begun emailing targeted advertisements to their users on behalf of solar companies. These partnerships allow the solar company to leverage the reputation and goodwill earned by the company whose application was actually downloaded by the consumer. Examples provided to CSLB show the email states it is a paid advertisement for the solar contractor, but does not give the solar contractor's license number or the license number for the advertiser. Instead, the email provides the advertiser's license number from the Bureau of Real Estate Appraisers. In addition to unlicensed activity, this activity likely evinces advertising violations and potential unlawful payments to a salesperson pursuant to BPC 7157.

Response to Changes in Online Practice
Unlicensed activity over the internet is always evolving and CSLB cannot estimate how widespread it is. However, CSLB remains cognizant of changing practices used by industry and as unlicensed contractors find new and inventive ways to avoid licensure, CSLB develops strategies to strengthen its unlicensed enforcement activity. These may include legislation, leveraging partnerships with sister state agencies, process improvement, or other methods to curtail unlicensed activity in California.

Section 7 – Workforce Development and Job Creation

58. What actions has the board taken in terms of workforce development?

Although workforce development is not an activity that falls within CSLB's mandates, CSLB has taken multiple steps to increase the number of qualified licensees, which include those described below, as well as the initiatives described in responses to questions 60 and 62.

Creation of B-2 License Type
CSLB partnered with Senator McGuire to pass SB 1189 (Chapter 264, Statutes of 2020), which created the B-2 residential remodeling license type and redefined "home improvement" to include reconstruction and restoration of a residential property that is damaged or destroyed by a natural disaster for which a state of emergency is proclaimed by the Governor. The B-2 license allows contractors who have experience in multiple areas that do not include carpentry (disqualifying them from a "B" license), to obtain a contractor license. CSLB began accepting B-2 applications effective January 1, 2021, and as of November 2023, there were 559 licenses. The license is quickly increasing as the population has more than doubled in the past 12 months from 228 to 559.

Regular Licensing Workshops
To assist all applicants with the licensing process, interactive "Get Licensed to Build" workshops are conducted live in English on the first Friday of every month and in Spanish on the second Friday of every month. Past licensing workshop videos in both languages are posted to YouTube for viewing at any time. These videos walk applicants through the process and the live workshops include a period to allow participants to ask questions directly to CSLB Licensing staff.

59. Describe any assessment the board has conducted on the impact of licensing delays.

CSLB continually monitors license processing times and staff adjusts workload or modifies processes as needed to prevent delays from occurring.

60. Describe the board's efforts to work with schools to inform potential licensees of the licensing requirements and licensing process.

There is no education requirement to obtain a contractor license; however, CSLB manages grant disbursements, through the Construction Management Education Account (CMEA). This account is funded by licensee donations and provides funding for post-secondary institutions that offer construction management education programs. Grant funds may be used by awarded institutions to provide "instructional materials and support, equipment, curriculum development, and delivery." Although CSLB does not participate in developing curricula, a requirement of qualifying institutions is that the school offers, "A bachelor of science or higher degree program documenting placement of more than 50 percent of their graduates with California licensed contractors." Thus, California licensure is a primary goal of these programs.

61. Describe any barriers to licensure and/or employment the board believes exist.

CSLB has not identified any significant barriers to licensure at this time. However, staff are closely monitoring whether requiring all licensees to obtain workers' compensation insurance is proving to be a barrier to licensure. SB 216 (Dodd, Chapter 978, Statutes of 2022), which requires all C-8, C-20, C-22, and D-49 licensees to have a Workers' Compensation insurance policy on file with CSLB as a condition of licensure regardless of whether the contractor has employees.

Comparing license data from November 2022 (before SB 216 was effective) to October 2023 (the time of this writing), CSLB's license population in the four affected classifications decreased by 2,426 active licensees or 10 percent. During the same time period, the inactive license population in the same classifications increased by 19 percent. While a license is inactive, the licensee cannot practice as a contractor or submit a bid on a project. While a license is inactive, the contractor maintains their license number, but is not required to meet workers' compensation insurance requirements as a condition of that licensure and renewal is every four years rather than every two.

Conversely, the active licensee population of C-39 (roofing) contractors, who are also subject to workers' compensation insurance requirements regardless of whether the contractor has employees, has increased by three percent during that time. While it is premature to conclude that SB 216 has created a barrier or whether licensee fluctuations are due to other factors, CSLB continues to watch the licensee population closely for long-term impact of requiring all licensees to obtain workers' compensation insurance.

62. Provide any workforce development data collected by the board, such as:

a. Workforce shortages

CSLB does not collect information about workforce shortages.

b. Successful training programs.

CSLB does not monitor training programs; however, programs that benefit from the CMEA grants are required to report the number of graduates with their application for the following year. Following are the number of qualifying graduates as reporting in each year's application for disbursement the past three years:

Qualifying Graduates* of CMEA Grant Recipient Institutions				
Institution	FY 2020/21	FY 2021/22	FY 2022/23	Total
California State University, Chico	110	115	97	222
California State University, Fresno	24	34	32	90
California State University, Sacramento	56	59	81	196
California Polytechnic State University	95	86	115	296
Qualifying Student Total	285	294	325	904

* Qualifying graduates are those placed with California licensed contractors during the previous academic year.

63. What efforts or initiatives has the board undertaken that would help reduce or eliminate inequities experienced by licensees or applicants from vulnerable communities, including low- and moderate-income communities, communities of color, and other marginalized communities, or that would seek to protect those communities from harm by licensees?

Translating Examinations and Study Guides
CSLB noticed examination failures belonging to candidates who request translation services outpace failures of applicants who do not request translation services in any given year. To address this inequity, the top ten examinations for which CSLB receives requests to use Spanish translators were translated and released into production between August 1 and December 1, 2023. The examinations translated are the Law and Business, B-(General Building), C-8 (Concrete), C-9 (Drywall), C-15 (Flooring and Floor Covering), C-27 (Landscaping), C-33 (Painting and Decorating), C-36 (Plumbing), C-39 (Roofing), and C-54 (Ceramic and Mosaic Tile). Additionally, CSLB translated all study guides into Spanish, even for examinations that are not yet translated.

Creation of B-2 License Type
The B-2 license, described in question 58, allows contractors who have experience in multiple areas that do not include carpentry (thus, disqualifying them from a "B" license), to obtain a general contractor license. This license was intended, in part, to provide a pathway to licensure for workers who have experience in multiple areas, but do not have four years of journey level experience in the previous 10 years in any one area, as is required to obtain a "C" (limited specialty) license.

Protecting Senior Citizen Consumers
Valid home improvement contracts are required to include a three-day "right to cancel," during which the consumer may cancel the contract. Senior citizens are members of a demographic the is frequently targeted by unscrupulous contractors intent on defrauding consumers. To allow senior citizens more time to consider whether the contractor in which they entered is in their best interest, CSLB supported passage of AB 2471 (Maienschein, Chapter 158, Statutes of 2020), which defines "senior citizen" as an individual who is 65 years of age or older and extends the right to cancel a home improvement contract for senior citizens from three days to five days.

This bill requires a home improvement contract to include a notice in a 12-point, bold font, "The law requires that the contractor give you a notice explaining your right to cancel. Initial the checkbox if the contractor has given you a Notice of the Five-Day Right to Cancel." This acknowledgement may serve as evidence of elder abuse in cases where violations are alleged.

Restitution for Victims of Solar Energy System Scams
AB 137 (Committee on Budget, Chapter 77, Statutes of 2021) created SESRP within CSLB and granted a one-time $5 million General Fund appropriation to administer the program through June 30, 2024. SESRP was enacted in response to unscrupulous solar salespeople who have taken advantage of homeowners, often low income, elderly or non-English speakers, to engage in fraudulent and criminal acts. Victims were left with unfinished installations, property damage, excessive debt, and no benefits of solar energy production from nonworking installations.

Proposal to Authorize Licensure to Tribes and Tribally Owned Businesses
Many tribes' economic development strategy includes owning and operating businesses. These businesses fund tribal operations and allow tribes to provide services to their members, including health care, education, and cultural preservation.

Recently, a tribe that operates a construction business applied for licensure; however, CSLB is not authorized to issue a license to tribes or tribally owned contractor businesses. While tribal governments may operate a construction business on tribal and federal land, they are excluded from participating in projects outside those boundaries without a California license. To address this lapse in licensing authority, CSLB has included New Issue 5, which would authorize CSLB to issue licenses to tribes.

Section 8 – Current Issues

64. What is the status of the board's implementation of the Uniform Standards for Substance Abusing Licensees?

The Uniform Standards for Substance Abusing Licensees is not applicable to CSLB.

65. What is the status of the board's implementation of the Consumer Protection Enforcement Initiative (CPEI) regulations?

CSLB is not required to adopt regulations to implement CPEI.

66. Describe how the board is participating in development of BreEZe and any other secondary IT issues affecting the board.

a. Is the board utilizing BreEZe? What Release was the board included in? What is the status of the board's change requests?

CSLB was previously identified as a member of BreEZe Release 3. CSLB operates its own Information Technology Division to support its licensing/enforcement systems. Consequently, CSLB does not submit any BreEZe-related change requests.

b. If the board is not utilizing BreEZe, what is the board's plan for future IT needs? What discussions has the board had with DCA about IT needs and options? What is the board's understanding of Release 3 boards? Is the board currently using a bridge or workaround system?

CSLB meets all statutory and regulatory mandates utilizing its existing information technology systems and does not utilize a bridge or workaround system.

The board is aware that the BreEZe project concluded once Release 2 boards and bureaus transitioned to the new system. Release 3 entities, such as CSLB, are working both independently and alongside DCA to evaluate their unique operational requirements to identify the most appropriate strategy. CSLB is included in DCA's yearly communication and reporting to the Legislature, as required by BPC section 156. Furthermore, activities to transition to a new licensing platform will comply with the project approval lifecycle protocol established by the Department of Technology.

CSLB is actively collaborating with DCA to explore ways to unify and share technological resources, aid in recording business procedures, and investigate new methods for advancing the ongoing modernization of the board's information technology systems.

Section 9 –
Board Actions and Responses to COVID-19

67. In response to COVID-19, did the board take any steps or implement any policies regarding licensees or consumers? Has the board implemented any statutory revisions, updates or changes that were necessary to address the COVID-19 Pandemic? Any additional changes needed to address a future State of Emergency Declaration.

The Board did not utilize any state or emergency statutes in response to COVID-19. To CSLB's knowledge, there were not any emergency statutes applicable to CSLB and the Board did not work on fee waiver requests with the Department. It was particularly important for CSLB to continue uninterrupted operations as construction was deemed an essential industry and was allowed to continue throughout the pandemic. Despite the challenges of operating during the height of the pandemic, CSLB continued to perform essential functions, such as licensing and investigating consumer complaints. Protecting the health, safety, and wellbeing of CSLB employees while also performing the essential functions of the board was the greatest concern.

To limit the risk of exposure, the public counters at all 13 CSLB locations were closed on March 23, 2020. CSLB reopened its offices on June 1, 2020, after implementing control measures to protect staff and members of the public who visited CSLB locations. Among those control measures were implementing telework for employees whose duties were conducive to telework and following Center for Disease Control (CDC) guidelines for social distancing, wearing masks and/or gloves when appropriate, providing staff with hand sanitizer, and routinely cleaning frequently touched surfaces. Additionally, CSLB closed all test centers effective March 19, 2020, reopening in June 2020 at half capacity to allow examination candidates to practice social distancing.

CSLB reduced its in-office staff by 50 percent or more. Limiting the number of staff in the office space was accomplished through staff teleworking on a staggered schedule and some staff working from home full-time. These steps allowed staff to maintain social distance while avoiding significant backlogs. Additionally, SWIFT unit staff, who were prohibited from working in the field, were assigned to contact tracing, which allowed CSLB to meet its mandatory in-office staff reduction requirements while retaining positions whose duties could not be temporarily suspended.

To accommodate telework, CSLB immediately deployed 30 loaner laptops to staff who worked remotely while the process to purchase laptops and docking stations for all staff was underway. In partnership with DCA, CSLB deployed a DCA cloud desktop, which allowed staff to remotely access internal files and the Teale Mainframe system from their personal computer. General email addresses for Licensing, Enforcement, and the Call Center were created to allow staff to communicate with the public over email. Further, Teams and WebEx accounts were acquired to hold meetings with internal and external parties.

Specific to licensing, application forms that contain applicants' personal information could not be taken home for telework so CSLB developed an instant online renewal application process for licenses with a single qualifier and home improvement salesperson registrants, as well as adopting electronic payment capability to accept renewal payments online from all business entity types. This reduced workload associated with processing renewals so more staff could focus on issuing initial licenses and license maintenance duties while simultaneously reducing renewal cycle times.

CSLB produced videos to provide information to consumers, licensees, and applicants that might have been provided in person prior to COVID. For example, the "Tips for Seniors," video was

created to provide information that would be presented at a Senior Scam Stopper℠ event. Interactive licensing webinars were launched to replace in-person licensing workshops in May 2020, webinar videos are saved to the CSLB YouTube channel in English and Spanish, and due to their popularity, online webinars continue to be held once a month in each language.

The Board also implemented virtual Board and Committee meetings in response to COVID-19. Prior to 2020, all Board meetings were in person or by conference call, but between June 2020 and June 2022, 17 Board and committee meetings were held via WebEx, which allows the remote board member participation and public viewing, but unlike traditional webcasting, allows the public to participate in real time.

Section 10 –
Board Action and Response to Prior Sunset Issues

ADMINISTRATIVE ISSUES

ISSUE #1: (STAFFING) What are the operational impacts of the CSLB's reported staffing challenges?

Background: During the CSLB's prior sunset review, the CSLB identified staffing levels as an issue of concern. At that time, the CSLB reported 354 authorized positions with a vacancy rate around 40 positions, and the CSLB was concerned that the workflow would increase as the economy rebounded and more contractors were licensed, increasing both application processing needs and enforcement-related issues. Ultimately, the CSLB was concerned that it would not have sufficient staff to meet potentially growing needs. Since 2015, the CSLB has seen its authorized position count grow identified staffing as an issue in two specific areas: workload for complaints and the CSLB's role in disaster situations, such as the recent fires.

Complaint Workload
According to the CSLB, over the last year, the CSLB saw significant growth in the number of consumer-filed complaints. According to the CSLB, for fiscal year 2017-2018, CSLB enforcement division staff operated at higher-than-optimum workloads. The target maximum number of complaints per enforcement representative is 35, but as of July 2018, staff averaged 39 cases per representative. An analysis of consumer complaints received during the last four fiscal years shows an increase of 1,872 complaints in fiscal year 2017-2018, as compared to fiscal year 2016-2017. This equates to approximately 150 more complaints per month, or a 10 percent increase.

Disaster Response
According to the CSLB, in 2017, CSLB personnel worked at approximately two dozen local assistance centers (established by the Governor's Office of Emergency Services) and federal disaster relief centers (established by FEMA) in 20 different counties. Although staffing for these events requires contributions from many units within CSLB, the majority of staff assigned to these centers came from the enforcement division. In 2017, 52 CSLB employees worked a total of almost 3,600 hours at the relief centers—the equivalent of 90 work weeks. The CSLB further reports, "This total does not include the extensive post-disaster enforcement efforts conducted by CSLB during community rebuilding. With thousands of staff hours redirected to the disaster areas, the impact on the Enforcement Division has been substantial, and has led to a decrease in the timely handling of complaints. Unfortunately, all indications are that 2017 was not an anomaly. It appears that the frequency and severity of wildfires in California will continue to outpace historical averages and continue to adversely affect CSLB's routine operations."

The CSLB reports that it has submitted five budget change proposals over the four FYs, and has received six permanent and two limited staff positions to address staffing needs based on recently enacted legislation. For FY 2019-2020, the CSLB is requesting a staffing augmentation of 2.0 permanent positions (1.0 Enforcement Representative II (ER II) and 1.0 Office Technician Typing (OT)) and $217,000 in 2019-20 and $201,000 in 2020-21 and ongoing to address the additional workload and implement the mandates associated with SB 1465 (Hill, Chapter 514, Statutes of 2018). The current BCP is under consideration through the annual budget process.

Committee Staff Recommendation: The CSLB should advise the Committees on its current staffing issues and future concerns. The CSLB should advise the Committees on processes for cross-training staff and managing workloads based on departmental needs and changes.

CSLB's 2018 Response to Recommendation: In the past year staff has made significant progress in reducing the vacancy rate, which is now consistently at 20 positions, or less than 5 percent of the board's workforce of 407 authorized positions. This success is attributable, in large part, to our in-house personnel unit and the strong relationship we have with DCA's human resources team.
In the past two years CSLB's disaster response, the number of incoming complaints, and, more recently, the receipt of applications have all increased markedly. Cross-training staff, so they can be quickly redirected for unexpected events, like disaster response, has so far minimized the effect on workloads in both licensing and enforcement. CSLB has also continued to implement new licensing efficiencies, such as providing online fillable forms, to help keep processing times low.

However, should the board continue to see increases in workload leading to delays in processing times and in responding to consumer complaints, we may seek additional staff through the budget change proposal process.

Current Response: As of September 2023, there were 30 vacancies out of 425 positions, or seven percent, which is an increase since the last sunset review, but well below the goal of a vacancy rate of less than 10 percent. There are common challenges that have contributed to a delay in filling positions. For example, many candidates are searching for 100 percent telework post-COVID. CSLB offers hybrid telework to all employees who meet work expectations, but does not offer 100 percent telework. To meet operational needs, all employees are required to report to a CSLB office at least one day per week.

In-person employees are particularly important for jobs that are difficult to perform or cannot be performed at home, such as the public facing positions in the call center and front counters at CSLB headquarters and its field offices. Additionally, positions that need significant training upon appointment and benefit from the employee reporting to an office during the probationary period, such as those in enforcement and examination development, have seen reduced candidate pools. To address these issues, CLSB began advertising that a hybrid telework schedule is available on its job postings. Communicating the hybrid availability up front has resulted in an increase in the number of candidates and a decrease in candidates who drop out during the recruitment process after finding out 100 percent telework is not likely.

Another CSLB-wide concern is the scarcity of applicants for entry-level classifications. In Sacramento, where most of CSLB employees are located, the median household income was $58,307 in 2021.[16] However, the annual income for the most common classifications, Office Technician and Program Technician II, fall well below that median ($40-$50 thousand for each classification). Although CSLB has not conducted a study, it is confident in assuming that low wages present an issue to prospective candidates and contribute to small candidate pools. Pay levels are subject to collective bargaining and not under CSLB control. To expand the applicant pool, CSLB highlights promotional opportunities and seeks opportunities to reclassify positions to more commonly used positions. Examples include reclassifying Enforcement Representatives to Special Investigators (discussed in question 14) and a current effort to reclassify Consumer Services Representatives to Staff Service Analysts.

Enforcement Division
Staffing levels remain a concern for CSLB, particularly for the Enforcement Division. CSLB saw a temporary decrease in consumer complaints during COVID as fewer consumers were contracting for home improvements – the primary source of complaints received by CSLB. However, as the impact

[16] Employment Development Department, Bureau of Labor Statistics, 2021 Data for Sacramento County.

of COVID became less intense, complaints returned to pre-COVID levels and have increased by 1,056 complaints over the average of the previous three fiscal years.[17]

Specific complaints that create a strain on enforcement resources is the volume of solar complaints. With the exception of FY 2019/20, complaints against solar companies have increased each year during the reporting period for a total increase of 1,365 complaints (or 276 percent) since FY 2018/19.

Solar Complaints Received by Year					
Fiscal Year	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Complaints Received	777	965	901	1,148	2,142

In addition to the high volume, the egregiousness of solar complaints further creates a workload issue. These cases often include elder abuse, fraud, and other high priority complaint types that require these cases to be prioritized over other complaints.[18] CSLB is considering ways to address the increasing solar related complaints that include a continued restitution fund and a BCP to create enforcement positions because the increased workload cannot be supported with existing resources.

Additionally, severe storms and fires have resulted in numerous emergency declarations in FY 2022/23, with some counties experiencing more than one disaster. Staff from CSLB's proactive enforcement unit –SWIFT – primarily attend LACs and DRCs. SWIFT employees are in the field regularly, are located throughout the state, and have access to state vehicles, which makes them ideal representatives to attend these events.

CSLB staff participated in 47 LACs/DRCs in FY 2022/23, which required 10,894 staff hours – more than the previous four years combined (45 and 5,772, respectively).

Disaster Response Events Attended and Enforcement Staff Hours					
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
LACs/DRCs Attended	15	8	13	9	47
CSLB Personnel Hours	3,838	334	1,168	432	10,284

Although SWIFT personnel can be called upon to reduce investigative backlogs when needed, disaster response has limited their availability for this duty. The staff hours required for disaster response in FY 2022/23 are nearly equivalent to five PYs, which if working complaints, could close 120 cases in a year per staff member. If the pace of LAC/DRC participation remains near/at current levels, the impact to workload will not be sustainable.[19]

Increased complaints, disaster response, and turnover, combined with fewer qualified candidates and delays inherent to hiring Special Investigators (e.g., time to complete background checks and obtain medical clearance), lead to lengthy recruitment periods and higher caseloads for existing staff. These challenges have also contributed to a higher than preferred caseload as well as more management and senior employee resources being redirected to training and developing new employees or taking on the work of the vacant positions.

[17] Although Table 9 reports 20,522 complaints received for FY 2022/23, 629 of those were solar restitution claims, which CSLB excluded for this calculation, i.e., the total received to calculate this increase is 19,893.
[18] A full description of CSLB's complaint prioritization guidelines is in the response to Prior Issue 9 on page XX.
[19] CSLB received an appropriation of approximately $1.3 million from the General Fund to reimburse costs associated with LAC participation in FY 22/23. Although the reimbursement minimizes the fiscal impact of travel and overtime, the appropriation does not offset the workload impact.

Licensing and Examinations Division
The Licensing and Examinations Division has also experienced staffing issues, and in some units, had a vacancy rate as high as an 80 percent (e.g., four out of five PYs). While most vacancies can be attributed to positive developments – retirements and promotions – the high volume of new applications and renewals (2,300 and 4,600 each month, respectively) makes it challenging to keep pace when an employee leaves. The Licensing Division has maintained performance goals through extensive cross-training, approving overtime when necessary, having working managers, and placing a high priority on filling vacancies.

The Licensing Unit anticipates an unabsorbable new workload associated with implementing SB 216 (Dodd, Chapter 978, Statutes of 2022). This bill required workers' compensation for all licensees in four classifications effective January 1, 2023, and will apply to all other classifications on January 1, 2026.[20] Based on the unanticipated workload that was created by that bill in 2023, Licensing is concerned that current staffing levels (even if fully staffed) will not be sufficient to implement and comply with this bill.

In the four affected classifications, 45 percent of the 30,000 licensees had exemptions on file prior to SB 216. This bill was expected to impact IT workload as an online method was developed in anticipation of the SB 216 effective date. However, a significant number of the licensees chose to submit their insurance policies through the mail rather than utilize online services. Additionally, CSLB did not anticipate the volume of addendums for staff services companies who would be submitting insurance. The volume of cancelations, suspensions, and reinstatements increased, all of which contributed to a significant impact to workload.

To prepare for the classifications that will be required to replace exemptions with policies in 2026, CSLB is considering multiple ways to address this workload issue, including a BCP to create positions to perform ongoing work created by SB 216.

ISSUE #2: (BOARD MEMBER VACANCIES) Do vacancies affect the CSLB's ability to meet and undertake its important work?

Background: The CSLB's 15-member board is statutorily constructed and has a vital role in the overall operation of the CSLB. Board members are responsible for appointing the Registrar, and setting the administrative and legislative policy for overall operations. As required in BPC § 7002, board members are comprised of 7 industry members including five contractor members, one labor representative and one local building official. The remaining eight public members include one representative of a statewide senior citizen organization. As of January 1, 2018, the CSLB had three vacancies on its board. On January 4, 2019, former Governor Brown appointed a public member to fill one of the three vacancies. There are currently two vacancies both are Governor appointees, a "C" contractor member; and a public member from a statewide senior citizen organization. CSLB does not note any issues with achieving a quorum because of the vacancies. Although there was one recent appointment, the positions had been vacant since mid-2018. In the CSLB's 2015 sunset review, it was reported that the CSLB had two vacancies then as well.

Committee Staff Recommendation: The Board should advise the Committees about any issues with the current board member vacancies. Does the CSLB anticipate any quorum issues at future meetings? How is the CSLB working with the Governor's office to encourage the appointments of the two remaining vacancies?

[20] SB 216 is discussed in detail in the response to Prior Issue #10 on page XX.

CSLB's 2018 Response to Recommendation: The board does not have any concerns about the two current member vacancies, either in regard to ensuring a quorum for future meetings or in fulfilling its responsibility in directing administration and legislative policy. It is not unusual for board vacancies to remain open for 6-to-12 months, and the board has had a quorum at all board and committee meetings during the past four years. The two current vacancies are governor appointees, and while the new gubernatorial administration navigates a considerable number of statewide appointments, CSLB continues to work closely with DCA's office of Board and Bureau Relations on board member appointments. The board will assist, as appropriate, to expeditiously fill these vacancies.

Current Response: CSLB encourages industry leaders to share when board member vacancies are available with their membership. When an industry representative shows interest, CSLB ensures the candidate has a valid license and does not have a history of disciplinary action or other consumer complaint issues. The Department of Consumer Affairs' Division of Board and Bureau Relations then works with the Governor's Appointments Secretary to appoint qualified and reputable board members.

In June 2023, there was one new appointment to the board and one existing board member's term limit expired. Consequently, the board still has two vacant board member positions. However, the board has established a quorum at all board and committee meetings during the past five years. CSLB does not anticipate the two vacancies to impact the board's ability to meet quorum requirements or fulfill its duties.

ISSUE #3: (IMPLEMENTATION OF RECENT LEGISLATION) Numerous measures have been enacted since the prior review affecting the Board's operations and licensees. How does CSLB effectively implement so many changes?

Background: Since 2015, there have been 28 measures chaptered into law, which effect a multitude of operations at the CSLB including its regulatory authority, licensees, applicants and the industry of which it regulates. Much of the chaptered legislation requires the CSLB to change or alter existing practices, provide reports, convene stakeholder groups, update examinations, and change application or licensure requirements, along with altering enforcement capabilities. Roughly, 35% of the recent legislation was sponsored by the CSLB; however, industry-related organizations or members of the Legislature sponsored the remaining 65%.

Statutory changes have serious impacts on the regulatory population of the CSLB. While many licensees and members of the public follow legislative activities affecting the CSLB, many do not and rely solely on the CSLB to provide updates on issues. As noted above, the CSLB does maintain a useful website, but there may be other mechanisms the CSLB could utilize to inform licensees, consumers, industry representatives, local building officials and others about changes to the contractors' license law.

Committee Staff Recommendation: The CSLB should advise the Committees on how it adapts to numerous legislative changes and requirements. Further, the CSLB should advise the Committees on any budget, operations, or staff-related issues resulting from the recent changes to the contractors' license law.

CSLB's 2018 Response to Recommendation: All proposed legislation related to CSLB licensees, applicants, consumers, and internal operations are analyzed to determine their effect. CSLB responds to new legislation in different ways, depending on the legislative requirements and, when necessary, will request additional resources to ensure that the board meets statutory mandates.

For example:

- SB 561 (Monning, Chapter 281, 2015) required CSLB to alter forms and change processes for registering home improvement salespersons, but also created new efficiencies by allowing registrants to work for multiple licensees.
- To assist disaster survivors, CSLB met the mandates of AB 2486 (Baker, Chapter 270, 2016) to provide a website search function for licensed contractors by geographic area one year early.
- To implement AB 2138 (Chiu and Low, Chapter 995, 2018), CSLB is amending regulations, updating its licensing system to track new statistics, and establishing new protocols to obtain court records to meet the mandates of this new legislation.

In addition to its website, CSLB utilizes several platforms to publicize relevant information for its stakeholders. These include: posting content to various social media channels; issuing a newsletter; utilizing an email alert system for more than 174,000 subscribers; annually publishing and distributing the *California Contractors License Law and Reference Book*; hosting numerous outreach events for seniors, potential applicants, and consumers; participating in various home and industry shows; and producing live and archived webcasts of board and committee meetings.

Current Response: Since the board's last sunset review, 13 bills were enacted that created an absorbable workload and two created an unabsorbable workload. For bills that require additional resources to implement, CSLB requests BCPs. Since FY 2018/19, CSLB requested two BCPs for a total of $717,000 to implement SB 1465 (Hill, Chapter 514, Statutes of 2018) and AB 2138 (Chiu, Chapter 995, Statutes of 2018). Although 13 bills generated workloads that were manageable individually, their collective impact equates to 2-3 additional positions and a financial need of $369,000, for which CSLB did not request extra funding. These legislative changes predominantly affect our IT Division.

Each CSLB division contributes to the process of implementing legislation and the level of each division's involvement is determined by the bill's subject matter. The Legislative Division adopts regulations when necessary and issues implementation memos and BCPs. The Licensing Division may be required to update their forms, processes, and internal workflow. The Testing Unit could be required to update the law examination or even develop a new examination, such as when SB 1189 (McGuire, Chapter 364, Statutes of 2020) created the B-2 residential remodeling license type. When the legislation creates a new cause for discipline, adds authority, changes fines, or makes any other amendment that impacts the Enforcement Division, procedures are updated and staff are trained to enforce the new law.

In addition to the divisions that carry out legislation, the Public Affairs Office (PAO) updates the website, informational materials, licensing workshops, and law book to notify licensees of the changes. To advertise changes in law, the PAO issues industry alerts, recently renewed publishing its quarterly newsletter, and uses social media. The new laws are also summarized in a legislative update that is sent to the interested parties list.

In addition, CSLB sponsored SB 630 (Dodd, Chapter 153, Statutes of 2023) to require applicants and licensees of CSLB to provide an email address, if available, at the time of initial licensure and renewal. This bill will enable CSLB to communicate with its licensee population of more than 280,000 in a manner that is low-cost and timely without requiring contractors to undergo the opt-in process to join the interested party list.

Potential Issues Anticipated

The majority of enacted bills impact CSLB's IT Division, which would benefit from a delayed implementation whenever legislation impacts IT systems. Any bill that has an IT impact has a disproportionate impact on CSLB because the IT system and website are self-supported, i.e., not

supported by DCA. Therefore, CSLB is responsible for the full breadth of implementation. Because most bills are effective on January 1 of the following year, the IT Division does not have lead time required to create positions and hire staff or to contract with a temporary staff member to implement legislation. This leads to the IT Division absorbing a significant amount of work for which it would request resources under a longer implementation timeline.

Additionally, while CSLB undertakes a business modernization project (discussed in Prior Issue 12 on page XX), duplicative changes may be required on the legacy system and developed into the new system for changes borne from future legislation, requiring a duplicative effort by the IT Division.

The Licensing Division is concerned that implementing SB 216 (Dodd, Chapter 978, Statues of 2022) in 2026 will have a larger than anticipated impact on workload. While SB 216 progressed through the legislative process, CSLB did not anticipate a significant workload impact because renewals and insurance are submitted online. BPC section 7125 (a) requires a Certificate of Workers' Compensation Insurance to be filed by an insurer duly licensed to write workers' compensation in this state. This requirement contributed in Increased workload in several ways, including: 1) multiple submissions by an insurer, which requires staff to determine which is the correct certificate by ruling out incorrect, incomplete, or duplicate submissions; 2) submissions that require staff follow up due to incomplete information, 3) submissions that are not accepted and the insurer does not follow up, which can lead to suspension; and 4) fielding calls, sending letters to licensees, and changing the license status of licenses that are suspended when an insurer does not submit a policy timely.

CSLB is researching multiple ways to help the Licensing Division prepare for January 1, 2026, when all licensees must have workers' compensation policies on file, including submitting a BPC for additional positions, cross training staff from other units within the Licensing Division to temporarily work in this unit, and otherwise streamlining the process.

BUDGET ISSUES

ISSUE #4: (FUND CONDITION). Boards under the DCA are typically expected to maintain a fund reserve of 6 months. CSLB's expenditures are increasing and reserve funds are decreasing. What accounts for this trend and is CSLB concerned?

Background: According to the CSLB's 2018 Sunset Review Report, the CSLB's projected months in reserve is 1.9 months down from 4.7 months (a 58% drop) since FY 2014-2015. The Expenditures have remained relatively consistent since FY 2014-2015; annual expenditure totals have remained between $60,773 in FY 2014-15 and $62,200 in FY 2017-18 (2.3% annual increase).

Committee Staff Recommendation: The CSLB should advise the Committees on its current fiscal situation, and the current trend of declining reserves, including what steps CSLB is taking to ensure a healthy fund.

CSLB's 2018 Response to Recommendation: In the past four years, a series of expenditures increased CSLB's spending by approximately $3 million per year, which led to a decline in reserves. This resulted from increases in operational costs, most significantly in personnel, statewide pro rata, disaster response, and one-time expenditures for facility improvements.
CSLB's 2017 fee increase was projected to produce an additional $5 million in revenue annually to ensure that CSLB's budget remains balanced. For the current fiscal year, CSLB is on pace to exceed revenue projections for the year and projects to maintain a steady reserve.

The board continues to be fiscally prudent with its resources and regularly seeks ways to reduce expenditures without compromising consumer protection, such as the recently approved informal

citation conferences (SB 1042, Monning, Statutes of 2018), which will reduce CSLB legal fees. Staff also provide budgetary updates at each board meeting. Finally, although there is no current plan to raise fees, CSLB can address any unforeseen future increases in expenses by raising fees via regulation.

Current Response: As of June 30, 2023, CSLB has a fund reserve of approximately $24 million, representing three months of operating expenditures. CSLB took multiple steps to return the fund to a healthy reserve balance following the previous sunset review.

Emergency regulations were approved and effective on December 19, 2019, to raise license renewal fees to the statutory maximums while recommendations for long term fee structure changes were considered. This emergency fee increase was projected to increase revenue by $2.5 million in FY 2019/20 and $6 million beginning in FY 2020/21 and ongoing.

CSLB commissioned a fee study to be conducted by CPS HR (attachment XX), which was finalized in December 2020. The study recommended a permanent increase to all fees to address continuing structural fund imbalances. SB 607 (Min, Chapter 367, Statutes of 2021) codified the emergency fee increases, increased remaining fees, and raised the statutory maximum of each fee by approximately 25 percent, effective January 1, 2022.

In addition to fee increases, SB 607 implemented a reorganized fee structure to charge fees by the type of business (e.g., sole owner vs other entities). This tiered fee structure allows CSLB to assess fees commensurate with the workload required to process an application of the business types, which introduces fairness to sole owners, whose applications are not as work intensive to process as those with multiple owners.

The decision to raise fees was not made lightly. Despite best efforts to reduce costs, CSLB could not continue to reduce expenditures that support the licensing and enforcement programs without negatively affecting the ability to process applications in a timely manner and to quickly mediate or investigate consumer complaints. These fee increases were necessary to ensure that CSLB continues to be effective in regulating the construction industry in California.

ISSUE #5: (PRO RATA). CSLB is prohibited from paying over 10 percent of its total income to DCA pro rata. Is CSLB and DCA in compliance with this statutory limit?

Background: Like many other DCA entities, the CSLB is required to pay a share of its revenue to the DCA for services provided. DCA is 99% funded by a portion of the licensing fees paid by California's state-regulated professionals in the form of "pro rata." Pro rata funds DCA's two divisions, the Consumer and Client Services Division (CCSD) and the Department of Investigations (DOI). Service areas under the CCSD include the Administrative and Information Services Division which includes the Executive Office, Legislation, Budgets, Human Resources, Business Services Office, Fiscal Operations, Office of Information Services, Equal Employment Office, Legal, Internal Audits, and SOLID training services), the Communications Division (Public Affairs, Publications Design and Editing, and Digital Print Services), and the Division of Program and Policy Review (Policy Review Committee, Office of Professional Examination Services, and Consumer Information Center. Pro rata is primarily apportioned based on the number of authorized staff at each board, regardless of how much of DCA's services the boards say they use. DCA also charges boards based on actual use for some services, such as the Office of Information Services, the Consumer Information Center, the Office of Professional Examination Services, and DOI. Based on DCA's own figures, actual pro rata, costs for every board have increased since FY 2012-2013.

BPC § 7136 prohibits the DCA from taking more than 10% of the CSLB's total income for the

CSLB's share of the cost of administration. According to the CSLB, the percentage paid in DCA pro rata during the last four FYs is as follows: FYs 2014-2015 10.8%; FY 2015-16 11.55%; FY 2016-2017 11.5%; and, FY 2017-2018 10%. The CSLB projects spending 10% for pro rata in FY 2018-2019 as well. Although the CSLB's pro rata is fairly close to the statutory allotment, in three of the last four FYs years, the CSLB has provided more than the statutory authority.

Committee Staff Recommendation: The CSLB should explain to the Committees if the current statutory cap has any impact on the CSLB's ability to perform its oversight functions. What steps does the CSLB take to ensure that only the maximum authorized in statute is provided for administrative purposes?

CSLB's 2018 Response to Recommendation: In fiscal year 2017-18, CSLB discovered that the pro rata assessment to DCA for the prior fiscal year exceeded 10 percent. CSLB notified DCA, which quickly rectified the oversight once it was brought to their attention. In fiscal year 2017-18, CSLB operated with a pro rata rate of 9.8 percent of the board's appropriations. DCA will continue to provide pro rata calculations annually, which CSLB staff will review for accuracy.

Though CSLB maintains its own information technology unit, testing and examination unit, call center, and public affairs office, DCA does provide administrative and other services to CSLB and deals directly with all control agencies (Department of Finance, Department of General Services, State Controller's Office, and California Department of Human Resources).
The board believes that the current 10 percent cap on CSLB's pro rata contribution to DCA is fair, based on the services utilized, and is an amount that does not negatively affect CSLB's ability to appropriately regulate the construction industry and protect consumers.

Current Response: CSLB annually reviews pro rata paid to the Department to ensure compliance with the 10 percent statutory cap in BPC section 7136. Total expenditures are included in Table 3 on page XX and the following table shows how those data translate to a percentage of income paid toward pro rata:

CSLB Pro Rata Payments – Percentage of Income by Year					
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Pro Rata Expenditures	$6,561,455	$6,802,143	$7,578,724	$7,148,474	$8,932,573
Percentage of Income	10%	11%	10%	9%	9%

An unexpected COVID-related decrease in licensing revenue occurred during the fourth quarter of FY 2019/20. This resulted in pro rata, which was assessed based on projected revenue, slightly exceeding the 10 percent limit that year.

The Board believes the pro rata contributions are fair for the services received from the Department and the 10 percent cap sufficiently ensures CSLB has resources to effectively regulate industry and protect consumers.

LICENSING ISSUES

ISSUE #6: (EXAMINATION PASSAGE RATES) Why are some examination passage rates so low?

Background: In order to obtain any contractor's license, an applicant must take and pass both a trade examination and a California Law and Business examination unless they have qualified for a waiver of the examination. In Table 8, on page 59, in the CSLB's 2018 sunset review report, there is a list of each examination administered by the CSLB, the passage rate of each examination for both first-time and repeat test-takers (those who failed passage the first time), and the combined total of

both during the last four FYs. Across all 46 classifications, the CSLB reports a passage rate of 69% for all of its examinations, down 5% from FY 2014-2015 when 74% of first-time test takers passed the examinations (the total number of test takers has significantly increased from FY 2014-2015 to 2017-2018 by roughly 35%). Although 69% is the average passage rate for all examinations in FY 2017-2018 for first-time test takers, there are some notable lower passage rates for a number of the contractor classifications: "General B", 60%; C-2 37%; C-6 57%; C-9 48%; C-13 51%; C-28 39%; C35 54%; C-42 44%; and, 48% for asbestos certification, to name a few. The CSLB develops its licensing examinations with the aid of industry experts, and each examination goes through an occupational analysis approximately every five to seven years.

Committee Staff Recommendation: The CSLB should advise the Committees on efforts to improve examination passage rates. The CSLB should advise the Committees on why some examinations have lower passage rates than others.

CSLB's 2018 Response to Recommendation: CSLB's examinations are designed to test for minimum competency to ensure that all candidates who pass are ready to practice their trade in a safe and competent manner. The examination development process occurs every five-to-seven years, which includes an occupational analysis and determines the passing standard that candidates must meet. CSLB's development of this standard for each of its exams follows industry accepted standards. In addition, CSLB's examination development model was used to develop the National Commercial General Building Contractor exam, which has a comparable passage rate to CSLB's overall passage rate.

Each trade varies in regard to training, which can lead to different passage rates. Specifically, the lower passage rates for the C-2 (Insulation and Acoustical) examination and the C-28 (Lock and Security Equipment) exam are likely the result of many C-2 candidates specializing in one aspect of the trade but not both, and many C-28 candidates coming to the examination with four years of journey-level experience performing simpler locksmith work but not adequately preparing for an exam that covers the breadth of this complex electronics-based trade.

To assist candidates who may not have experience in the full breadth of their trade, CSLB sends applicants free study guides (also available on the CSLB website) when their exam date is scheduled. These documents tell candidates what to expect on the day of the exam, including what content they will be tested on. The guide also provides sample questions and study resources to help them prepare for the examination.

Current Response: CSLB administered 167,651 examinations over the past four years and the overall pass rate for all examinations mirrors that of National Association of State Licensing Agencies (NASCLA), which develops and administers examinations for states that do not have in-hour test development and offers an open book examination. However, there are several individual trade examinations that have lower pass rates than the overall average and there seem to be recurring factors that contribute to these examination failures.

Requests for Translation Services
Due to the technical nature of the examinations, the ability of the test taker to pass largely depends on the skill of the translator they use. Eighty percent of the requests for translation services are for Spanish and not surprisingly, the passage rates for the specialties with the highest number of requests are lower than the overall pass rate in any given year. The top ten examinations for which CSLB received requests to use Spanish translators were translated and released into production between August 1 and December 1, 2023. The examinations translated are Law and Business, B-(General

Building, C-8 (Concrete), C-9 (Drywall), C-15 (Flooring and Floor Covering), C-27 (Landscaping), C-33 (Painting and Decorating), C-36 (Plumbing), C-39 (Roofing), and C-54 (Ceramic and Mosaic Tile).[21]

Additionally, CSLB translated all study guides into Spanish, even for examinations that are not yet translated. Although it is too early to determine if these actions are positively impacting passage rates, early response has shown promise.

Between August 1 and November 1, 2023, PSI Exams administered 631 Spanish examinations (589 Law and Business, 33 "B" license, seven C-08 (concrete) trade, and two C-33 (painting)). Of those, 96 previously failed an exam in English. Upon retake in Spanish, 42 passed, which brings the Spanish speaker retake pass rate equal to the overall retake pass rate. On November 1, 2023, CSLB released Spanish exams for the C-9 (drywall) and C -27 (landscaping). CSLB will closely monitor Spanish examination pass rates to evaluate the efficacy of translating examinations.

Other Contributing Factors
Individual trade examination passage rates may appear artificially low for examinations that have a small number of candidates, i.e., one candidate's failure (or multiple failures) will have a disproportionate impact on the overall results for that particular examination. Examples of these are C-4 (Boiler, Hot Water Heating, and Steam Fitting), C-11 (Elevator), and C-55 (Water Conditioning), which average 34, 25, and 21 examinations each year, respectively.

Finally, there is not a limit on how many times an examination can be taken so candidates who fail will often retake and fail the examination multiple times. These multiple failures decrease the passage rate as an overall percentage of tests administered. In FY 2022/23, first time candidates comprised 56 percent of the candidates who failed the examinations; therefore, 44 percent of candidates failing the exam were taking the exam a second or subsequent time with some having taken the exam and failing eight attempts.

Additional Steps Taken to Curtail Failures
The Testing Division has considered several strategies to decrease the impact of these factors that hinder successful examinations. Based on the factors above, CSLB continues to update study guides to promote first time examination passage. These study guides are also translated into Spanish each time an exam is updated.

Additionally, each examination contains "pretest" questions that are being vetted for future inclusion in an examination. These questions are not included in the final score and instead, are evaluated to determine if the question is too confusing. This step is taken to ensure questions are adequate to test that the applicants meet minimum standards without being overly complex. Like the revised study guides, this method of test development is intended to reduce the number of applicants who must take an examination more than once by incorporating questions that are clear, not too complex, and relevant to the trade.

ISSUE #7. (LICENSING AND CERTIFICATIONS) Are there any certification and licensing requirements that CSLB needs to update?

Background: The CSLB licenses and regulates approximately 285,000 licensees in 44 licensing classifications and 2 certifications and registers approximately 18,000 Home Improvement Salespersons. Each licensing classification specifies the type of contracting work permitted in that classification. To obtain licensure in each classification, applicants are required to take and pass both

[21] CSLB also receives a high number of requests to use translators for the C-10 (Electrician) classification, but those requests are not as high for Spanish.

a trade examination and a Law and Business examination. If an individual seeks licensure in two separate classifications (e.g., C-10 Electrical and C-39 Roofing), the individual must take and pass both trade examinations. Licensees may not perform work outside of a classification without having the appropriate license to do so, unless they are a "B" general contractor who is able to take a prime contract or subcontract for projects involving other trades as long as framing and carpentry (i.e., the C5 trade) is not counted among those other trades.

Although the examination, experience, workers' compensation, and bonding requirements are consistent amongst the different classifications, there are instances where certain contracting classifications are required to have additional certifications or meet other requirements based on the work performed within that classification.

For example, LC § 108.2(a) requires persons who perform work as electricians to become certified and prohibits uncertified persons from performing electrical work for which certification is required and specifies that certification is only required for persons who perform work as electricians for contractors licensed as class C-10 electrical contractors. Specifically, each person who performs work as an electrician must obtain the certification. C-10 license holders are not required to obtain the separate certification; however, the employees that work under the C-10 contractor's license are required to obtain certification.

Additionally, a general building contractor may not contract for any project that includes the "C-16" Fire Protection classification as provided for in BPC § 7026.12 or the "C-57" Well Drilling classification as provided for in Section 13750.5 of the Water Code, unless the general building contractor holds the appropriate license classification, or subcontracts with the appropriately licensed contractor. (BPC §7057).

It is unclear how often, or if at all, the CSLB reviews its licensing classifications to determine if additional certifications or other requirements should be included for its licensing population.

Committee Staff Recommendation: The CSLB should explain to the Committees its processes for reviewing and revising new work or certification requirements for its various licensing classifications. Are there any updates needed?

CSLB's 2018 Response to Recommendation: Several CSLB license classifications also require additional certifications issued by other California state agencies. These certifications are outside of CSLB's jurisdiction. For example, while CSLB licenses electricians, asbestos removers, and fire suppression system contractors, it does not certify them. They are certified, respectively, by the Department of Industrial Relations' Division of Labor Standards Enforcement, the Department of Industrial Relations' Division of Safety and Health, and CalFire. Because CSLB does not issue or administer supplemental certifications, the board does not have a process to review or revise them for these or other classifications. However, CSLB does have a memorandum of understanding with DLSE, DOSH, and the Division of Apprenticeship Standards to discuss enforcement of certification requirements.

Current Response: CSLB conducts an occupational analysis for each classification every five to seven years. During that time, the examinations are evaluated to determine whether they adequately establish minimum standards for the classification and examinations are revised accordingly. In addition to regular evaluations during the occupational analysis process, CSLB may review requirements and/or certifications for other reasons, including meeting consumer needs, defining classifications after new technology is introduced into industry, and addressing the natural evolution of classification's scope.

Response to Consumer Needs – B-2 Residential Remodeling
Consumer needs have recently motivated adding a new license type, the B-2 residential remodeling contractor license. SB 1189 (McGuire, Chapter 364, Statutes of 2020) created the B-2 residential remodeling license type and redefined "home improvement" to include the reconstruction, restoration, or rebuilding of a residential property that is damaged or destroyed by a natural disaster for which a state of emergency is proclaimed by the Governor. Following a disaster when there is an increased need for licensees in a specific location, there are frequent shortages of licensed contractors who can restore residential properties. Prior to SB 1189, the only option for a general contractor was the B – general building contractor license, which is defined by BPC § 7057 (in relevant part) as, "a contractor whose principal contracting business is in connection with any structure built, being built, or to be built…" Because the scope includes structures that are built or to be built, the qualifier is required to demonstrate knowledge in framing or carpentry.

However, through the process of researching the viability a handyman license, CSLB found there were many contractors who have experience in more than one classification that does not include framing or carpentry. The B-2 license allows those contractors to obtain a general license to take on projects to restore or make improvements on an existing residential structure. As of November 1, 2023, there were 594 licensed B-2 contractors.

Technological Advancements – Battery Energy Storage Systems
Advancements in technology also contribute to revisions being necessary to define those who may perform specific work under their classification. The development of battery energy storage systems (BESS) designed for residential use and those specifically installed in conjunction with solar photovoltaic systems is one such example.

The C-46 solar contractor classification was established to enable solar contractors to install, modify, maintain, or repair thermal and photovoltaic (PV) solar energy systems. The C-46 classification does not expressly include BESS within its scope, however. This led to an analysis of whether BESS is: 1) A separate electrical system, which would require a C-10 electrical contractor to install, 2) Considered incidental and supplemental to installing PV solar energy systems, which would allow a C-46 solar contractor to install a BESS, or 3) A system that could be installed by both classifications.[22]

CSLB collaborated with expert consultants to study each of the above options (attachment XX). Based on the results of the study, CSLB submitted a rulemaking proposal to pursue the third option above where C-16 solar contractors would be permitted to install BESS of up to 80 kWh and a larger system would require a C-10 electrician contractor. This determination was made to recognize that consumers are increasingly having BESS installed at the same time the PV solar system is installed. Further, the limit of 80 kWh was based on safety concerns when installing BESS above that threshold.

Evolution of Industry – Hazardous Substance Removal Certification (HAZ)
In the wake of unprecedented disasters in California over the past several years, residential rebuilding efforts have commenced across the state in areas devastated by floods, fires, and earthquakes. CSLB has received inquiries from concerned parties about whether contractors digging to remove contaminated materials from these devasted areas are trained or have the qualifications to do the work safely.

A contractor must have an existing license to apply for a certification, which is added to the license after the qualifier passes the corresponding examination. The hazardous material certification scope is defined in BPC section 7058.7 and essentially permits the contractor to install or remove

[22] 16 CCR, Section 831, defines incidental and supplemental as, "…work for which a specialty contractor is licensed if that work is essential to accomplish the work in which the contractor is classified…."

underground storage tanks. However, CSLB does not know of a reason that excavating and removing hazardous material should be limited to storage tanks, unless the construction site is listed on specified state and federal websites. To address this limitation, CSLB included expanding the scope of a hazardous substance removal certification to include excavation and hazardous debris removal required during the rebuilding process after a disaster as New Issue 3.

ENFORCEMENT ISSUES

ISSUE #8: (ENFORCEMENT PRIORITIES) Do CSLB's enforcement priorities continue to prioritize consumer safety and public protection?

Background: The CSLB's mission "is to protect consumers by regulating the construction industry through policies that promote the health, safety, and general welfare of the public in matters relating to construction." Two of the ways in which CSLB accomplishes its missions is by enforcing the laws, regulations, and standards governing construction in a fair and uniform manner and providing resolution for disputes that arise from construction activities. CSLB's enforcement staff have authorization under the contractors' license law to investigate complaints against licensees, nonlicensees acting as contractors, and unregistered home improvement salespeople. In addition, the CSLB may refer cases involving criminal activity to district attorneys who may prosecute cases under the BPC and other applicable codes.

As noted in issue number 1) above, the CSLB identified enforcement staffing as an issue for enforcement operations. According to the CSLB, complaints have increased and enforcement division staff are "operating at higher-than-optimum caseloads." The CSLB reports that enforcement management is working with the CSLB, and the DCA human resources department to fill job vacancies as quickly as possible.

As part of its enforcement unit, the CSLB also takes actions against unlicensed individuals who may be providing services for which a license is required. The CSLB notes that unlicensed activity and the underground economy continues to be a problem for the CSLB. Unlicensed contractors avoid the legal requirements to comply with the law, which may include avoiding the workers compensation requirement law or obtaining the appropriate construction-related permits.

As part of its efforts to address the underground economy, the CSLB established the Statewide Investigative Fraud Team, which is a statewide program that focuses on underground economy and unlicensed operators. When participating in the activities of the Joint Enforcement Strike Force on the Underground Economy pursuant to Section 329 of the Unemployment Insurance Code, the enforcement division has the authority to visit any construction site with labor present ask contractors to produce proof of licensure in good standing, citing those who are not properly licensed.

The CSLB reports that it is mostly meeting its internal and statutory timeframes for enforcement workload, however, it was noted in its 2018 Sunset Review Report that enforcement cases exceeding 270 days has increased since FY 2014-2015. In FY 2017-2018, the CSLB reported that 119 cases exceed the Board's goal of completing investigations within 270 days of receipt. The CSLB attributes aging cases to the redirection of enforcement staff to disaster response, an increase in complaints received, an increase in accusations filed, and an increase in the number of citations issued. Increased workload amount can affect the functions of the CSLB's enforcement operations.

CSLB's enforcement program extends beyond complaint investigations and those involving the underground economy. The CSLB's enforcement extends to various compliance issues including, workers compensation requirements, the electrical certification requirements, advertising requirements, and newly enacted mandatory settlement reporting requirements, among others. As

part of its application review process, the CSLB reviews all applications for previous disciplinary actions and criminal history. As part of that review, the licensing unit and enforcement unit are coordinated in efforts to ensure that applicants for licensure are accurately reflecting any past disciplinary outcomes as well as criminal convictions.

How the CSLB determines its enforcement priorities has been an issue identified during prior sunset reviews of the CSLB. The CSLB notes in its responses to issues identified during the last sunset review that enforcement staff across the state typically focus on consumer filed complaints, the majority of which are against licensed contractors. Issues identified from previous reports, were critical of the CSLB' attention to unlicensed contractors rather than focused enforcement of current licensees. Given that the CSLB reports that most of its enforcement efforts now address current licensees, it would be helpful to understand how the CSLB addresses enforcement needs and determines enforcement priorities.

Committee Staff Recommendation: The CSLB should advise the Committees on it enforcement priorities. How does the CSLB determine the focus of enforcement pertaining to licensed and unlicensed populations? Is the CSLB aware of any consequences when the focus shifts too far in one direction?

CSLB's 2018 Response to Recommendation: Allocating CSLB's enforcement resources to investigate licensed versus unlicensed contractors requires maintaining an effective balance. Activities involve "reactive" efforts, which include responding to and investigating incoming complaints, and "proactive" efforts, involve sweeps of active construction sites and undercover stings to ensure compliance with laws and regulations.
To maximize consumer protection, the majority of CSLB's Enforcement division staff are dedicated to reactive enforcement activities: handling, mediating, and investigating consumer construction complaints. In 2018, CSLB completed more than 20,000 investigations. Approximately 15,000 of these resulted from consumer filed complaints, with about 70 percent filed against licensees, and 30 percent against unlicensed contractors.
The board believes its current determination of enforcement priorities is appropriate and annually reviews an enforcement priority matrix that was established in 2013. The matrix prioritizes complaints that involve an immediate threat to public safety, criminal activity, or widespread victimization of vulnerable populations. Consumer complaints are handled promptly and effectively, while CSLB's proactive enforcement efforts remain both aggressive and widespread. The board receives regular updates about current operations and allows management sufficient flexibility to temporarily redirect personnel when necessary, such as enhanced enforcement in disaster areas.

Current Response: Board approved enforcement priorities continue to be reactive cases, which are primarily generated from consumer complaints. CSLB's enforcement staff distribution is an effective indicator of those priorities with 77 Special Investigators and 32 Consumer Services Representatives who investigate consumer complaints, while there are 27 members of the SWIFT unit, who investigate proactive, unlicensed cases. This staff distribution ensures that while there are resources dedicated to finding and enforcing unlicensed activity, consumer complaints are prioritized and resolved in a timely manner.

In May 2019, the board approved revised prioritization criteria, which replaced the complaint prioritization matrix discussed during the previous sunset review. While mostly reflective of CSLB's enforcement priorities, the matrix was considered visually confusing and appeared to consider the source of the complaint, e.g., elected officials, consumers, anonymous tips, etc., over the type of complaint, which dictates priority in practice.

The revised criteria were memorialized in a chart developed by Enforcement Division staff to help managers prioritize workload and correct deficiencies of the previous matrix. The chart's design was inspired by the Complaint Prioritization and Referral Guidelines published by the Department of Consumer Affairs in late 2017 and identifies twenty-one complaint types, which have been grouped into four prioritization categories: Urgent, High, Routine, and Low. Other improvements include: 1) the updated complaint types and positions more accurately express current Board priorities, 2) the chart is more comprehensive by including almost twice as many complaint types, and 3) the complaint source has been deleted, which ensures the type of complaint received is the determining factor.

These criteria place a higher priority on complaints of violations that have a greater negative impact on consumer protection and public safety, including predatory contractors, those committing elder abuse, and repeat offenders. Additionally, the revised criteria ensure unlicensed activity is not the primary focus of the Enforcement Division by ranking unlicensed activity as a routine violation. However, when a licensee aids and abets the unlicensed activity, that is considered a high priority. This distinction ensures that complaints against licensees who are aware of the importance of licensure, yet still help unlicensed contractors operate, are treated with more urgency than a standalone unlicensed activity complaint.

Not included in the chart are solar restitution claims. Subsequent to board approval of the above criteria, AB 137 (Committee on Budget, Chapter 77, Statutes of 2021) created a Solar Energy System Restitution Program (SESRP). The SESRP provides restitution to consumers who experienced financial loss or injury resulting from fraudulent or other unlawful acts committed by a residential solar energy system contractor on or after January 1, 2016. The Legislature granted CSLB a one-time appropriation of five million dollars that included up to one million dollars to administer the program. Because SESRP is not a continuous program, CSLB did not incorporate these complaints into the prioritization criteria. Additionally, these complaints are not investigated by the Enforcement Division and instead, staff dedicated to SESRP handle these complaints to enable efficient accounting of administrative costs. To facilitate a fair distribution of restitution payments, these claims are prioritized in the order received.

SESRP Activity as of December 1, 2023	
Total Claims Received	703
Total Claims Reviewed	562
Restitution Approved for Payment	$4.2 million
Claims Closed Without Restitution Paid *	207
Claims Pending	13
Claims Not Reviewed **	129
Average Approved Payout	$12,041

* Reasons for closure without payment include duplication of claims, lack of jurisdiction, respondent contractor has a valid license, or insufficient evidence to support a financial injury.
** Claims received after February 28, were not reviewed due to insufficient remaining funds.

ISSUE #9: (WORKFORCE DEVELOPMENT AND DISASTER RESPONSE) California has faced a series of devastating natural disasters, the recovery from which typically includes a role for contractors. What steps has CSLB taken to coordinate with various agencies to ensure consumers in these situations are provided quality services and fraud is prevented?

Background: The CSLB partners with other state and federal agencies in response to natural disasters to help those whose homes, businesses, and/or property were damaged or destroyed. According to the CSLB, they provided staff for more than two dozen local assistance centers established by the Governor's Office of Emergency Services and disaster relief centers established by FEMA. The centers, which were open from one day to one month, provided a single location for disaster survivors to receive services and information. The CSLB notes that its response to the disasters placed a significant workload strain on CSLB. From fall 2017 through June 2018, CSLB employees, mostly from its enforcement division, worked almost 3,600 hours at the relief centers—the equivalent of 90 work weeks (not including enforcement sweeps and sting operations in the various fire zones, or the time involved in investigating leads provided by survivors, industry groups, local building departments, and others). CSLB reports that the increased workload has led to a decrease in the number of closed complaints.

Committee Staff Recommendation: The CSLB should advise the Committees on its disaster response systems. What processes does the CSLB have in place to quickly transition staff to assist in disaster response situations when needed? The CSLB should update the Committees on how it helps to ensure a licensed workforce is available to meet the needs for rebuilding and other clean-up efforts. Does the CSLB forecast any workforce shortages or concerns?

CSLB's 2018 Response to Recommendation: Over the past four years, CSLB has aggressively expanded its disaster response program, and has committed to cross-training staff to ensure that the board can quickly redirect resources when needed. This comprehensive effort has focused

particularly on helping to educate survivors who need to hire someone to repair or rebuild their homes. CSLB has distributed educational material at assistance centers and in other locations; coordinated numerous rebuilding workshops for survivors and contractors looking to work in these areas; and posted hundreds of warning signs in disaster zones throughout the state noting that it is a felony to work as an unlicensed contractor in a declared disaster area, including in Butte, Lake, Los Angeles, Mendocino, Napa, Orange, San Diego, Santa Barbara, Shasta, Sonoma, and Ventura counties.

While CSLB does not specifically create jobs in construction or train workers, to help ensure a licensed workforce is available to meet the needs in disaster zones, CSLB expedites applications for those seeking to work in these areas and also prioritizes applications from those already licensed in states with which the board has a reciprocity agreement. Additionally, as noted in response to Chairman Low's question about this issue at the February 26, 2019 oversight hearing, CSLB has asked the National Association of State Contractors Licensing Agencies (NASCLA) to share information about work requirements in California with its other member states.

Beginning in November 2017 in northern California, and in February 2018 in southern California, CSLB has held monthly licensing workshops in English and Spanish to assist individuals seeking licensure. In the past we have also partnered with several day laborer centers and the Mexican Consulate to present this same information to potential applicants. CSLB is currently developing plans to expand these workshops, as well as to continue partnering with local agencies to hold workshops in disaster areas for those who want to work on the rebuild.

Additionally, in the months following the October 2017 northern California wildfires, CSLB served on a joint Wildfire Recovery Long-Term Housing Task Force working group established to help identify the availability of a skilled construction workforce. CSLB reached out to a number of stakeholders to secure their involvement with the project. The group developed a resource guide for licensed contractors, job seekers, local governments, and workforce developers that identifies existing training programs for individuals interested in entering the construction industry in the North Bay Area.

Also, for almost 30 years, CSLB has served as the conduit for the industry to help fund the education of the next generation of construction leaders. CSLB oversees the "Construction Management Education Sponsorship Act," which funds grants to university Construction Management Departments. Generous donations from licensees and applicants have allowed CSLB, since 2002, to disburse more than $1.3 million in grants to seven different universities.

Current Response: To promote a licensed workforce is available in disaster areas, CSLB continues to expedite applications for contractors seeking to work in counties where emergencies are declared and still prioritizes applications from those already licensed in states with which the board has a reciprocity agreement. To further assist applicants with the licensing process, interactive "Get Licensed to Build" workshops are conducted live in English on the first Friday of every month and in Spanish on the second Friday of every month. Past licensing workshop videos in both languages are posted to YouTube for viewing at any time.

CSLB revised its Disaster Response Plan to place increased priority on enforcement in disaster areas. The Disaster Response Plan identifies the roles of various stakeholders, including local, state, and federal agencies in responding to declared natural disasters result in lost structures. The plan also identifies the role of each CSLB division in the coordinated disaster response from first response to post-disaster response, along with a timeline for each activity. These duties include outreach and education from the Public Affairs Office, enforcement activity by the SWIFT unit, and application expediting by the Licensing Division.

The increasing frequency of disasters and CSLB participation in disaster response has contributed to an enforcement workload issue, which is discussed in Prior Issue 1 on page XX. Despite those concerns, CSLB remains committed to ensuring that the board can quickly redirect resources when a disaster occurs. Staff from the SWIFT unit attend most local assistance centers and disaster recovery centers because of their access to state vehicles and unit employees being located throughout the state. Additionally, because SWIFT conducts proactive enforcement, its operations can be scheduled to accommodate participation in disaster response, i.e., cross-training is not generally required. However, in the event SWIFT staff are not available to staff disaster response, CSLB dispatches staff from other units whose workload allows them to attend these events.

CSLB works with the California Governor's Office of Emergency Services to participate in local assistance centers and the Federal Emergency Management Agency to staff disaster recovery centers. For its participation, CSLB received an appropriation of approximately $1.3 million from the General Fund to reimburse costs associated with local assistance center participation in FY 22/23. Activities at these centers include educating consumers how to protect themselves from predatory contractors by checking the license, as well as adhering to down payment limits of $1,000 or 10 percent of the contract price, whichever is lower, and ensuring progress payments do not exceed the value of the work performed or material delivered (BPC section 7159.5, subdivisions (a)(3) and (a)(5), respectively).

To supplement in-person outreach and information distribution, CSLB revised its outreach materials to address current issues found in disaster areas, including updated fast fact documents addressing Rebuilding After a Disaster and Debris Removal. CSLB also created a QR code to allow consumers quickly access CSLB's Disaster Help Center that provides the fast facts documents, tip sheets, videos, and other information for consumers, contractors who work in these areas, and media.

Following a disaster, there is an increased need for licensees to facilitate the rebuilding process for consumers, but there is frequently a shortage of licensed "B" general contractors who have the necessary classification to rebuild homes. To expand the number of contractors available to perform disaster related restoration work and provide effective consumer protection in rebuilding after a disaster, CSLB partnered with Senator McGuire to pass SB 1189, which created the B-2 residential remodeling license type and redefined "home improvement" to include the reconstruction and restoration of a residential property that is damaged or destroyed by a natural disaster for which a state of emergency is proclaimed by the Governor. The updated definition of "home improvement" recognizes specific activities that fall under this activity when performed in a declared disaster area and the B-2 license allows those contractors to take on projects to restore or make improvements on existing residential structures. While there are not as many licensees as other license types because the license type is new, the B-2 population has increased by an average of 20 licensees each month since it was created.

Unlicensed activity and excessive payments remain leading contributors to job abandonment, which is a common problem during rebuilding after a disaster. To address these issues, CSLB partnered with Senator McGuire to pass SB 601 (McGuire, Chapter 403, Statutes of 2023). This bill extends the statute of limitations when a licensee aids and abets unlicensed activity from one to three years. Consumers who are recovering after a disaster don't often file a complaint immediately because they do not have a concern with their contractor until construction is underway. Investigating complex fraud issues or contractual arrangements can take more than six months and this bill will allow CSLB time to effectively pursue criminal action in these cases.

Additionally, SB 601 mandates courts to assess the maximum civil penalty for home improvement contract violations in declared disaster areas, including violations of down payment and progress payment requirements. Prohibiting courts from lowering fines assessed to contractors who take

advantage of consumers in disaster areas ensures this predatory activity is punished with a fine commensurate with the egregiousness of the offense.

ISSUE #10: (WORKERS' COMPENSATION) Should the CSLB be authorized to mandate that additional license classifications have workers' compensation insurance?

Background: Licensees are required to obtain workers' compensation insurance or have a workers compensation exemption on file with the CSLB if they qualify. Those licensees with employees must file with the CSLB either a Certificate of Workers' Compensation Insurance or a Certificate of Self-Insurance (issued by the Department of Industrial Relations). Licensees without employees are required to file a workers' compensation exemption with the CSLB (BPC § 7125). Licensees with a workers' compensation exemption are required to recertify on their renewal application that they do not have employees each time they renew a license. According to the CSLB, 55% of its licensing population maintains an exemption from workers' compensation, meaning that licensees report having no employees. If a contractor files a false workers' compensation exemption, they may be subject to disciplinary action, including the suspension of a license.

Concerned about the potential of fraudulent workers' compensation exemptions, the CSLB conducted a pilot project in Sacramento County during the first quarter of 2017. Through that program, the CSLB contacted a sample of contractors in four targeted classifications that perform outdoor construction (likely to require multiple employees): C-8 (Concrete), C-12 (Earthwork/Paving), C-27 (Landscaping), and D-49 (Tree Trimming). According to the CSLB, the results of the survey found that a minimum of 59% of the contractors investigated had filed false workers' compensation exemptions with the CSLB.

In 2018, the CSLB discussed a statutory change to mandate workers' compensation insurance for specific license classifications likely to employ workers (as required for C-39 roofing), and preclude licensees from filing a new workers' compensation exemption with CSLB for one year if they are found to have employed workers without a workers' compensation policy.

The legislative proposal to consider mandating workers' compensation insurance for specified license classifications received full support from CSLB board members at its September 2018 meeting, and subsequently adopted as a 2019-21 strategic plan objective. The additional licensing classifications that would be required to have workers' compensation insurance, regardless of employee status is as follows: : C-8 (Concrete) D-49 (Tree Service) and C-16 (Fire Protection).

Committee Staff Recommendation: The CSLB should inform the Committees of any other options to ensure compliance with workers' compensation requirements. Does the CSLB inspect or attempt to verify if a workers' compensation exemption form is valid? Can the CSLB explain how it identified the specialty licenses, which would be subject to this requirement?

CSLB's Response to 2018 Recommendation: All applicants for licensure must either provide proof of workers' compensation insurance or certify that they do not have employees and are, therefore, exempt from the requirement before CSLB will issue an initial license. Subsequently, licensees with a policy must provide CSLB proof of renewal when the policy expires or recertify their exemption from the requirement when renewing their contractor license with CSLB.

CSLB regularly reminds licensees about the importance of complying with this requirement in communications to the industry through newsletters, industry bulletins, and social media, and also encourages consumers to ask about coverage. In 2017, CSLB created a process for electronic submission of workers' compensation paperwork to ease compliance for licensees.

CSLB engages in regular enforcement actions around workers' compensation insurance compliance, including responding to leads, conducting undercover stings, engaging in sweeps of active job sites and issuing stop orders if a workers' compensation violation is found, and partnering with other state agencies, including the Joint Enforcement Strike Force.

CSLB can also cancel a false workers' compensation exemption and suspend the license. However, this is not always effective since a contractor can immediately file a new exemption to avoid license suspension. Since 2015, in response to consumer complaints, on average, 49 percent of those referred for license suspension filed new workers' compensation exemptions, 39 percent acquired policies, and less than 12 percent resulted in license suspension. The board has previously discussed a possible legislative proposal to preclude licensees from filing a workers' compensation exemption with CSLB for one year if they are found to have filed a false exemption.

The specialty license classifications identified as potentially subject to a mandatory workers' compensation requirement were selected because the nature of the work involved most likely involves employee labor, such as concrete, because there are particular safety concerns, as with tree service workers, and because, in the case of fire protection, the classification is required to have certified employees, which would require the licensee to carry workers' compensation insurance.

CSLB plans to hold stakeholder meetings with both insurance and industry representatives to discuss the possibility of proposing legislation that would mandate workers' compensation coverage in these classifications and to develop strategies for appropriate auditing so that such a change would not lead to higher premiums. Representatives from these three industries have expressed support for this requirement.

Current Response: The board sponsored SB 216 (Dodd, Chapter 978, Statutes of 2022) to require all licensees to have evidence of worker's compensation coverage on file with the Board. This bill was effective on January 1, 2023, for C-8 (Concrete), C-20 (Warm-Air Heating, Ventilating and Air-Conditioning), C-22 (Asbestos Abatement), and D-49 (Tree Service) classifications.[23] The bill also made failure to have workers' compensation on file with the Board cause for suspension, i.e., exemptions from workers' compensation insurance needed to be replaced with a policy on file, effective July 1, 2023. The delayed suspension date allowed CSLB to conduct outreach to licensees and gave licensees in the affected classifications time to obtain workers' compensation insurance policies. On January 1, 2026, this bill and disciplinary action will be effective for all other classifications.

Despite years of increased enforcement focus on compliance with workers' compensation requirements, the number of exemptions on file with CSLB and the number of contractors in violation of the workers' compensation laws remained consistent. This problem creates an unfair competitive disadvantage for law-abiding contractors who are subject to higher business costs, puts employees at risk if they are not covered and experience a workplace injury, and exposes consumers to litigation for injuries incurred on their property. SB 216 protects law abiding contractors, contractor employees, and consumers by addressing a longstanding practice of filing fraudulent workers' compensation insurance exemptions.

Although the initial classifications included C-12 (Earthwork/Paving), C-16 (Fire Protection), and C-27 (Landscaping), industry input and support changed the focus for the first classifications to which the

[23] AB 881 (Emmerson and Runner, Chapter 38, Statutes of 2006) removed eligibility for C-39 (Roofing) to file an exemption regardless of whether they have employees, thereby requiring all C-39 contractors to file workers' compensation polices with CSLB as a condition of licensure. Subsequent bills extended, then made permanent, this requirement for roofing contractors.

requirement would apply. CSLB held several stakeholder meetings to discuss which classifications should be included on the first effective date and the meeting during which the C-8, C-20, and D-49 classifications were discussed was held on April 4, 2019, at the State Compensation Insurance Fund in Sacramento. Representatives included United Contractors, Sheet Metal and Air Conditioning Contractors Association of California, West Coast Arborists, and the California Professional Association of Specialty Contractors (which is now Housing Contractors of California). The C-22 classification was not discussed at that meeting, but was amended into the bill because workers' compensation insurance is already required by the Department of Industrial Relations to perform asbestos removal.[24]

CSLB's goal was to eventually require workers' compensation for all contractors. SB 216 was widely supported by industry, as evidenced by the registered support for the bill and no industry opposition. Additionally, on February 7, 2023, CSLB held a stakeholder meeting with staff from Senator Dodd's office to discuss impacts to industry and unintended consequences after the first implementation date of January 1, 2023. All industry representatives in attendance remained overwhelmingly supportive of the policy, which they said improves worker safety, protects consumers, and removes inequities arising from fraudulently filed exemptions.

For classifications that may still submit a workers' compensation exemption through December 31, 2025, applicants sign under penalty of perjury that they do not have employees. CSLB's enforcement division verifies this information when conducting investigations in response to a consumer complaint. CSLB also continues to engage in regular proactive enforcement operations to address workers' compensation insurance compliance.

On November 1, 2022, CSLB contacted all licensees in the four affected classifications (active and renewable) to notify them of changes to the law, including potential for disciplinary action. Licensees who did not replace an exemption with a workers' compensation insurance policy by July 1, 2023, would be subject to automatic suspension or removal of the C-8, C-20, C-22, or D-49 classification when a license included multiple classifications. At the time, 10,807 of these licensees had workers' compensation exemptions on file (2,706 C-8; 7,043 C-20; 2 C-22, and 1,056 D-49). On July 1, 2023, 1,681 licenses were suspended and a classification was removed from 1,122 licenses.

Despite a small decline in the license population due to suspension or licensees voluntarily removing a classification, there are now thousands of additional contractors who protect their employees and consumers by complying with workers' compensation requirements.

ISSUE #11: (TREE WORKER SAFETY) Should the CSLB have expanded enforcement authority for contractors who perform tree work?

Background: According to information provided by the CSLB, since August 2017, CSLB staff has met several times with members of the tree care industry regarding the proper CSLB license classifications to perform tree care. Members of the industry expressed concern about accidents, injuries, and fatalities among workers in this occupation. Two CSLB license classifications may perform stand-alone tree work: C-27 (Landscaping) and C-61/D-49 (Tree Service). Additional license classifications may perform tree work as part of a larger contract in specified circumstances.

At the CSLB's April 2018, meeting, the board directed staff to meet with representatives from the Department of Industrial Relations' Division of Occupational Safety and Health (DOSH) and hold informational meetings with various stakeholders to identify possible solutions to the concerns raised

[24] BPC section 7058.6 requires asbestos-related work to be performed by a contractor who is registered by the Division of Occupational Safety and Health (DOSH). A pre-requisite to DOSH registration is for the employer to cover employees by being insured by workers' compensation (Labor Code section 6501.5 (a)(2)).

regarding safety. In these meetings, DOSH confirmed that existing safety regulations require specific training and equipment for tree workers and that it may issue a citation to employers for failing to meet these requirements. However, BPC §7109.5 requires that, before CSLB can discipline a license, a contractor's violation of a safety provision must result in the death of or serious injury to an employee. The CSLB would like to see increased oversight beyond death or serious injury.

At its September 20, 2018 meeting, board members directed staff to prepare a legislative proposal for consideration by the Legislative Committee and, ultimately, the full Board. The proposal would expand BPC §7109.5 to provide CSLB authority to initiate disciplinary action against a licensee upon receipt of a DOSH finding that a licensee violated tree worker safety requirements and require that DOSH forward findings of such violations to CSLB.

Committee Staff Recommendation: The CSLB should advise the Committees on the number of additional enforcement actions that would have resulted from this change. The CSLB should advise the Committees on what its anticipated enforcement penalties for a violation would be.

CSLB's 2018 Response to Recommendation: CSLB would rely on referrals regarding tree safety violations from the Department of Industrial Relations. According to the Department of Industrial Relations, in 2018, DOSH issued 45 violations to California employers related to its tree worker safety regulations. If DOSH was mandated to report this information to CSLB, that would have likely resulted in 45 enforcement actions by CSLB against these contractors for violation of safety regulations that do not involve serious death or injury.

The anticipated penalties for a violation would closely mirror those in BPC section 7110, which ranges from $200 to $5,000.

Current Response In 2020, AB 2210 (Aguiar-Curry, Chapter 128, Statutes of 2020) added subdivision (a) to Business and Professions Code section 7109.5 to provide that violation of any safety provision in the Department of Industrial Relations General Plant Equipment and Special Operations regulations (California Code of Regulations, Title 8, §§ 3420-3583, and accompanying tables and appendices) is cause for disciplinary action regardless of whether death or serious injury occurred. Following are the number of enforcement actions (discipline or citation) since subdivision (a) was enacted:

BPC § 7109.5 (a) Violations		
	FY 2021/2022	FY 2022/23
Complaints/DOSH Referrals Received	3	0
Accusations	0	0
Citations	3	0

AB 2210 enables CSLB to take disciplinary action for safety violations without regard for injury or death so a referral from DOSH is no longer required to investigate an alleged violation and one of the above was a result of a DOSH referral. The citations above assessed fines of $5,000 each. The maximum administrative fine that can be assessed for most violations, including BPC section 7109.5, was increased to $8,000 by AB 569 (Grayson, Chapter 94, Statutes of 2021). Thus, the fine range for these violations is now $500 to $8,000 (16 CCR § 884 (a)) and the amount assessed is determined using the criteria set forth by 16 CCR § 884 (b).

CSLB will meet with DOSH and industry partners in early 2024 to encourage them to notify CSLB when a construction worker is seriously injured or killed.

TECHNOLOGY ISSUES

ISSUE #12: (BreEZe) What is the status of the CSLB's technology system upgrade? Does the CSLB need a new IT system?

Background: DCA has been working since 2009 to replace multiple antiquated standalone IT systems with one fully integrated system used consistently across all regulatory entities. That project, commonly referred to as BreEZe, was planned to be implemented in three releases, or phases. The CSLB was slated to be a part of the third release. Unfortunately, due to numerous cost overruns, technical delays, and product inefficiencies, in 2015 the DCA-led technology upgrade was stopped, effectively canceling the BreEZe system for those entities in the third release. Special Project Report 3.1 outlined the changing scope and cost of the BreEZe project and removed all Release 3 entities from the project entirely.

As a result, numerous regulatory entities, including the CSLB, did not transition to the new IT system. Payment for the entire technology upgrade was the responsibility of the boards, bureaus and commissions under the DCA umbrella. Presumably, the decision to include all entities regardless of need was to spread the costs of the system across the entire regulatory landscape. However, the remaining boards and bureaus that never transitioned to the BreEZe system were still required to pay the costs associated with the project. As of FY 2017-2018, the CSLB's contributions to the BreEZe project has been $4,255,555, a hefty figure for an IT project it will not, and has not received any benefit. The CSLB reports that beginning in FY 2018-2019, it will no longer contribute to the BreEZe system. Any costs already contributed to the system will not be paid back to the CSLB, even as the CSLB is facing a depleted reserve level of 1.9 months for FY 2019-2020.

Prior to 2009, when the BreEZe project began, the CSLB had and continues to utilize, its own Information Technology (IT) system and department. The CSLB's IT division supports all of its licensing and enforcement programs along with its website, public outreach and all other routine functions of the CSLB. CSLB's IT division has approximately 25 personnel. The CSLB notes that its IT system is effective and efficient; however, the CSLB notes that it continues to seek upgrades to its own system including an upgrade to application processing to help reduce the number of deficient applications it receives. According to CSLB, in FY 2018-2019, it spent approximately $2.9 million on its IT division staff and operations.

In the CSLB's sunset report, it notes that release 3 boards and bureaus, which include the CSLB, are individually, and in collaboration with DCA, assessing their specific business needs to determine the best course of action for a replacement for the BreEZe project. DCA currently has no formal plan to expand BreEZe to the 19 boards originally included in Release 3. Instead, DCA first intends to conduct a cost-benefit analysis for Release 3 boards and then make a decision about whether programs previously slated for Release 3 of the project will come onto BreEZe and, if so, how it will be implemented. It is not clear whether the system has been evaluated to determine if it will meet the needs of Release 3 entities like the CSLB or whether or not a transition to the new upgraded system is valuable or even necessary, especially for the CSLB which currently has its own unique IT infrastructure.

AB 97 (Ting, Chapter 14, Statutes of 2017) and SB 547 (Hill, Chapter 428, Statutes of 2017) required the DCA to provide specified reports to the Legislature on the status of the DCA's technology projects. Both bills required the director of the DCA to report progress on Release 3 entities' transition to a new licensing technology platform to the Legislature by December 31 of each year. Information included in the progress report is to include updated plans and timelines for completing: business process documentation; cost-benefit analyses of IT options; IT system development and implementation; and,

any other relevant steps needed to meet the IT needs of release 3 entities along with any other information requested by the Legislature.

Because the CSLB is included in the release 3 entities, it is required to be a part of the director's annual report. The director's report noted the following with respect to the CSLB in DCA's report to the Legislature on the status of its technology projects:

Summary of Business Activities

Level of Effort:

During the 2018 reporting period, the board and OCM staff held 10 exclusively for business activities, which includes process documentation, review, approval, discussions, business use case and functional requirements gathering. The team is in the midst of the process and continues to work towards completion.

Deliverables during Business Activities

Process Workflow Documentation Listing:

Business activities for the Contractor State Licensing Board are underway. To date, the board and OCM have completed the workflow documentation for the following processes.

The information provided in the director's report regarding the CSLB's technology modernization does not fully explain the CSLB's current technology system and its need or desires to move to new IT system.

Committee Staff Recommendation: The CSLB should update the Committees about its current information technology system and how a new DCA-wide platform would be beneficial or any concerns moving to a new system.

CSLB's 2018 Response to Recommendation: CSLB's in-house Information Technology unit maintains three separate computer systems for exams, licensing and enforcement, and imaging/workflow. CSLB is working closely with DCA to modernize these current systems. Priorities include the capacity to accept online payments and electronic signatures, both of which can be incorporated into the board's existing systems.

In 2018, the board established a two-member information technology advisory committee to provide oversight on IT project and priorities.

Although, as a release 3 board, CSLB is no longer part of the BreEZe project and no longer contributes financially to its costs, the board's earlier involvement provided a valuable opportunity to document existing and future business processes and needs that will help in the effort to modernize the board's existing systems. However, because CSLB has its own information technology systems and staff to implement incremental changes and does not rely on DCA to do so, the board does not believe CSLB needs to be included in DCA's annual reporting to the legislature on the status of the BreEZe system.

Current Response: CSLB incorporated the concept of business modernization into its 2022-2024 Strategic Plan. The goals and objectives involve updating traditional IT strategies to reflect current technological advancements, operational needs, and organizational achievements. Transition to a new system carries the risk of introducing compatibility issues and the loss of custom features critical

to CSLB's operations. However, incremental updates have been continuously implemented to improve the user experience while simultaneously protecting CSLB data and infrastructure.

Online Services
CSLB focused on customer-centric digital services by enhancing the customer experience through online services, mobile friendly applications, and self-service portals. Over the past few years, CSLB's IT Division released online services that enable license renewals, association and disassociation for Home Improvement Salespersons, and citation payments to be submitted. CSLB also released a mobile-friendly service to report unlicensed contractor activity. To fast track these implementations, CSLB leveraged an agile methodology for IT project management for flexibility and adaptability.

During this time, the IT Division also led the transition of CSLB's license examination administration from an in-house operation to a third-party vendor allowing applicants greater flexibility and availability in scheduling a contractor's trade and law examinations.

Improved Security
In response to the evolving landscape of cyber threats, CSLB has made significant strides in strengthening our cybersecurity posture. CSLB has implemented a comprehensive strategy that leverages cutting-edge technologies and best practices to protect our data and systems. A key achievement in cybersecurity is implementation of Varonis, a sophisticated data security platform that provides CSLB with unparalleled visibility into user data, such as their roles, permissions, activities, and user behavior. This enhanced insight allows CSLB to proactively manage data security risks, ensure compliance with regulatory standards, and optimize data management strategies. Another achievement is strengthening CSLB's network security with Palo Alto Networks. Their next generation firewalls and threat intelligence capabilities allowed CSLB to improve threat prevention and fortified the network infrastructure, including a secure VPN for remote access to allow employees to telework.

The CSLB IT Division continues to foster a collaborative ecosystem with DCA's Office of Information Services, with assistance to enhance the IT infrastructure and security for CSLB. This collaborative environment has allowed CSLB to adopt cloud computing for data protection and retention, and office productivity and collaborative tools. In addition, the CSLB and DCA partnership has embarked on a digital transformation project for the CSLB Call Center leveraging Amazon Web Services Call Center application.

As shown with the recent upgrades and completed projects, CSLB's existing infrastructure and IT system has the capabilities and adaptability of future enhancements such as data security, customer friendly features, and efficiency improvements, while tailoring to CSLB's unique requirements.

CSLB continues to enhance and optimize the current IT system, including a new digital workflow automation product set to begin in 2024. Through these examples, CSLB has effectively demonstrated its commitment to maintaining a modern, efficient, and secure IT infrastructure that aligns with both current needs and future innovations.

OTHER ISSUES

ISSUE #13: (TECHNICAL CHANGES MAY IMPROVE EFFECTIVENESS OF THE LAW ADMINSITERED BY CSLB.) There are amendments to the various practice acts that are technical in nature but may improve CSLB operations and the enforcement of those laws.

Background: There may be a number of non-substantive and technical changes to the contractors' license law, which may improve efficiencies. Since the CSLB's last sunset review in 2015, the CSLB has sponsored or been impacted by more than 20 pieces of legislation which address all or parts of the

CSLB's duties, oversight authority, licensing requirements and examination standards, among others. As a result, there may be a number of non-substantive and technical changes to the contractors' law, which should be made to correct deficiencies or other inconsistencies in the law.

Because of numerous statutory changes and implementation delays, code sections can become confusing, contain provisions that are no longer applicable, make references to outdated report requirements, and cross-reference code sections that are no longer relevant. The CSLB's sunset review is an appropriate time to review, recommend and make necessary statutory changes. For example, AB 1070 (Gonzalez-Fletcher, Chapter, Statutes of 2017) amended BPC § 7169 by requiring the CSLB to develop a "solar energy disclosure document". In BPC § 7169 (c), there is an incorrect reference to the "disclosure document" as a "disclose document". A technical correction is recommended. Any changes to the CSLB during the sunset review and subsequent legislation would be an appropriate place to update any technical deficiencies similar to the above noted.

Committee Staff Recommendation: The CSLB should recommend any technical and non-substantive clean-up amendments for BPC § 7000 et seq. to the Committees.

CSLB's 2018 Response to Recommendation: CSLB has identified no additional technical changes to contractors' state license law beyond the one identified in the background information presented above and has no requests at this time.

Current Response: CSLB has identified technical amendments that are needed to clarify the Contractors State License Law, which it will submit under separate cover.

ISSUE #14: (LLCs). Do timeframes outlined for compliance with LLC filing requirements need to be updated to better reflect how long the process can take?

LLC Liability Policy: BPC § 7071.19 requires a license holder as a limited liability company (LLC) to maintain a general liability insurance policy at all times as a condition of licensure. The number of persons on the personnel of record will determine the amount of insurance the LLC must maintain. BPC § 7071.19(f) requires the applicant or license holder renewing an application to provide the required insurance information to the CSLB. Additionally, insurer companies are required to report to the registrar including the name, license number, policy number, dates that coverage is scheduled to commence and lapse, date and amount of any payment of claims, and cancelation date if applicable. The CSLB raised an issue that it is having difficulty securing the required information from the insurance companies in a timely manner. If the CSLB does not have the information on record, it will suspend the license. The CSLB reports that insurance providers are not always timely in submitting the required information to the CSLB. In some cases, the licensee may have submitted the required insurance documents, but the insurance provider has not. If the CSLB does not have both records of insurance on file, the CSLB reports that the license must be suspended.

In its Sunset Review Report 2018, the CSLB proposed a statutory modification regarding BPC § 7071.19 to allow the insurance provider and applicants 45 days to provide the required insurance documents. The CSLB notes that a licensee would still be required to submit the certificate of insurance compliance without a break in general liability insurance coverage or the suspension would still apply. Under current law, the CSLB reports that if the CSLB gets a report that a workers' compensation policy has lapsed, the licensee has 45 days to take corrective actions.

Secretary of State Filing of Information: In addition to a liability insurance policy, license holders who are LLCs or corporations are required to register with, and be in good standing with, the Secretary of State. Any failure to register or be in good standing as identified by the Secretary of State can result in the automatic suspension of a license 30 days from the date of the Secretary of State's notice of

noncompliance. The CSLB contends that it can take more than 30 days for a licensee to reconcile with the Secretary of State when filing its "statement of information and would instead request that the license suspension be effective 60-days from the date of notice from the Secretary of State. The CSLB reports that it can take longer than 30 days to resolve registration issues with the Secretary of State. It is not clear why processing these registrations is delayed at the Secretary of State's office nor is it clear how the Secretary of State notifies the CSLB if an individual is not incompliance with filing the required statement of information.

Committee Staff Recommendation: The CSLB should advise the Committees on outreach efforts to licensees to encourage the timely filing of required documentation for licensure and renewal. Additionally, the CSLB should advise the Committees on its communications with outside entities to encourage the timely distribution of required information for CSLB licensees and applicants. How will the additional time ensure compliance?

CSLB's 2018 Response to Recommendation: In January 2019, CSLB launched an online submission process for general liability insurance to ease compliance with this requirement and plans to develop industry bulletins to educate licensees, insurance carriers, and interested stakeholders about complying with license renewal and other license maintenance requirements. CSLB has not conducted specific outreach with licensees on ensuring compliance with limited liability company and Secretary of State requirements.
CSLB requests extending the grace period to 45 days before license suspension occurs for limited liability companies to comply with commercial general liability insurance requirements, as is already the case for maintenance of a workers' compensation policy or workers' compensation exemption. The licensee would still be required to timely submit the certificate without a break in general liability insurance coverage. CSLB also requests extending to 60 days the grace period before license suspension occurs if a licensee is not registered and in good standing with the Secretary of State's office.
These two proposals, which would allow licensees additional time to submit insurance documents to CSLB and to reconcile records with the Secretary of State, are intended to reduce barriers to maintaining valid licensure.

Current Response: Issues previously reported as specific to processing LLC applications are considered resolved. Licensees, applicants, and insurance providers have grown accustomed to the reporting requirements as a condition of licensure. These applications are now routinely processed without incident or complaint.

Process changes for LLC applications were quickly implemented by CSLB's Licensing Division and adopted by industry, which eliminated the need for an Industry Advisory. CSLB has developed processes specific to processing an application from an LLC and cross-trained multiple staff to process applications and assist applicants when questions arise. Additionally, CSLB updated its IT systems to better communicate with insurance companies and reflect changes to the applicant's status with the Secretary of State's systems.

In addition to internal adjustments, improvements outside CSLB have contributed to decreasing processing times. Since CSLB's last sunset review, the Secretary of State's online business lookup has been updated multiple times to include additional functionality and provide more information. The improvements simplify verifying LLC status with the Secretary of State, which was previously identified as a contributor to delayed processing times. Although changes to the Secretary of State website have improved CSLB's ability to obtain information, the frequent changes have presented challenges for staff when researching applicant information. Because the Secretary of State website continues to be incrementally updated and improved, staff communicate changes as they are

discovered to managers who then ensure all staff are aware and update procedures to reflect those changes to prevent delays in processing.

ISSUE #15: (UNSATISFIED JUDGMENTS) What steps can the CSLB take to ensure that licensees facing construction related judgements are prevented from continuing to operate until the judgement is satisfied?

Background: CSLB has authority to suspend a license if it learns of an unsatisfied construction-related judgment imposed on the licensee, as specified in BPC § 7071.17. When the CSLB suspends a license for failure to pay an outstanding judgement, any qualifying individual or personnel on the license record is automatically prohibited from serving in those capacities on another license until the judgment is satisfied. This prohibition also causes suspension of the license of any other license entity with any of these same personnel as the license subject to the judgment (until those members disassociate from the license or the judgment is satisfied). Therefore, when a judgment is imposed on a license, the suspension extends to individuals associated with the judgment debtor license and other licenses.

However, the reverse is not true: If a judgment is entered against an individual without naming the licensed entity, the statutory language does not authorize CSLB to suspend the license on which the individual appears. As a result, an individual named on a construction-related judgment can remain on a license. The proposed clarifying change to BPC section 7071.17 would preclude license applicants, if they were subject to an unsatisfied final judgment, from becoming licensed until that judgment is satisfied. Additionally, it would preclude an individual named in an unsatisfied judgment from appearing on an active license until the judgment is satisfied.

Committee Staff Recommendation: The CSLB should advise the Committees on the extent of this issue and explain how changing current law would enhance consumer protection.

CSLB's 2018 Response to Recommendation: Contractors' state license law allows CSLB to suspend a contractor license and associate licenses for those that have a construction-related unsatisfied civil judgment. However, many consumers are unfamiliar with the civil court process and name only the individual they have dealt with and not the licensed entity. Currently, CSLB cannot help them enforce the judgment if the licensed entity is not named. CSLB does not currently track these types of judgments; however, this proposed change to hold named individuals accountable for unsatisfied judgments that arise from their contracting activities would benefit consumers.

Current Response: SB 610 (Glazer, Chapter 378, Statutes of 2019), which extended the regulatory authority of CSLB to 2024, made several additional amendments to the Contractors State License Law. Among those amendments were clarifying changes to BPC section 7071.17.

One amendment specifies that if a judgement is made against a licensee's personnel of record (rather than the licensee), the qualifier and personnel of record at the time of the judgement cannot serve on another license until that judgement is satisfied (BPC section 7071.17 (j)(1)). Additionally, this bill precludes an individual named in an unsatisfied judgment from appearing on any other active license until the judgment is satisfied and authorized suspension of those licenses until the judgement is satisfied (BPC section 7071.71 (j)(2)).

These amendments prevent the personnel of record and qualifiers from recommitting violations, mistakes, or fraudulent behavior against additional consumers by serving in the same capacity for another contractor. CSLB does not have a method of predicting how many consumers could have fallen victim had these amendments not been made. However, it is undeniable that holding the

personnel of record and qualifiers accountable for actions that led to judgments reduces the potential harm caused to consumers.

Judgement data for Fiscal Years 2018/19 through 2022/23 are as follows:

Outstanding Liabilities (from California State Agencies)					
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Initial	934	737	363	1176	730
Suspend	820	699	200	899	617
Reinstate	693	617	220	634	469
Total	2447	2053	783	2709	1816

Final Judgments (from Court Actions)					
Fiscal Year	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Initial	593	593	644	553	569
Suspend	224	260	235	278	181
Reinstate	602	565	567	558	498
Total	1419	1418	1446	1389	1248

ISSUE #16: (C-10 LICENSE CATEGORY FEE COLLECTION) The CSLB is authorized to collect fees from certain licensure categories, but does not require these fees to be assessed. Should the CSLB be required to collect fees to verify certification?

Background: BPC § 7137 authorizes the CSLB to charge a fee, not to exceed $20, for C-10 (Electrician) and C-7 (Low Voltage Systems) licensees for enforcement of the electrician certification requirement as specified in Labor Code (LC) §108.2. LC § 108.2(a) requires persons who perform work as electricians to become certified and prohibits uncertified persons from performing electrical work for which certification is required and specifies that certification is only required for persons who perform work as electricians for contractors licensed as class C-10 electrical contractors.

Specifically, each person who performs work as an electrician must obtain the certification. C-10 license holders are not required to obtain the separate certification; however, the employees that work under the C-10 contractor's license are required to obtain certification. In addition, if a licensed C-10 contractor is working under another C-10 license holder as an employee, then he or she is subject to the certification law and must be certified. If a C-10 contractor is in violation of the certification law, he or she is subject to discipline by the CSLB.

The certification is not required for persons performing work for contractors licensed as C-7 low voltage systems or C-45 electric sign contractors as long as the work performed is within the scope of the class C-7 or class C-45 license. The CSLB is responsible for ensuring that the C-10 employees meet the certification requirements. According to the CSLB, there are approximately 30,500 active C10 contractors and if they use employees as prescribed in LC § 108.2, the CSLB must ensure that those employees are certified. The CSLB reports that it does not have sufficient staff resources allotted to ensure compliance with the LC requirement. As a result, the CSLB acknowledges that it does not effectively enforce this requirement. The CSLB has the statutory authority to charge the fee, but would need regulations to implement its authority; however, the regulatory process is currently under review, as it may take multiple years for the appropriate issuance of new regulations. The CSLB would like to request a statutory change to require the CSLB collect the $20 payment to increase enforcement efforts of the electrician certification.

Under current law, the Labor Commissioner is required to have a memorandum of understanding with the Registrar and maintain a process for referring cases to the CSLB when it determines that a violation has likely occurred. Upon receipt of a complaint from the Labor Commissioner alleging that a violation has occurred, the CSLB is required to open an investigation, and any disciplinary action against the licensee must be initiated within 60 days of receipt of the referral. Additionally, the Registrar may initiate disciplinary action against any licensee upon his or her own investigation, the filing of any complaint, or any finding that results from a referral from the Labor Commissioner alleging a violation.

CSLB's proposal would change the permissive language to a requirement that the CSLB collect the $20 fee and would additionally would strike the reference to C-7 (Low Voltage Systems) contractors as they are currently exempt under LC § 108.2 electrician certification requirements.

Committee Staff Recommendation: The CSLB should explain how the additional revenue would increase compliance given the CSLB's concerns with sufficient staffing.

CSLB's 2018 Response to Recommendation: CSLB requests statutory authority to assess an additional $20 fee on C-10 (Electrician) license renewals to fund additional staff to focus on ensuring compliance with the electrician certification requirement, as well as related disciplinary legal action costs. As the funding for this additional staff would come from a new revenue source, it would not affect staffing in other areas of the board. CSLB would seek this additional staffing through the budget change proposal process.

Current Response: During the board's previous sunset review, BPC section 7137 authorized CSLB to charge a fee up to $20, but did not set the fee to be charged to C-10 electrical contractors. This fee is required to be used by the Board to enforce provisions of the Labor Code, including certification requirements of employees of C-10 (electrical) contractors. Subsequent to CSLB's proposal to set the fee during the sunset process, SB 610 (Glazer, Chapter 378, Statutes of 2019) set the fee at $20, payable at time of C-10 license renewal. Therefore, CSLB is no longer requesting this amendment. When the fee became effective, CSLB's fund was near insolvency. While SB 607 requires the C-10 fee to be charged, the fund was not stable enough to create additional positions to perform this work. In fact, after SB 610 was enacted, the Board sponsored SB 607 (Min, Chapter 367, Statutes of 2021) to raise most fees to address the fund's structural imbalance. Now that Contractors License Fund has stabilized, CSLB plans to submit a BCP in 2024 to request new positions in the Enforcement Division got dedicated enforcement of electrician certification requirements.

Although a BCP was untenable at the time, CSLB continued to enforce Labor Code section 108.2. This was accomplished by redirecting a seasoned Special Investigator (SI) to collaborate with industry partners to enforce certification requirements on a part-time basis. However, one part-time SI is not sufficient to effectively investigate electrician certification violations. Two full-time SIs are needed.

CONTINUED REGULATION OF THE PROFESSION BY THE CURRENT MEMBERS OF CSLB

ISSUE #17: (SHOULD THE CSLB BE CONTINUED?) Should the licensing and regulation of contractors be continued and be regulated by the CSLB?

Background: The safety and welfare of consumers persists under the presence of a strong licensing and regulatory structure to oversee the contractor profession. The CSLB's focus is consumer protection, to that end, has demonstrated its commitment to ensuring a robust contractor market place. Although, there are places where the CSLB can improve, including fiscal prudence, strengthening its licensing and enforcement objectives and those respective programmatic units, and identifying legislative priorities sooner, the CSLB should continue with a four-year extension so

that the Legislature may once again review whether the issues and recommendations in this Background Paper have been addressed.

Staff Recommendation: Recommend that the licensing and regulation of contractors and home improvement salespersons continue under the CSLB's regulatory authority in order to protect the interests and safety of the public. The CSLB should continue to improve upon its administrative processes to ensure the regulatory functions of the CSLB meet it consumer protection mandate. The CSLB should continue to develop staff management policies to ensure it has well-trained and crosstrained staff to alleviate pressures when disaster response is necessary. Further, the recommendation is for the CSLB to be reviewed by the appropriate policy committees of the Legislature once again in four years.

CSLB's 2018 Response to Recommendation: As noted in the board's December 2018 Sunset Report, a well-regulated construction industry protects the health, safety, and welfare of consumers.

Current Response: The board agrees with the recommendation to extend CSLB's regulatory authority. The board continues to fulfill its consumer protection mandate and goals through effective licensing and consumer-focused enforcement programs. CSLB consistently strives to improve its ability to protect consumers and looks forward to working with the Committees during sunset review to continue improving its regulation of the construction industry.

Section 11 – New Issues

Issue #1: Reimbursement for Industry Expert Costs

Issue: A primary goal of the CSLB Intake and Mediation Unit is to resolve as many complaints as practical without referral to field investigation; the Board approved an internal goal to settle 30 percent of complaints. When complaints are received that include workmanship issues, they are perfect candidates for mediation if the contractor is willing to correct the work or provide a refund to resolve the matter or avoid CSLB investigation. Additionally, when a complaint is referred for a field investigation, the investigation is more likely to result in a settlement, citation, letter of admonishment, or arbitration, which do not provide a mechanism for cost recovery.

To resolve a workmanship dispute, CSLB must evaluate the work that needs to be completed to bring a project up to industry standard, as well as the associated costs. CSLB contracts with industry experts (IEs) to conduct these evaluations and pays them approximately $800 to inspect the project site complaint items and prepare an industry expert report. From FY 2019/20 through FY 2022/23, CSLB spent $2,061.446 to contract with IEs 2,594 times (one case may require more than one IE). Costs incurred also include IE travel to the job site.

Background: CSLB receives more than 13,000 consumer-filed complaints each year, the majority of which allege incomplete and/or defective work. For the complaints that allege workmanship issues, IE services are required to determine if the contracted work was completed and/or performed to minimum trade standards. CSLB contracts with hundreds of IEs each year and is unable to recover the cost of these inspections except in the small number of cases in which a formal accusation is filed. Costs to retain IEs are distinguishable from traditional "cost recovery" because in the majority of complaints described here, CSLB is not usually pursuing an accusation. There is a need for CSLB to have authority to obtain reimbursement for the cost of repeatedly inspecting poor workmanship or incomplete work prior to and in lieu of the disciplinary stage of a complaint when appropriate. Providing authority to recover some IE costs will serve as a deterrent to contractors who do not timely respond to requests to correct work or who repeatedly rely on CSLB to incur the cost of an IE to tell them how to correct and complete their contracted work. These practices have CSLB essentially providing quality control for contractors that abuse this system by relying on CSLB to handle their customer disputes particularly in the residential solar industry. This has the additional effect of increasing complaints to CSLB.

IE Costs Paid by CSLB

	Total IE Fees Paid	Number of Invoices	Average IE Fee	Travel Claims Paid	Travel Claims	Average IE Travel
FY 2019/20	$574,842	878	$653	$49,300	730	$67
FY 2020/21	$267,884	454	$587	$16,433	238	$69
FY 2021/22	$381,008	499	$699	$26,376	338	$72
FY 2022/23	$704,903	763	$805	$40,699	505	$70
Total	$1,928,637	2,594	$743.50	$132,808	1,811	$73.33

At least one other DCA agency has authority to charge for inspections to verify a violation has occurred. The Bureau of Household Goods and Services (BHGS), in its Home Furnishings and Thermal Insulation Act (BPC sections 19213 and 19213.1) authorizes BHGS to charge a fee when an inspection is needed to establish a violation. These sections do not require cost recovery through disciplinary action to invoke the fee. Unlike BHGS, which has staff to conduct and report on inspections, CSLB does not have in-house expertise to identify workmanship violations or the staff resources to conduct inspections at the rate these complaints are received. Thus, CSLB must rely on experts in the field to

conduct inspections that currently average $805 plus travel. To ensure CSLB can continue to contract with IEs as the cost of services rises, authorization would be recommended to charge actual costs.

Recommended Solution: Authorize CSLB to seek reimbursement for IE costs when a letter of admonishment or citation is issued for a workmanship violation. The contractor would be required to pay an industry expert cost which would be set by statute considering CSLB's actual cost for the inspection (at a maximum of $1,000). The costs would be assessed to the contractor on their next renewal as a fee based on actual costs rather than a fine, which is punitive and may vary based on factors other than actual costs to conduct the inspection.

Issue #2: Adopt Enforcement Fine Minimums in Statute

Issue: CSLB enforcement fines are set by statute, but do not include minimum fines. Because CSLB's fines provide only "maximum" amounts in statute, this leads to frequent and significant fine reductions during citation appeals by administrative law judges which creates great disparities in the amount of final fines issue compared to the maximum fine available.

The minimum fines that are set in regulation at $100, have not been increased in 15 years, and fines are frequently reduced to the minimum. CSLB issued $18,091,356 in fines on 5,597 citations in FY 2019/20 through FY 2022/23. During this time, the average pre-appeal fine was $3,232. ALJs reduced 2,014 fines on appeal to $1,840, a difference of $3,706,540. These reductions ensure fines are not commensurate with the violation, do not support Enforcement Division activity, and do not provide an incentive to comply with the Contractors State License Law.

Background: The CSLB minimum fines are in regulation and were last amended in 2007. In 2003, the Legislature more than doubled the maximum fine for most violations of the Contractors State License Law from $2,000 to $5,000. In response, CSLB amended its citation regulations in 2007 to reflect the increased maximums and applied the rationale of doubling the maximum fines to the minimum fines. In this rulemaking, CSLB increased its minimum fines from $50 to $100. The minimum fines have not been amended since then.

CSLB has had several successful bills in the past few years that increased maximum fines by statute for specified violations (for example from $5,000 to $8,000 and from $15,000 to $30,000 for specified violations). But each time this was done, the minimum fines set forth in regulation remained unchanged. As a result, an ALJ must consider a wide range of potential fines between an out-of-date minimum in regulation (for example, $200) and an updated statutory maximum (say, $8,000), causing the judge to land on a reduced fine. Failing to set higher minimum fines when the legislature increases the maximum fine is contrary to CSLB's consumer protection mandate and confounds legislative intent that reflects the seriousness of the violations.

CSLB considered two methods of determining how to set increases minimums to reduce the impact of reduced fines on CSLB's consumer protection mandate. First was to consider increases commensurate with the increase to the maximum fine, similar to the rationale used in the 2007 minimum update. This would lead to a six-fold increase for fines that have a $30,000 maximum. If CPI was used, a $100 fine would increase to $152.00 (adjusting for California urban areas, this value would be $164).[25] This minimum fine would have the same flaws as the current minimum – it would not be commensurate with the violation, would not support Enforcement Division activity, and would not provide an incentive to comply with the Contractors State License Law. The other solution considered is to adopt the fines in statute, raise the minimum fines to levels commensurate with the violation (a higher maximum penalty should have a higher minimum penalty), and allow CSLB to raise fines at

[25] The U.S. Bureau of Labor Statistics CPI Calculator was used to determine this amount.

regular intervals consistent with increases in CPI. This would be consistent with recent laws that implemented realistic ranges for the violations and allow periodic increases for BHGS (see BPC sections 19094 (d)(3) and 19103 (e)).

Recommended Solution: Ensure enforcement fine "floors" are commensurate with recent statutory maximum increases and increases and allow future increases to the minimum fine based on increased to the CPI. This proposal would involve enacting a statutory minimum fine that is based on the egregiousness of the violation as evidenced by the maximum already set by the Legislature. The proposal would also provide that minimum fines be adjusted every five years in line with the CPI.

Issue #3: Expand Hazardous Substance Certification to Include Excavation and Debris Removal

Issue: In the wake of unprecedented disasters in California over the past several years, rebuilding efforts have commenced across the state in residential areas devastated by floods, fires, and earthquakes. CSLB has received several inquiries from concerned parties about whether contractors digging to remove contaminated materials from these devastated areas are properly trained or qualified. CSLB updates the hazardous substances certification examination every five years with extensive input from subject matter experts who help design questions based on federal, state, and local law. However, existing statute only requires the hazardous substance certification for removal and installation of underground storage tanks or if the project site is listed on state or federal websites, and as a result the certification examination test questions are limited in scope to these issues.

Background: CSLB issues a hazardous substance certificate to contractors who already have a contractor's license and need the certification to engage in "removal or remedial action." The certification is required for all work that requires the contractor to dig into the surface of the earth and remove the dug material "at hazardous sites that are identified by the Department of Toxic Substances Control's Hazardous Waste and Substances Site List under state law or are listed on the United States Environmental Protection Agency's National Priorities List under federal law.

The criteria for inclusion on these lists are not the same as those to designate a declared disaster area. Consequently, the hazardous substance certification does not permit a certificate holder to perform removal or remediated action in areas where consumers are victims of disasters, unless the work needed is to install or remove underground storage tanks.

Recommended Solution: There is a need to evaluate whether CSLB's hazardous substance certification needs to be updated to include construction related digging in disaster areas. CSLB is currently working with DTSC to clarify the criteria for inclusion of a dig site within a declared disaster area on their website. If DTSC is unable to list residential sites in declared disaster areas on their website, then there will be a need to expand the CSLB hazardous substance certification to include these additional sites devastated by floods, fires, and earthquakes.

Issue #4: Update License Examination Fee Structure to Reduce Costs to Applicants and to CSLB

Issue: In July of 2022, CSLB entered a master contract held by the Department of Consumer Affairs, joining several boards and bureaus whose license examinations are administered by a third-party vendor, PSI Exams. However, CSLB's existing fee statute compels the Board to continue to charge applicants directly for examination administration services and pay the vendor to administer the examination. The vendor in turn charges CSLB for each examination administered. This is a costly duplication of effort and paperwork for all parties involved.

Background: In 2020, CSLB contracted with CPS HR Consulting, Inc. (CPS) to conduct a fee study. CPS evaluated the work required to administer and enforce the Contractors State License Law, the costs of providing those services, and whether the fees charged support CSLB activities. The study made recommendations to realign fee structures by business structure to be consistent with the work required to process an application for each type. Additionally, the study recommended new fees and fee increases under the same workload methodology.

The fee study's recommendations were implemented by SB 607 (Min, Chapter 367, Statutes of 2021) effective January 1, 2022. The original license fee includes test development and administration costs for the first examination, i.e., the cost of the first attempt at each test – the Law and Business and the trade examination – is included at the time of application. For those who need to reschedule an examination due to failing an exam or another reason, the fee is set at $100. The $100 is meant to cover the cost of both required examinations; however, a candidate who fails may only need to retake either the Law and Business Exam or the trade exam, yet must pay for both exams.

The reasons for the current inefficiency are threefold: 1) CSLB's structural budget imbalance requiring cost-saving measures be adopted in 2019; 2) the fee study to justify increased fees was completed in 2020; and 3) legislative authority to contract with a third party for examination administration was enacted in 2021. Each of these steps were well before PSI Exams assumed examination administration on behalf of CSLB.

The initial strategy discussed by CSLB staff with the consultant who conducted its fee study in 2020 involved the following:

- When application fees were increased based on the fee study, the new application fees intentionally did not include the costs of examination administration (with the understanding it would soon be outsourced and the cost was not known at that time). CSLB planned to absorb those costs in the interim.

- CSLB has a long-standing fee in existing law that charges for rescheduling an examination; this fee was retained to cover the estimated costs of coordinating examination scheduling with PSI Exams until outsourcing was complete.

- In anticipation of this upcoming costs for applicants, CSLB did not increase the initial licensee fee of $200 for sole ownerships (60% of CSLB's license population) when increasing fees in 2021. Consequently, CSLB has been absorbing the examination costs.

After a year of examination administration through a third-party vendor, CSLB pays the vendor $45.65 for each examination administered. CSLB collects nothing from applicants for first-time examination administration but assesses (per statute) a $100 examination "rescheduling fee" when applicants fail and must retake examinations.

Legislatively, this proposal would provide that fees for examination administration be paid to the vendor directly and remove the $100 reschedule fee from CSLB law. The result would be that applicants would pay $45.65 per examination ($91.30 for Law and Business and the trade examination) to sit for their first examination, the amount that is currently paid by CSLB. A large number of applicants who reschedule for any reason, including failing the examination, would pay the vendor $45.65 to reschedule instead of paying CSLB's $100 flat fee to reschedule. This results in net savings of $54.35 for each applicant who reschedules an examination. Further, the majority of candidates who fail the examination do so multiple times so the cost savings may be much higher in practice.

CSLB would then stop paying PSI directly and the Licensing Division would be relieved of the workload associated with collecting application administration fees and transferring them to the vendor who actually administers the examination. Scheduling examinations and retakes requires significant staff resources to receive and process payments then to notify candidates and PSI that they may schedule a second (or subsequent) examination, some as many as 12 times.

Applicants could be charged less for rescheduling an exam after failing an examination required for licensure with CSLB if CSLB was not required to process examination reschedules. BPC section 7137 (a)(2) sets the fee to reschedule an examination at $100; however, PSI Exams invoices CSLB $45.65 for each standard examination. The workload to PSI would not change, only the person with whom they scheduled the examination would change.

Recommended Solution: Amend the Contractors State License Law to require candidates to pay examination fees directly to the vendor (in this case, PSI exams). By moving payment directly to PSI Exams, Licensing Division workload will be reduced and allow staff to be redirected to other work in the unit, while simultaneously reducing the cost to candidates to take the examinations. The existing contract between CSLB and PSI contains controls to prevent the applicant from paying an excessive amount to PSI to take the examination (i.e., the applicant should not be charged much more than the actual cost to PSI administering the examination).

Issue #5: Authorize CSLB to Issue License to Tribes and Tribally Owned Businesses

Issue: Recognizing the state's requirement to obtain a license to act in the capacity of contractor, a tribe applied for a contractor's license in 2021. However, while processing the application, staff realized that there is no authority in the Contractors State License Law to issue a license to a tribe because the law does not reference tribes in any capacity (tribe, tribally owned entity, tribal corporation, etc.) that authorizes licensure.

In relation to a construction related project, BPC section 7026, defines a contractor as, "…a ***person*** who undertakes to or offers to undertake to, or purports to have the capacity to undertake to, or submits a bid to, or does himself or herself or by or through others, construct, alter, repair, add to, subtract from, improve, …" [emphasis added.]

The term "person" in the definition of a contractor is defined in BPC section 7025, subd. (b) as "an individual, a firm, partnership, corporation, limited liability company, association or other organization, or any combination thereof," However, BPC section 7065 limits the entities to which a license may issue to individual owners, partnerships, corporations, and limited liability companies. This creates a barrier to licensure for tribes, which are distinctly not any of these entities.

Finally, BPC section 7076.2 requires licensed contractors with Secretary of State registration to maintain good standing. Failure to do so shall result in suspension by operation of law. However, tribes have several options when forming their corporations. A tribe may form a corporation as a tribally chartered corporation under tribal law, under federal law through Section 17 of the Indian Reorganization Act (IRA), and as a state chartered tribal corporation formed under state law. However, the Contractors State License Law only recognizes registration with the Secretary of State as a valid method of forming a corporation.

Background: Tribal governments are distinct political entities that have the power of self-government and a right to exercise sovereignty over their members and territories. These rights predate the United States. Tribes and states have adjacent jurisdictions and some of California's tribes' territories cross state borders. As sovereign governments, tribes often pursue economic development initiatives by operating for-profit businesses. A tribe that establishes businesses as part of its economic

development strategy does so to fund tribal operations that provide health care, education, social services, cultural preservation, land acquisition, and job opportunities to members.

These businesses may, but are not required to, form under state law and register with the Secretary of State as a foreign corporation. Tribal businesses may also be formed as a tribally chartered corporation, a company formed under tribal law. Some tribes have laws that prohibit them from forming businesses under any other structure. Finally, tribes may form a business as a Section 17 corporation. To organize as a Section 17 Corporation, a tribe must be federally recognized, a process established by Section 16 of the IRA.[26]

While tribes may form a corporation under tribal, federal, or state law, depending on which the tribe has determined is best for them, tribes are sovereign governments that have rights to self-governance that an individual (sole proprietor), partnership, or corporation do not possess. Because of this sovereignty, a tribe is also *not* an association or organization. This distinction needs to be made in the Contractor's State License Law to allow a tribe or tribally owned business to operate as a licensed contractor outside tribal or federal boundaries without imposing a specific business structure upon tribal governments. Requiring a tribe to register with the Secretary of State offends principles of sovereignty. Further, issuing a license to a sole proprietor or general partnership is not sufficient because a tribe is a government, not an individual or business organization. As a result, CSLB is unable to issue contractor licenses to tribes.

Recommended Solution: Remove barriers in the Contractors State License Law that prevent CSLB from issuing a license to tribally owned corporation. This proposal would add to the Contractors State License Law the different ways a tribe can be organized and recognize tribes as entities to which a contractor's license can be issued, e.g., "tribally owned business," "tribally chartered corporation," or "state-chartered tribal corporation." This proposal would allow tribes to perform work that requires a contractor's license outside reservation, rancheria, or federal boundaries, while recognizing tribes' sovereignty to choose the manner in which their businesses are formed.

Issue #6: Specify CSLB is not Responsible for Attorney Fees Related to Disposition of Cash-In-Lieu of Bond

Issue: Contractors are required to maintain a contractor's bond for the benefit of consumers, employees, or other contractors who may be damaged as a result of defective construction or from other Contractors State License Law violations. However, a decision in a California Appellate Court case, Karton v. Ari Design & Construction (Karton), found that surety bond companies holding licensed contractor bonds may be ordered to pay the attorney fees of the litigating parties when the surety company delays in releasing the bond in the civil litigation. This decision may expose CSLB to liability for attorney fees in all future "cash deposit" civil cases.[27]

This exposure is contrary to the policy and purpose behind cash deposits, which is simply to provide contractors who do not want to use a surety company with a means of complying with the contractor's bond requirement, a condition precedent to licensure (BPC section 7071.6). CSLB should not be responsible for attorneys' fees for holding a cash deposit because CSLB is not a surety, does not issue bonds or make profit on bonds, and has no discretion to release cash deposits without an order from the court.

[26] California currently has 109 federally recognized tribes and others seeking recognition.
[27] Cash deposits refer to cashier's checks (filed with the state) or certificates of deposits (filed with private banks) by contractors who do not want to use a surety company for their required license bond.

Background: BPC section 7071.4 authorizes CSLB to accept cash deposits in lieu of filing a contractors bond and subdivision (c)(1) prohibits CSLB from releasing any portion of the deposit for any purpose, except as determined by the court. CSLB is named as a co-defendant in civil cases involving claims against the cash deposit, which is a necessary step for a consumer to claim against a cash deposit held by CSLB. To comply with subdivision (c)(1), CSLB waits for instruction from the court on the disposition of the cash deposit. On or about April 20, 2023, a deputy attorney general representing CSLB in a routine cash deposit bond case, on which CSLB is listed as a codefendant, alerted CSLB that the Karton case was being used to make CSLB liable for consumer's attorney fees in a civil case against a contractor. This was the first CSLB learned of the case being used in this way.

When a contractor commits an act that exposes their bond to payout, CSLB is not legally responsible. CSLB's only role in these cases is to protect the consumer (and the funds) by making the cash deposit bond funds available when the court has litigated the issues and directed CSLB to dispense the funds to an injured party. However, the legal interpretation that the Karton decision applies in these cases is possible because the Bond and Undertaking Law (Code of Civil Procedure sections 995.010-996.560) treats CSLB as a "surety" in situations when CSLB is holding cash deposits for contractors until their dispute is resolved. There are currently 300 deposits on file for which CSLB could be held liable for attorney fees in cases in which CSLB is simply complying with the law by awaiting disposition instruction from the court.

CSLB sponsored AB 3126 (Brough, Chapter 925, Statutes of 2018) to eliminate cash deposits in lieu of bond. At the time, the alternatives to filing a bond included a cashier's check, certificate of deposit, or a savings account showing the ability to pay out the bond amount. CSLB proposed this legislation out of concern about consumers' difficulty in recovering payment if a contractor removed money from their savings account or closed the account, as well as the burden to the consumer to sue in small claims court to attempt to obtain a release of the funds. However, the Board's original legislative proposal to eliminate cash deposits altogether was amended to only remove the savings account option. This amendment was intended to allow contractors with poor credit, no social security number, or other reasons for not obtaining a bond to have an additional barrier to licensure.

Recommended Solution: Amend the Contractors State License Law to expressly provide that CSLB is not liable for attorney fees in civil claims involving a contractor's cash deposit on license bond.

Section 12 – Attachments

Please provide the following attachments:

A. Board's administrative manual.

B. Current organizational chart showing relationship of committees to the board and membership of each committee (cf., Section 1, Question 1).

C. Major studies, if any (cf., Section 1, Question 4).

1. Energy Storage Systems Report
2. Staff Report on Mandated Workers' Compensation for Certain License Classifications
3. Senate Bill 610 (Glazer) License Bond Study
4. 2020 Fee Study
5. Battery Energy Storage Systems (BESS) – Evaluation of Alternative Contractor License Requirements for Battery Energy Storage Systems
6. Battery Energy Storage Systems (BESS) – CSLB Staff Report in Consultation with Expert Consultants

D. Year-end organization charts for last four fiscal years. Each chart should include number of staff by classifications assigned to each major program area (licensing, enforcement, administration, etc.) (cf., Section 2, Question 15).

E. Provide each quarterly and annual performance measure report for the board as published on the DCA website

F. Provide results for each question in the board's customer satisfaction survey broken down by fiscal year Discuss the results of the customer satisfaction surveys.

Attachment A – Board's Administrative Manual

2023

Board Member Administrative

PROCEDURE MANUAL

CONTRACTORS STATE
LICENSE BOARD

Table of Contents

Chapter 1. Introduction

Overview

The Contractors State License Board (CSLB) was created by the California Legislature in 1929 as the Contractors License Bureau under the Department of Professional and Vocational Standards to safeguard the public's health, safety, and welfare. Today, CSLB is one of the boards, bureaus, commissions, and committees within the Department of Consumer Affairs (DCA), part of the Business, Consumer Services and Housing Agency under the oversight of the governor. The Department is responsible for consumer protection and representation through the regulation of licensed professions and the provision of consumer services. While DCA provides administrative oversight and support services, CSLB has policy autonomy and sets its own policies and procedures, and initiates its own regulations.

The Board is comprised of 15 members. By law, nine are public members (eight non-contractors and one local building official), five are contractors, and there is one labor representative. Eleven appointments are made by the governor. The Senate Rules Committee and the speaker of the assembly each appoint two public members. Board members may serve up to two full four-year terms. Board members fill non-salaried positions, but are paid $100 per day for each meeting day or day spent in the discharge of official duties (see section entitled "Salary Per Diem") and are reimbursed for travel expenses.

This Board Member Administrative Procedure Manual is provided to board members as a ready reference of important laws, regulations, DCA policies, and board policies to guide the actions of board members and ensure board effectiveness and efficiency.

Mission, Vision, and Values

Mission

CSLB protects consumers by regulating the construction industry through policies that promote the health, safety, and general welfare of the public in matters relating to construction, including home improvement.

The Board accomplishes this by:

- Ensuring that construction, including home improvement, is performed in a safe, competent, and professional manner;
- Licensing contractors and enforcing licensing laws;
- Requiring licensure for any person practicing or offering to practice construction contracting;
- Enforcing the laws, regulations, and standards governing construction contracting in a fair and uniform manner;
- Providing resolution to disputes that arise from construction activities; and
- Educating consumers so they can make informed choices.

Vision

CSLB is a model consumer protection agency, integrating regulatory oversight of the construction industry as necessary for the protection of consumers and licensed contractors.

Values

CSLB provides the highest quality throughout its programs by:

- Being responsive and treating all consumers and contractors fairly;
- Focusing on prevention and providing educational information to consumers and contractors;
- Embracing technology and innovative methods to provide services; and
- Supporting a team concept and the professional development of staff.

General Rules of Conduct

- Board members shall not speak or act for the Board without proper authorization from the board chair.
- Board members shall maintain the confidentiality of confidential documents and information.
- Board members shall commit the time to prepare for board responsibilities.
- Board members shall recognize the equal role and responsibilities of all board members.
- Board members shall act fairly, be nonpartisan, impartial, and unbiased in their role of protecting the public.
- Board members shall treat all applicants and licensees in a fair and impartial manner.
- Board members' actions shall serve to uphold the principle that the Board's primary mission is to protect the public.
- Board members shall not use their positions on the Board for personal, familial, or financial gain.

Chapter 2. Board Meeting Procedures

Bagley-Keene Open Meeting Act

All meetings of CSLB are subject to the Bagley-Keene Open Meeting Act ("Act"), which governs meetings of the state regulatory boards and committees of those boards. The Act specifies meeting notice and agenda requirements, and prohibits discussing or taking action on matters not included on the agenda.

This Act is summarized in the "Guide to the Bagley-Keene Open Meeting Act" developed by DCA's Legal Affairs Division, available online at www.dca.ca.gov and distributed to board members at the beginning of each calendar year.

Frequency of Meetings

(Business & Professions Code section 7006)

The Board shall meet at least once each calendar quarter for the purpose of transacting such business as may properly come before it.

Location

(Board Policy)

CSLB chooses meeting locations that are compliant with the Americans with Disabilities Act and easily accessible to the public. CSLB will hold board meetings in different locations throughout the state. CSLB also recognizes its responsibility regarding the public's concern for the judicious use of public funds when choosing meeting facilities and overnight accommodations.

Board Member Attendance at Board Meetings

(Board Policy)

Board members shall attend each meeting of the Board. If a member is unable to attend, they must contact the board chair or the registrar and ask to be excused from the meeting for a specific reason. If the absence is approved, it will be recorded as an "approved absence" in board records. Should a member miss two consecutive meetings, the board chair may notify the director of DCA.

Quorum

(B&P Code section 7007)

Eight board members constitute a quorum for the transaction of business. The concurrence of a majority (more than one-half of the entire body) who are present and voting at a meeting shall be necessary to constitute an act or decision of the Board.

Agenda Items

(Board Policy)

The board chair, with the assistance of the registrar, shall prepare the agenda and tentative meeting timeframe. Any board member may submit items for a board meeting agenda to the registrar 15 days prior to the meeting.

Notice of Meetings

(Government Code section 11120 et seq.; Business and Professions Code section 101.7)

Meeting notices (including agendas for board meetings) shall be sent to persons on the Board's mailing or email list at least 10 calendar days in advance. The agenda mailing list shall include a staff person's name, work address, and work telephone number who can provide further information prior to the meeting. The mailing list shall include all CSLB board members, as well as those parties who have requested notification.

Notice of Meetings to be Posted on the Internet

(Government Code section 11125 et seq.)

Unless the meeting meets the requirements for a special or emergency meeting under the Act, notice shall be given and also made available on the internet at least 10 calendar days in advance of the meeting, and shall include the name, address, and telephone number of a staff person who can provide further information prior to the meeting, but need not include a list of witnesses expected to appear at the meeting. The written notice shall additionally include the Internet address where notices required by the Act are made available.

Record of Meetings

(Board Policy)

The minutes are a summary, not a transcript, of each board meeting. They shall be prepared by board staff and submitted for review by board members before the next board meeting. The minutes must contain a record of how each member present voted for each item on which a vote was taken. Board minutes shall be approved at the next scheduled meeting of the Board. When approved, the minutes shall serve as the official record of the meeting.

Voting on Motions

All votes must be taken publicly. Secret ballots and proxy votes are prohibited. A majority of the board or committee vote is determined by the votes actually cast. Abstentions are recorded, but not counted, unless a law provides otherwise.

Voting options for board members:

1) Support / in Favor / Yes / Aye
2) Oppose / No / Nay
3) Abstain (not counted as a vote)
4) Recused (not counted as a vote)

Audio/Visual Recording

(Board Policy)

The meeting may be audio/video recorded and/or broadcast live via the internet. Recordings may be disposed of upon board approval of the minutes; broadcasts may be available in perpetuity. If a webcast of the meeting is intended, it shall be indicated on the agenda notice.

Meeting Rules

(Board Policy)

The Board will use Robert's Rules of Order, to the extent that it does not conflict with state law (e.g., Bagley-Keene Open Meeting Act), as a guide when conducting the meetings.

Public Attendance at Board Meetings

(Government Code section 11120 et seq.)

All meetings are open for public attendance.

Public Comment

(Board Policy)

Discussion of items not on a noticed agenda violates the Act's advance notice provision. However, the Board may accept public testimony on an item not on the agenda, provided that the Board takes no action or does not discuss the item at the same meeting. For items not on the agenda that the Board wishes to address, the chair may refer a member of the public to staff or the registrar, or refer the matter for placement on a future agenda. The Board cannot prohibit public criticism of the Board's policies or services. The chair may set reasonable time limitations.

Public comment must be allowed on open session agenda items before or during discussion of each item and before a vote, unless the public was provided an opportunity to comment at a previous committee meeting of the Board, where the committee consisted exclusively of board members. If the item has been substantially changed since the committee meeting, the Board must provide another opportunity for comment at a later meeting.

Due to the need for the Board to maintain fairness and neutrality when performing its adjudicative function, the Board shall not receive any substantive information from a member of the public regarding matters that are currently under or subject to investigation, or involve a pending or criminal administrative action.

1. If, during a board meeting, a person attempts to provide the Board with substantive information regarding matters that are currently under or subject to investigation or involve a pending administrative or criminal action, the person shall be advised that the Board cannot properly consider or hear such substantive information and the person shall be instructed to refrain from making such comments. The Board may ask or direct a staff member to speak with the person directly outside the confines of the meeting room.
2. If, during a board meeting, a person wishes to address the Board concerning alleged errors of procedure or protocol or staff misconduct involving matters that are currently under or subject to investigation or involve a pending administrative or criminal action, the Board will address the matter as follows:
    a. Where the allegation involves errors of procedure or protocol, the Board may designate either its registrar or a board employee to review whether the proper procedure or protocol was followed and to report back to the Board.

b. Where the allegation involves significant staff misconduct, the registrar will follow state law, departmental policies and procedures to investigate. The registrar may also refer the matter to DCA for investigation.

3. The Board may deny a person the right to address the Board and have the person removed if such person becomes disruptive at the board meeting.

Closed Session

(Government Code section 11126)

Examples of types of closed session meetings include:

- Discuss and vote on disciplinary or enforcement matters under the Administrative Procedure Act (APA);
- Prepare, approve, or grade examinations;
- Discuss pending litigation; or;
- Discuss the appointment, employment, evaluation or dismissal of the registrar unless the registrar requests that such action be taken in public.

If the agenda contains matters which are appropriate for closed session, the agenda shall cite the particular statutory section and subdivision authorizing the closed session.

No members of the public are allowed to remain in the meeting room for closed sessions. At least one staff member must be present at all closed sessions to record topics discussed and decisions made. Closed session must be specifically noticed on the agenda (including the topic and legal authority). Before going into closed session the board chair should announce in open session the general nature of the item or items to be discussed. If the item involves the registrar's employment, appointment, evaluation or dismissal, and action is taken in closed session, CSLB must report that action and any roll call vote that was taken at the next public meeting.

OTHER TYPES OF BOARD MEETINGS

Teleconference Meetings

(Government Code section 11123)

Special Rules for Notice of Teleconference Meetings are as follows:

- Same 10-day notice requirement as in-person meetings.
- Notice and agenda must include teleconference locations.
- Every teleconference location must be open to the public and at least one board member must be physically present at every noticed location. All board members must attend the meeting at a publicly noticed location.
- Additional locations may be listed on the agenda that allow the public to observe or address the Board by electronic means.

Special Meetings

(Government Code section 11125.4; Business and Professions Code section 7006)

Four members can call a special meeting held with 48 hours' notice in specified situations (e.g., consideration of proposed legislation) and a meeting can be held where two-thirds of the board members find that there is a "substantial hardship on the state body or immediate action is required to protect the public interest."

Emergency Meetings

(Government Code section 11125.5)

An emergency meeting may be held after finding by a majority of the Board at a prior meeting or at the emergency meeting that an emergency situation exists due to work stoppage or crippling disaster. [A quorum is required for the Board to meet in the event of emergency, such as a work stoppage or crippling disaster.] Emergency meetings require a one-hour notice.

Chapter 3. Committee Meetings

Standing Committees of the Board:

- Enforcement
- Executive
- Legislative
- Licensing
- Public Affairs

The board chair appoints each committee member, with the exception of the executive committee, which shall be comprised of the current board chair, the vice chair, the secretary, and the immediate past board chair.

Each committee shall have a chairperson, designated by the board chair, and who is tasked with:

- Running committee meetings.
- Opening and adjourning committee meetings.
- Coordinating the creation of the summary reports with staff.
- Presenting committee meeting reports and minutes to the Board.

Committee Appointments

(Board Policy)

At the beginning of each fiscal year, the newly appointed board chair will ask CSLB board members if they wish to participate on a committee for the following year. The registrar's executive assistant will compile a list of interested parties and supply it to the chair. The chair shall establish or abolish additional committees, as they deem necessary. Composition of the committees and the appointment of the members shall be determined by the board chair in consultation with the registrar. When committees include the appointment of non-board members, all interested parties should be considered. Committee officer term lengths are for one year, beginning July 1 of the next fiscal year.

Attendance at Committee Meetings

(Board Policy)

Board members who are not members of the committee that is meeting cannot vote during the committee meeting. Board members who are not members of the committee must sit in the audience and cannot participate in committee deliberations.

Participation at Committee Meetings

(Government Code section 11122.5 et seq.)

When a majority of the members of the Board are in attendance at an open and noticed meeting of a standing committee, members of the Board who are not members of the standing committee may attend only as observers. Board members who are not members of a committee where a majority of the members of the committee are present, cannot ask questions, talk or sit with the members of the committee.

Committee Meetings Quorum

A quorum is majority (more than one-half) of those committee members appointed by the board chair. Committees can include no more than seven members in order to avoid a full quorum of the Board, which would constitute a full board meeting.

Chapter 4. Selection of Officers

Officers of the Board

(Board Policy)

The Board shall elect from its members a chair, a vice chair, and a secretary to hold office for one year or until their successors are duly elected and qualified.

Nomination of Officers

(Board Policy)

The board chair shall appoint a nominations committee prior to the last meeting of the fiscal year and shall give consideration to appointing a public and a professional member of the Board to the committee. The committee's charge will be to recommend a slate of officers for the following year. The committee's recommendation will be based on the qualifications, recommendations, and interest expressed by the board members. A survey of board members may be conducted to obtain interest in each officer position. A nominations committee member is not precluded from running for an officer position. If more than one board member is interested in an officer position, the nominations committee will make a recommendation to the Board and others will be included on the ballot for a runoff if they desire. The results of the nominations committee's findings and recommendations will be provided to the board members. Notwithstanding the nominations committee's recommendations, board members may be nominated from the floor at the meeting.

Election of Officers

(Board Policy)

The Board shall elect the officers at the last meeting of the fiscal year. Officers shall serve a term of one year, beginning July 1 of the next fiscal year. All officers may be elected on one motion or ballot as a slate of officers unless more than one board member is running per office. An officer may be re-elected and serve for more than one term.

Officer Vacancies

(Board Policy)

If an office becomes vacant during the year, an election shall be held at the next meeting. If the office of the chair becomes vacant, the vice chair shall assume the office of the chair. Elected officers shall then serve the remainder of the term.

Chapter 5. Travel and Salary Policies and Procedures

Travel Approval

(Travel Guide)

Board members shall have board chair approval for all travel except for regularly scheduled board and committee meetings to which the board member is assigned.

Travel Arrangements

(Board Policy)

Board members are encouraged to coordinate with the registrar's executive assistant for any board-related travel arrangements, including air or train transportation, car rental, and lodging through Cal Travel Store's online booking tool, Concur. The registrar's executive assistant will set up board members' Concur accounts.

Board members must also utilize the most economic source of transportation available. For example, if the hotel provides a shuttle from the airport to the hotel, it is not fiscally responsible to rent a car or take a taxi. Reimbursements may be reduced or denied if the most economical sources are not used.

Concur

All board-related travel must be booked using Cal Travel Store's self-service reservation system, Concur, if a board member intends to seek reimbursement.

Lodging

In advance of board and committee meetings, the registrar's executive assistant will provide members information detailing the name and address of the chosen hotel where a room block has been established for lodging. The registrar's executive assistant is available to assist in making these travel reservations, or board members may coordinate them on their own.

Out-of-State Travel

(SAM section 700 et seq.)

Out-of-state travel for all persons representing the state of California is controlled and must be approved by the governor's office.

Travel Reimbursements

(SAM section 700 et seq.)

Rules governing reimbursement of travel expenses for board members are the same as for management-level state staff. Board members must submit the originals of all receipts, with the exception of meals, and, when applicable, a copy of the airline itinerary and hotel receipt showing the balance paid, to the registrar's executive assistant. Reimbursement requests for personal vehicle mileage must include where the trip originated from, where it ended, and the license plate number of the vehicle driven. All travel must be booked through Concur if the board member seeks reimbursement.

The registrar's executive assistant completes travel expense claim reimbursements in CalATERS Global and maintains copies of these reports and submitted receipts. It is advisable for board members to submit their travel expenses immediately after returning from a trip and not later than two weeks following the trip.

Salary Per Diem

(B&P Code section 103)

Compensation in the form of salary per diem and reimbursement of travel and other related expenses for board members is regulated by B&P Code section 103.

In relevant part, this section provides for the payment of salary per diem for board members "for each day actually spent in the discharge of official duties," and provides that the board member "shall be reimbursed for traveling and other expenses necessarily incurred in the performance of official duties."

Accordingly, the following general guidelines shall be adhered to in the payment of salary per diem or reimbursement for travel:

1. Salary per diem or reimbursement for travel-related expenses shall be paid to board members for attendance at official board meetings, committee meetings, and DCA training. Salary per diem for substantial official service performed by a board member (more than one hour) may be paid for attendance at gatherings, events, hearings, conferences, or meetings. The board chair, or designee, shall perform final approval of all salary per diem or travel-related expenses.
2. The term "day actually spent in the discharge of official duties" shall mean such time as is expended from the commencement of a board meeting, committee meeting, or other substantial official service to the conclusion of that meeting. Where it is necessary for a board member to leave early from a meeting, the board chair shall determine if the member has provided a substantial service during the meeting and, if so, shall authorize payment of salary per diem and reimbursement for travel-related expenses.

For board-specified work, board members will be compensated $100 per "day" for performing work authorized by the board chair. That work includes, but is not limited to, authorized attendance at other gatherings, events, meetings, hearings, or conferences, and the National Association of State Contractors Licensing Agencies (NASCLA) or the Council on Licensure, Enforcement and Regulation (CLEAR) committee work. That work does not include preparation time for board or committee meetings.

Chapter 6. Board Administration and Staff Responsibilities

Board Administration

(DCA Reference Manual)

Board members should be concerned primarily with formulating decisions on board policies rather than decisions concerning the means for carrying out a specific course of action. It is inappropriate for board members to become involved in the details of program delivery. Strategies for the day-to-day management of programs and staff personnel matters shall be the responsibility of the registrar.

Board Budget

(Board Policy)

The secretary shall serve as the Board's budget liaison with staff and shall assist staff in the monitoring and reporting of the budget to the Board. Staff will conduct an annual budget briefing with the Board with the assistance of the secretary.

The registrar or the registrar's designee will attend and testify at legislative budget hearings and shall communicate all budget issues to the Administration and Legislature.

Strategic Planning

(Board Policy)

The executive committee shall have overall responsibility for the Board's strategic planning process. The vice chair shall serve as the Board's strategic planning liaison with staff and shall assist staff in monitoring and reporting of the strategic plan to the Board. The Board will conduct a strategic planning session and may utilize a facilitator to conduct the strategic planning process.

Legislation

(Board Policy)

In the event that time constraints preclude board action, the Board delegates to the chair of the legislative committee the authority to take action on legislation that would change Contractors State License Law that impacts a previously established board policy or affects the public's health, safety, or welfare. Prior to taking a position on legislation, the registrar or legislative division chief, after consultation with the registrar, shall consult with the chair of the legislative committee. The Board shall be notified of such action as soon as possible.

All staff proposals for legislation shall include a statement of the policy or purpose the legislative proposal is intended to achieve. If the Board approves a proposal for staff to

seek authorship of a legislative bill, the board's approval shall extend authorization for staff to:

- Locate and secure a legislative author for the bill;
- Communicate in public hearings and in written letters the Board's support for any bill introduced based on that proposal as a board sponsored bill;
- Negotiate amendments, both technical and substantive, as long as the amendments are in furtherance the policy or purpose identified in the proposal.

The Board can take a position on any introduced legislation by a majority vote. Examples of positions are Support, Support if Amended, Neutral, Neutral if Amended, Oppose, and Oppose Unless Amended. When the board takes a position on introduced legislation, this extends to staff the authority to communicate that position in public hearings and in written letters the board's position. It shall also extend to staff the authority to negotiate any amendments described in any recommendation approved by the Board to "Support if Amended", "Neutral if Amended," and "Oppose Unless Amended."

With the exception of the procedure described in paragraph one of this policy, staff is not authorized to take any position on introduced legislation other than that taken by the full board.

Registrar Evaluation

(Board Policy)

Board members shall evaluate the performance of the registrar of contractors on an annual basis or as necessary. The board chair will use board members' surveys to complete a written summary of the evaluations and then meet with the registrar to discuss his/her performance during a closed session of a board meeting. The original evaluation is signed by the board chair and the registrar and sent to the DCA Human Resources Office for placement in the registrar's Official Personnel File.

Board Staff

(DCA Reference Manual)

Employees of the board, with the exception of the registrar, are civil service employees. Their employment, pay, benefits, advancement, discipline, termination, and conditions of employment are governed by civil service laws, regulations, and collective bargaining labor agreements. Because of this complexity, it is most appropriate that the Board delegate all authority and responsibility for management of the civil service staff to the registrar. Board members shall not intervene or become involved in specific day-to-day personnel transactions or matters.

Chapter 7. Representations on Behalf of CSLB

Communication with Other Organizations and Individuals

(Board Policy)

All communication relating to any board action or policy to any individual or organization, including, but not limited to, NASCLA and CLEAR, shall be made only by the chair of the board, their designee, or the registrar. Any board member who is contacted by any of the above should immediately inform the board chair or registrar of the contact. All correspondence shall be issued on the Board's standard letterhead and will be created and disseminated by the registrar's office.

Public or News Media Inquiries

(Board Policy)

All technical, licensing, or disciplinary inquiries to a CSLB board or committee member from applicants, licensees, or members of the public should be referred to the registrar. Contact of a board or committee member by a member of the news media should be referred to the registrar and the chief of public affairs.

Stationery

(Board Policy)

- **Business Cards**
  Business cards will be provided to each board member with the Board's name, address, telephone and fax number, and website at the board member's request.
- **Letterhead**
  Only correspondence that is transmitted directly by the CSLB office may be printed or written on CSLB letterhead stationery. Any correspondence from a board or committee member requiring the use of CSLB stationery or the CSLB logo should be transmitted to the CSLB office for finalization and distribution.

Chapter 8. Training

Once a board member is appointed, the registrar's executive assistant will send an email containing a list of all the required trainings, their due dates, and instructions about their completion. Board members should send the certificate of completion or signature page to the registrar's executive assistant who maintains board members' records. For additional information, Board Members may refer to DCA's online Board Member Resource Center: www.dca.ca.gov/about_us/board_members/index.shtml.

Board Member Orientation Training

(Business and Professions Code section 453)

Newly appointed and reappointed board members' must attend a board member orientation training course offered by DCA within one year of assuming office. The orientation covers information regarding required training, in addition to other topics that will ensure a member's success, including an overview of DCA.

Board Member Ethics Training

(Government Code section 11146 et seq.)

State appointees and employees in exempt positions are required to take an ethics orientation within the first six months of their appointment and every two years thereafter. To comply with that directive, board or committee members may take the interactive course provided by the Office of the Attorney General, which can be found at www.oag.ca.gov/ethics.

Sexual Harassment Prevention Training

(Government Code section 12950.1)

Board members are required to undergo sexual harassment prevention training and education once every two years, in odd years. Staff will coordinate the training with the Department of Consumer Affairs.

Defensive Driver Training

(SAM section 0751)

All state employees, which includes board and committee members, who drive a vehicle (state vehicle, vehicles rented by the state, or personal vehicles for state business) on official state business must complete the Department of General Services approved defensive driver training within the first six months of their appointment and every four years thereafter.

CHAPTER 9. Other Policies and Procedures

Board Member Disciplinary Actions

(Board Policy)

A board member may be censured by the Board if, after a hearing before the Board, the Board determines that the member has acted in an inappropriate manner.

The board chair shall sit as chair of the hearing unless the censure involves the chair's own actions, in which case the board vice chair shall sit as hearing chair. In accordance with the Bagley-Keene Open Meetings Act, the censure hearing shall be conducted in open session.

Removal of Board Members

(Business and Professions Code sections 106, 106.5, 7005)

The governor or appointing authority has the power to remove from office at any time any member of any board for continued neglect of duties required by law or for incompetence or unprofessional or dishonorable conduct. The governor also may remove from office a board member who directly or indirectly discloses examination questions to an applicant for examination for licensure.

Resignation of Board Members

(Government Code section 1750)

In the event that it becomes necessary for a board member to resign, a letter shall be sent to the appropriate appointing authority (governor, senate rules committee, or speaker of the assembly) with the effective date of the resignation. Written notification is required by state law. A copy of this letter also shall be sent to the director of the department, the board chair, and the registrar.

Conflict of Interest

(Government Code section 87100)

No board member may make, participate in making, or in any way attempt to use their official position to influence a governmental decision in which they know or have reason to know they have a financial interest. Any board member who has a financial interest shall disqualify themselves from making or attempting to use their official position to influence the decision. Any board member who feels they are entering into a situation where there is a potential for a conflict of interest should immediately consult the registrar or the Board's assigned legal counsel. The question of whether or not a board member has a financial interest that would present a legal conflict of interest is complex and must be decided on a case-by-case review of the particular facts involved. For more information on disqualification because of a possible conflict of interest, please refer to the Fair Political Practice Committee's manual on their website: www.fppc.ca.gov.

Financial Disclosure

The Conflict of Interest Code also requires CSLB board members to file annual financial disclosure statements by submitting a Form 700 – Statement of Economic Interest. New board members are required to file a disclosure statement within 30 days after assuming office or, if subject to Senate confirmation, 30 days after being appointed or nominated. Annual financial statements must be filed no later than April 1 of each calendar year.

A "leaving of office statement" must be filed within 30 days after an affected CSLB board member or other official leaves office.

Board members are not required to disclose all of their financial interests. Government Code section 87302 (b) explains when an item is reportable:

An investment, interest in real property, or income shall be made reportable by the Conflict of Interest Code if the business entity in which the investment is held, the interest in real property, or the income or source of income may foreseeably be affected materially by any decision made or participated in by the designated employee by virtue of their position.

Refer to DCA's Conflict of Interest Code to determine what investments, interests in property, or income must be reported by a board member. Questions concerning particular financial situations and related requirements should be directed to DCA's Legal Affairs Division.

Incompatible Activities

(Government Code section 19990)

The following is a summary of the employment, activities, or enterprises that might result in or create the appearance of being inconsistent, incompatible, or in conflict with the duties of state officers:

- Using the prestige or influence of a state office or employment for the officer's or employee's private gain or advantage, or the private gain or advantage of another.
- Using state time, facilities, equipment, or supplies for the officer's or employee's private gain or advantage, or the private gain or advantage of another.
- Using confidential information acquired by the virtue of state employment for the officer's or employee's private gain or advantage or advantage of another.
- Receiving or accepting money, or any other consideration, from anyone other than the state for the performance of an act which the officer or employee would be required or expected to render in the regular course or hours of their state employment or as a part of their duties as a state officer or employee.
- Performance of an act other than in their capacity as a state officer or employee knowing that such an act may later be subject, directly or indirectly, to the control, inspection, review, audit, or enforcement by such officer or employee of the agency by which they are employed. (This would not preclude an "industry" member of CSLB from performing normal functions of their occupation.)
- Receiving or accepting, directly or indirectly, any gift, including money, any service, gratuity, favor, entertainment, hospitality, loan, or any other thing of value from anyone who is seeking to do business of any kind with the state or whose activities are regulated or controlled in any way by the state, under circumstances from which it reasonably could be inferred that the gift was intended to influence them in their official duties or was intended as a reward for any official action on their part.

The aforementioned limitations do not attempt to specify every possible limitation on employee activity that might be determined and prescribed under the authority of section 19990 of the Government Code.

Contact with License Applicants

Board members shall not intervene on behalf of an applicant for licensure for any reason; they should forward all contacts or inquiries to the registrar.

Contact with Parties to a Complaint/Investigation

Board members shall not obtain substantial information from parties to a CSLB complaint; they should forward all contacts or inquiries to the registrar.

Gifts from License Applicants

Gifts of any kind to board members or staff from license applicants shall not be permitted.

Request for Records Access

No board member may access the file of a licensee or applicant without the registrar's knowledge and approval of the conditions of access. Records or copies of records shall not be removed from CSLB's office.

Ex Parte Communications

(Government Code section 11430.10 et seq.)

The Government Code contains provisions prohibiting ex parte communications. An "ex parte" communication is a communication to the decision-maker made by one party to an enforcement action without participation by the other party. While there are specified exceptions to the general prohibition, the key provision is found in subdivision (a) of section 11430.10, which states:

> "While the proceeding is pending, there shall be no communication, direct or indirect, regarding any issue in the proceeding to the presiding officer from an employee or representative of an agency that is a party or from an interested person outside the agency, without notice and an opportunity for all parties to participate in the communication."

Board members are prohibited from ex parte communications with board enforcement staff while a proceeding is pending.

Occasionally, an applicant who is being formally denied licensure, or a licensee against whom disciplinary action is being taken, will attempt to directly contact board members.

If the communication is written, the person should read only far enough to determine the nature of the communication. Once they realize it is from a person against whom an action is pending, they should reseal the documents and send them to the chief of enforcement.

If a board member receives a telephone call from an applicant or licensee against whom an action is pending, they should immediately tell the person that discussion about the matter is not permitted; that they will be required to recuse themselves from any participation in the matter; and continued discussion is of no benefit to the applicant or licensee. The board member should end the conversation in a firm and cordial manner.

If a board member believes that they have received an unlawful ex parte communication, they should contact the Board's assigned legal counsel.

Abbreviations and Acronyms Glossary

ALJ	Administrative Law Judge
ACD	Automated Call Distribution system
ACT	Bagley-Keene Open Meeting Act
ADA	The Americans with Disabilities Act
ADR	Alternative Dispute Resolution
AG	Office of the Attorney General
AGENCY	Business, Consumer Services and Housing Agency
AMCC	Arbitration Mediation Conciliation Center
APA	Administrative Procedure Act
APP	Application for contractor license or Home Improvement Salesperson registration
App Fee	Application Fee Number
ASB	Asbestos Certification
B&P	Business and Professions Code
BCP	Budget Change Proposal
BQI	Bond of Qualifying Individual
Cal/OSHA	DIR Division of Occupational Safety & Health
CAT	Computer Assisted Testing
CB	Contractor's Bond
CCCP	California Code of Civil Procedure
CCR	California Code of Regulations Cite Citation
CDI	California Department of Insurance
CLC	California Licensed Contractor newsletter
CLEAR	Council on Licensure Enforcement and Regulations
CP/CORP	Corporation
CSLB	Contractors State License Board
CSR	Consumer Services Representative
DAG	Deputy Attorney General
DB	Disciplinary Bond
DBA	Doing Business As
DCA	Department of Consumer Affairs
DDT	Defensive Drivers Training
DGS	Department of General Services
DIR	Department of Industrial Relations
DLSE	Division of Labor Standards Enforcement
DOI	Division of Investigation
DOL	Department of Labor
DOSH	DIR Division of Occupational Safety & Health (also referred to as Cal/OSHA)
EDD	Employment Development Department

EO	Executive Officer / Registrar of Contractors
FSR	Feasibility Study Report
FTA	Failure to Appear
FTB	Franchise Tax Board
HAZ	Hazardous Substances Removal Certification
HIS	Home Improvement Salesperson
IC	Investigative Center
IE	Industry Expert
IEP	Industry Expert Program
IMC	Intake and Mediation Center
IT	Information Technology
IVR	Interactive Voice Response system (automated telephone system)
JV	Joint Venture
LEG	State Legislature, legislative
LETF	Labor Enforcement Task Force
MARB	Mandatory Arbitration Program
MOU	Memoranda(um) of Understanding
MSC	Mandatory Settlement Conference
NASCLA	National Association of State Contractors Licensing Agencies
NTA	Notice to Appear
OA	Occupational Analysis
OSN	On-Site Negotiation Program
PAO	Public Affairs Office
PD	Proposed Decision
PT	Partnership
QPT	Qualifying Partner
RFP	Request for Proposal
RME	Responsible Managing Employee
RMO	Responsible Managing Officer
SAM	State Administrative Manual
SCIF	State Compensation Insurance Fund
SME	Subject Matter Expert
SOI	Statement of Issues
SI	Special Investigator
SSI	Supervising Special Investigator
SSN	Social Security Number
SWIFT	Statewide Investigative Fraud Team
TVDS	Test Validation and Development Specialist
VARB	Voluntary Arbitration Program

CONTRACTORS STATE LICENSE BOARD

P.O. Box 26000
Sacramento, CA 95826-0026

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www.cslb.ca.gov
CheckTheLicenseFirst.com
SeniorScamStopper.com

Attachment B – Relationship of Committees to the Board and Membership of Each Committee

2023-24
Committee Assignments

9821 Business Park Drive
Sacramento CA, 95827

P.O. Box 26000
Sacramento, CA 95826

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www.cslb.ca.gov
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Executive
Diana Love, Chair
Michael Mark, Vice Chair
Miguel Galarza, Secretary
Mary Teichert, Past Chair

Enforcement
James Ruane, Chair
Joel Barton
Rodney Cobos
Miguel Galarza
Amanda Gallo
Jacob Lopez
Michael Mark

Licensing
Alan Guy, Chair
David De La Torre
Miguel Galarza
Susan Granzella
Steven Panelli
Mary Teichert
VACANT

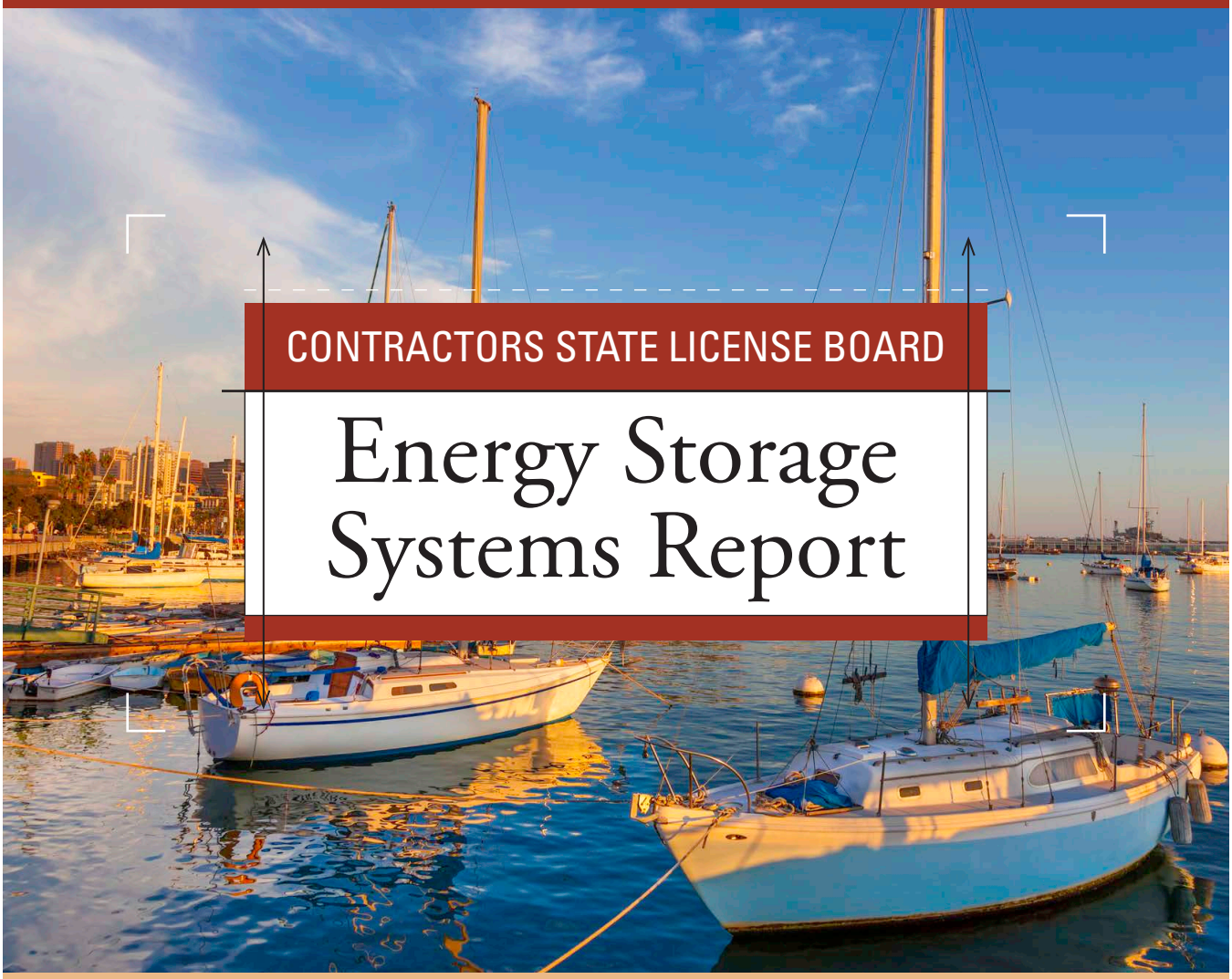
Legislative
Michael Mark, Chair
Joel Barton
Rodney Cobos
Miguel Galarza
Amanda Gallo
James Ruane
VACANT

Public Affairs
Miguel Galarza, Chair
David De La Torre
Susan Granzella
Alan Guy
Jacob Lopez
Steve Panelli
Mary Teichert

Attachment C – Major Studies

Energy Storage Systems Report

March 21, 2019
San Diego, California



CONTRACTORS STATE LICENSE BOARD

Energy Storage Systems Report

ERRATA SHEET

March 19, 2019

This document contains corrections to the Energy Storage Systems Report that are indicated by ***blue underline and highlight***, as follows:

Page 23: "distributed energy resource***"***

Page 42: *[in footnote 3]* The CALBO letter is described on page ~~33~~ **35** of this report

Page 65: (see page ~~50~~ **52-53** of this report)

Page 69: certified electrician**s**

Page 70: (see page ~~58~~ **60-61**)

Page 71: There are ~~79,502~~ **32,303** licensed C-10 contractors in California, and ~~2,108~~ **1,425** licensed C-46 contractors in California. A total of ~~606~~ **449** contractors hold both licenses. LC 108.2 does not provide an exception for the ~~576~~ **449** licensed contractors that have a C-46 Solar and C10 Electrical classification.

Page 74: The February 23, 2018 Licensing Committee Meeting Motion asks staff to conduct public meetings and report findings regarding ~~the~~ which, if any, of the…classifications should be precluded from installing an ESS in a standalone contract or when included in the installation of a solar PV system. ***And on April 13, 2018, the Board directed staff to hold a public meeting to collect information about energy storage systems.***

Page 75: The Board has also continuously affirmed over the years that A-General and B-General contractors may install all solar photovoltaic systems within the context of their licenses. ***For example, in 1982 the Board adopted Section 832.62 of its regulations to authorize "A" and "B" contractors to install active solar systems within the scope of their classifications.***

Page 76: As of March 2019, ~~606~~ **449** licensees hold both a C-10 and C-46 classification.

Contractors State License Board

Energy Storage Systems Report

March 2019
Staff Report to the Board

SECTION ONE:

Energy Storage Systems Issue at CSLB: Timeline of Relevant Events

The following timeline details the chronological events in recent history that led to the development of this energy storage systems (ESS) report.

July 5, 2005: Then-Registrar of the Contractors State License Board (CSLB) Stephen Sands issued a letter to the International Brotherhood of Electrical Workers that states that, for the purposes of photovoltaic systems on residential and commercial buildings and projects that "feed into the utility grid or otherwise offset the energy costs for structures they serve," the C-10 Electrical or C-46 Solar contractor licenses are the appropriate classifications. (**EXHIBIT 1**) The letter further states that the A-General Engineering Contractor and B General Building Contractor may contract for the installation of those systems within the scope of their existing classification.

August 27, 2009: With the increased popularity in alternative energy projects, CSLB issued a "Fast Facts on Solar Projects" bulletin for "contractors seeking to venture into these emerging technologies."[1] The licenses identified in the bulletin as qualified to "perform solar projects" are A-General Engineering, B-General Building, C-4 Boiler, Hot-Water Heating and Steam Fitting, C-10 Electrical, C-20 Warm-Air Heating, Ventilating and Air Conditioning, C-36 Plumbing, C-46 Solar, C-53 Swimming Pool, and C-61/D-35 Swimming Pool and Spa Maintenance. The bulletin emphasizes that the solar projects each classification is authorized to perform is limited to (must be performed within) the existing scope of the license.

December 30, 2009: The CSLB formally amends the C-46 Solar Contractor license classification (Title 16, Division 8, Article 3, § 832.46 of the California Code of Regulations). Prior to December 2009, the C-46 classification read:

> A solar contractor installs, modifies, maintains, and repairs active solar energy systems. An active solar energy system consists of components which are thermally isolated from the living space for collection of solar energy and transfer of thermal energy to provide electricity and/or heating and cooling of air or water. Active solar energy systems include, but are not limited to, forced air systems, forced circulation water systems, thermosiphon systems, integral collector/storage systems, radiant systems, evaporative cooling systems with collectors, regenerative

> rockbed cooling systems, photovoltaic cells, and solar assisted absorption cooling systems.
>
> A licensee classified in this section shall not undertake or perform building or construction trades, crafts or skills, except when required to install an active solar energy system.

After the amendment (and through present day), the classification now reads:

> A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems.
>
> A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.

June 30, 2010: The CSLB issued an updated version of the August 2009 fact sheet on the contractor license categories that are authorized to perform work on "solar energy projects."[2] The C-46 description is modified to reflect the 2009 regulatory change to that classification. The bulletin again explains that the solar projects each classification is authorized to perform is limited to (must be performed within) the existing scope of the license. The latest Description of Classifications published by CSLB (2016) includes the same list as the updated June 2010 fact sheet.[3]

October 28, 2016: The CSLB Enforcement Committee included as an agenda update a "Review of Solar Energy Storage System CSLB Classifications"[4] in its committee packet. The update states that a C-46 Solar Contractor cannot install energy storage systems and that the most appropriate classification for doing so is the C-10 Electrical Contractor.[5] At the meeting, Board member Frank Schetter made a motion to add energy storage systems (ESS) to the C-10 Electrical Contractor regulation. Counsel and staff clarified that the agenda update in this packet was staff's effort to clarify which classifications are appropriate to install ESS, and that the update is not a regulatory change and does not request a regulatory change. Counsel clarified that if there is a request to clarify which classifications could install ESS in regulation, that the Board would have to place the request on next Board meeting agenda.

November 15, 2016: Then-Registrar Cindi Christenson issued a letter in response to an inquiry from an industry representative regarding the proper classification to install energy storage systems (**EXHIBIT 2**). The letter states that a C-10 Electrical Contractor is the appropriate classification to install energy storage systems in existing structures, and that an A-General Engineering classification is appropriate if the work includes "a plant or facility to house the system." Staff who assisted in preparing the letter confirmed that the letter intentionally does not mention photovoltaics or the installation of energy storage in connection with a solar system and applies to the installation of standalone systems.

December 8, 2016: During the public comment portion of the December 8, 2016 Board Meeting, Board member Frank Schetter requested that an item on "solar classification and energy storage systems" be placed on the next Licensing Committee meeting agenda.[6]

February 10, 2017: A "Discussion Regarding CSLB License Classifications and Regulations that Authorize Contractors to Install Energy Storage Systems" is placed on the February 10, 2017 Licensing Committee Meeting Agenda. At the meeting, it was determined that the matter would not be addressed at that time and would be "tabled."[7]

March 13, 2017: The energy storage systems agenda item from the February 2017 Licensing Program update is made an item for discussion at the March 13, 2017 Board meeting. It was again determined that the matter would not be addressed at that time.[8]

July 18, 2017: Then-CSLB Classification Deputy issued a letter in response to an inquiry from an industry representative regarding the proper classification to "install energy storage systems as part of a solar system installation." (**EXHIBIT 3**) The letter provides that "the C-46 – Solar classification may install energy storage systems as part of a solar system installation," and that the "C-10 Electrical classification may install energy storage systems as part of a photovoltaic system installation as well as an independent project." This letter resulted in the inclusion of the C-46 Solar Contractor in the list of the California Public Utilities Commission's list of Self Generation Incentive

Program (SGIP)-eligible licenses "for the combined installation of solar photovoltaics and energy storage systems" in its December 2017 edition of the SGIP handbook.[9]

February 23, 2018: A "Review, Discussion, and Possible Action on License Classifications Authorized to Install Energy Storage Systems" is placed on the agenda for the February 23, 2018 Licensing Committee meeting. Prior to the meeting, CSLB received several letters from the public about the appropriate classifications for the installation of energy storage systems. The letters were published into a packet to supplement the committee meeting materials.[10] The February 23, 2018 agenda update in the packet summarizes the letters and includes a staff recommendation for consideration by the Committee.[11] Public comment and board discussion on the topic ensued at the meeting.[12]

The Committee ultimately passed the staff recommendation in the packet, on a 6-1 vote, as follows:[13]

> To direct staff to conduct public meeting(s) to determine if the "A" (General Engineering), "B" (General Building), C-4 (Boiler, Hot-Water Heating and Steam Fitting), C-10 (Electrical), C-20 (Warm-Air heating, Ventilating and Air Conditioning), C-36 (Plumbing), C-46 (Solar), and C-53 (Swimming Pool) classifications should be precluded from installing an energy storage system in a standalone contract or when included in the installation of a solar system. After the public/work group meetings conclude, staff will report any findings to the full Board to determine if policy, regulatory, or statutory changes are needed.

These eight classifications were named in the staff recommendation because they each had been previously publicly identified by the Board as classifications "authorized to perform solar construction or installation."[14] **It is this motion from which this report is derived.**

April 13, 2018: A "Review, Discussion, and Possible Action on License Classifications Authorized to Install Energy Storage Systems" (ESS) is placed on the agenda for the April 13, 2018 Board meeting. The Board packet update includes the following statements:[15]

- A "C-10 (Electrical) classification is the most appropriate classification authorized to install a stand-alone electrical system."
- A "C-46 solar contractor can install an ESS, if the installation is in connection to a photovoltaic system."
- An "A" (General Engineering) contractor may install an ESS system as part of the installation of a solar system "if the installation requires specialized engineering."
- A "B" (General Building) contractor may install an ESS system as part of the installation of a solar system "if the installation is in connection to a structure."

The packet update includes a staff recommendation for the Board's consideration.[16] Public comment and board discussion on the topic ensued at the meeting.[17] The Board ultimately passed the staff recommendation in the packet, on a 13-0 vote, as follows: to "direct staff to hold a public meeting to collect information about energy storage systems."[18]

April 17, 2018: The CSLB announced its intent to hold a public participation hearing to gather information on energy storage systems that will be used to review the appropriate classification(s) to install an energy storage system in a standalone contract or as part of the installation of a solar photovoltaic system.[19] Both before and after this meeting, CSLB received numerous letters from the public arguing for or against C-10 or C-46 contractors installing energy storage systems. See **Section 5** of this report for summaries of all the letters received on this issue.

April 25-26, 2018: At its headquarters in Sacramento, the CSLB held the two-day public participation hearing on energy storage systems. See **Section 3** of this report for summaries of the testimony from both days.

August 8, 2018: Following a meeting with CSLB staff, representatives from the C-10 electrical contracting industry and the C-46 solar contracting industry agreed to create and submit, on behalf of their respective license classifications, an educational video demonstrating a residential and commercial energy storage system installation for CSLB staff review. The videos from each industry were received on February 9 and February 11, 2019, respectively.[20]

August 31, 2018: The CSLB distributed a survey to more than 300 building departments throughout the state. The survey asked questions about safety, code requirements and license classifications involved with the installation of solar photovoltaic systems. See **Section 4** of this report for summaries of survey responses from building departments.

December 13, 2018: During the Executive Division program update at the December 13, 2018 Board meeting, Registrar David Fogt notified the Board that staff intends to have an energy storage system report available for the Board's review by the March 2019 board meeting.[21]

January 17, 2019: CSLB staff hosted a meeting of C-10 Electrical Contractor industry experts to discuss the technical requirements and safety risks of the installation of energy storage systems.

January 18, 2019: CSLB staff hosted a meeting of C-46 Electrical Contractor industry experts to discuss the technical requirements and safety risks of the installation of energy storage systems.

January 30, 2019: CSLB staff hosted a meeting with a representative of the California Building Industry Association on the topic of energy storage systems and the California Energy Commission adoption of building standards to require solar photovoltaic systems on residential buildings starting in 2020.

SECTION TWO:

CSLB Regulatory Process and Solar License Regulatory History

CSLB Regulatory Rulemaking Process

When adopting regulations, the Board must follow the rulemaking procedures in the Administrative Procedure Act (APA). The APA requirements are designed to provide the public with a meaningful opportunity to participate in the adoption of regulations. The rulemaking process broadly includes development of documents and information on which the rulemaking action is based, sets related timeframes, provides opportunities for public participation and response to public comment, and defines the regulatory language, all of which is incorporated into a "rulemaking file." Regulatory rulemaking files require approval from the Department of Consumer Affairs, Business Consumer Services and Housing Agency, Department of Finance, and the Office of Administrative Law before final adoption by the Board. The time for development and approval of regulations is approximately 18-24 months.

Summary of the Regulatory History of the License Classifications the Board has Authorized to Perform Solar System Installations

For convenience of the reader, the next three paragraphs summarize the regulatory history that is detailed in pages 12 through 21 of this report. It should be noted that the formal regulatory documentation does not mention storage batteries of any kind, lead-acid or otherwise. However, solar thermal energy storage systems were among the first energy storage systems solar contractors were authorized to install in California.

Licensed contractors have been installing solar energy systems in California for nearly 40 years. In July 1979, CSLB began issuing its first solar license, the SC-44 solar license. As a supplemental classification (SC), the SC-44 was only issued to contractors already holding an A, B, C-4, C-20, C-36, C-53, or C-61 / D-35 license.[1] The SC-44 could contract for solar energy installations consistent with the scope of one of these

[1] A-General Engineering Contractor, B-General Contractor, C-4 Boiler, Hot-water Heating and Steam Fitting Contractors, C-53 Swimming Pool Contractors, C-20 Warm-Air Heating, Ventilating and Air Conditioning Contractor, C-36 Plumbing Contractor, C-53 Swimming Pool Contractor, C-61/D-35 Pool and Spa Maintenance Contractor.

primary classifications only. No certification of experience or examination was required, and SC-44s had to report to CSLB twice a year about the projects they were completing under the SC-44 license.

Most solar work at the time involved hot water system and swimming pool heating. The SC-44 was written to encompass the installation of solar thermal systems and not solar photovoltaic systems;[2] however, by June 1980, it became clear that the Board would need to consider advancement of photovoltaics (PV) in the industry. After two years of monitoring the work of SC-44 contractors, staff found that most were working beyond the scope of their primary classification by undertaking all phases of solar installations. By April 1981, after meeting with industry, utility companies, building officials, and solar training institutions, staff recommended to the Board the creation of a C-46 solar specialty license and elimination of the SC-44. The rationale provided was that a new specialty class, rather than a supplemental license, would allow the Board to verify the practical skills of applicants to the class, including "HVAC, electrical, plumbing, engineering, other associated trades." At a September 1981 Board meeting, the Board confirmed that it was the intent of the new C-46 classification to include the electrical components of solar systems. At the same meeting, it was clarified that A-General Engineering Contractors and B-General Contractors could install all forms of solar in connection with a structure or an engineering project, respectively.

In April 1982, the Board amended its regulations to add the words "solar heating" and/or "solar equipment" to the C-4, C-20, C-36, and C-53 classifications, to allow those classes to continue solar thermal work. To allow the C-10 Electrical Contractor and C-46 Solar Contractor to install PV systems, the amendments also added the words "solar photovoltaic cells" to the C-10 classification and created the new C-46 Classification to include the words "photovoltaic cells" and "electricity." The C-46 classification was not substantively amended again until 2009, when text that refers to "outdated types" of solar energy systems was deleted from the classification. The 2009 C-46 definition was

[2] Solar thermal involves the production of energy from sunlight using various mechanical devices other than photovoltaics for the purpose of heating liquid or spaces within facilities or buildings.

amended to refer to thermal and photovoltaic solar energy systems and "to allow for new innovations that would also meet this definition." The final statement of reasons for this amendment rejected a public comment that suggested that only certified electricians be allowed to connect PV panels to the inverter and building, on the grounds that such work is incidental and supplemental to the installation of a solar system.

Regulatory History of the License Classifications the Board has Authorized to Perform Solar System Installations

The following chronological events between 1978 and 2009 are summarized from the C-46 Solar Contractor regulatory file and do not include any editorializing, analysis, or commentary by the authors of this report. Any underlined text that is quoted or blocked in a paragraph in this section was underlined in the original excerpt.

October 20, 1978:[22] CSLB adopts for the first time a solar classification, in Sections 756.1 (Assignment of Supplemental Solar Classification), 756.2 (Qualification for Supplemental Solar Classification), 756.3 (Solar Project Reporting Requirements), and 754.16 (Class SC-44 Supplemental Solar Classification) of the California Code of Regulations, as follows:

> **754.16** A solar installation contractor is a contractor classified in one or more of the following areas: A, B, C-4, C-20, C-36, C-53, C-61 (pool maintenance contractor) who executes contracts or subcontracts requiring the ability and skill to competently and effectively install, maintain, repair, or modify an active solar system. An active solar system consists of components which are thermally isolated from the living space for collection of solar energy and transfer of thermal energy to provide heating, cooling, or heating and cooling. Active solar systems include, but are not limited to, forced air systems, forced circulation water systems, thermosiphon systems, integral collector/storage systems, radiant systems, evaporative cooling systems with collectors, regenerative rockbed cooling systems, solar-assisted absorption cooling systems and solar -assisted heat pump systems.
>
> **756.1** No person shall engage in the activities of a solar installation contractor as defined in Section 754.16 without at the time of so doing possessing a valid supplemental solar classification.
>
> **756.2** A supplemental solar classification may be obtained by: (a) Possessing a valid license in one or more of the following classifications: A, B, C-4, C-20, C-36, C-53, C-61 (pool maintenance contractor), and (b) Paying the fee established by Section 7137 of the Business and Professions Code.

The board voted to establish the supplemental classification for a number of reasons, noting the increasing potential of solar contracting work.[23] There was "a great impetus" [to adopt the classification] because of "available tax incentives for solar energy systems, pressures of rising energy costs, and pressures of new technology;" no one "was quite sure where the industry was going" but CSLB "knew it should involve us."[24] The focus was on "active systems" and intentionally "did not attempt to get into passive side of the issue."[25] There had also up to that point (1978) been a pattern of complaints relating to unlicensed activities, out of class complaints, design, workmanship, oversold systems, and misrepresentations made to owners.[26]

The SC-44 license was intentionally issued without requiring certifications of experience or an examination; SC-44 licensees would instead report to CSLB twice a year about the projects they were completing under the SC-44 license as issued.[27] At the time the classification was adopted, C-36 Contractors "account for a very large portion of the solar work that's been done," which included "hot water system and swimming pool heating."[28]

The 1978 regulatory hearings testimony on the adoption of the SC-44 license focused on concerns that "90% of the solar installations required plumbing or heating and air conditioning skills for final connection into existing conventional heating systems."[29] The board created the SC-44 "based on this testimony that the SC-44 would be dependent on certain existing primary classifications and skills" and the new classification would represent "an effort to monitor and assess development of the industry,"[30] which was a reference to the new (Section 756.3) requirement that the SC-44 licensees report to the board the solar installations they have completed twice per year. After receiving the reports from licensees, the board would then "close the monitoring period" and determine the final course of action."[31]

July 1, 1979: Board begins issuing the SC-44 supplemental solar classification only to entities holding an A, B, C-4, C-20, C-36, C-53, C-61 (swimming pool maintenance). A letter from Registrar John F. Maloney to local building officials clarifies that the "intent of issuing the SC-44 license is to monitor and regulate the solar energy installations in

California and not to expand the rights or practice of licensees beyond that which they are otherwise entitled to engage in by virtue of their primary classification."[32]

December 1, 1979: CSLB formally issues a publication (a chart) included with all SC-44 license correspondence and letters to the public, which clarifies what each of the prerequisite classifications could install, as follows:

> B-General "installation of all solar systems on buildings that support, shelter, and enclose people, animals, chattel, or moveable property of any kind, the construction of which requires the use of more than two unrelated building trades or crafts." A-General "solar projects on engineering jobs that do not involve buildings which house people, property, or chattel. Includes solar pools, hot tubs, spas, and separate solar arrays." C-4 "solar space heating utilizing a hot water holding tank." C-36 "solar hot water, pools, hot tubs, and spas." C-53 "solar swimming pools only." C-20 "solar space heating or solar air conditioning." C-61 "repair and maintenance of existing solar systems, may not install original systems."

June 30, 1980: In a letter to the CSLB Enforcement Committee members from the Office of the Registrar, it is clarified that the contractor's primary license [underlying the SC-44 supplemental class] "entitles him/her to work in [the area of the primary license] and not in a "supplemental area." Also clarifies that the SC-44 program was intended for "active solar mechanical systems" and "not intended for those who do building design and passive solar." The letter also acknowledges that the Board will "have to deal with technological advancements in photovoltaic cells."[33]

January 14, 1981: In a letter to the public from the CSLB Energy Division Chair Kathy Ryan, it states that CSLB is "in the process of evaluating the impact of photovoltaics on the construction industry." The letter asks that in order for CSLB to determine the "appropriate contractor license that may be involved in photocell installation, please send written comments." The letter states "obviously the appropriate license classification is C-10 but we are attempting to ascertain whether photocell installation requires additional experience, training, or other restrictions."[34]

March 2, 1981:[35] In a letter from Registrar John Maloney to Building Departments and Contractors, it states that "there has been confusion regarding the ambiguity in the SC-44 regulations" and that CSLB will be holding meetings to draft proposed changes to the regulations for discussion at April 1981 board meetings in order to propose regulations

by July 1981. Letter clarifies that "we've always interpreted the SC-44 to allow a contract for solar energy installations consistent with the scope of work of the primary classification" held by the licensee. The letter clarifies with an example, that "*e.g.*, a C-36 holding an SC-44 would be allowed to undertake solar contracts involving the use of plumbing skills, which includes solar pool systems, domestic hot water systems, and hot tub and spa applications," and that "B-Generals can do all solar work." The letter also reissued the December 1979 chart, referred to above.

April 9, 1981:[36] In a letter from the CSLB Energy Division Chair Kathy Ryan to the Enforcement Committee, it notes that "during the past two years of monitoring complaints and job reporting forms" (pursuant to the 756.3 regulation that required SC-44 contractors to report their projects to CSLB), staff have "found that the majority of contractors were working beyond the scope of their primary classification by undertaking all phases of solar installations." The letter notes that following meetings with industry, utility companies, building officials, and solar training institutions, that the SC-44 regulations "should be clarified." Specifically, that this means "developing a specialty solar license C-46 and eliminating the SC-44."

The letter clarifies that the rationale for eliminating the SC-44 in favor of developing the C-46 is due to the "large percentage of complaints involve business practice failure and ignorance of contractor's law," and notes that this is "problematic in an emerging field like solar where new companies must deal with rapidly developing technology and numerous state and local regulations related to solar energy installations." The letter further notes the fact that the "solar field is undergoing rapid change" and a new classification would allow for the "verifying [of] practical skills" and "emphasizing proven trade skills verified by employer certification, trade association certification, and educational experience." Finally, the letter notes that the "proper skill and experience" of the new classification would be "comprised of HVAC, electrical, plumbing, engineering, other associated trades, as well as an evaluation of any applicable educational courses."

September 1, 1981:[37] A CSLB rulemaking package is published, including a notice of proposed changes in CSLB regulations, and a Statement of Reasons. The package proposed repealing sections 756.1 (Creation of the Supplemental Classification), 756.2 (Qualifying Licenses for SC-44 Classification), 756.3 (Solar Reporting Requirement), 756.4 (Effective Date of Supplemental Class), and it printed the following amendments to the following license classifications (*underlines in original and highlight the change from the regulations as they existed in 1978*):

> **Amend 754.1 Class C-4 Boiler**, Hot-water Heating and Steam Fitting Contractors, amend existing classification to include language "including solar heating equipment"
>
> **Amend 754.10 Class C-53 Swimming Pool Contractors**, amend existing classification to include language "including installation of solar heating equipment"
>
> **Amend 746 Class C-20 Warm-Air Heating, Ventilating and Air Conditioning Contractors**, amend existing classification to include language "including systems utilizing solar energy"
>
> **Amend 734 Class C-36 Plumbing Contractor**, amend existing classification to include language "this includes the installation of solar equipment to heat the water to a suitable temperature for the purposes listed above"
>
> **Amend 733 Class C-10 Electrical Contractor**, amend existing classification to include language "solar photovoltaic cells or"
>
> **Amend 754.16 Class C-46 Solar Classification**, amend existing classification as follows: "A solar contractor is a specialty contractor whose contracting business is the execution of contracts or subcontracts requiring that specific art, ability, experience, knowledge, science and skill in designing, installing, modifying, maintaining, and repairing active solar energy systems. An active solar system consists of components which are thermally isolated from the living space for collection of solar energy and transfer of thermal energy to provide heating, cooling, or heating and cooling. Active solar systems include, but are not limited to, forced air systems, forced circulation water systems, thermosiphon systems, integral collector/storage systems, radiant systems, evaporative cooling systems with collectors, regenerative rockbed cooling systems, solar-assisted absorption cooling systems and solar -assisted heat pump systems. A licensee classified in this section shall not undertake or perform building or construction trades, crafts or skills except when required to design and install an active solar energy system.

In stating the rationale and purpose behind developing the stand-alone license, the Statement of Reasons for proposing the C-46 license explained that:

> Representatives from the plumbing industry…have stated that specific types of solar energy installations (e.g. hydronic systems) should be within the scope of Plumbing (C-36), and Boiler, Hot-water Heating & Steam Fitting (C-4) license classifications."[38]

> Representatives from the [sheet metal and HVAC] industries stated that specific types of solar energy installations (e.g. space-conditioning systems) be within the scope of their Warm-Air Heating, Ventilating and Air Conditioning Contractor (C-20) license classification.[39]
>
> A number of electrical contractors, solar photovoltaic firms, and the electrical industry association stated that a C-10 classification is the appropriate license for the installation of solar photovoltaic cells…currently, solar photovoltaic cells are not included in any of the existing regulations.[40]
>
> The use of solar heating systems for swimming pools presently represent the largest number of solar energy installations. The swimming pool license (C-53) allows a contractor to undertake or subcontract all phases of the construction of a swimming pool. The addition of a solar energy system for heating pool water is just another feature of this construction project. This is [supported by industry].[41]
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> Testimony from various trade associations and general contractor associations indicates that all known active solar energy systems include aspects of at least three separate building trade skills and that certain active solar systems are within the meaning of a fixed work requiring specialized engineering, knowledge and skill.[42]
>
> The Contractors State License Board has received several letters from industry representatives stating that there are a minority of contractors who specialize in installation of all types of solar systems. Those contractors specializing in multiple or hybrid solar systems must have expertise that differs from the accumulation of the various specialty classifications which include specific solar technology. The Contractors State License Board, therefore, will take testimony on a separate solar classification.[43]
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> Written correspondence and Contractors State License Board experience in handling consumer complaints relating to installation of solar systems attest to the fact that many consumer complaints involve insolvent or unlicensed contractors.[44]

December 10, 1981:[45] At a Special Meeting of the Board, Oakland, California, held in part to vote on the September 1, 1981 amendments, Board Member Warren E. McNely is selected to outline the Board's plan for the amendments. McNely states that "the problem with the current (SC-44) system is that there is no license for a specialist"; that "[a specialist would] have to get one of the core licenses if they want to just specialize in solar," which "results in a lot of people with the core license plus SC-44 working out of class."[46] McNely further stated, "there are a lot of people that, in good faith, have gone into this field and we feel a great obligation that we would not cause undue disruption." McNely then introduced the five steps that he articulated would be the plan for the amendment of the identified sections, as follows:

> "The first step…we amend the definition of the original classifications to include solar work. So what we're saying is, if you are a C-36, and we are willing to issue you a SC-44 because you held a C-36, let's put it into that classification so that you would be licensed

> to do that work without going to the added trouble of taking out an SC-44. This applies to five classes: C-4, C-53, C-20, C-36, and we're also proposing that the C-10 be added because there are increasing numbers of projects that are going to involve electrical and photovoltaic."[47]
>
> "Secondly, clarify that As and Bs can do work in existing statute. This is a statute that the Board itself has not determined. It's a legislative activity. I know that there will probably be another look at the As and Bs at a later date, but that is, we feel, beyond the purview of the Board at this point."[48]
>
> "Thirdly…we would like to stop issuing SC-44s at the time [that] the classifications that [currently] entitle a person [to have the SC-44] have the solar listed in their basic classifications [by regulation]. In other words, if you have a C-4 license, and the C-4 definition includes solar work, there's no point in then asking you to then get another license to restate that you can do solar work."[49]
>
> "Fourth…would be to establish the C-46 classification, which would be a solar license for solar specialists. There are a number of questions that have to be addressed in establishing this classification…We're proposing…we not resolve all those questions [now]…instead, we say that we are establishing this solar license classification at a date certain…that on January 1, 1983, we will have the C-46 license, and whatever criteria is established in the interim will be in effect."[50]
>
> "Step five would be the total elimination of the SC-44 classification…the end result will be that we will have the solar work defined in the basic classifications, plus a new classification which would be for solar specialists."[51]

The Board then proceeded to review the amendments to the classifications proposed in the September 1981 package above. The motion was unanimous to adopt 754.1, 754.10, 746, 734 and 733 as amended in the September 1, 1981 regulatory packet (see above).[52] The discussion then proceeded to the new proposed solar classification, 754.16, as it was presented in the September 1, 1981 package (see above). The Board confirmed the regulation is intended to "cover active solar only not passive."[53] The Board explained the intent to add "of air or water" to the words "or heating and cooling" in the 754.16 regulation and provided an explanation of the intent to eliminate the words "design" and "designing" from the classification.[54] Board Member McNely then clarified an unintended omission from the draft of 754.16 regulation, as it was presented in September 1, 1981, as follows:

> "We neglected to include in this proposed classification those electrical components [of solar systems]. It was our intent to do so. So…I'm proposing…we add, after the words that I previously asked you to write in ['*of air or water*'], 'heating and cooling of air and water or electricity.' This would be the collection and transfer of energy to provide those things. And then secondly, on the line where it ends, 'regenerative rockbed cooling systems,' [*add*] 'photovoltaic cells.'"

A motion was adopted to include Mr. McNely's amendments to Section 754.16 to include electrical and photovoltaic systems.[55]

April 28, 1982: Amendments were formally filed to repeal Sections 756.2 (Qualification for Supplemental Solar Classification), 756.3 (Solar Project Reporting Requirements), and 756.4 (Effective Date of Regulation), and to amend Sections 754.1 (C-4 Boiler, Hot-water Heating and Steam Fitting), 754.10 (C-53 Swimming Pool Contractors), 746 (C-20 Warm-Air Heating, Ventilating and Air-Conditioning Contractors), 734 (C-36 Plumbing Contractor), 733 (C-10 Electrical Contractor), and 754.16 (C-46 Solar Classification).[56]

This regulatory act did two things. First, it incorporated the changes to C-4, C-10, C-20, C-36 and C-53 classifications that added the solar construction to each classification, as presented in the September 1, 1981 regulation package and adopted at the December 10, 1981 special meeting. Secondly, it incorporated the amendments to Section 754.16 as presented and adopted at the December 10, 1981 special meeting, as follows: (*with strikethroughs and underlines to show the amended changes that occurred between September 1981 and December 1981*)

> **754.16**: A solar contractor is a specialty contractor whose contracting business is the execution of contracts or subcontracts requiring that specific art, ability, experience, knowledge, science and skill in ~~designing,~~ installing, modifying, maintaining, and repairing active solar energy systems. An active solar energy system consists of components which are thermally isolated from the living space for collection of solar energy and transfer of thermal energy to provide heating, cooling, heating and cooling **of air or water, or electricity**. Active solar energy systems include, but are not limited to, forced air systems, forced circulation water systems, thermosiphon systems, integral collector/storage systems, radiant systems, evaporative cooling systems with collectors, regenerative rockbed cooling systems, **photovoltaic cells**, and solar-assisted absorption cooling systems ~~and solar -assisted heat pump systems~~. A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills except when required to ~~design and~~ install an active solar energy system. The C46 classification will be issued on or before 1/1/83 after approval by the Board in a public meeting of a qualification procedure developed by the Registrar.

June 8, 1982:[57] In a memorandum to all staff from CSLB Energy Division Chair Kathy Ryan entitled "Solar Licensing Changes Go into Effect," it states that the "solar regulations adopted by the Board December 1981 were approved by the State Office of Administrative Law and became effective May 22, 1982." The memorandum clarifies that after the C-46 license begins being issued, "any contractor who wants to do solar

work outside the scope of the license classification he/she holds will have to apply for a C-46 license or additional licenses depending upon the type of solar work they undertake."

August 25, 1983: Amendments are formally filed to amend Section 754.16 (C-46 Solar Contractor Classification), as follows:[58] (*with strikethroughs and underlines to show the amended changes that occurred between June 1982 and August 1983*)

> **754.16**: 754.16 Class C-46 Solar Classification: a solar contractor ~~is a specialty contractor whose contracting business is the execution of contracts or subcontracts requiring that specific art, ability, experience, knowledge, science and skill in installing,~~ **installs**,~~ modifying,~~ **modifies**, ~~maintaining,~~ **maintains**, and ~~repairing~~ **repairs** active solar energy systems. An active solar energy system consists of components which are thermally isolated from the living space for collection of solar energy and transfer of thermal energy to provide **electricity** ~~heating, cooling,~~ and/or heating and cooling of air or water~~, or electricity~~. Active solar energy systems include, but are not limited to, forced air systems, forced circulation water systems, thermosiphon systems, integral collector/storage systems, radiant systems, evaporative cooling systems with collectors, regenerative rockbed cooling systems, photovoltaic cells, and solar-assisted absorption cooling systems.
>
> ***[ ]***
>
> A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills except when required to install an active solar energy system. The C46 classification will be issued ~~on or before 1/1/83~~ after ~~approval by the Board in a public meeting of a qualification procedure developed by the Registrar."~~ **development of an examination**.

April 20, 2009: The CSLB holds a regulatory hearing on the following proposed amendments to the C-46 Solar Contractor license classification.

> A solar contractor installs, modifies, maintains, and repairs **thermal and photovoltaic** ~~active~~ solar energy systems. ~~An active solar energy system consists of components which are thermally isolated from the living space for collection of solar energy and transfer of thermal energy to provide electricity and/or heating and cooling of air or water. Active solar energy systems include, but are not limited to, forced air systems, forced circulation water systems, thermosiphon systems, integral collector/storage systems, radiant systems, evaporative cooling systems with collectors, regenerative rockbed cooling systems, photovoltaic cells, and solar assisted absorption cooling systems.~~
>
> A licensee classified in this section shall not undertake or perform building or construction trades, crafts or skills, except when required to install a~~n active~~ **thermal or photovoltaic** solar energy system. ~~The C46 classification will be issued after development of an examination.~~

The initial statement of reasons for the regulatory package explains:[59]

> The existing regulation sets forth the scope of work for a C-46 Solar Contractor as it relates to the installation, modification, maintenance, and repair of specific types of active solar energy systems.
>
> The proposed amendment is being made in order to update the definition of a C-46 Solar Contractor by deleting text that refers to specific and in some cases outdated types of solar energy systems. Instead, the definition would simply refer to thermal and photovoltaic solar energy systems to allow for new innovations that would also meet this definition.
>
> This regulation is necessary to update the definition of a C-46 Solar Contractor.

The final statement of reasons details a single public comment and the Board's response thereto, as follows:[60]

> **Comment #1:** In his written comments, John Lloyd recommended that the Board modify the language of Section 832.46 further to require that only "certified electricians" be authorized to perform the connections from panels to the inverter and building. He also recommended that persons "having direct contact with the Photovoltaic panels in the mounting of racking and installing of the panels at least be in an indentured apprenticeship program and the connections from the array to the buildings be performed by a certified electrician.
>
> **Response to Comment #1:** Mr. Lloyd's recommendations are not consistent with existing rules and regulations. Business and Professions Code Section 7059 (a) contains a provision that allows contractors to perform work that is "incidental and supplemental to the performance of the work in the craft for which the specialty contractor is licensed." In addition, CCR Section 831 defines the phrase "incidental and supplemental" as work that is "essential to accomplish the work in which the contractor is classified. Therefore, the changes recommended by Mr. Lloyd will not be made because they would be inconsistent with the existing language contained in one of the reference statutes and an existing regulation.

December 30, 2009: The CSLB formally amends the C-46 Solar Contractor license classification[61] (Title 16, Division 8, Article 3, § 832.46 of the California Code of Regulations). After the amendment (and through present day), the classification now reads:

> A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems.
>
> A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.

SECTION THREE:

Public Participation Hearings and Industry Stakeholder Meetings

January 2019 Industry Expert Meetings

On January 17 and 18 of 2019, CSLB staff hosted meetings of C-10 Electrical Contractor industry experts and C-46 Solar Contractor industry experts, respectively. The focus of both meetings was to discuss the technical requirements and safety risks of the installation of energy storage systems (ESS) paired with solar photovoltaics (PV). Comments from the presenters at each meeting are summarized below.

January 17, 2019 C-10 Industry Expert Meeting

Battery ESS is a separate system than a solar PV, subject to separate codes, safety risks and installation. Both are a "distributed energy resource; a battery does not generate energy, rather it is a "load" that consumes energy. Industrial-scale solar installations use the most modular ESS units, followed by residential scale installations, and commercial application has the fewest modular units. Whether residential or commercial, calculations are required to ensure the existing electrical system can withstand installing an ESS. To prevent overloading, residential and commercial systems will usually require a service upgrade; approximately 20% of installations require a service upgrade, due to the installation of equipment such as an electric car charger or PV system that exceeds the energy threshold of the service panel. Most batteries installed by C-10 contractors are AC coupled; DC batteries are used to install solar and require an inverter.

As for safety, the same steps and precautions are taken to ensure installations are done safely and to code, no matter the scale. Batteries and their components generate fault currents, which must be coordinated properly to protect equipment and persons. The more batteries connected in a series, the more fault currents created. Anything over 50 volts is considered life-threatening, and solar PV ranges from 17 to 1,500 volts. Commercial is up to 1,000 volts with 800-volt batteries and utility scale is 1,500. On large scale systems the fire department must approve ESS and its design; there are measures implemented for fire departments to do emergency shut downs of systems. Under current law, B Contractors can install solar PV paired with ESS but it is

recommended they subcontract to C-10s. Technology has changed and lithium-ion batteries are more commonly used now than lead-acid. Each battery type has their safety concerns depending on the "set up and management" and poor installation can increase battery safety risks.

January 18, 2019 C-46 Industry Expert Meeting

The battery ESS most commonly used in the market are "plug and play," comparable to a simple appliance installation. With larger systems, the batteries are manufactured with the system and arrive as a "modular" unit. The same type of battery is generally used in residential and commercial and the number of modular units for a system depends on the energy demand. Distinguishing by commercial, residential, or industrial systems is difficult because energy needs, the building, and system size vary (e.g. a large residence can require bigger ESS than light commercial). This industry has been installing batteries for the last 40 years and in many ways lead-acid is more dangerous than new lithium ion enclosures. There are many components to "PV system," but one inverter makes the whole thing operate as a system. Manufacturers are building PV systems to include battery ESS because of the increase in demand. The steps for installation at the commercial level is the same as residential, the steps simply take longer. One permit is required to install a solar system and a battery.

As for safety, the "plug and play" systems at the residential and commercial level have circuit protections built in that preclude the arc flash and thermal runaway. While battery cells can deliver high fault currents that can spark from blunt impact, installers do not have access to the terminals, as a safety measure by the manufacturer. A PV system can be connected to a service panel but there is a 20% output limit to prevent overloading the panel. If the equipment must be upgraded, it is usually to the service equipment; approximately 20% of PV installs require a service panel upgrade. Most new homes have an "all in one" service panel that includes the meter and breaker. Utilities determine if service upgrades are required and a C-46 will subcontract a full-service upgrade. A C-46 would not install a standalone ESS job that would typically be performed by C-10 or B contractors. Approximately 70% of PV is installed by union

electricians mostly for commercial and industrial jobs. Having a certified electrician is beneficial when working with PV and energy storage.

April 2018 Public Participation Hearings

On April 25 and 26, 2018 Contractors State License Board (CSLB) staff held a two-day public participation hearing at its headquarters in Sacramento. The purpose of the hearing was to take testimony that would assist in the CSLB review of its current determination of the appropriate license classification(s) to install an energy storage system (ESS) either in a stand-alone contract or when included in the installation of a solar photovoltaic (PV) system.

A total of seventy-one people testified over both days. Forty-six people testified on day one and twenty-five people testified on day two. The tables below summarize the seventy-one comments by each speaker with the speaker's conclusion (if one could be identified). The tables are divided into the following categories of speakers, based on how the speakers identified themselves: (1) Electrical Training Instructors; (2) Certified Electricians or Electrical Apprentices; (3) Contractors; (4) Labor/Contractor/Utility Representatives; (5) Fire / Inspection / Safety; (6) Other Specialist / Unknown.

The tables indicate that 63 people testified in support of ESS systems being installed by C-10 contractors employing certified electricians (CE) regardless of whether as a standalone system or part of a PV system install. All speakers representing the training instructors, electricians, apprentices, fire, inspection, or safety groups spoke in favor of this conclusion. One contractor identified as a C-10/C-46 license holder recommended the Board conduct more research. Two other licensed contractors holding C-10, C-46, A, and B licenses did not express direct conclusions. One C-10/C-46 license holder testified that C-46 contractors are the most experienced and trained in battery ESS paired with PV. Three solar contractor representatives testified in support of allowing C-46 contractors to install solar PV paired with ESS.

The following table summarizes the comments and conclusions of the speakers who identified themselves as instructors or teachers in the electrical training industry.

ELECTRICAL TRAINING INSTRUCTORS				
#	Speaker # / Day	Speaker	Conclusion	Comments
1.	1 / 1	Master Instructor	C-10 with CEs install ESS only	PV and ESS are separate systems. Subject to separate codes and separate safety risks (shock, fire, flash burns, explosion, chemical exposure). C-46 employees don't have the same training of C-10 employees.
2.	19 / 1	Training Director	C-10 with CEs install ESS only	ESS has become integral part of industry. Apprenticeship training will soon include training on safety and installation of ESS and microgrid.
3.	21 /1	Assistant Training Director	C-10 with CEs install ESS only	*Extensive testimony on the content of training that California electrical apprentices receive* (five years, 1,200 hours instruction from CE trainers, electrical theory, interconnection of batteries and power sources, safe work practices, Cal OSHA and NFPA safety requirements, 8,000 hands-on under C-10s, pass exam, continued education)
4.	23 / 1	Training Director	C-10 with CEs install ESS only	Only employees of C-10s meet the California definition of "qualified person" for the NFPA (National Fire Protection Association) and NEC (National Electrical Code) for electrical safety. They are trained on the likelihood of dangers and how to respond.
5.	37 / 1	Apprenticeship Instructor	C-10 with CEs install ESS only	Battery room is most dangerous area in commercial solar PV power plants. Technology is changing, we're improving wattage per square foot on panels, voltages higher and higher, batteries have to match that. Lithium-ion currently state of art, and that will be changing soon as well. Only employees of C-10 have qualifications to manage these systems.
6.	38 / 1	Apprenticeship Instructor	C-10 with CEs install ESS only	ESS is not new or evolving technology we've been installing them for decades. They are installed to take load off peak or shave peak load down for customer. The C-46s that do ESS all have a C-10. If they do ESS without C-10 they've broken the law.
7.	42 / 1	Instructor	C-10 with CEs install ESS only	OSHA 10 is a must-have certification for anyone performing electrical work or working on a construction site. Apprentices learn DC theory, what batteries operate on, what happens when you put sources in a series versus parallel
8.	48 / 2	Electrical Training Director	C-10 with CEs install ESS only	*Extensive testimony on the content of training that California electrical apprentices receive* (first year includes safety training, DC v. AC, second year classroom and hands-on in PV, inverters, AC, third year DC semiconductors, electronics and power sources, fourth year, frequencies and power conversion, all five years 1,000 hours classroom, 8,000 on job.) DC is letters of alphabet, AC is writing an essay. CEs have to know both.
9.	49 / 2	Training Director	C-10 with CEs install ESS only	Trainers recently went through 45 hours of ESS microgrid training and certification. Shorting out of terminal on lithium-ion battery can generate 1,200-1,750 instantly. When sealed in case, arc flash of between 30k-60k degrees, just one battery. If they are stacked, e.g. at a residence, it's a series of bombs. ESS not just "plug and play" like solar panels that are just connected in series; if you make a mistake across the phases, will explode, a thermal runaway.
10.	66 / 2	Apprenticeship Instructor	C-10 with CEs install ESS only	Since high-energy ESS are already energized when connecting a few together they meet OSHA requirements of energized work permits and procedures that must be followed. Proper safety, rigging, termination, torqueing techniques must be followed to install. Apprentices learn this.

The following table summarizes the comments and conclusions of the speakers who identified themselves as certified electricians (CE) or as midway through an

apprentice program. Some CEs in this table indicated they worked for licensed contractors but did not identify those contractors.

. CERTIFIED ELECTRICIANS (CE) OR ELECTRICAL APPRENTICES				
#	Speaker # / Day	Speaker	Conclusion	Comments
1.	2 / 1	Certified Electrician	C-10 with CEs install ESS only	CE training includes labeling wires properly so if you are assigned to a different task, someone else can pick up where you left off behind you. Electrical industry is dangerous.
2.	3 / 1	Electrical Apprentice	C-10 with CEs install ESS only	Worked under C-10 and C-46. Under C-46 "thrown out in field, learning as you go." Received more training working under a C-10.
3.	7 /1	Certified Electrician	C-10 with CEs install ESS only	In ESS when you try to contain energy into a small point it wants to escape: either slow, regulated trickling, or thermal runway. Catastrophic event involving battery breakdown and melting everything. Must understand hazards with crossing the 48V threshold.
4.	10 / 1	Electrical Apprentice	C-10 with CEs install ESS only	ESS and PV systems have their own codes because its not just batteries, when you tie into electrical grid engaging loads requirements need to be met. CEs are trained on that. Batteries more complex and demanding on utility level, larger capacities, higher voltages.
5.	12 / 1	Certified Electrician	C-10 with CEs install ESS only	Discusses history of CE requirement and purpose of NFPA is safeguarding persons and property from hazards of electricity. If you install batteries, can you install electrical systems in building that house rack? What if new switchgear required? Disconnects, controls, underground, feeders, if C-46 does this need C-10 so they can use CEs.
6.	15 / 1	Certified Electrician	C-10 with CEs install ESS only	Experience with C-46 installing PV on home, C-46 did not know difference between grounded conductor and grounding conductor. Purpose of NEC is safeguarding people and purport from hazardous. C-46s not qualified like CEs.
7.	16 / 1	Certified Electrician	C-10 with CEs install ESS only	Having worked for both C-46 and C-10 witnessed firsthand amount of training that goes into safety of installing ESS. CEs evolve as the technology evolves.
8.	18 / 1	Certified Electrician	C-10 with CEs install ESS only	There are many types of ESS, batteries, and types of batteries, lead and nickel cadmium, fuel cells, flow batteries, hydro generation. They pose risk to utility workers when connected to grid. All can be connected with PV or separate.
9.	20 / 1	Electrical Apprentice	C-10 with CEs install ESS only	Failure to follow NFPA and OSHA guidelines can result in injury. A non-CE cannot recognize the hazards involved in PV plus storage, such as shock hazards up to 12k degrees Celsius.
10.	26 / 1	Certified Electrician	C-10 with CEs install ESS only	Speaker presented a suit of a type worn two years previously that saved this speaker's life, while working on an energy backup system installing a meter-read to read a meter that someone else installed.
11.	31 / 1	Certified Electrician	C-10 with CEs install ESS only	DC systems are greatly expanding. When seemingly simple batteries connected together as complete system, high voltages and arc energy rival AC systems they are integrated with. DC power systems arguably more dangerous than traditional AC systems because they can't be shut off at panel. ESS systems are on all the time.
12.	33 / 1	Certified Electrician	C-10 with CEs install ESS only	Solar PV and battery storage is ever-changing technology. The more MW, the more complex. Solar panels generally produce about 30-35 volts, a couple of amps, and there is no on-off switch. Shock from a solar panel mildly uncomfortable. Batteries are an add-on, not limited to solar, lithium-ion of 2 two volts can produce 1,700 amps. Must know whole NEC to understand batteries.

13.	34 / 1	Certified Electrician	C-10 with CEs install ESS only	Difference between C-10 and C-46 is standardized training, working with other professionals beside you and chain of command with years of knowledge. At every level experience and knowledge to get job done safely.
14.	35 / 1	Certified Electrician	C-10 with CEs install ESS only	Solar PV and ESS are separate, distinct systems. Witnessed PV being installed on home of family member by solar company, system not grounded properly and not supported. Was able to show contractor in NEC where wrong.
15.	36 / 1	Certified Electrician	C-10 with CEs install ESS only	Solar PV and ESS are separate, standalone systems that are complex in nature. Just because an ESS is adjacent to solar facility does not mean solar contractor can install any more than a cement mason can finish the concrete dome around a reactor can build the reactor.
16.	41 / 1	Certified Electrician	C-10 with CEs install ESS only	Before becoming CE, worked for a C-46 as a temp employee on 1.1 MW solar install at a Costco, installed 2,500 panels. They were energized and had a voltage differential. Therefore, speaker was terminating wires with no experience and no idea about voltage differential; one path it can take is through the body.
17.	45 / 1	Certified Electrician	C-10 with CEs install ESS only	C-46 contractors are going to create an underground economy that is going to have a direct impact on CEs.
18.	46 / 1	Certified Electrician	C-10 with CEs install ESS only	C-46 contractors lack experience in electrical industry.
19.	47 / 2	Certified Electrician	C-10 with CEs install ESS only	Electrical work is inherently dangerous and requires more than just instructions to produce it safely. Times change and citizens of the state want only well-trained people to install electrical equipment of any kind. Mistake to allow C-46 to continue and/or expand their scope of work to ESS.
20.	54 / 2	Certified Electrician	C-10 with CEs install ESS only	C-46 contractors can pay their workers minimum-wage and have no experience to do the install. C-10 employees have 8k hours work just to take a taste that over 50% fail. CSLB should look at turnover for C-46 employees versus CEs and see if cost is why the C-46 doesn't get the C-10
21.	55 / 2	Certified Electrician	C-10 with CEs install ESS only	Experience with DC and battery backup systems for schools, data centers, hospital. Each one is different in installation and operations. Requires strong education in fundamentals of electricity, DC and AC, to work on variety of ESS
22.	62 / 2	Certified Electrician	C-10 with CEs install ESS only	Because you have a driver's license, does that entitle you to drive a bus? No. If you're a dental hygienist, do you perform root canals? No. Because you can fly a Cessna, does that mean you fly a commercial airline? No. Should a non-CE working for a C-46 be able to install and maintain ESS? No.
23.	67 / 2	Certified Electrician	C-10 with CEs install ESS only	On one hand, highly skilled guys doing ESS for years (C-10), and the other hand less skilled, less trained with less experience (C-46). They should be excluded because of potential hazards.
24.	68 / 2	Certified Electrician	C-10 with CEs install ESS only	In the utility industry, the battery backup mazes we have are for whole substations. They are kept in separate buildings, explosion-proof fittings with separate codes because of dangers. Should be cautious of lithium-ion battery or lead acid battery installed at school or hospital or home.

The following table summarizes the comments and conclusions of the speakers who identified themselves as contractors. Some, but not all the individuals in this category identified themselves as the license qualifier (the individual with the knowledge and experience who took a licensing exam) for a CSLB license. Others in this category identified themselves as a certified electrician. However, all the speakers in this category identified themselves as working in a high capacity (director, manager, officer)

for an identified licensee, which is why they were included in this table (despite not all of them identifying themselves as the license qualifier).

CONTRACTORS				
#	Speaker # / Day	Speaker	Conclusion	Comments
1.	5 / 1	C-10	C-10 with CEs install ESS only	There is no "plug and play" on interconnection of an electrical panel. It requires drilling hole in live panel, installing conduit, pulling wire, landing on a breaker on a live busbar.
2.	6 / 1	C-10 / C-46	Further research needed / establish a committee	There are many kinds of ESS (like hydrogen, solar pumps, water pumps) many of which can be paired with PV. No rational reason to limit installation by KW or by KV or by storage. Lithium-ion LiPo is one of safest ESS out there. It is "kind of crazy" to say C-46 is not qualified. CSLB needs to have a committee to look into this further.
3.	9 /1	C-10	C-10 with CEs install ESS only	*Spoke of three utility-scale projects installed*. Have installed projects over 10 MW batteries operating over hundreds of degrees, over 1,000 volts DC with 15KV inverters. Projects more than just battery, includes communications, relays. They are all very unique and take competencies in more than one electrical discipline.
4.	11 / 1	C-10	C-10 with CEs install ESS only	Things coming out nowadays are coming out faster than the codes can address them. Article 706 in NEC (dealing with ESS) is not in the current code that's in the 2017. We are looking at more than just battery plus PV but on utility scale here. Codes are only just evolving to cover all this, and only CEs are trained in it all.
5.	17 / 1	C-10 / C-46	C-10 with CEs install ESS only	We win projects that qualify for both licenses but don't put C-46 employees on battery ESS because they aren't trained or educated. It is more than plug and play, you are migrating circuits, actual electrical work. It isn't just the license holder doing this work its employees. Storage requires more than PV part of project.
6.	22 / 1	C-10 / C-46	C-10 with CEs install ESS only	Licensee has installed 8k plus residential jobs over 60MW of power and installed 60 plus residential ESS and backlogged with 50-60 more. Recently 23 units had to be recalled from homes and replaced. There are manufacturing kinks to work out.
7.	30 / 1	C-10	C-10 with CEs install ESS only	ESS and PV are separate systems with their own technical requirements, codes, and hazards. Most battery ESS operate near 1k volts DC, much different than 5 years ago. They are growing and can be combined to support many homes. One minor installation error can create arc fault or short circuit that can cause fire.
8.	32 / 1	C-10 / C-46 / A / B	No direct conclusion expressed	Regarding the voltages and currents of ESS plus PV versus solar PV only, over the past 2-3 years voltages and currents that are present on ESS have become more and more in line with the solar-only grid-tied industry. In residential, it's a 600-volt DC limit. In commercial and industrial is 1,000-volt DC. The ESS products coming out are in line with these expectations. The challenges facing a C-46 in dealing with these voltages is very similar to the last 20 years. There is essentially no change to the consumer in delivering products and components they're used to. And even if they're considered separate systems, CA is seeing attachment rates at 50% and Hawaii is at 100%. They're combined systems by policy and demand.
9.	51 / 2	C-10	C-10 with CEs install ESS only	Many of our projects result in output of 240 to 480 volts and if grid-tie, voltages even higher with very special connections need to be made. They are extremely dangerous requires proper training. Installing PV and plugging them together is far different than constructing and connecting battery ESS.
10.	53 / 2	C-10	C-10 with CEs install ESS only	Battery ESS is much more complex than PV and provide functions beyond converting sunlight to power. They can be installed in combination with PV or without, independent of PV and independent of the grid. NEC has separate code articles for each system, and the CA fire code regulates batteries different than PV. Lithium batteries are prone to thermal escape if installed incorrectly. An ESS is never a requirement for installing a PV; they're separate systems.

11.	56 / 2	C-10	C-10 with CEs install ESS only	Risk factors increase exponentially when connecting sizable solar arrays to the larger overall system. Although PV and ESS can be paired, they are separate systems per the NEC and at the disconnect. Risks of electric shock, fire, flash burns, explosion, chemical hazard exposure. Battery banks must be electrically isolated when working on them. Risk varies depending on battery type and size.
12.	57 / 2	C-10	C-10 with CEs install ESS only	Company does solar installations at schools, airports, hospitals. Each project requires detailed interconnection to existing building power source or grid. 1 MW rooftop solar project spread over 70k square feet versus 1MW battery system in a container over less than 500 square feet gives you a sense of the difference in potential energy danger. It is becoming more common for battery and storage to be on the same project, but they do not need to be installed together to operate.
13.	58 / 2	C-10	C-10 with CEs install ESS only	NEC is trying to keep up with this new technology. Now that ESS is available for general public must minimize hazards. C-10 covers energy storage, C-46 does not.
14.	59 / 2	C-10	C-10 with CEs install ESS only	ESS and PV can be paired together but are separate systems subject to their own code, installation, and fire safety standards. NEC provides in 690.1B that PV install ends at system disconnect. ESS is a separate electrical system covered under section 706. They also pose very different fire and safety risks. Higher ESS capacities have higher risk of arc flash. Must be qualified to install.
15.	60 / 2	C-10 / C-46	No direct conclusion expressed	C-46s are not here to hurt anyone. We learn from other people, we get the certifications, we learn how to do things properly, follow plans, get approvals, we must follow the same rules. We do have training. C-46s are not a fly-by-night operation. It will kill the business for small installers if they think they need a C-10.
16.	61 / 2	C-10	C-10 with CEs install ESS only	The workers are the ones who install these systems while contractors are employers who run the business. Lead acid batteries are not the same as lithium-ion batteries. A 7kw solar system produces 7k watts but a battery ESS stores the energy produced by these arrays, meaning up to 56kw. And the system can only deliver the power it is producing at a moment in time. Battery storage under a direct fault can deliver all its stored energy at once. It's a big difference.
17.	69 / 2	C-10 / C-46	C-46 are the most experienced and trained on battery ESS	Assisted in development of C-46 license exam, which is very focused on energy storage. Solar customers have historically needed batteries when the sun doesn't shine so C-46 contractors are trained and tested on batteries because that's what customers need. Took the C-10 test and there were no battery storage questions. Lithium ion batteries won't be in CA codes until 2020. PV voltage is 400 volts, and popular lithium ion batteries run at 400 volts DC. Solar installers have worked with this voltage for 20 years. When connecting these systems, the terminals are not live because there are circuit breakers. If the terminals are shorted, the breaker trips. There can be no fire, no explosion, no arc flash. These are the systems that are going in homes and businesses.

The following table summarizes the comments and conclusions of the speakers who identified themselves as representatives of various industries, to include labor, contractor or utilities.

. LABOR / CONTRACTOR / UTILITY REPRESENTATIVE				
#	Speaker	Speaker	Conclusion	Comments
1.	28 / 1	Representative – Electrical Contractors	C-10 with CEs install ESS only	If C-46 are not allowed to do standalone ESS why should they be allowed to install as part of a PV system? These are not separate systems. They are not comparable to the small car batteries installed with PV 25 years ago. A few questions on a test does not qualify you to install complex systems. A C-46 should not be able to employ CEs because they don't have CE training.

2.	29 / 1	Representative – Electrical Workers	C-10 with CEs install ESS only	The last thing we want is our members to show up on the job after a storm or fire and these systems aren't working correctly. They need to be installed, maintained properly so they don't have to worry about something taking their lives. OSHA requires employees must receive instructions for how to work on these systems.
3.	39 / 1	Representative – Electrical Contractors	C-10 with CEs install ESS only	No one besides a C-10 should install ESS because of the potential for injury and accidents is much higher when the products involve DC currents at higher voltages than normally dealt with on jobsites. The work has to abide by the NEC so it should be done by a CE.
4.	40 / 1 and 67 / 2*	Representative – Solar Contractors	C-46 can install ESS paired with PV	There is no evidence of widespread health or safety issues in this marketplace. Restricting all solar and ESS paired systems to a C-10 limits the workforce and disrupts hiring practices and knocks out some of most qualified contractors. 100k systems installed in 2017, 69% hold C-10 and 62% hold C-46. Of that 110, eleven hold a C-10 only. There is no significant difference in residential and commercial markets. CAL/OSHA requires all licensed contractors with 3 or more employees to document and certify everyone on staff is properly trained in accordance with the California Electrical Code. Of over 200 PV plus solar systems interconnected by PG&E since 2013 and over 4kw, the majority installed by C-46. This is not new technology or an expansion of technology.
5.	43 / 1	Representative – Solar Contractors	C-46 can install ESS paired with PV	Our association pushed for C-46 examination in 1980 because only a few mechanical trades were allowed to do it at the time, the C-10 was not even included because it was all solar thermal back them. Many of our people have the NEC and CEC on their desk, which supersedes the NEC. The C-46 are trained in the codes and by the ESS manufacturers who train us on their technology. Governor Brown is building a house with PV and storage installed by a C-46. If C-46 installs an ESS and is no longer allowed to maintain it does this void warranty? C-10s will need to buy those warranties.
6.	44 / 1	Representative – Electrical Contractors	C-10 with CEs install ESS only	*Extensive testimony about labor, work force development and electrical worker market demand.* As this technology matures and proliferates, particularly within the dense urban environments of our load centers, CSLB will play a central role in determining whether those installing it have safety training and skills that sets the competitive dynamic around lowest price and lowest wages.
7.	50 / 2	Representative – Utility Company	C-10 with CEs install ESS only	Oppose to expanding C-46 licenses to ESS and urge requiring only contractors qualified to install ESS as stand-alone projects to install ESS paired with PV. The maturing technology must be installed by the highly skilled and trained
8.	52 / 2	Representative – Solar Contractors	C-46 can install ESS paired with PV	C-46 exams test heavily on battery ESS. We have not seen statistics or evidence that C-46 are ill-equipped to install PV plus storage. CA is not only state to offer solar installer license like C-46. Some of the largest solar markets in country include Nevada, Connecticut and Florida. Solar plus PV installed by solar contractors is not unique or new to California.
9.	63 / 2	Representative – Electrical Contractors	C-10 with CEs install ESS only	C-46 regulation clearly restricts to thermal and PV solar energy systems and shall not undertake other skills except when required to install PV. An ESS is not required to install PV. CSLB report should include (1) number licensees holding C-10 and C-46 (2) number of NEC and NFPA questions on both exams (3) number of complaints against C-46; (4) determine which industries have approved training programs for installation of ESS; (5) who is best suited to protect consumers
10.	64 / 2	Representative – Utility Employees	C-10 with CEs install ESS only	Fire and electrical codes treat systems as separate because they're located in different areas of the occupancy, subject to different codes and standards, pose different safety works. Fire code has specific requirements about ESS when they are put in their own room. All available configurations of PV plus solar in the codes have them as separate systems. Solar PV generates and exports but does not store energy. ESS does not generate energy but it stores and discharges energy. Storage makes them more hazardous. On the customer side we're seeing commercial systems that are now 10 to MW which is essentially utility scale.

11.	65 / 2	Representative – Contractor Labor	C-10 with CEs install ESS only	C-10 contractors have done DC and ESS work since the 50s and 60s. What is on the exam does not matter because it is the workers who install these systems for C-46s. It is the workers that lack the skill, training, and certifications.

*Representative spoke twice, once on day one, once on day two. Comments on both days summarized here.

The following table summarizes the comments and conclusions of the speakers who identified themselves as representing the firefighting industry, inspection or safety industry. The one individual who identified himself as a safety professional indicated that he only worked with electrical safety. The one individual who identified himself as an inspector did not specify what kind of inspector.

. FIRE / INSPECTION / SAFETY				
#	Speaker # / Day	Speaker	Conclusion	Comments
1.	4 / 1	Fire Chief	C-10 with CEs install ESS only	These systems are varied, they're massive, and they take a lot of technical expertise to manage. They're growing in proliferation in our community and the technical expertise that it takes to work on the systems is high level.
2.	13 / 1	Firefighter	C-10 with CEs install ESS only	C-46 installers have long history of safety in low voltage flooded cell ESS. But introduction of new chemistry and new technologies requires re-look at the requirements. Lithium-ion chemistry hazards are not completely understood. There is a need for expanded licensing and education requirements of installers. PV and ESS are separate systems. They are more integrated on residential side but on the utility side it is complex and high level requiring significant electrical engineering.
3.	14 / 1	Inspector	C-10 with CEs install ESS only	Batteries are inherently safe. They are made to be safe. But if you do not know what you are doing, they are dangerous. Especially the larger scale batteries. You do not want people putting them in that don't know the NEC or what's going on.
4.	25 / 1	Fire Prevention Officer	C-10 with CEs install ESS only	The C-46 classification description specifically prohibits installation of trades, crafts and skills not required to install PV. The C-46 should not be expanded to ESS. They require separate knowledge, skills, and abilities.
5.	27 / 1	Safety Professional	C-10 with CEs install ESS only	The safety concern with batteries is energy potential, even in smaller ESS. Electrical shock, hazardous voltages, arc flash if short-circuited, temperatures above 35k degrees. Higher the storage capacity higher the risk. Fire and exposure, hazardous gas, electrical overload, damaged battery casing ruptures. Safety concerns during installation can be followed to prevent this if trained.

Finally, the following table summarizes the comments and conclusions of the speakers who identified themselves as having some other special knowledge or experience, or they did not identify themselves at all.

OTHER SPECIALIST / UNKNOWN				
#	Speaker # / Day	Speaker	Conclusion	Comments

1.	8 / 1	Plant Operator	C-10 with CEs install ESS only	Owner-operator of large industrial battery systems. MW level battery systems require control systems in large central energy plants. The most dangerous room in the house is the battery room. Background in electrical theory is basis for working on these. Inspections of these area takes two days.
2.	24 / 1	Electrical Engineer	C-10 with CEs install ESS only	These are DC voltages. Volts are free, amps are expensive – which means the higher the voltage, the lower the current, the smaller the conductors, changes all your switches. When that happens there are dangers. Amp interrupting capability or vault current. When the fuse arrives out in the field, someone must be able to read the label and understand what they're putting in. Especially utility scale.
3.	70 / 2	Unknown	No conclusion expressed.	So far focused on one technology and application. The Board needs to look at the five different types of ESS. Pumped hydro, mechanical, thermal, electrochemical, and that there's prefabricated systems and non-prefabricated systems. make sure when you make a ruling on energy storage, you're considering this.
4.	71 / 2	Unknown	C-10 with CEs install ESS only	Electrical work should stay in the hands of the qualified, licensed, state-certified electricians.

SECTION FOUR:

Survey of Building Departments

This section of the report summarizes information, statements, and survey responses the Contractors State License Board (CSLB) has received from individuals on behalf of local building departments.

Letter from California Building Officials Association

In response to its announcement that it would host a public participation hearing on the appropriate classifications to install an Energy Storage System (ESS) in a standalone contract or when included in the installation of a photovoltaic system, the Contractors State License Board (CSLB) received a letter from the association of California Building Officials (CALBO), dated April 25, 2018. The Letter states that CALBO members are primarily responsible for enforcing building code requirements in an estimated 95% of the buildings constructed in the state. The letter states that CALBO "support[s] a C-10 classification as the most appropriate for installing an ESS" and that the C-10 classification "has the proper training and expertise in order to provide the required safety measures and ensure proper code compliance." The letter further states that "allowance of a C-46 licensee to perform this job function could jeopardize the integrity and safety of the ESS unit and jeopardize the safety of those within the dwelling" and that the C-46 license "does not have the proper training or experience to comply with current installation requirements."

County Building Official Annual Business Meeting

On May 2, 2018, CSLB Board Member Nancy Springer and Registrar David Fogt met with more than 30 county building officials and received general information regarding the installation of energy storage systems (ESS). In summary, the officials' comments indicated that the license classification causing the officials the most ESS installation concerns is the B-General Building Contractor classification. Many of the officials for the various counties indicated that the counties require a C-10 Electrical Contactor license to upgrade the electrical panel, which is often necessary for an ESS installation. Finally, officials at the meeting noted that code and trade standard compliance depend on the use of trained electrical workers to perform ESS installations.

CALBO Solar-Related Code Violations Survey

On August 31, 2018, CSLB staff distributed a survey to the CALBO membership. The survey asked the members to identify the most common and significant "solar-related code violations" they have witnessed as well as the license classifications associated with the violations. The CSLB received responses to the survey from 44 CALBO members. Below is a table of the significant code violations identified by CALBO members who responded to the survey. The numbers in the table indicate the number of times a CALBO respondent associated a type of code violation with the license classification indicated (C-10 Electrical, C-46 Solar, or B-General contractors).

The table shows that C-10, C-46, and B-General contractors were associated with the various solar-related code violations shown 61 times, 76 times, and 17 times, respectively. In another 14 instances, the survey respondents either failed to identify a license class associated with the violation, or identified the incident as involving a home owner or owner-builder.

MOST SIGNIFICANT CODE VIOLATIONS	C-10 Electrical Contractor	C-46 Solar Contractor	B-General Contractor	Not Specified / Owner-Builder
Wiring / Electrical Problems				
Bonding (*jumper removal, electrical bonding of pipes, bonded neutrals on subpanels, bonding of systems, bonding incorrect or not in place*)	2	4		1
Disconnection (*means of disconnect, subpanel disconnect problems, disconnect not in sight of storage, disconnect missing, disconnect not raintight or leaning, missing DC connects*)	5	6	1	1
Wire management on roof or under panels (*size, sagging, rubbing, unsecured, crimping, not supported*)	5	5	3	1
Conduit (*unsecured, cables in conduit wrong, anchoring, flash standoff, PVC instead-of*)	2	5		
Grounding (*not grounded per code, ground clip installation, grounding of hardware/rails/panels*)	4	2	1	1
Load issues (*calculations, conductor size*)		2		

Subpanel/panel wiring and multi-wire circuits (*improperly installed or identified, improper wiring through panels, electrical panel or bus bar overload*)	4	4	2	
Electrical Devices or Metering Issues				
Energy Storage System Wiring (*incorrect, or incorrectly wiring as manual transfer switch, or to a standby generator, failure to island [SFGE Rule 21]*)	3	3		
Breakers (*retention, amperage rating / de-rating, size, height, 100 or 120% rules, backfeeding, CEC 690*)	4	7	2	1
Splicing and taps at metering, line side tap and service meter listing	2	2		
Conductors (*sizing, cable management*)	2	4	2	
Backfeed and overcurrent protection sizing, point of interconnection (*705.12(D)*), **strand crossing**	3	2	1	
Feeders (size, running)	2	2		
Construction / Installation Problems				
Installation of ESS unit on wall (*mounting)*		2		
Hardware (*Roof mount spacing, racking, rack / rail sizing, module / panel securing [loose or unsecured], mounting, fire set back violations, lag screw section, fitting size/attachment problems*)	8	6	1	1
Roof water proofing				1
Other Issues				
Signage/labeling (*incorrect, missing, decals, directories, unlisted devices, conduit labels*)	7	8	3	2
Plans, single line drawing (*failure to follow, not meeting, not installing according to, panel calculations, quantity of units*)	3	5		3
Physical workspace adequacy (*clearance, space to work, causing damage to equipment, location of installation*)	4	5	1	2
Connections/grid (*serving utility approval, connecting to unpermitted or unsuitable electrical services, connecting to undersized or isolated services without room for conductors, CTs, other equipment*)	1	2		
TOTALS	61	76	17	14

According to the chart above, a C-46 contractor license is associated with 49% of the reported incidents, a C-10 contractor license is associated with 39% of the incidents, a B contractor with 9% of the incidents, and the remaining 3% are an unknown license classification or an owner/builder. There is an unknown margin for error in the two charts above because many of the respondents indicated that many of the installers held both the C-10 and C-46 license but did not make this distinction when associating the license type with the violations they witnessed.

The CALBO survey also asked the members to identify examples of injuries or damage that occurred because of these installation practices. A total of 34 survey respondents left the injury section "blank" and 10 explicitly state that they had no injury information to report. Many of the respondents also did not report any damages that resulted from the solar-related code violations. The responses of those who did report damage associated with these violations are indicated in the chart below with the license classifications associated with the damage.

REPORTS OF DAMAGE	C-10 Electrical Contractor	C-46 Solar Contractor	B-General Contractor	Not Specified / Owner-Builder
Equipment Damage				
Wiring pinched between modules and racking	1			
Wiring drug across roof showing signs of damage to insulation	1			
Incorrect grade of bolts at column/girder connections resulted in panels collapsing onto vehicles in high wind*	1	1		
Equipment damage due to overloaded panels		1		
Equipment damage due to lack of proper grounding methods	1	1	1	
Inverter failure and arc flash nearly causing fire and destroying inverter**				1
Damage to roof coverings (concrete tile roof covering damage) or roof leaking				2
Fires				

Bad or old connections made in place of required utility splice connections resulting in fires				1
Fires at main service mains due to not cleaning busbar before back fed breaker installed; system energized prior to utility clearance	1	1	1	
TOTALS	**5**	**4**	**2**	**3**

*Respondent noted this system was installed according to approved engineered design
**Respondent noted that officials concluded that the failure of inverter's internal wiring was the cause

Finally, respondents to the CALBO survey were invited to make any additional comments. The following statements were drawn from the survey responses:

CALBO Survey Respondents – General Comments
[On the type of license associated with the size of system installed]
I have not noticed any correlation between system size and type of license installing them.
Our division issues owner-builder permits to systems below 20kw-AC
Most residential installs (with less than 40 panels) are C-10s with Bs the second largest group
Most panel installations under 5kw are [installed by] C-46s
Most hold C-10s regardless of system size
[On the overall workmanship of licensees]
Overall workmanship much better with C-10s [*a statement making this or a similar conclusion was made by three different respondents*]
Electrical work should be required to be performed by C-10s only *[a statement making this or a similar conclusion was made by four different respondents*]
C-46 contractors are the biggest violators [*a statement making this or a similar conclusion was made by two different respondents*]
Need to get the B contractors out of the solar installs
General Comments
If B licensed contractors are able to install a solar system, they should be able to install the integrated ESS, likewise for C-10 and C-46
Energy storage is such a young technology that there is no history yet. As inspectors we rely on the test lab to verify that the equipment is utility interactive based on UL [Underwriting Laboratories] standard 1741

A lot of these problems are due to salesmen not obtaining proper information at sale. Doing a plan review for projects in house rather than inspector field verifying information onsite and writing corrections that could've been caught at plan review

Other issues [involve battery] capacity, which [reflects] undersizing [problems]. A permit applicant submitted plans which showed a battery backup that is connected to the whole load of the house while its size is a fraction of the load. The Code doesn't address this issue.

As a plans examiner most of the items that I see that do not meet code are a direct result of the lack of information provided on the plans, product listing information, fire classifications of the installation, misinterpretation of fire access pathways, directory placards that are lacking detail.

Around 25% of the projects are not built per the permitted set of plans; the changes are found at final and in some cases cannot be approved as installed

Please know the licensee does not perform installs, instead an employee or laborer performs install

The PV industry is changing with materials, equipment and technology. Please consider the need to have all National Recognized Testing Laboratories [NRTL] (e.g. CSA, ETL, TUV, or UL) become more transparent with inspection and plan staff. I have found numerous occasions the report issued by an NRTL was more trade secret or proprietary, therefore making any investigation for a specific listing end with no information to learn. [This is a] disparity between NRTL and AHJ [authority having jurisdiction]

SECTION FIVE:

Summary of Letters from the Public

Introduction to Written Correspondence Received from the Public

On February 23, 2018, the Contractors State License Board (CSLB) placed the following item on its agenda for its February 23, 2018 Licensing Committee meeting: "Review, Discussion, and Possible Action on License Classifications Authorized to Install Energy Storage Systems." On April 17, 2018, the CSLB announced its intent to hold a public participation hearing to gather information on energy storage systems that will be used to review the appropriate classification(s) to install an energy storage system in a standalone contract or as part of the installation of a solar photovoltaic system. In the months before and after these announcements, CSLB received numerous letters from various members of the public on the topic of C-10 or C-46 contractors installing energy storage systems.

This section summarizes all 269 letters received from the public up to and those received on March 8, 2019: 121 letters were written on behalf of the C-46 Solar Contractor industry, and 148[3] were written on behalf of the C-10 Electrical Contractor industry. In addition to letters on behalf of the C-10 Electrical Contractor industry, CSLB received a press release, and a petition signed by 2,877 individuals on behalf of the C-10 Electrical Contractor industry.

To maintain objectivity and anonymity, this report does not identify letter writers; however, copies of all the letters are available upon request and will be redacted as necessary for confidentiality of non-public persons. The summaries of the letters in this section may not summarize all the information provided in every letter; the summaries are designed to address information not already repeated in another summary and to summarize facts not opinion or argument from the original letters.

[3] This total does not include the letter from the California Building Officials (CALBO) association. The CALBO letter is described on page 33 of this report, and thus not described / included in this section of the report. Therefore, the technical total of the letters received in support of the C-10 Electrical Contractor industry is 149, not 148.

Letters Written on Behalf of the C-46 Solar Contractor Industry

This section of the report summarizes the 121 letters written on behalf of the C-46 Solar Contractor industry. The CSLB received 121 letters from various authors on behalf of the C-46 Solar Contractor industry. The letters all oppose CSLB changing its existing license classifications. This section summarizes the letters into two tables: (1) Letters from Contractors; (2) Letters from Industry Representatives. Many of the letters are written from the following template:

> [Name] [Title] [License] [Years' Experience] [Number of Employees] I am writing to express my strong opposition to changes to the licensing classifications authorized to install solar and energy storage systems. The safety of my workers and my customers is of the utmost importance. To imply otherwise or to suggest that my staff is unable to install solar and energy storage systems safely is, simply put, inaccurate.
>
> As you know, the C-46 contractor can and has installed solar and energy storage systems for decades. In addition, the General A contractor has been able to install energy storage when specialized engineering is required, and the General B contractor has been able to do so in connection to a structure. There is no evidence that, for the sake of public health and safety or for any other legitimate public interest purpose, the installation of solar and energy storage needs to be restricted to the C-10 license only.
>
> The fact is energy storage has always been paired with solar photovoltaic systems, ever since the technology was first used in off-grid homes. The advent of net metering in the mid-1990s made grid-tied solar photovoltaic systems possible without batteries, but the pairing of these technologies nonetheless has never waned. That the C-46 license has been able to install energy storage is evidenced by the fact that the C-46 test has contained more questions on energy storage, and for many more years, than any other test administered by the CSLB.
>
> From a safety point of view, energy storage technologies are getting safer, simpler to install, and more plug-and-play. Batteries today are UL listed, with circuit breakers to prevent thermal events, and other safety features that are designed for easy installation and widespread use.
>
> It is important to note that energy storage is rapidly becoming a necessary part of the grid-tied solar market with the advent of Time-of-Use rates and the need to smooth out the intermittency of renewable energy. To cut off the C-46 contractor, or the A and the B, from installing energy storage would be to effectively cut those contractors off – contractors like myself – from the very market we've worked so hard to build.
>
> Thank you for considering these comments. I urge you to reject any proposals to restrict solar and energy storage installations.

The first table summarizes 73 letters representing solar installation companies. The individuals in this table identified themselves as a qualifier for a CSLB license or working in a high capacity (director, manager, officer) for an identified licensee. Many of

the letters were submitted using the template above, without providing additional information. Those letters are indicated below by the word “template” in the “comment” column. Other letters expanded upon the template with additional commentary or were entirely original letters. These letters received full summaries in the table below.

LETTERS FROM CONTRACTORS IN SUPPORT OF C-46 SOLAR CONTRACTORS INSTALLING ENERGY STORAGE SYSTEMS PAIRED WITH SOLAR PV				
#	Date	Author	Years in field / # of employees	Comments
1.	5/15/18	B	18 / 20	Perfect safety record. Staff is well trained, and we have put in place safety protocols that has kept us safe and our customers protected from any safety concerns.
2.	5/15/18	C-46	40 / 4	Template
3.	5/15/18	AZ contractor	35 employees	Hold NABCEP PV installation certificate and passed required safety standards to be an APS approved contractor in Solar Communities Program
4.	5/3/18	C-46	40 / 30	Template
5.	5/18/18	C-46 / C-10	12 / 6	We have not had a claim from an injured employee and have been installing solar with storage since opening our doors.
6.	5/15/18	B	11 / 25	Have performed countless jobs including LAUSD, SMMUSD, NMUSD solar projects making sure we uphold the OSHA requirements and standards for all projects
7.	5/10/18	C-46	40 years’ experience	Template
8.	5/25/18	B / C-10	40 / 8	Template
9.	5/4/18	B / C-46	35 / over 35	Template
10.	5/15/18	C-46 / C-10	8 / over 10	Template
11.	5/4/18	B	3 / 5	Change would put us out of business. Strong track record in install quality and safety. Adhere to every safety precaution and procedure. Intimately familiar with NEC code. Often use C-10s when need to. Often correct work of C-10s. Inaccurate to say C-46s cannot do this work. Experience with certified electricians and C-10s indicate they are not better placed to do solar.
12.	5/14/18	C-46	5 employees	Certified by NABCEP since 2009 and attend at least a dozen webinars and conferences each year to keep up to date on all advances in the solar industry including extensive battery storage system information.
13.	5/7/18	C-46 / C-36 / C-20	14 years’ experience	Been through several battery manufacturers’ training and have extensive experience with off-grid solar and battery integration. Make sure every installer has appropriate training to handle battery systems safely.
14.	5/16/18	C-46	34 / 160	Template
15.	4/25/18	B	13 / 20	Template
16.	5/15/18	C-46	35 / 60	Installed over 8,000 solar energy systems and serviced tens of thousands of others and never had a complaint or claim against insurance. All systems must comply with NEC,

				Section 690, which has been continuously re-written and updated over the years with input from the C-46 community.
17.	5/18/18	B / C-46 / C-36	44 / 40	Installed 25 systems and 40 in our pipeline. Unacceptable to revoke these opportunities from our team. Follow all safety protocols, fully capable and comfortable performing all installations having to do with energy storage
18.	5/3/18	C-10 / C-46	9 / 75	Template
19.	5/4/18	C-46	38 / 14	Template*
20.	5/4/18	C-46	38 / 14	Template*
21.	5/8/18	B / C-46	9 / 6	Template
22.	5/16/18	B*	14 / 30	Template
23.	5/16/18	C-46*	14 / 30	Template
24.	5/7/18	B / C-10 / C-46	9 / 12	Template
25.	5/15/18	C-46	40 / several	
26.	5/18/18	C-10 / A / C-46 / B / C-39	3,000 employees	Change is not necessary and would do more harm than good. NEM 2.0 and time of use rates are market forces driving solar and storage closer together. Solar and storage contractor (including C-46) must know NEC including but not limited to 690 (solar PV), 705 (interconnection), 250 (grounding and bonding), 110 (general requirements), Chapter 3 (wiring methods), 240 (overcurrent production), 706 (storage - NEC 2017). That NEC does not put solar and storage in one section does not mean they are not installed as a system nor does it preclude installing as a system. Energy storage products are now more closely resembling grid-tied products from voltage and amperage perspective. Voltages of 300-400 VDC in battery packs is similar to 300-600 VDC in grid-tied solar that C-46s are very familiar with. Currents in 20-amp range closely resemble wire sizes and types seen for grid-tied systems with #10 and #8 wires. Nothing new for C-46.
27.	5/18/18	C-46*	44 years	Improvements in battery design have made them safer and easier to install. Issues reported by CSLB Solar Task Force show issues exist for all license holders not just C-46.
28.	5/18/18	Solar Installer*	11 years with same company in letters #27 / 29	Solar installer with 11 years of experience for company. Training an experience allowed me to obtain by own C-10 license, and NABCEP license and OSHA 10Hr and 30Hr cards. C-46 is a multi-craft trade. While it encompasses electrical it is also broader than C-10.
29.	5/18/18	C-46*	44 years	Been doing this since 1974. Not aware of any evidence that would indicate for public health and safety any reason to restrict to C-10 license. Before 1996 net metering passed batteries were almost always paired with solar PV; net metering made separation more possible and more common but did not mature until 2001. Before 2001 when high voltage (600V) inverters became available almost all installations were low voltage battery-based systems. The safety issue at the time was higher voltage DC runs not energy storage (lower voltage). Therefore, C-46 license ability to install high voltage DC runs was proven in 2001.
30.	5/8/18	B / C-46	41 / 80	Never felt need to acquire C-10, never had problem getting permit. No reason to change requirements, will cause more harm than good. Grid-tied residential PV started in CA around 1998 with NEM (net-metering) and SGIP (solar generation incentive program) rebate program. At time, no grid-tied PV inverters would operate without batteries until around 2003. For 5 years all residential PV installers were building experience with battery storage plus PV. Incumbent on all license holders to train people to provide safe place to work. Only two solar-related fatalities in CA happened at C-10 companies. Lithium-ion batteries are far cleaner and safer to handle than lead-acid installed 20 years ago and will only get easier to install. There is not enough certified electricians to service this large and growing industry. Making this change will put tens of thousands of trained solar installers out of work.

31.	5/11/18	B*	33 / 45	This will lead to higher prices paid for no safety benefit at a time when the state is advocating for increased use of storage systems and reduced energy costs. Solar systems are routinely installed at 600 volts and many hundreds of amps. There are no elements of energy storage systems that pose threat to workers, consumers or residents that are of any greater threat than what is currently installed. Installing an ESS is no more complicated than installing a solar inverter. A typical ESS system with a concrete foundation requires several trades of which C-10 is only one. ESS is rapidly becoming necessary part of grid-tied solar market and is now required by many cities and counties. This will cause bankruptcies and lost jobs.
32.	4/8/18	B*	33 / 45	Template
33.	5/18/18	C-20 / B / C-10 / C-46*	Not stated	Solar and energy storage are multi-craft trades covering many disciplines. There is a broad array of energy storage technologies on the market, some mounted on individual solar panels and installed on a roof, carport or ground mount, others like an inverter in the garage, or mechanical room on side of building. Safer to install than the old lead acid batteries solar installers have been installing for decades.
34.	5/18/18	C-20 / B / C-10 / C-46*	Over 30 employees	Energy storage is rapidly becoming necessary part of grid-tied solar market. It will eventually not be possible for install solar without pairing it with energy storage. We invest significant time and resources in training and developing skilled workforce. C-46 contractors have installed solar paired energy storage systems since before CSLB had a specialty solar classification. Off-grid solar systems require ESS to function and the earliest grid-tied systems had ESS. Newer systems have more safety features than the old ones including monitoring systems.
35.	5/18/18	Solar installer for company #33 and 34 above*		Same letter as #33
36.	5/18/18	Solar installer for company #33 and 34 above*		Same letter as #33
37.	5/15/18	B / C-46	25 years' experience	Twenty-five years ago, all PV systems were battery based and the C-46 classification was limited to solar water heating. When CSLB shifted to solar PV, obtained C-46 and have not needed a C-10. Does not make sense to change now
38.	5/10/18	C-46	13 years' experience	Template
39.	5/16/18	C-46 / C-10	17 years' experience	Helped develop C-46 exam. Installed over 10,000 PV systems many with storage. Most of the testimony at CSLB's two-day hearing did not relate to what has become by far the most common type of battery storage system: pre-packaged UL listed systems with internal management components and integrated circuit breakers. Contractors making comments about the explosive or thermal runaway protentional of these integrated systems do not have experience with this equipment
40.	5/17/18	C-46	14 years' experience	Where is the problem that this purge claims to solve? Please stand up for the expertise, experience and rights of the C-46. Cutting them out is an insult to the builders of this market.
41.	5/18/18	C-46	42 / 20	I have updated the C-46 exam for CSLB for 10 years. The normal work of a C-10 Electrical Contractor involves alternating current (AC) which is why there are no battery storage direct current (DC) questions on their tests. The normal work of a C-46 is direct current and battery storage is part of the same training and language.
42.	5/22/18	B / C-10	30 years' experience	Solar PV requires the knowledge of many techniques and disciplines to install and retrofit into a structure. Many issues can arise in an install that dedicated electrical workers who are unfamiliar with the relationship, compatibility and fitness of the material and hardware involved may not be able to resolve
43.	5/17/18	C-46	Not specified	Storage systems have always been a part of PV more so during the early years. Many solar contractors train and attend workshops on the installation of battery systems. This requires working with the makers and suppliers of these systems.

44.	5/4/18	B / C-2 / C-46	35 years' experience	Installation of solar and energy storage is its own field, pioneered and driven by C-46. Prior to net metering C-46s were installing solar PV with lead-acid battery storage which was much more dangerous than lithium with the myriad of electronic safety features built into the charge controllers and inverters today. It is not clear what problem is trying to be solved. The need of ESS has been brought about by the electric utility time of use rate program. Limiting to C-10s will raise costs.
45.	5/15/18	B	35 / 250	Template
46.	5/14/18	B / C-46	34 / 15	Template
47.	5/16/18	C-20 / C-36**	34 / 2,500	Template
48.	5/3/18	C-46	8 / 30	Template
49.	5/15/18	B / C-46	38 / 40	Template
50.	5/18/18	C-46	7 / 10	Template
51.	5/3/18	C-46	10 / 2	Template
52.	5/14/18	C-46	12 years' experience	Template
53.	5/14/18	B, C-39	30 / 20	Exceptional safety record resulting in low insurance premiums. Training and awareness with our insurance provider.
54.	5/15/18	C-46 / B	24 / 25	Flawless safety record installing both storage and PV systems. Meet all OSHA safety standards on the job.
55.	5/14/18	B	8 / 500	Template
56.	5/14/18	C-46 / NM electrician	14 / 200	Multiple C-10 companies use our company and experience with batteries and storage technology as their battery expert. Variable DC voltages are more common in solar and battery systems than seen by C-10 electricians who do not do this work
57.	5/14/18	B / C-46	30 / 10	Template
58.	5/4/18	C-46	Not stated	Template
59.	5/17/18	B / C-10	60 / 80	We implement certified electrical, battery storage and safety training every day. There are many ways available for California contractors to obtain quality training. Though we are a C-10, discriminating against other related licenses will hurt California and industry. There are already many rules and regulations in place protecting the public, NEC, local agency inspections, etc. This area does not need another layer of regulation.
60.	5/16/18	A / C-10 / C-46 / B	10 / 40	Template
61.	5/18/18	C-46 / B	3 / 15	Template
62.	5/17/18	C-46 / C-10	Not stated	One of leading installers of solar in California, unique position to offer up opposition to the proposed licensing revision. Have installed over 100 MW of solar generated capacity and nearly a dozen proposed, designed, and installed ESS under C-46
63.	5/14/18	C-46*	18 / 20	NABCEP certified, steeped in NFPA, NEC, and OSHA protocols and standards. Staff attends regulator OSHA and NABCEP training and certifications from manufacturers. Storage has always been paired with solar PV when first used in off-grid when off-grid was the norm.
64.	5/15/18	C-46*	10 / 20	Mirrors letter #63
65.	Not dated	C-10 / B	9 / 15	Template

66.	5/11/18	C-46	19 / 20	Template
67.	5/15/18	C-46	35 / 6	Template
68.	5/15/16	C-46 / B	38 / 30	Template
69.	5/17/16	B / C-10 / C-46 / D-21	12 / 15	Template
70.	5/3/18	B	8 / 15	We have the knowledge and skills to build entire homes, far less properly install, attach, wire and commission an energy storage system. We all have specialized training and have 100% customer satisfaction rating.
71.	5/4/18	C-46	39 / 10	Template
72.	5/15/18	C-46 / C-10	Since 1978	Have installed thousands of battery systems. Manufacturer of lithium ion for 7 years, they are much safer than lead acid. Hearing testimony stated that Tesla and LG batteries are complicated, need extensive training and vulnerable to incorrect installation. This is not true. They are plug and play. You cannot get inside the battery compartment. If there is a problem, you ship it back. Both systems never put cells in a series above approximately 120 VDC. A converter is used to boost to 400. Battery systems have very simple rules and guidelines to observe and follow. The ESS on the market today are plug and play. They are AC coupled utility support systems that do not allow anyone inside the system and therefore cannot be installed "improperly."
73.	5/18/18	B / C-10 / C-46 / A	30 years	Manufacturer and installer of solar electric components and systems for residential, business, government, school, and utilities. Extensive experience installing paired solar and ESS. We go to great lengths to ensure our systems are installed by a trained workforce. We have worked with C-46s for many years in CA and find no lack of knowledge, skill, or training needed to properly install ESS paired with PV

*Different representatives with same company
**This company previously held a C-10 and C-46 but that qualifier recently disassociated. The company is under suspension for lack of qualifier as of March 6, 2019.

Not indicated in the table above are 27 additional letters signed by individuals identifying themselves as "solar installers" for the author of letter number 45 above. The 27 letters are from the same template, which reads as follows:

> My name is [Name], and I am a solar installer with [Company]. I have several years of experience in the industry. I am writing to express my strong opposition to changes to the licensing classifications authorized to install solar and energy storage systems.
>
> The safety of the customers I serve is of the utmost importance and my training and on-the-job experience reinforces that priority every day.
>
> It is also important to note that solar is a "multi-craft" trade entailing many different skills including site analysis, building structure suitability and reinforcements, roof penetrations and methods for walking on roofs to prevent damage, and many other skills. While the job encompasses electrical work, it is much broader.
>
> Finally, energy storage technologies are getting safer, simpler, and easier to install. Many battery systems are UL listed, with circuit breakers to prevent thermal events, and other safety features that are designed for plug-and-play installation and widespread use.
>
> Thank you for considering these comments. I urge you to reject any proposals to restrict solar and energy storage installations.

Finally, CSLB received an additional 21 letters from industry representatives of solar associations, battery distributors, manufacturers, and others on behalf of the C-46 Solar Contractor industry. The letters all oppose CSLB changing its existing license classifications. Many of the letters are drawn from the template indicated above and are summarized in the following chart in the same manner as the previous chart.

LETTERS FROM INDUSTRY REPRESENTATIVES IN SUPPORT C-46 CONTRACTORS INSTALLING ENERGY STORAGE SYSTEMS PAIRED WITH SOLAR PV

#	Date	Author	Comments
25.	5/18/18	Solar Distributor	Template
26.	5/16/18	Energy Storage Company	Santa Clara based energy storage company with focus on providing schools and public sector customers energy bill savings with smart energy storage technology, primarily lithium ion.
27.	5/18/18	Designer and Manufacturer	The C-46 was the original energy storage and solar installer in California. Company is leading designer and manufacture of advanced power electronics and energy storage for off-grid and gird-interactive solar plus storage applications. The C-46 can and has installed solar and energy storage systems for decades. There is no lack of knowledge, skill, or training needed to properly install our products.
28.	5/18/18	Designer and Manufacturer	Designs and manufactures energy storage, solar and electric vehicle charging systems highly integrated to one another requiring specific training by our staff for installation.
29.	5/16/18	Engineering Plan Set Services	Involved in PV training and codes/standards development and panel member for UL 2703 technical panel, and officer for NABCEP (national solar industry certification organization). The significant majority of solar and energy storage systems in California were installed by C-46 by the mid-2000s. C-10s have only shown interest in this technology recent years. There is no lack of skill training or knowledge in C-46.
30.	5/16/18	Manufacturer	Leading manufacturer of microinverters for PV and storage, installation base of over 16 million microinverters globally, plug and play solutions for residential and small commercial. Energy storage is rapidly becoming like any other appliance. Installer not exposed to terminals. In sales of over 10,000 storage units to date in dozens of countries have had zero reported cases of injury or property damage. We are simplifying designs, installation procedures, and safety procedures. Not aware of any significant incidents related to energy storage by C-46 contractors.
31.	5/17/18	Manufacturer	Successful California manufacturer of residential, commercial and mobile lithium ion energy storage systems. Have worked with both C-46 and C-10 contractors to install our systems safely and to code and standards. There is no evidence the installation of these systems needs to be restricted. We need to increase, not decrease, the number of qualified installers
32.	5/7/18	Nonprofit green policy advocate	The installation of solar energy systems has been determined to be a multi-craft occupation numerous times by the state of California. Energy storage has been a part of the solar photovoltaic installation and market for over 40 years. Emerging markets like solar and energy storage must remain accessible and inclusive for all workers.
33.	5/16/18	PV mounting structure manufacturer	Japanese subsidiary providing products of technical benefit translating to time savings on rooves. Solar contractors are dedicated and have the knowledge, and manufacturers provide training to installers and contractors.
34.	5/15/18	Roof attachment manufacturer	We go to great lengths to ensure our products are installed by a trained workforce. We have worked with hundreds of solar contractors throughout California to provide education, live, on-demand, in person, hands-on and jobsite training. C-46 contractors have installed solar and energy storage systems for decades. There is no lack of knowledge or skill or training to

			install our products.
35.	5/18/18	Technology company	Our home energy storage product is being deployed in residential applications through our direct installers and through our certified installers and resellers. To support the State's ambitious clean energy and energy storage goals, we should be increasing, not limiting the number of qualified installers.
36.	5/18/18	Engineer	Limiting the installation of solar and energy storage systems to C-10 license holders eliminates the substantial work force of qualified C-46 license holders which employers' numbers nearly equivalent to licensed electricians. In nearly 40 years at national laboratory, established the first PV test facility where inverters, controllers and complete systems were developed and evaluated. I have served on numerous panels for code development and UL standard committees. Founding member of NABCEP and served on IEEE standards groups. C-46 installers provide safe and code compliant installations and supply expertise and knowledge to this industry. I do not see a need to eliminate an established 50% of the qualified workers on solar systems.
37.	5/18/18	Inverter distributor	Subsidiary of international company providing single and three phase inverters to the US PV market for residential, agricultural and commercial PV solar systems. The next generation of inverters will feature energy storage options (high capacity lithium-based batteries) that easily integrate with inverters in a DC coupling manner. These hybrid solutions are a component of a hybrid or stand-alone PV system in the Code (690(1)(b)) and is not a separate system. There is no construction of a battery system just a connection of equipment using standard wiring practices already employed with non-battery systems. We have worked with C-46 contractors for years and find no lack of knowledge, skill, or training needed to properly install our products.
38.	5/14/18	Manufacturer and distributor	There is proven, mature, safe and well-functioning industry in California. This change will hurt the renewable energy industry. Battery energy storage manufacturer and distributor powered by safe lithium batteries throughout U.S. They require zero maintenance with numerous safety mechanisms built into the system to make installation safe and quick. We certify and vet all our dealers to install the product. Many of our installers have been installing for over a decade and complete our technical training.
39.	4/10/18*	Solar Industry Representative	CSLB should allow C-46 contractors to continue installing solar plus storage systems as they have done safely for years. A C-10 license is unnecessary to ensure safe installations and is inconsistent with national best practice. This decision exposes consumers to risk by disqualifying the storage portion of their system from investment tax credit. The purpose of a C-46 license is to allow contractors to perform electrical work in connection with a solar system installation. There is no evidence that limiting installations to C-10s improves safety; C-46s have installed solar plus storage safely for years and regulatory structures are in place to promote safe installations.
40.	5/16/18	Advanced Battery Developer	Developer of advanced battery technology since 1991 including lithium ion. Qualified solar installers have successfully installed, operated and maintained our energy storage products. Our home battery is simple and easy to install and is just a component within an installer's full residential solar installation
41.	5/17/18	Building Industry Representative	California Energy Commission updated energy efficiency standards will take effect January 2020 with first-of-its-kind solar mandate for new homes and apartments. CEC has approved significant compliance credit for voluntary installation of battery storage technology in combination with rooftop solar PV. There will be an increasing consumer demand. This decision will reduce available workforce. We are unaware of worker or public safety issue being document. These smaller scale systems are becoming easier to install. Manufacturers responding to market-demand are producing plug and play battery systems fully integrated with inverters. The C-46 has been installing these systems for years.
42.	5/18/18*	Solar Industry Representative	Requiring a C-10 license is unnecessary to ensure safe installation of solar plus storage systems which C-46 contractors have done for years. Multiple states outside of California offer solar-specific contractor or sub-contractor licenses including Nevada, Connecticut, Utah, and Florida. Each allow solar contractors to install solar plus storage. This is neither new nor unique to California.
43.	4/10/18*	Solar Industry Representative	If CSLB revokes C-46 ability to install storage-paired solar system, it may revoke the ability to install solar PV of any kind given trends in the marketplace. Solar PV systems contain many different parts that include but are not limited to PV modules made up of cells, racking and

		mounting hardware, inverter, energy storage (both AC and DC coupled – for many systems, battery and PV system share inverter). An ESS, when paired with a solar PV array, is a fully integrated component of that system, not a separate component. Warranties of existing systems installed by a C-46 could be voided by this decision. California Public Utilities Commission updated its 2017 SGIP guidebook citing CSLB authorization of C-46 licenses installing solar plus storage. Lithium-ion batteries are modular (scales up or down depending on consumer energy needs and DC circuits of one or two family PV systems can operate up to 600V, which C-46 are quite familiar. Manufacturers are now selling with UL 9450 compliant products which will soon be added to CA Fire Code and Residential Codes and is associated with pre-engineered, prepackaged systems that some will refer to as "plug and play."
44. 5/18/18*	Solar Industry Representative	Solar installations are a "multi-craft" trade. The on-the-job work entails many different skills. There is no significant difference between the voltages in a battery pack and the voltages in a grid-tied solar PV array. Any energy system with an inverter is a "system" in the NEC. The inverter connects the solar array with the storage device and is part of the solar PV system. The C-46 was given its current definition long after the practice of paring solar and energy storage. Over 700,000 solar PV systems have been installed in CA the last 15 years many with ESS. We are unaware of any accident or problem related to the installation of an ESS. There are approximately 30-40k solar installation workers in CA. If they are precluded from installing solar plus ESS there would not be enough workers in this growing market and may increase the installation costs of going solar.
45. 5/17/18	Fire Captain	28 years as firefighter and 13 years in house powered by panels and batteries off grid. Taught over 1,000 firefighters across the county how to respond to emergencies involving solar panels and battery storage. Solar panels and storage are one entity and have to be approached in that manner; there are deadly consequences if first responders don't shut the system down as one unit. Idea of separating the systems is impractical and can lead to confusion in an emergency. Not aware of worker or safety incidents caused by installation of solar and storage. Manufacturers are meeting market demands for pre-engineered plug and play systems integrated with inverters; makes installation safer and ability for firefighter to deenergize.

*Two individuals wrote the four different letters indicated on four different dates

Letters Written on Behalf of the C-10 Electrical Contractor Industry

The CSLB received 148 letters from various authors on behalf of the C-10 Electrical Contractor industry between February 2018 and present day. The letters all support limiting Energy Storage System (ESS) installation to C-10 contractors irrespective of their connection to solar PV system.

In addition to the 148 letters, on March 6, 2019, CSLB received a letter, press release, and petition signed by 2,877 individuals. The letter was on the template that is reproduced below and is the most common template used among the letters summarized in this section. The press release states that "safe installation of battery ESS by qualified electrical contractors and electricians is key to protecting public safety." The petition states that the "undersigned strongly urge the Contractors State License Board to uphold its commitment to protect consumers and the public by allowing only qualified C-10 Electrical Contractors to install and maintain battery energy storage systems." The petition was generated from https://safeenergystorage.com/, a website which allows visitors to sign the petition and to "tweet" CSLB staff. As of March 12, 2019, CSLB staff had received 120 "tweets" from various sources with the following message: "please clarify regulations to ensure battery energy storage systems are safely installed by only C-10 electrical contractors."

This section summarizes the 148 letters into 7 tables: (1) Letters from Trainers / Educators; (2) Letters from Workforce Unions; (3) Letters from Contractors; (4) Letters from Utilities; (5) Letters from Other [Interested Persons] (6) Letters from Elected Officials; (7) Letters from Law Firms. Many of the letters appear to be written from several different templates. As mentioned above, one template appeared to be used more frequently than others. The most common template submitted by letter writers is reproduced in its entirety below, as follows (emphases in original):

> Thank you for your continued efforts to protect California consumers by ensuring the construction industry adheres to policies that promote the health, safety and general welfare of the public. We are appreciative of the thorough review the Board has taken in recent months and are writing to **urge the Board to clarify current regulations to**

require that only specialty contractors holding a C-10 electrical contractors license may install battery energy storage systems.

The use of battery energy storage systems is rapidly expanding in hospitals, schools, businesses and homes throughout the state. This technology is key in helping California meet its clean energy and emissions reduction goals and to expand the adoption of solar, wind and other clean energy sources. However, if not installed and maintained correctly by highly-qualified and licensed C-10 electrical contractors, battery energy storage systems pose unique fire, electrical and public safety risks to installers, consumers, utility workers and emergency personnel. Ambiguity in the regulations has allowed C-46 solar contractor licensees to install battery energy storage systems when paired with a solar photovoltaic (PV) system, even though these battery energy storage systems are separate electrical systems and the C-46 solar contractors do not have the electrical training or expertise required.

A PV energy system is very different technology than a battery energy storage system. A battery **transforms** electrical energy to chemical energy and back into electricity. For that reason, CSLB regulations specifically require a C-10 license to "*install, erect or connect any electrical wires, fixtures, appliances, raceways, conduits, solar photovoltaic cells or any part thereof, which generate, **transmit**, transform or utilize electrical energy in any form or for any purpose*."

C-10 licensed electrical contractors have an extensive background in electrical theory and, by law, are required to install battery energy storage systems with highly trained electricians who have been certified by the state. In contrast, C-46 licensed solar contractors are not specifically qualified to safely install this complex technology and their installing employees have no training nor certification requirements.

We are urging the Board to not compromise safety standards by continuing to allow a C-46 solar contractor to install a battery energy storage system. CSLB regulations specifically prohibit C-46 solar contractors from installing standalone battery energy storage systems.

Please adhere to the mission of the CSLB and protect public safety and consumers by ensuring battery energy storage systems are installed by only contractors who hold a valid C-10 electrical contractors license.

Any time any of the 7 tables to follow us the word "template" in the "comment" column of the table, it means that the letter was submitted by the letter writer using the template above. Other letters were drawn from other templates that are not produced here, to constrain the length of this report. Rather, those templates are summarized when they first appear; thereafter, letters using those templates refer back to the letter writer that first used the template, with a comment similar to the following: "Same letter as letter number 6 in "Trainer/Educator" table above."

TABLE ONE: Summarizes 15 letters from individuals identifying themselves as electrical educators or trainers, as follows:

LETTERS FROM TRAINERS / EDUCATORS ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	5/15/18	Training Director	Safety is fundamental in educating apprentice electricians. Apprenticeship training is thousands of hours classroom and hands-on. Cal/OSHA 10 and 30 are not electrical safety classes. It is not sufficient to rely on them for ESS training. Training CEs receive is not comparable to C-46. The installation of ESS requires ability to assess and adapt to unpredictable field conditions.
2.	5/17/18	Training Director	CE apprentices receive OSHA safety training, NFPA 70E, electrical safety in the workplace and apply knowledge of the NEC throughout the five-year program and their career. DC is the foundation of all electrical theory on which CEs are trained, includes full gamut of solar PV systems such as inverters, DC and AC, semi-conductors, power sources, variable frequency drives, and thousands of hours of training.
3.	Not dated	Training director	The current policy of C-46 installing and maintaining ESS is based on older technology. Current systems are more advanced and allow for larger storage. CA requires employees of C-10 contractors who install or maintain electrical equipment must be CEs. OSHA 10 and 30 are general safety classes that apply to all tradespeople. Only CEs are trained in electrical safety installation. The NEC requires a "qualified person" to install and maintain an ESS. C-46s do not have the training that meets this definition and cannot identify hazards. ESS is separate system from PV subject to different codes and safety risks.
4.	Not dated	Instructor	ESS and solar PV are two separate systems with different risks, hazards, permitting and code requirements, and require different expertise. CEs are trained on DC and AC theory, grounding and bonding, NEC, ESS and microgrids, power quality, PV installation, load calculations for systems and instruments. Any worker required to install an ESS would be nothing less than a qualified electrical worker as defined by CA and Federal OSHA, NFPA 70E and NFPA 70B.
5.	Not dated	Training Director	C-46 should not be allowed to install ESS even when connected to PV. C-46 contractors are not qualified for this. Improperly installed ESS pose significant public safety risks if improperly installed. PV and ESS are separate systems with different risks that require more skill.
6.	5/17/18	Apprenticeship and Training Committee*	This is not a union issue. Thousands of C-10 contractors employ non-union CEs. To be a CE you have to pass a test union or not. Employees do installations, so it is the qualifications of the employees that matter. C-46s do not have employee requirements. C-10 employees must have at least 8,000 hours of electrical training and experience. CalOSHA 10 and 30 are general safety classes not sufficient on electrical safety. Plug and play does not mean simple and easy. UL listing means tested for safety but does not guarantee safety. They can still catch fire. ESS store large amount of electricity. PV will shock you, ESS will kill you.
7.	Not dated	Instructor**	C-46 should not be allowed to install ESS even when connected to PV. C-46 contractors are not qualified because they have no state requirements for electrical training and experience. Cal/OSHA general safety training is not electrical. PV and ESS are separate systems with different risks that require more skill. They can overheat, explode, catch fire, and electrocute at a greater level than PV. Fire Code provides for separate permitting, code and safety requirements for ESS. Battery storage permits have specific room design and fire suppression requirements.
8.	5/15/18	Training Director	CEs trained over 5 years, 8,000 hours job training 860 hours classroom, learn electrical theory and safety, NEC, OSHA, NFPA 70E. ESS is DC not AC. Need to understand electrical theory and safety codes to install and maintain. Arc flashes more serious with DC. Failure to understand this is life threatening.
9.	5/17/18	Training Director	A properly trained CE is aware of hazards inherent in any electrical installation and meets "qualified person" definition of NEC and CEC. 8,000 hours of on job training and 1,020 hours classroom training on electrical theory and safety, NEC, OSHA, NFPA 70E, blueprint reading, motor controls. ESS have become integral component in our industry so we are investing additional resources on training for them.

10.	Not dated	Assistant Training Director	Apprenticeships spend thousands of hours covering safety procedures during install and complete 1,020 hours classroom training on electrical theory and safety, NEC, OSHA, NFPA 70E, blueprint reading, motor controls. Recently added energy storage and microgrid training and certification. Battery and other ESS will always have inherent dangers in their construction and installation because there is no means of disconnect. The system does not remain at 12V or some other low voltage, potential increases as strings are connected.
11.	5/16/18	Training Director	CA requires employees of C-10 contractors who install and/or maintain electrical equipment to be state certified general electricians. The workers for C-46s have no iminium requirement for education, training, skills, and experience, which puts public safety at risk. Cal/OSHA training alone is inadequate because they are general safety not electrical. Lead acid batteries were smaller and less dangerous than modern ESS. NEC provides specific requirements for ESS operating over 50 or 60 volts, and car batteries are 12 volts and not subject to the standards. ESS and PV are separate systems with separate requirements and risks. Incorrect installation can start a fire. There is no such thing as plug and play.
12.	Not dated	Training Instructor	Apprenticeship training is thousands of hours classroom and hands-on. Cal/OSHA 10 and 30 are not electrical safety classes. It is not sufficient to rely on them for ESS training. Training CEs receive is not comparable to C-46. The installation of ESS requires ability to assess and adapt to unpredictable field conditions. ESS is becoming more technical and requires different set of skills. Early lead-acid batteries were smaller and less dangerous. Current battery chemistry and technology is different with different safety risks, requiring different knowledge, skills and experience.
13.	Not dated	Training Director	The installation of solar panels is under the C-46 licensing process. The installation of energy storage is not. The training requirements for training in energy storage are not covered under the licensing of C-46 contractors. When an ESS is not installed correctly, results are catastrophic.
14.	Not dated	Instructor	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
15.	5/18/18	Electrical Instructor	The issue is not who the employer is, it is with proper training, knowledge and safe work practices. Storage batteries must be constantly maintained by monitoring fluid levels, toxic gas sensors and alarms, charge and discharge rate, ventilation systems and temperature sensing monitors. A solar panel can be plugged into itself with little to no damage but if you short a battery it will explode.

*This letter was signed by 11 individuals
**Representing same center as letter 5

TABLE TWO: Summarizes 18 letters CSLB received from on behalf of labor, contractor and/or workforce unions, or lobbying groups, as follows:

LETTERS FROM WORKFORCE UNIONS ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	2/22/18	Utility Employees Representative	PV systems and ESS connected to utility distribution systems is increasing but the race to install them should not be at expense of safety. ESS may be paired with PV but they are separate systems with different installation, permitting and code standards, and fire and safety risks and are located on different areas of property. ESS vary widely in size and type and can exceed 10MW at utility-scale.
2.	2/2/18	Electrical Contractors Representative	C-46 contractors are not licensed to install ESS as standalone projects. Many building officials do not allow C-46 contractors to install ESS because they are separate systems with unique fire and life safety risks with their own safety standards and code requirements. Improper installation could cause serious public safety hazards including explosion, electrocution, arc flash, arc blast, fires caused by shorting or thermal runaway. Only CEs who are qualified to install in these as standalone systems should be able to install at all. There are many different types of ESS some exceeding several MW. ESS is independent source of stored energy that can be paired with any energy source not just PV and predate

			PV.
3.	5/18/18	Electrical Workers Representative	C-46 are not qualified to install ESS and should not be authorized to install ESS whether they are connected to PV or not.
4.	5/18/18	Electrical Workers Representative	This is a training and safety issue. OSHA 10 and OSHA 30 are not adequate training courses. They reference electrical safety but are not electrical safety classes. NFPA 70E is an electrical safety class and is better for installing ESS.
5.	2/5/19	Electrical	Template
6.	2/5/19	Electrical Contractor Representative	Template
7.	2/20/19	Multi-Trade Contractor Representative	Template
8.	2/21/19	Electrical Workers Representative	Template
9.	2/21/19	Multi-Trade Contractor Representative	Template
10.	2/20/19	Utility Employees Representative	Template
11.	5/16/18	Fire Fighter Representative	Solar PV and ESS are separate systems with different installation, permitting and code standards, and fire and safety risks. Battery cells in banks can operate at hazardous voltages and deliver severe electrical shock. Must be isolated electrically while any work is being performed on them or other parts of the ESS. Short circuit or fault can cause arc flash over 12k degrees. Higher storage capacity higher risk. Lithium ion prone to thermal runaway. Ruptured battery casing from over charging or short circuit can release toxic fumes and cause explosions. Applies to large commercial and small UL listed ESS. UL certification does not eliminate risk. Circuit breakers are not perfect. If wiring or distance from breaker is wrong, fire can start at broken circuit. Fire Code ESS requirements different than for PV for good reason.
12.	Not dated	Electrical Workers Representative	ESS is electrical storage. Electrical storage is electrical work. Electrical work is performed by C-10 electrical contractors not any other license. If another contractor can install ESS this will lead to accidents, injuries, fire, and damage.
13.	5/17/18	Electrical Workers Representative	Same letter as letter number 6 in “Trainer/Educator” table above.
14.	5/17/18	Electrical Workers Representative	Same letter as letter number 6 in “Trainer/Educator” table above. This letter is signed by 92
15.	5/16/18	Electrical Contractor Representative	OSHA 10 and OSHA 30 are general safety training classes that include a certification if passed. They encompass all trades and reference electrical safety but are not electrical safety and do not substitute to NEC, Fire Code requirements. The discussion at the hearings of plug and play systems do not contemplate several megawatt microgrid ESS. C-10 contractors with CEs perform the preponderance of all electrical work in the state. Solar PV and ESS are separate systems with different risks, code and permit requirements, and different expertise.

16.	5/18/18	Electrical Workers Representative	Same letter as letter number 6 in "Trainer/Educator" table above.
17.	5/18/18	Electrical Industry Representative	Electricians comprise more than three-quarters of all construction workers. The market demand for skilled and certified electricians is growing faster than other construction occupations. UC Berkeley research shows lower pay and less training and fewer advancement opportunities in solar industry. There is no apprenticeship program for solar installers. Allowing C-46s to deploy undertrained under skilled and unrepaid workforce will affect the labor market and endanger workers and owners and stifle demand for electricians.
18.	5/18/18	Electrical Industry Representative	While C-46 contractors are clearly qualified and authorized to install solar PV systems, only C-10 contractors have the comprehensive electrical theory background and certified electrician workforce necessary to safely install modern ESS. Battery ESS is no longer low-voltage lead-acid car battery systems. ESS today are often utility-sized lithium battery arrays with MW of storage. ESS are independent electrical systems that pose unique risks and are subject to separate codes and safety and installation standards. The legislature created a certified electrician program for complex electrical work. The C-46 is limited on its face to solar PV and should not be extended to complex electrical work. The scope of work for C-46 cannot be expanded by exam questions.

TABLE THREE: Summarizes 36 letters CSLB received from contractors. The individuals in this table identified themselves as either a qualifier for a CSLB license or working in a high capacity (director, manager, officer) for an identified licensee.

LETTERS FROM CONTRACTORS ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	5/16/18	C-10 / B / C-7	Over 40 years' experience as electrician, designer, manager and partner. The codes and standards governing ESS are far reaching due to the complexity of the subject. Installers should be familiar with all codes and standards including NEC, CEC, NFPA, city specific adoptions, and any utility company rules relating to ESS
2.	5/17/18	B / C-10 /	Same letter as letter number 6 in "Trainer/Educator" table above.
3.	5/18/18*	B / C-10 / A / C-31	Installing ESS of any size is a separate and distinctly more dangerous process than PV. More complicated requiring more skill and knowledge than PV. Low voltage installs are much less complex and less dangerous that is why there is a C-10 and a C-7. ESS vary widely in size, type and power requiring broader electrical knowledge and safety, ability to assess and adapt to unpredictable conditions. PV install is more predictable than ESS install. Improperly installed ESS is risk to utility infrastructure and workers. Different and separate systems with different code requirements, risks and dangers.
4.	Not dated*	B / C-10 / A / C-31	There are small residential units that are plug and play but there is an electrical tie in for those units and will have to enter live panel for interconnection. Anyone working on electrical panel should be trained for that install. Nothing is in place for ensuring this for C-46 workers.
5.	5/17/18*	B / C-10 / A / C-31	There is industry standard personal protective equipment necessary to hook up and service modern battery ESS. There are challenges inherent in these systems. Cal/OSHA training is insufficient to prepare C-46 for installing ESS. A 7kw system produces 7,000 watts. If no consumptive load and 8 hours sunlight, the battery will store 56,000 watts. This is not comparable to PV system. In the past lead acid was commonly paired with PV before grid-tied made them obsolete but now most systems are not paired with battery.
6.	Not dated*	B / C-10 / A / C-31	ESS can be complex and require knowledge and skill of trained person for their installation. Even plug and play units are suspect to safety issues if improperly installed. Just as a 15-100KW PV residential or commercial PV system is relatively simple comparted to a 1MW PV system at a waste treatment plant, the same is true with ESS. Some systems can be simple but C-46 should not have

			the ability to participate in larger complex systems out of their class.
7.	2/6/19*	B / C-10 / A / C-31	Template
8.	5/23/19*	B / C-10 / A / C-31	ESS is becoming more technical and requires different set of skills. Early lead-acid batteries were smaller and less dangerous. Current battery chemistry and technology is different with different safety risks, requiring different knowledge, skills and experience. NFPA is adopting new codes and standards particularly for ESS. Cal/OSHA general safety training is insufficient. Improperly installed ESS is risk to utility infrastructure and workers.
9.	5/17/19	C-10 / C-46 / B / C-7	ESS includes electrochemical, thermal, pumped hydro and machinal. Commercial and industrial system sizes range from 30kw to 5MW and employ lithium ion chemistries operating between 800-1,000VDC exceeding 100,000 amps at voltages ranging from 480 to kV and often require service upgrades, line side taps or new switch boards. AT 12kV medium voltage you are exceeding C-46 qualification, certification and safety. ESS safety concerns are arc flash, device coordination, improper conductor termination, improper crimps, DC voltage and amps interrupting rating, improper grounding. C-46 technicians do not have the training to work on these systems; the lead acid batteries were 12, 24 or 48VDC.
10.	5/15/18	C-10 / C-46 / C-39 / C-20	There are several different types and brands of ESS available for residential. Some are AC coupled others are DC coupled. Rapidly evolving and manufacturers constantly changing their products. They are not inherently safe. Installation techniques need to be followed. Size and power capacity of an ESS is limited only by the service it is connected to. Multiple ESS can be connected to the same service allowing for larger ESS (20kw plus) to power homes. This often requires main service panel upgrade which requires a CE otherwise there are risks.
11.	5/16/18	C-10 / B / C-7	Same letter as letter number 3 in this table.
12.	5/16/18*	C-10 / B / C-7	Shortened version of letter 11 in this table.
13.	5/16/18*	C-10 / B / C-7	Same letter as letter number 3 in this table.
14.	Not dated*	C-10 / B / C-7	Our alternative energy group does PV with ESS including fuel cells, hydro generation and battery storage. The different systems require different levels of knowledge and capability necessary to install correctly and safely. Battery storage projects are much more complex than PV systems and provide functions far beyond back up of the utility distribution system. Can include high voltage cables, inverters and up to 1,000 volts of direct current. Power stored operates as its own grid furnished power. NEC recognizes these are different systems. Banks of batteries operating at high levels of voltage and potential are capable of deadly electric shock and burn. There are serious risks from improper install. Batteries connected in series pose great danger to unqualified personnel but single batteries that are mishandled are capable of explosion and burn on their own.
15.	5/14/18*	C-10 / B / C-7	Same letter as letter number 3 in this table.
16.	5/14/18*	C-10 / B / C-7	Same letter as letter number 3 in this table.
17.	Not dated	C-10	Same letter as letter number 7 in “Trainer/Educator” table above
18.	5/16/18	C-10 / B / A	Have supervised electrical installation of roughly 400 MW of PV installs and can ensure the board that hazards associated with ESS are numerous and extreme. Even small battery storage units are capable of producing Arc Faults and shock hazards many magnitudes as powerful and damaging as a small residential PV. Understanding hazards and safely addressing them takes extensive training and special gear. Batteries on market require understanding charging and discharging characteristics. NEC states that it is not an instruction manual for untrained persons. C-46 contractors are untrained.
19.	5/18/18	C-10 / C-7 / A	Battery storage is not integral to a renewable energy project. Each comes with its own skill necessary for safe and efficient installation and pose different challenges, risks, and dangers. ESS can be an add on rather than a necessary part. Battery ESS has been installed in many other

			electrical systems with no renewable component for decades. They are constantly evolving and are different from what was installed years ago. Electrical expertise is needed to manage the wattage difference between a PV array and storage system.
20.	5/18/18*	C-10 / C-7 / A	Same letter as letter number 19 in this table.
21.	5/18/18*	C-10 / C-7 / A	Same letter as letter number 19 in this table.
22.	5/18/18*	C-10 / C-7 / A	Same letter as letter number 9 in this table. In addition, there are dangers and risks presented by modern residential ESS. They are smaller but represent dangers when installed by persons not defined as qualified by NEC. C-46 is not equipped to install residential ESS.
23.	Not dated	C-10 / A	Letter is the written testimony given by the letter writer at the public participation hearing, speaker # 57, day 2, with the additional comment that the plug and play systems described at the hearing as simple did not mention the risk of arc flash at the panel if improperly wired by the contractor nor did it mention large scale utility ESS which are not plug and play.
24.	5/15/18	C-10 / B	Time as a building inspector encountered C-46 contractors who did not have sufficient training or access to information and their employees were not familiar with the NEC. The qualified person is defined in the NEC and NFPA. The C-46 does not employ qualified persons. PV and ESS are separate systems and ESS is more complex and more dangerous. Residential solar install must conform to NEC but an ESS install must conform to NEC and also NFPA.
25.	5/17/18	C-10 / A	Modern ESS can produce over 10MW of power at commercial, residential and utility level. Incorrectly installed there is serious risk to installer, property and general public. The cost of C-46 using low or unskilled workers at low pay with few benefits impacts the public. ESS and solar PV are separate systems.
26.	5/22/18	C-10	ESS is constantly evolving from battery ricks filled with lead and acid to residential applications like Tesla. Once energy is stored the potential for release of all that energy in seconds if certain safety precautions are not used by knowledgeable trained people. Lithium ion has risk of thermal runaway unlike lead acid. C-46 workers may be able to install PV but that does not extend to their workers. ESS and PV are separate systems.
27.	Not dated	C-10	Installation of ESS and connections to electrical distribution system require understanding entire electrical system. ESS can produce as much as 10 MW of power and potential danger to installers, maintenance workers and public. C-46 workers have littler or no technical training which is a public safety risk when installing systems producing large amounts of electrical energy.
28.	Not dated*	C-10	Same letter as letter number 27 in this table, plus: there is an inherent dangerous nature to ESS systems and training is required to install every component, connection point, and safety label correctly to protect everyone in contact or utilizing the ESS.
29.	5/16/18	C-10	ESS installations present a much more complicated and hazardous environment and should be left to expertise of C-10s. ESS vary widely in type, size and power and require more skill and knowledge than PV. Improperly installed systems are a risk to workers, emergency responders and public and to the utility infrastructure when connected to grid. PV and ESS are different and separate systems.
30.	No date	C-10	C-46 may be able to install solar but do not have electrical skills and experience to install dangerous electrical systems because they are not required to have certified electricians. ESS systems are dangerous, they can catch fire and explode.
31.	5/17/18*	C-10	Same letter as letter number 6 in “Trainer/Educator” table above.
32.	5/16/18	C-10 / B	Battery ESS market is changing and expanding. Applying existing rules to this new market is potentially dangerous. Its growth is outpacing groups working to develop safety standards. More stringent requirements will be out in 2020. The systems in the new market are not the systems paired with smaller PV systems but are much more complex, requiring expanded knowledge of installation means and methods for varied electrical components.
33.	Not dated	Unable to identify	Bay area general contractor. Anything over 12V we also use C-10. If ESS are deployed without highest regard for public safety, it will disrupt the adoption of the technology. They could explode if less than rigorous installation standards are involved. They are separate systems with unique

			installation requirements. The intensity of the risk is greater than posed by solar PV.
34.	3/4/19	C-7 / C-10 / B / C-46	Template
35.	5/18/18	C-10	Solar PV with ESS on a home is a mini power plant and should be treated as such, being installed by electricians. These are separate systems with different risks, requiring different permitting and code requirements. Cal/OSHA training is inadequate to prepare and protect C-46 installation employees and the problem. C-46 contractors can and do hire workers with littler or no training which puts workers and end consumers at risk.
36.	5/16/18	C-10 / B / A	Reports no new information or otherwise substantially similar if not borrowing content from previous letters

*different individual with the same company as the letter immediately above

TABLE FOUR: Summarizes 4 letters CSLB received from persons writing on behalf of identified utilities, as follows.

LETTERS FROM UTILITIES ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	2/28/19	Utility Company	ESS pose unique and potentially hazardous safety risks if not properly installed or operated. The relatively new ESS technology is maturing and installations in residential and commercial settings should require a skilled, highly-trained workforce to ensure safety.
2.	2/20/18*	Utility Company	Same letter as letter number 1 in this table.
3.	2/20/18	Energy Utility	A solar PV system generates and exports energy while an ESS has two functions: charge and discharge. They vary widely and include mechanical, thermal, and chemical storage and can include the use of flywheels, ultracapacitors, superconducting magnetic ESS, molten salt, synthetic oil or compressed air. Commercial systems can go up to 20 MW. They have their own separate installation and safety standards. CA law is requiring more storage and these systems require special care. They need to be treated as separate from PV.
4.	2/20/18	Utility Company	ESS are a distinct specialty area. While C-46 are licensed to install, modify, maintain or repair thermal and PV solar energy systems, this does not translate to expertise for ESS, which requires adhering to specialized safety standards. Improperly installed ESS creates a serious risk of electrocution and fire. Specialized installers expert in safety codes and standards mitigates that risk. The amount of ESS on the grid will grow in coming years. To ensure reliable utility operation, ESS must be properly installed by skilled contractors. ESS is not required for PV system and therefore a C-10 or an A are properly licensed not a C-46.

*different or same individual with the same company as the letter immediately above

TABLE FIVE: Summarizes 65 letters CSLB received from various other interested parties identifying themselves as citizens, certified electricians, firefighters, inspectors, or other groups.

Table 5 begins on the next page.

LETTERS FROM OTHERS [INTERESTED PERSONS] ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	5/16/18	CE	The C-10 test has less questions on energy storage than the C-46 because the C-10 test has to cover a wide range of subjects. Not just DC, ESS devices and the tying in. C-10s deal with AC, DC, transformers, capacitors, fire alarm, communications, fiber, it goes on.
2.	2/20/18+	Fire Fighter	ESS are PV are separate systems subject to separate codes and permitting requirements and different fire and safety risks. Lead-acid batteries need adequate ventilation to avoid explosion. Lithium ion is prone to thermal runaway. ESS are serious safety risk for occupants and installers if incorrectly installed and operated. Large ESS may need engineered fire suppression systems depending on technology and configuration use. Building standard codes are constantly playing a game of catch up to ESS evolving technology.
3.	5/16/18	Building Inspector	ESS is relatively new and presents hazards and risks more serious and different than PV. The early lead acid systems were smaller and less dangerous than modern systems. Battery chemistry and technology, safety risks, knowledge, skills and experience required are all now much different.
4.	Not dated	CE	The written testimony of speaker number 1 on day 1 of the public participation hearing, submitted as a letter.
5.	5/18/18	"Energy Industry" Representative	Same letter as letter number 6 in "Trainer/Educator" table above.
6.	5/17/18	Electrical Inspector	Same letter as number 3 in this table.
7.	Not dated	Community Energy Workgroup	C-46s do not have necessarily electrical safety training to install ESS because they are not trained in NFPA 70E which covers the hazards. ESS is not plug and play and there are many kinds such as ultracapacitors, flow batteries, fuel cells, hydrogeneration, lead acid, etc. that require special training. ESS is becoming more grid connected
8.	5/17/18	Firefighter	Same letter as letter as number 11 in the "Letters from Workforce Unions" table above.
9.	5/17/18	Fire Captain	Template
10.	Not dated	Private citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.
11.	Not dated	Private citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.
12.	5/18/18	Private citizen	Same letter as letter number 30 in the "Letters from Contractors" table above
13.	5/17/18	Electrical Inspector	Tesla powerwalls are self-contained battery system with built in inverter. Only connection is a 30 am circuit and low voltage cable; you never see the batteries. A PV system and powerwall both supply AC from an inverter output to the building wiring but their functions are separate. Tying a solar install into building wiring often means only installing a back-fed breaker into a panel to accept the inverter output. But a complete powerwall installation requires a grid-isolating contactor panel installed either as a service disconnect or in a feeder, often to a new critical load panel. It may mean relocating a full panel of branch circuits and reconfiguring and reworking panel feeders and often requires installing at least one additional panel. The common theme for my solar inspections is the general lack of installer experience and being easily tripped up by relatively minor situations. C-46 licensees should get a C-10
14.	5/17/18	Private Citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.

15	Not dated	CE	Solar PV and ESS are separate systems with separate risks, codes, fire safety standards. Battery cells operating at hazardous voltages must be electrically isolated when work is performed on them. While some lithium-ion batteries have features to prevent uncontrolled rupture, technologies vary. All aspects of ESS should be installed by qualified electricians.
16	5/18/18	Private Citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.
17	Not dated	Private citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.
18	5/17/18	CE	The complexity and interconnectivity of electrical systems need to be understand, such as consequences of hysteresis caused by the pulse width modulator, voltage drops, or ampacity de-rating due to temperature adjustments or conductors in a raceway, all of which can cause fire if not considered. These complexities are causing a push to create a new NFPA that will provide guidance for batteries and may be out in 2019. Understanding the NEC mitigates these dangers. (*Letter provides extensive detail on the technical aspects of training received by apprentices*)
19	5/17/18	CE	The installation of ESS requires ability to assess and adapt to unpredictable field conditions. ESS is becoming more technical and requires different set of skills. Early lead-acid batteries were smaller and less dangerous. Current battery chemistry and technology is different with different safety risks, requiring different knowledge, skills and experience. The NEC requires a "qualified person" to install and maintain an ESS. C-46s do not have the training that meets this definition and cannot identify hazards. ESS is separate system from PV subject to different codes and safety risks
20	Not dated	CE	UL listed just means tested for safety but not a guarantee of safety. UL listed devices do catch fire and circuit breakers reduce fire risk but do not eliminate it. Breakers can be overloaded or too far from the load or wire sizes can be wrong. ESS units are dangerous when installed incorrectly.
21	5/18/18	CE	PV and solar are separate systems and treated separately in NEC and NFPA.
22	5/16/18	CE	Same letter as letter number 19 in the "Letters from Contractors" table above.
23	5/17/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
24	Not dated	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
25	Not dated	CE (7 citizens signed with author)	NFPA has conducted hazard assessments on batteries. Due to lack of knowledge and understanding related to the enabling technology, the installation and maintenance of ESS needs a perquisite list for anyone considering the task. Requires an understanding of science behind the system. In a report issued by Fire Protection Research Foundation covering lithium-ion battery hazards, it provides many ways battery failure can happen. A 2016 report by the foundation found that there were several gaps in the electrical, fire, and building codes related to ESS. NFPA is currently pushing for a new edition on ESS to be published in 2019.
26	5/15/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
27	Not dated	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
28	Not dated	CE	When installing an ESS you are going from AC to DC. Many people are not aware that AC has less potential to hurt you than DC. Extensive electrical and safety knowledge is needed to install an ESS and it is not the same as a car battery.
29	Not dated	CE	Some ESS use something other than batteries to store energy, such as compressed air or steam. The majority of ESS systems most C-46 contractors install are for housing and light commercial. These ESS systems are designed to be simplistic and safer compared to larger systems. ESS is more dangerous than panels; panels do not produce choking, poisonous or

			explosive gassing or explosion hazards. ESS can be drained of energy and recharge to dangerous potentials if not made safe. Because of internal differences between batteries and panels, accidental arcing of the output of a battery bank of the same voltage as a solar array can create a more powerful arc. ESS has been the least advanced portion of the electrical industry until the recent past.
30.	Not dated	CE	Anything related to electricity can kill any electrician if they are not trained and know the NEC.
31.	5/16/18	CE	It is one thing to be in the field of working on solar but another to contain and harness the massive power that solar systems create. Persons working on ESS must have the pertinent electrical knowledge and training to work safely around massive power. PV and ESS are dissimilar in many ways.
32.	Not dated	Independent consultant	Many contractors in the residential and small commercial segment of the solar PV industry fail to invest in comprehensive occupational training of their workforce. Ensuring the rapidly growing ESS sector be anchored on a trained workforce can be done by employing certified labor.
33.	5/16/18	Firefighter	Same letter as letter number 11 in the "Letters from Workforce Unions" table above.
34.	5/20/18	Electrical Inspector	Safe electrical installations depend on a team of designers, manufacturers, contractors, electrical workers, and inspectors. No one group can ensure a safe installation. All are needed.
35.	5/17/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
36.	5/17/18	Private citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.
37.	Not dated	Private citizen	Same letter as letter number 30 in the "Letters from Contractors" table above.
38.	Not dated	Energy Manager for contractor	The variety of ESS requires more knowledge of the electrical portion and safety issues; variables include additional hazards, ability to identify problems and have experience to fix them. Solar PV is simplistic compared to ESS installation and maintenance.
39.	5/18/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
40.	5/17/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
41.	5/15/18	CE	The difference between a solar panel and a battery is potential incident energy. Shorting out a solar panel [*sic*] the available fault current is limited by the wattage of the panel. It is the difference of a few amps or 10s of thousands of amps. Panels also don't have cascading thermal breakdown like batteries.
42.	Not dated	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
43.	Not dated	CE	The written testimony of speaker number 36 on day 1 of the public participation hearing, submitted as a letter.
44.	5/14/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
45.	Not dated	CE	Same letter (different author) as letter number 42 above.
46.	5/17/18	CE	Same letter (different author) as letter number 42 above.
47.	Not dated	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters

48.	5/17/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
49.	Not dated	CE	Same letter (different author) as letter number 42 above.
50.	5/17/18	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
51.	Not dated	CE	The written testimony of speaker number 12 on day 1 of the public participation hearing,
52.	Not dated	CE and Apprentice Instructor	A technology as new as ESS should be investigated carefully. The components are constantly changing and we are far from the point where anyone can do it.
53.	Not dated	CE	Same letter (different author) as letter number 42 above.
54.	Not dated	CE	Same letter (different author) as letter number 42 above.
55.	Not dated	CE	Same letter (different author) as letter number 42 above.
56.	Not dated	CE	The written testimony of speaker number 18 on day 1 of the public participation hearing, submitted as a letter
57.	Not dated	CE	Same letter (different author) as letter number 42 above.
58.	Not dated	CE	Reports no new information or otherwise substantially similar if not borrowing content from previous letters
59.	5/16/18	CE	The written testimony of speaker number 45 on day 1 of the public participation hearing, submitted as a letter.
60.	Not dated	CE	The available short circuit current on PV systems is inherently limited. That is not the case with associated or stand-alone ESS. The need for utility scale energy storage is in its infancy and putting safety first now will prevent a misstep with tragic consequences in the future.
61.	5/17/18	Electrical Inspector	Same letter as number 19 in this table.
62.	Not dated	Developer / Builder	Anything we can do as an industry to raise the skill, knowledge and safety of those who install these systems is paramount. A lack of training and poverty wages does serious damage to the housing industry. ESS and PV are separate systems subject to separate requirements.
63.	Not dated	Energy Firm	Specializes in development and integration of boutique energy projects. Firm distributed survey to C-10 contractors inquiring about their background and experience in PV systems. 33 contractors reported. DC battery ESS installed = 1.6 million KW, average years installing = 31, number of DC PV residential and commercial installs: appx 171k. Power generated = 791.4 MW; utility scale installs: 205; utility power generated = 8.7 MW; avg number of years contractors have been installing PV = 13.7.
64.	1/31/19	Grassroots Environmental Organization	Strongly supported SB 100 to move CA toward clean energy economy by 2045. Battery ESS will be critical element of this and to succeed requires having qualified people install and maintain battery ESS.
65.	Not dated	Nonprofit Electrical Safety Group	ESS are fundamentally different systems from solar PV and subject to distinct code and safety requirements. Stored energy wants to escape and thus poses significant electrocution, fire, explosion, and thermal runaway concerns. This is a customer and worker safety issue. While battery ESS require connection to an energy source, it does not matter if this energy comes from the grid, windmill or solar PV array. If a contractor is not qualified to install a battery ESS that is connected to the grid then they should not be allowed to install a battery ESS simply

because it is powered by a different energy source.

+This letter enclosed an ESS battery safety research study that will be addressed in a separate section of this report.

TABLE SIX: Summarizes 6 letters CSLB received from various elected officials. The letter used by elected officials is the same template referred to earlier in this section (see page 50 of this report). For reader convenience, the template is duplicated again here as follows (emphases in original):

> Thank you for your continued efforts to protect California consumers by ensuring the construction industry adheres to policies that promote the health, safety and general welfare of the public. We are appreciative of the thorough review the Board has taken in recent months and are writing to **urge the Board to clarify current regulations to require that only specialty contractors holding a C-10 electrical contractors license may install battery energy storage systems**.
>
> The use of battery energy storage systems is rapidly expanding in hospitals, schools, businesses and homes throughout the state. This technology is key in helping California meet its clean energy and emissions reduction goals and to expand the adoption of solar, wind and other clean energy sources. However, if not installed and maintained correctly by highly-qualified and licensed C-10 electrical contractors, battery energy storage systems pose unique fire, electrical and public safety risks to installers, consumers, utility workers and emergency personnel. Ambiguity in the regulations has allowed C-46 solar contractor licensees to install battery energy storage systems when paired with a solar photovoltaic (PV) system, even though these battery energy storage systems are separate electrical systems and the C-46 solar contractors do not have the electrical training or expertise required.
>
> A PV energy system is very different technology than a battery energy storage system. A battery **transforms** electrical energy to chemical energy and back into electricity. For that reason, CSLB regulations specifically require a C-10 license to "*install, erect or connect any electrical wires, fixtures, appliances, raceways, conduits, solar photovoltaic cells or any part thereof, which generate, **transmit**, transform or utilize electrical energy in any form or for any purpose*."
>
> C-10 licensed electrical contractors have an extensive background in electrical theory and, by law, are required to install battery energy storage systems with highly trained electricians who have been certified by the state. In contrast, C-46 licensed solar contractors are not specifically qualified to safely install this complex technology and their installing employees have no training nor certification requirements.
>
> **We are urging the Board to not compromise safety standards by continuing to allow a C-46 solar contractor to install a battery energy storage system.** CSLB regulations specifically prohibit C-46 solar contractors from installing standalone battery energy storage systems.
>
> Please adhere to the mission of the CSLB and protect public safety and consumers by ensuring battery energy storage systems are installed by only contractors who hold a valid C-10 electrical contractors license.

LETTERS FROM ELECTED OFFICIALS ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	3/5/19	City Councilwoman	Template
2.	3/5/19	Vice Mayor (City)	Template
3.	3/4/19	City Councilwoman	Paragraph 2 and paragraph 6 of Template
4.	4/25/18	County District Supervisor	Template
5.	3/6/19	CA State Assembly Member	Template
6.	3/7/19	28 Members of the Legislature and 23 local or state officials	Template

TABLE SEVEN: Summarizes 3 letters CSLB received from law firms, as follows:

LETTERS FROM LAW FIRM ON BEHALF OF LIMITING THE INSTALLATION OF ENERGY STORAGE SYSTEMS TO C-10 CONTRACTORS			
#	Date	Author	Comments
1.	5/17/18	Counsel for Electrical Association	Cornerstone of health and safety of any worker is their training, experience and qualifications, especially for the performance of ESS. This work has become more complex and these systems have evolved. OSHA certification is not an acceptable qualification of an electrical worker. OSHA certification covers basic concepts that do not suffice for CE training.
2.	5/18/18	Counsel for Electrical Workers	A C-46 is strictly limited to work required for the installation of a PV system alone. PV and ESS are separate systems with separate risks. Proper installation requires trained and skilled workers. The basic purpose of an ESS is to store or capture the electricity generated by an electrical generating system, for distribution. Solar energy systems generate or produce electricity. An ESS is not required to install a PV system. Separate codes, installation, and fire and life safety standards apply to solar PV and ESS. Battery fires and explosions are becoming more and more common as ESS industry expands. Letter attaches series of exhibits: (1) declaration of an individual; (2) National Electrical Installation Standards – recommended practice; (3) documents describing ESAMTAC (ESS and Microgrid Training and Certification program); (4) Battery ESS: a guide for electrical contractors (Australia); (5) S. Vorrath, Household Battery Storage is a Game Changer (Nov. 25, 2015); (6) ESS Safety: Comparing Vanadium Redox Flow and Lithium-Ion Based Systems, Energy Response Solutions (Aug. 2017) (7) Fire Codes for ESS; Klausbruckner.com; (8) How Safe are Utility-Scale ESS? Energyskeptic.com (6/2015); (9) P. Rogers, Response to ESS, fireengineering.com (6/2015) (10) U. Irfan, Battery Fires Reveal Risks of Storing Large Amounts of Energy, Scientific American (Nov. 2011); (11) Lithium-ion Battery ESS: The Risks and How to Manage Them, AIG Energy Group; (12) Blum and Long, Hazard Assessment of Lithium Ion Battery ESS, Fire Protection Research Foundation (2/2016)

3.	5/18/18	Counsel for Utility Workers	The amount of solar PV and energy storage systems connected to utility distribution systems is increasing. Both state law and CPUC directives set ambitious goals for the procurement of solar and energy storage capacity by utilities, and utilities continually exceed them. Utilities support ESS installation and their employees have the biggest stake in their success and safety. ESS has evolved beyond lead-acid and are bigger safety risk. Modern ESS is not yet mature and is changing; each system carries distinct risks and the Fire Code subjects certain systems to extra requirements. NEC provides that PV and ESS are separate systems. The storage of energy is what makes ESS dangerous; hazards of PV do not compare to the risks of combustion, explosion, and hazardous material or gas leaks posed by ESS. ESS can range from 12v lead acid to systems over 100MW in size. Residential ESS projects are relatively small in comparison. PV and ESS are separate systems. Letter attaches series of exhibits: (A), (B) and (C) are letters from utilities summarized in the Utility table above.; (D) article, CPUC Requires Additional 500MW of ESS from CA IOUs; (E) 2016 SGIP Advanced ESS Impact Evaluation – report to So. CA. Gas Co. 8/2017); (F) 2016 SGIP Handbook; (G) 2017 NEC § 706.1; (H) CA Fire Code § 608.1-13; (I) CPUC, Relevant CPUC, Energy Comm. And ISO Proceedings & Initiatives; (J) CPUC Issues, priorities and Recommendations for ESS Interconnection Staff Proposal; (K) PG&E Application of PG&E for Approval of Agreements Resulting from its 2016-17 ESS and Cost Recovery (12/2017)

SECTION 6:

Other Considerations in ESS

Public Safety: Testimony and Letters

As documented in this report, information obtained from industry experts, utility representatives, and building and fire department officials state that ESS installations may pose a health and safety risk. Many of the letters summarized in this report state that ESS systems pose unique and particularly hazardous safety, fire and electrocution risks, and that improperly installed systems cause hazards and can overheat, explode, create arc flashes and blasts of electricity, or burst into flames.

The letters and public hearing testimony detail anecdotal reports of electrical accidents; however, none of these reports detail the license classification(s) involved or whether an energy storage system was a cause of the event. Some of the anecdotes explain that the parties involved were not certified electrician. As for battery safety itself, in one letter from a law firm summarized in this report, an exhibit was included from the "Energy Storage and Microgrid Training and Certification Center" (ESAMTAC). It detailed the following incidents:

- Two fires at lithium ion battery plants in 1995, and 2007, respectively.
- 2006 massive global recall of lithium-ion laptop batteries.
- Chevrolet Volt investigated for fires in 2011 and 2012 that destroyed garages in Connecticut and North Carolina.
- Boeing 787 "Dreamliners" grounded by federal regulators until the lithium-ion batteries in the model are "safe and in compliance"
- Three fires reported in Tesla Model S in 2014
- Lithium-ion batteries banned as cargo on passenger planes.
- Hoverboards recalled over battery fires and explosions.

Another exhibit in the same letter from the law firm includes an article "Household battery storage is a game changer – but is it safe?" by Sophie Vorrath, November 25, 2015 (https://onestepoffthegrid.com.au), an Australian article. The article states that "we have heard [battery storage] described, on numerous occasions by various energy industry insiders, as the most dangerous item you will ever put in your house." The

article states that “it takes years to understand lithium-ion batteries” and that “you’re putting a full power plant in your home.” The Australian article lists several recommendations for energy safety, such as improving regulations and building codes.

Finally, letter number 2, dated February 20, 2018, and summarized in Table 5 of the “Letters from the Public on Behalf of the C10 Industry” in this report (see page 58), enclosed a research study commissioned by the State of New York and local utilities, who conducted extensive fire and extinguisher testing on a broad range of ESS battery chemistries, including lithium-ion and lead acid. The study issued the following findings:

> The main conclusion from the program is that installation of battery systems into buildings introduces risks, though these are manageable within existing building codes and firefighting methods when appropriate conditions are met.
>
> Existing building codes and engineering controls can be adequate in many cases to handle battery safety issues.
>
> The toxic emissions from fires in this study can be managed by today’s engineering controls and are not anomalous or excessive when compared to a plastics fire. Plastics fires can generate similar gases in larger quantities over the average emissions duration on an equivalent mass basis.
>
> Many historic battery incidents are due to external damage factors which have created confusion and overreaction to the topic of battery safety.
>
> All energy systems carry with them a risk in their deployment; however, the risks identified in this study are manageable within the limits of today’s engineering controls for safety when appropriate conditions are met.

CSLB and OSHA Records on Battery ESS Safety or Complaints

The CSLB has solicited but not received examples of workmanship, or serious injury or death that has resulted from installation of ESS paired with solar photovoltaics. As for its own records, the CSLB polled its enforcement field offices to determine if in the past calendar year, if any of the 21,301 complaints CSLB opened involved energy storage systems. The field offices reported zero results.

The CSLB also received a report from the California Division of Occupational Safety and Health on the injuries reported over the last fiscal year in the Department of Industrial Relations’ electrical classification, and none of the reports identified accidents involving the installation of battery energy storage systems.

Electrician Certification Requirement

One of the central themes of the testimony and correspondence reviewed is the fact that battery energy storage systems involves the connection of electrical devices and the employees of C-10s, who are required to be certified electricians, are the appropriate persons to make those connections.

Labor Code (LC) 108.2 requires electrician certification for all persons who engage in the connection of electrical devices for C-10 Electrical contractors licensed pursuant to Section 7058 of the Business and Profession Code (BPC). However, LC section 108.2 provides for an electrician certification exception for persons performing work for contractors licensed as class C-7 low voltage systems or class C-45 electric sign contractors as long as the work performed is within the scope of the class C-7 or class C-45 license, including incidental and supplemental work as defined in BPC Section 7059 , and regardless of whether the same contractor is also licensed as a class C-10 contractor.

There are 79,502 licensed C-10 contractors in California, and 2,108 licensed C-46 contractors in California. A total of 606 contractors hold both licenses. LC 108.2 does not provide an exception for the 576 licensed contractors that have a C-46 Solar and C10 Electrical classification. CSLB has consistently required electrician certifications for C-10 contractors employing workers that “engage in the connection of an electrical device” notwithstanding the contractor may have an A General Engineering or B General Building classification, in addition to a C-10 Electrical classification. Installing an energy storage system falls within the definition of “engaging in the connection of an electrical device”.

Other States

Many states require an electrician’s license to perform solar photovoltaics and its component parts. However, Connecticut, Florida, Hawaii, Idaho, Louisiana, Nevada, and Utah have solar licenses like California. Of these states, CSLB has been able to

determine that only Hawaii and Utah solar license classifications mention energy storage.

In Utah, one level of their multi-level solar contractor license could previously install energy storage systems as part of a solar photovoltaic system until January 2019, when the authorization was rescinded. Staff reached out to the State of Utah for information about the decision to limit their solar classification and received the following response: “there was not much discussion about this, other than the discussion that the Commission felt all E202s should be treated the same.”

In the state of Hawaii, the C-60 Solar Power systems contractor may “assemble and install photovoltaic panels, batteries, controls, and related low voltage D.C. wiring.” The C-60 Solar power systems contractor is permitted to bid, contract and install a solar power system, provided that any non-low voltage electrical work, including grounding and bonding, is subcontracted to a C-13 Electrical contractor.

CSLB staff also directly polled other state contractor licensing agency executives on whether their states have a specialty solar license and if so, if the license authorizes the installation of battery storage systems. Of the states who responded, Minnesota does not have a specific license requirement for solar PV systems, but generally requires an electrical contractor license for them. In Nevada, the installation of an ESS paired with a PV system would fall under the “Photovoltaics” subcategory of their electrical contractor’s license. North Carolina does not have a license requirement for solar PV systems, and South Carolina has a solar panel “installer” license but the license must subcontract the roof mounting and electrical contracting.

Therefore, it appears at this time that California is unique among the states to allow a contractor designated by a specialty “solar” classification to connect an energy storage system device as part of a solar photovoltaic installation, and does not in some way cap that ESS installation by voltage, or require the ESS work to be subcontracted out to, or performed under, an electrician.

SECTION 7:

Board Options and Staff Recommendation

Report Findings

The February 23, 2018 Licensing Committee Meeting Motion asks staff to conduct public meetings and report findings regarding the which, if any, of the A, B, C-10, C-20, C-36, C-46 and/or C-53 classifications should be precluded from installing an ESS in a standalone contract or when included in the installation of a solar PV system. The testimony and correspondence received focused almost exclusively on the distinctions between the C-10 and C-46 contractors and did directly not address the appropriateness of the other classifications to install ESS. This may be due largely in part to the fact that the solar language within the classification descriptions of the C-20, C-36, and C-53 contractors relates to solar heating equipment, or solar thermal, a distinct system from photovoltaics.

Nonetheless, as indicated in the timeline at the beginning of this report, CSLB has previously publicly issued what amounts to four determinations or interpretations that are not conflicting on the appropriate classification(s) to install energy storage systems. They are summarized as follows:

1. For the purposes of PV systems on residential and commercial buildings and projects that "feed into the utility grid or otherwise offset the energy costs for structures they serve," the C-10 Electrical or C-46 Solar contractor licenses are the appropriate classifications. (July 5, 2005 Letter – former Registrar Stephen Sands)

2. The C-10 Electrical Contractor may install an energy storage system as part of a photovoltaic system installation or as an independent contract. (see October 28, 2016 Enforcement Committee packet and July 18, 2017 Classification Deputy determination).

3. The C-46 Solar Contractor classification may install an energy storage system as part of a solar system installation only and may not install a standalone energy storage system. (see October 28, 2016 Enforcement Committee packet and July 18, 2017 Classification Deputy determination)

4. The A-General Engineering Contractor classification may install an energy storage system if the work includes a plant or facility to house the system. (November 15, 2016 Letter - former Registrar Cindi Christenson).

History demonstrates that regulatory change may be necessary if the Board is to limit a technology to a single classification(s). As documented in this report, between 1978 through 2009, CSLB conducted regulatory hearings to make numerous

modifications to various license classifications related to the solar industry. For example, when the SC-44 was first enacted in 1978, it was limited to solar thermal installations and was only issued to contractors holding certain classifications. But by 1983, the C-46 specialty license was created to allow contractors who wanted to specialize in solar thermal and solar photovoltaics to install those systems. Also in 1983 the C-4, C-20, C-36 and C-53 licenses were amended with "solar heating" or "solar equipment" language. And most recently in 2009, CSLB defined the C-46 classification as follows:

> A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems.
>
> A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.

The C-46 Solar Contractor has been installing some form of ESS in conjunction with a photovoltaic system for approximately 40 years. The Board has also continuously affirmed over the years that A-General and B-General contractors may install all solar photovoltaic systems within the context of their licenses.

On the one hand, CSLB received oral and written testimony from over 100 persons/entities that support maintaining the status quo - not limiting the C-46 license from contracting for and installing an ESS in conjunction with a PV system. In addition, staff was unable to identify significant instances of harm to persons or property caused by the installation of an ESS system. One the other hand, CSLB received oral and written testimony from more than 100 persons/entities, a petition signed by 2,500 people, and a letter signed by 28 elected officials proposing that the Board limit ESS installations to C-10s. Staff also received information obtained from industry experts, utility representatives, and building and fire department officials stated that ESS continue to evolve and the larger ESS installations may pose a health and safety risk.

One of the central themes of the testimony and correspondence reviewed is the fact that battery energy storage systems involves the connection of electrical devices and the employees of C-10s, who are required to be certified electricians, are the

appropriate persons to make those connections. Labor Code section 108.2 requires electricians be certified when they "engage in the connection of an electrical device". Industry experts and building officials confirm that more than 20% of ESS installations require an upgrade to the electrical panel and or existing electrical system. CSLB's established practice and building officials interviewed require a C-10 electrical classification to upgrade the electrical panel/system. As of March 2019, 606 licensees hold both a C-10 and C-46 classification.

Options for the Board to Consider, and Staff Recommendation

Option 1: **Take no action.**

This would retain CSLB's current determination that the A-General Engineering and B-General Contractor can install ESS within the scope of those classifications, and C-46 may contract for and install an ESS in conjunction with a photovoltaic system.

Option 2: **Recommend industry representatives seek legislation to clarify when electrician certification is required for installation of ESS under the Labor Code.**

This would provide the opportunity to either exempt classifications from electrical certification requirements or expand the electrician certification requirement to classifications in addition to the C-10 classification that hire electricians (e.g., A-general engineering, B-general building, and C-46 solar).

Option 3 and Staff Recommendation. Direct staff to consider ESS size, complexity, voltage, and potential risks, and draft proposed regulatory language to present to the Board for consideration that would prohibit or restrict certain contractor classifications from performing the installation of ESS.

As ESS is an evolving technology, this would provide the opportunity to address which contractor classifications should install ESS.

ENDNOTES

[1] Contractors State License Board (CSLB) Offers Fast Facts on Solar Projects. August 27, 2009 http://www.cslb.ca.gov/Media_Room/Industry_Bulletins/2009/August_27.aspx

[2] Contractor Classifications Authorized to Perform Projects. June 30, 2010 http://www.cslb.ca.gov/Media_Room/Industry_Bulletins/2010/June_30.aspx

[3] See p. 19, CSLB Description of Classifications, 2016. http://www.cslb.ca.gov/Resources/GuidesAndPublications/DescriptionOfClassifications.pdf

[4] CSLB Licensing and Enforcement Committee Meetings packet. October 28, 2016. Sacramento, California. P. 55. http://www.cslb.ca.gov/resources/BoardPackets/10-28-16_enforcement_cmte_packet.pdf

[5] Id. p. 59.

[6] See December 8, 2016 Board Meeting Minutes, p. 157, CSLB Board Meeting packet. March 13-14, 2017. http://www.cslb.ca.gov/Resources/BoardPackets/BoardMeetingPacket2017031314.pdf

[7] See February 10, 2017 Committee Meeting Minutes, p. 81, CSLB Board Meeting packet. March 13-14, 2017. http://www.cslb.ca.gov/Resources/BoardPackets/BoardMeetingPacket2017031314.pdf

[8] See March 13, 2017 Board Meeting Minutes, p. 314, CSLB Board Meeting packet. June 15-16, 2017. http://www.cslb.ca.gov/Resources/BoardPackets/BoardMeetingPacket2017061516.pdf (Determination confirmed via video)

[9] The PUC notes in a December 2017 letter to the Center for Sustainable Energy that the C-46 had only been excluded from the eligible license list in previous years' versions of the SGIP handbook because the program eligibility had previously been limited to "non-solar distributed generation projects." With the proliferation in the use of and laws passed involving energy storage systems, the CSE sought to modify the SGIP eligible-contractor list to include C-46 contractors on its belief that "CSLB's current pattern and practice is to allow such installation."

[10] CSLB Licensing Committee Meeting Handouts, February 23, 2018, Sacramento, California. http://www.cslb.ca.gov/Resources/BoardPackets/2-23-18_licensing_committee_mtg_handouts.pdf

[11] CSLB Enforcement and Licensing Committee Meetings, p. 91. February 23, 2018, Sacramento, California. http://www.cslb.ca.gov/Resources/BoardPackets/CommitteeMeetingPacket20180223.pdf

[12] See February 23, 2018 Committee Meeting Minutes, p. 105, CSLB Board Meeting packet. April 13, 2018. http://www.cslb.ca.gov/Resources/BoardPackets/BoardMeetingPacket20180413.pdf. See also CSLB Amended Content, April 12-13, 2018 Board Meeting, p. 31. http://www.cslb.ca.gov/Resources/BoardPackets/AmendedMeetingPacketContent.pdf

[13] Id. p. 113. See also CSLB Amended Content, April 12-13, 2018 Board Meeting, p. 38. http://www.cslb.ca.gov/Resources/BoardPackets/AmendedMeetingPacketContent.pdf

[14] See, respectively: Contractors State License Board (CSLB) Offers Fast Facts on Solar Projects. August 27, 2009 http://www.cslb.ca.gov/Media_Room/Industry_Bulletins/2009/August_27.aspx; Contractor Classifications Authorized to Perform Projects. June 30, 2010 http://www.cslb.ca.gov/Media_Room/Industry_Bulletins/2010/June_30.aspx; See p. 19, CSLB Description of Classifications, 2016. http://www.cslb.ca.gov/Resources/GuidesAndPublications/DescriptionOfClassifications.pdf

[15] CSLB Board Meeting packet. April 13, 2018. San Diego, California. P. 155. http://www.cslb.ca.gov/Resources/BoardPackets/BoardMeetingPacket20180413.pdf

[16] Id.

[17] See April 13, 2018 Board Meeting Minutes, p. 300, CSLB Board Meeting packet. June 7, 2018. http://www.cslb.ca.gov/Resources/BoardPackets/BoardMeetingPacket20180607.pdf

[18] Id. at p. 317

[19] http://www.cslb.ca.gov/Media_Room/Industry_Bulletins/2018/April_17.aspx

[20] For a copy of the videos, please contact the CSLB Executive Office: (916) 255-4000

[21] See December 13, 2018 Board Meeting Agenda, item D(2)(b). http://www.cslb.ca.gov/Media_Room/Board_And_Committee_Meetings/2018/Board_Meeting_Agenda_December_13.aspx. At the time of this writing, the meeting minutes for this board meeting had not been published (they

are usually included in the packet of the subsequent board meeting for the Board's review and approval, which in this case would be March 2019).

[22] Register 78, No. 42.
[23] Page 105, December 10, 1981 Special Meeting of the Board, Oakland, California.
[24] Page 105, December 10, 1981 Special Meeting of the Board, Oakland, California.
[25] Page 105, December 10, 1981 Special Meeting of the Board, Oakland, California.
[26] Page 106, December 10, 1981 Special Meeting of the Board, Oakland, California.
[27] Page 106, December 10, 1981 Special Meeting of the Board, Oakland, California.
[28] Page 106, December 10, 1981 Special Meeting of the Board, Oakland, California.
[29] April 9, 1981. Letter from CSLB Energy Division Chair Kathy Ryan to the CSLB Enforcement Committee.
[30] April 9, 1981. Letter from CSLB Energy Division Chair Kathy Ryan to the CSLB Enforcement Committee.
[31] April 9, 1981. Letter from CSLB Energy Division Chair Kathy Ryan to the CSLB Enforcement Committee
[32] November 5, 1979. Letter to Local Building Officials from Registrar John F. Maloney.
[33] July 30, 1980. Letter to CSLB Enforcement Committee members from Registrar's office.
[34] January 14, 1981. Letter to General Public from CSLB Energy Division Chair Kathy Ryan
[35] March 2, 1981. Letter from Registrar John Maloney to Building Departments and Contractors.
[36] April 9, 1981. Letter from CSLB Energy Division Chair Kathy Ryan to the Enforcement Committee.
[37] September 1, 1981. CSLB Rulemaking package, notice of proposed changes in the regulations of the CSLB and Statement of Reasons.
[38] Statement of Reasons, paragraph 1.
[39] Statement of Reasons, paragraph 2.
[40] Statement of Reasons, paragraph 3.
[41] Statement of Reasons, paragraph 4.
[42] Statement of Reasons, paragraph 5.
[43] Statement of Reasons, paragraph 7.
[44] Statement of Reasons, paragraph 9.
[45] December 10, 1981: Special Meeting of the Board, Oakland, California, comments by Board Member Warren E. McNeely.
[46] Page 106-107, December 10, 1981 Special Meeting of the Board, Oakland, California
[47] Page 109-110, December 10, 1981 Special Meeting of the Board, Oakland, California
[48] Page 110, December 10, 1981 Special Meeting of the Board, Oakland, California
[49] Page 110-111, December 10, 1981 Special Meeting of the Board, Oakland, California
[50] Page 111, December 10, 1981 Special Meeting of the Board, Oakland, California
[51] Page 112, December 10, 1981 Special Meeting of the Board, Oakland, California
[52] Page 130, December 10, 1981 Special Meeting of the Board, Oakland, California
[53] Page 141, December 10, 1981 Special Meeting of the Board, Oakland, California
[54] Page 155, December 10, 1981 Special Meeting of the Board, Oakland, California
[55] Page 172, December 10, 1981 Special Meeting of the Board, Oakland, California
[56] Register 82, No. 18
[57] June 8, 1982: Memorandum to all staff "Solar Licensing Changes go into effect" from CSLB Energy Division Chair Kathy Ryan.
[58] Register 83, No. 35.
[59] April 20, 2009 hearing date, Initial Statement of Reasons.
[60] April 20, 2009 hearing date, Final Statement of Reasons.
[61] Register 2009, No. 49.

EXHIBIT ONE

CONTRACTORS STATE LICENSE BOARD
9821 Business Park Drive, Sacramento, CA 95827
Mailing Address: P.O. Box 26000, Sacramento, CA 95826
800-321-CSLB (2752)
www.cslb.ca.gov

STATE OF CALIFORNIA
ARNOLD SCHWARZENEGGER, Governor

July 5, 2005

John J. O'Rourke
International Brotherhood of Electrical Workers
Local Union 6
55 Fillmore Street
San Francisco, CA 94117

Subject: Photovoltaic Systems

Dear Mr. O'Rourke:

This letter is in response to your request for a licensing determination concerning the installation of photovoltaic systems.

Specifically, you have asked that we list the license classifications that are appropriate for photovoltaic systems that, for residential and commercial building projects, are installed for the purpose of feeding into the utility grid or otherwise offsetting the energy costs for the occupancies they serve. Under existing laws and regulations, contractors holding either one of the following two (2) license classifications can install any photovoltaic system without limitations:

C-10 (Electrical)
C-46 (Solar)

In addition, contractors holding the General Engineering (A) license classification or the General Building (B) classification may contract for the installation of these systems as outlined below:

1. In order for the General Engineering (A) classification to be appropriate, the system must be installed on the types of projects specified under the provisions of Business and Professions Code Section 7056 (copy enclosed).

2. In order for the General Building (B) classification to be appropriate, the prime contract must involve two or more unrelated trades, or be contracted to an appropriately licensed subcontractor as specified in Business and Professions Code Section 7057 (copy enclosed).

I trust that the foregoing information has been responsive to your request. If further clarification or additional information is needed, please do not hesitate to call my office at (916) 255-4000.

Sincerely,

Stephen P. Sands
Registrar of Contractors

EXHIBIT TWO

CONTRACTORS STATE LICENSE BOARD
9821 Business Park Drive, Sacramento, California 95827
Mailing Address: P.O. Box 26000, Sacramento, CA 95826
800-321-CSLB (2752)
www.cslb.ca.gov • CheckTheLicenseFirst.com

STATE OF CALIFORNIA
Governor Edmund G. Brown Jr.

November 15, 2016

Eddie Bernacchi
NECA Legislative and Regulatory Advocate
1127 11th Street, Suite 747
Sacramento, CA 95814-3811

Dear Mr. Bernacchi:

I am writing in response to your request for clarification from the Contractors State License Board (CSLB) on which specialty license classification should be obtained to place, install and connect an electrical energy storage system.

Energy Storage Systems (ESS) store electricity obtained when power is not being used, or "off-peak times". These stations consist of: foundations, battery containers that are set on helical piers- usually galvanized steel piers driven into the ground to a designed depth with a piece of machinery, and transformers set on concrete pads.

A microgrid is any small-scale localized station with its own power resources, generations and loads, and definable boundaries.

There are two classifications that can install microgrids or an ESS. The C10 – Electrical classification is most appropriate to install the ESS systems in existing structures. The A – General Engineering classification would be appropriate if the work also included a plant or facility to house the ESS system.

I hope this information is helpful.

Sincerely,

Cindi Christenson
Registrar

EXHIBIT THREE

CONTRACTORS STATE LICENSE BOARD
9821 Business Park Drive, Sacramento, California 95827
Mailing Address: P.O. Box 26000, Sacramento, CA 95826
800-321-CSLB (2752)
www.cslb.ca.gov • CheckTheLicenseFirst.com

STATE OF CALIFORNIA
Governor Edmund G. Brown Jr.

July 18, 2017

Jonathan Hart
Center for Sustainable Energy
9325 Sky Park Court, STE 100
San Diego, CA 92123

Mr. Jonathan Hart,

This letter is to follow up the email you sent requesting verification of the appropriate classifications to perform installation of an energy storage system as part of a solar installation.

The C46 – Solar classification may install energy storage systems as part of a solar system installation. The C10 – Electrical classification may install energy storage systems as part of a photovoltaic system installation as well as an independent project.

This determination is not a formal declaratory decision under the comprehensive process in the Administrative Procedures Act. I trust that the foregoing information has been of assistance to you.

Andrea Sisto
Classification Deputy
classifications@cslb.ca.gov

Attachment C – Major Studies

Staff Report on Mandated Workers' Compensation for Certain License Classifications

Mandated Workers' Compensation for Certain License Classifications

BACKGROUND

There are two primary ways an employer can cheat California workers' compensation laws: 1) by not having workers' compensation at all; or 2) by committing premium fraud.

CSLB's jurisdiction relates to contractors employing workers without workers' compensation insurance. Other jurisdictions are responsible for investigating premium fraud, which occurs when an employer inaccurately reports the number of workers it has to the insurance company (paying "off the books") or misclassifies the work employees do to obtain a lower premium. A contractor's failure to accurately report or classify employees or wages, nor their misclassification of workers, are issues within CSLB's jurisdiction; nor does CSLB receive general fund support to investigate or enforce such violations.

Workers' Compensation—CSLB Jurisdiction

Contractors' state license law provides administrative authority for CSLB to discipline licensees that employ workers without obtaining a worker's compensation insurance policy and/or who file a false exemption from workers compensation insurance:

- Labor Code §3700 (in part): "Every employer . . . shall secure the payment of compensation in one or more of the following ways: (a) By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state. (b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer, or as one employer in a group of employers. . . ."

- Business and Professions Code §7125.4 (in part) ". . . The filing of (an) exemption certificate . . . that is false, or the employment of a person subject to . . . workers' compensation laws after the filing of an exemption certificate . . . or the employment of a person subject to . . . workers' compensation laws without maintaining coverage for that person, constitutes cause for disciplinary action."

CSLB routinely takes disciplinary action against licensees discovered to have employees while having a false exemption on file, either through a consumer complaint or during a compliance sweep at an active construction site.

Workers' Compensation—Other State Agency Jurisdiction

The Labor Code, the California Insurance Code, and the Unemployment Insurance Code provide that the Department of Industrial Relations, the Insurance Commissioner, and the Employment Development Department are agencies with authority over the following premium fraud issues.

- Insurance Code §1871.4 (in part): "(a) It is unlawful to do any of the following: (1) Make or cause to be made a knowingly false or fraudulent material statement or material representation for the purpose of obtaining or denying any compensation. . . . Every person who violates subdivision (a) shall be punished by imprisonment in a county jail for one year. . . ."

- Unemployment Insurance Code §1088.5 (in part): "(a) . . . each employer shall file, with the department, the information provided for . . . on new employees . . . (d) (1) Employers shall submit a report…within 20 days of hiring any employee whom the employer is required to report pursuant to this section."

Workers' Compensation—Uninsured Employers Benefit Trust Fund

To offset the costs and impact on owners and employees of employers who do not have sufficient workers' compensation insurance, the Labor Code provides for the Uninsured Employers Benefits Trust Fund (UEBTF).

The UEBTF was created to ensure that workers employed by illegally uninsured employers are not deprived of workers' compensation benefits. Although the UEBTF obligation is coextensive with that of the uninsured employer, once the UEBTF pays the entire award, it may make a claim against the uninsured employer to recover the entire amount of the award. Should the employer prove to be insolvent, the UEBTF bears the entire financial burden of the award.[1]

The 2020 UEBTF rate is 0.001274 percent of the premium.[2] Assuming a $5,000 premium (which is the approximate amount of a minimum policy for a roofer), the fee the contractor pays for the UEBTF is about $6.37 a year, or about 53 cents a month.[3]

CSLB WORKERS' COMPENSATION ENFORCEMENT EFFORTS

A licensee's failure to obtain a workers' compensation insurance policy and/or having a false exemption on file is a widespread issue among contractors. CSLB has worked to address the problem for many years.

At the end of 2017, the board established a two-person advisory committee to develop strategies to address workers' compensation insurance avoidance, which involved collaborating with other industries, increasing enforcement, and discussing legislative solutions.

In 2018, as part of CSLB's Sunset Review Report for the 2019 Joint Sunset Review Oversight Hearings the board identified as its first "new issue" concern about the high number of workers' compensation exemptions (approximately 55 percent) claimed by licensed contractors. The report identified the C-8 Concrete contractor and D-49 Tree Service contractor as two of the classifications under consideration for mandatory workers' compensation.

CSLB held meetings in April 2019 and January 2020 with the State Compensation Insurance Fund, California Department of Insurance, and various construction industry stakeholders to collect information and discuss solutions to this problem.

At the April 2019 meeting, industry representatives identified the C-20 Warm-Air Heating, Ventilating and Air-Conditioning (HVAC) contractor as an additional classification appropriate for the mandatory workers' compensation requirement.

In addition to requiring workers' compensation for certain identified classifications, industry stakeholders have advocated legislation to phase in a requirement that all licensees have workers' compensation insurance by 2025.

CSLB'S PRIOR LEGISLATIVE EFFORTS TO ADDRESS WORKERS' COMPENSATION

- AB 2282 (Chapter 1386, Statutes of 1990): Added authority to automatically suspend a license for failing to carry workers' compensation when required and made having a certificate of insurance on file with CSLB a "condition precedent" to the "issuance, reinstatement, reactivation, renewal, or continued maintenance of a license." Provided the opportunity for a contractor to file an exemption, under penalty of perjury, if they contend to have no employees.

- AB 3355 (Chapter 331, Statutes 1996): Provides that a licensee filing a false workers' compensation exemption is cause for disciplinary action. Previously, not complying with general workers' compensation requirements resulted only in automatic license suspension.

- AB 264 (Chapter 311, Statutes 2002): Made the automatic suspension date for failing to provide a current certificate of insurance effective on "either the date the coverage lapsed or the date the coverage was required to be obtained" (as opposed to when CSLB merely finds out about the failure to provide workers' compensation).

- AB 878 (Chapter 686, Statutes of 2011): Requires an insurer to report to CSLB any licensed contractors whose policies are cancelled for failure to pay workers' compensation premiums when due; failure to report payroll or payroll audit; misrepresentation; or failure to reimburse insurer and provides that willful or deliberate disregard and violation of workers' compensation laws is cause for disciplinary action.

- SB 560 (Chapter 389, Statutes of 2015): Authorizes CSLB Enforcement Representatives to issue a written notice to appear (NTA) to individuals who fail to secure workers' compensation insurance. (An NTA is a court order mandating an individual's presence at a hearing to answer to a misdemeanor charge.)

- AB 2705 (Chapter 323, Statutes of 2018): Increases from one year to two years the statute of limitations during which an unlicensed contractor can be prosecuted for failing to obtain workers' compensation insurance for employees.

Other legislative efforts that were industry, rather than CSLB-sponsored, made it a requirement in 2007 that licensed C-39 Roofing contractors, as a condition of licensure, maintain workers' compensation at all time regardless of whether or not they have employees. The requirement began as a "pilot program" and eventually became permanent. (See: Stats. 2006, Ch. 38 § 1 (AB 881), effective January 1, 2007, repealed January 1, 2011, Stats. 2010, Ch. 423 § 1 (AB 2305), effective January 1, 2011, repealed January 1, 2013, and Stats. 2012, Ch. 389 § 1 (AB 2219), effective January 1, 2013.)

EFFECT OF MANDATORY WORKERS' COMPENSATION REQUIREMENT ON C-39 ROOFING CONTRACTORS

The stated intent of the legislature when it imposed a workers' compensation requirement on roofers was to reduce workers' compensation rates among roofers, identify and eliminate cheating contractors, protect workers and owners, and level the playing field between legitimate and illegitimate contractors.

Data from workers' compensation insurance companies reveals that the legislation did not result in a reduction in roofing insurance premiums. Many factors influence rates over time; however, rates do not appear to have decreased since the C-39 requirement was put into place in 2007. Though 2007 rate data is not available, the chart below shows that the average rates steadily climbed between 2010 and 2015, despite a static hourly wage rate for roofers during that time period. According to the State Compensation Insurance Fund (SCIF), roofing remains the construction trade with the highest workers' compensation insurance premium rates.[4]

5552 - Roofing Classification Code (hourly wage < $27.00 (WCIRB)				
Base Rate (per every $100 paid to an employee)[5]				
Year	Lowest to Highest Insurer at the Time	SCIF	Avg. Rate	Hourly Wage
2010	$21.64 - $61.25	$69.24	$50.71	$23.00
2011	$26.90 - $59.87	$64.15	$50.30	
2012	$27.97 - $63.01	$67.92	$52.96	
2013	$37.83 - $78.64	$71.13	$62.53	
2014	$37.73 - $94.83	$67.86	$66.80	
2015	$32.44 - $118.42	$88.08	$79.64	
2016	$37.28 - $111.93	$88.08	$79.09	$23.00
2017	$32.25 - $104.23	$58.44	$64.97	
2018	$24.34 - $80.81	$58.41	$54.52	$25.00
2019	$23.06 - $87.83	$59.81	$56.90	$25.00
2020	N / A	$59.18	N / A	$27.00

With regard to premium fraud, a 2016 Workers Compensation Insurance Rating Bureau (WCIRB) report found "very high claim frequency and loss to payroll ratios" by employers with the lowest amount of roofing payroll, which may be "indicative of underreporting of payroll" by these employers. [6]

This data shows that the roofing requirement did not lower workers' compensation rates in the roofing industry or reduce premium fraud, as intended by the legislation.

EFFECT OF MANDATORY WORKERS' COMPENSATION REQUIREMENT ON C-39 ROOFING LICENSE POPULATION

The data shows that the workers' compensation insurance requirement contributed to a 27 percent decline in total roofing license population.

Year	Active C-39 Contractors
2005 (Jun)	5,898
2006 (Dec)	5,912
2007 (Feb) (Ins. Requirement Imposed)	5,293
2008 (Dec)	5,100
2009 (Dec)	4,899
2010 (Dec)	4,807
2011 (Dec)	4,791
2012 (Dec)	4,671
2013 (Dec) (Ins. Req. made permanent)	4,499
2014 (Dec)	4,386
2015 (Dec)	4,382
2016 (Dec)	4,370
2017 (Dec)	4,403
2018 (Dec)	4,525
2019 (Dec)	4,657
2020 (March)	4,654
Percent Change in population between 2005 and 2020	**- 27%**

The decline in the number of licensed roofing contractors was probably not the result of the economy or a recession for two reasons: 1) the decline was steady both before and after known periods of recession; and 2) the licensed roofing population declined significantly compared to the active licensed population as a whole.[7] The decline in the numbers of licensed roofers does not necessarily mean fewer contractors are doing roofing work but, rather, that more of them have moved into the underground economy or are performing roofing "out of class."[8]

The loss of license renewal revenue to CSLB from a declining population of C-39 roofing contractors between 2007 and 2020 is approximately $120,000 per year.

WORKERS' COMPENSATION LAWS IN OTHER STATES

It is sometimes useful to analyze what other states have done in response to workers' compensation fraud in the construction industry, which is undoubtedly a national issue. CSLB issued a workers' compensation insurance poll to the National Association of State Contractors Licensing Agencies (NASCLA) to learn if other states require workers' compensation for a single license classification whether or not they have employees, as is the case in California. Rhode Island, South Carolina, North Carolina, Oregon, Arkansas, Mississippi, Hawaii, Arizona, and Nevada responded.

All but one of the states (South Carolina) requires a contractor to have workers' compensation if they have employees. Oregon is unique in requiring commercial contractors to have workers' compensation regardless of whether or not they have employees but allows residential contractors to have an exemption.[9] All the states polled provide some form of exemption for contractors without employees.

California is the only state (in this poll) that requires a contractor of a certain license class (roofing) to have workers' compensation whether or not they have employees.

LEGISLATIVE PROPOSAL

Despite CSLB's efforts, the number of workers' compensation exemptions on file has remained consistent. As a result, seeking legislation to mandate workers' compensation insurance for specified license classifications to protect workers and consumers is part of the board-approved 2019-21 strategic plan, with a January 2020 target date.

At a January 2020 meeting of industry, CSLB staff, and the two members of the board's WC Advisory Committee, staff presented a proposal to mandate workers' compensation for three classifications most likely to have employees: C-8 Concrete contractors; C-20 HVAC contractors; and, D-49 Tree Service contractors. Representatives of these industries were present and supported the measure.

Representatives at the meeting also recommended that CSLB slowly extend this requirement to more and more licensees until every licensed contractor is required to have workers' compensation.

Projected Fiscal Impact

The projected fiscal impact of this proposal is broken into two sections.

The first section describes the fiscal impact of imposing the workers' compensation requirement on three classifications (C-8, C-20, and D-49). The second section describes the fiscal impact of imposing the workers 'compensation requirement on all active licensees who currently have an exemption from workers' compensation on file.

The projections presume that CSLB will lose 10 percent of a given license population (as opposed to the 27 percent seen with licensed roofers) for whom the requirement is imposed. The presumption is that this 10 percent will not renew their license and either stop working as a licensed contractor or work "underground" rather than pay for the required workers' compensation insurance. Other presumptions are made in the following calculations that are explained in their corresponding endnotes.

Fiscal Impact of Proposal for Three Classifications

Annual Cost to CSLB in Lost License Renewal Fees: $356,625 or $1,069,875 over three years

Annual Cost to C-8, C-20, D-49 Licensees in Premiums: $25,637,500 or $76,912,500 over three years

These figures are based on the numbers below:

- D-49 Tree Service
  - Active D-49 contractors: 3,038
  - D-49 contractors with WC insurance: 1,913
  - D-49 contractors required to obtain WC insurance: 1,125 (37%)
  - Annual cost to D-49 licensees in aggregate[10]: $2,812,500
  - Two-year revenue loss to CSLB in license renewals[11]: $138,600

- C-8 Concrete
  - Active C-8 contractors: 6,160
  - C-8 contractors with WC insurance: 3,639
  - C-8 contractors required to obtain WC insurance: 2,521 (41%)
  - Annual cost to C-8 licensees in aggregate: $6,302,500
  - Two-year revenue loss to CSLB in license renewals: $277,200

- C-20 HVAC
  - Active C-20 contractors: 12,050
  - C-20 Contractors with WC insurance: 5,441
  - C-20 contractors required to obtain WC insurance: 6,609 (55%)
  - Annual cost to C-20 licensees in aggregate: $16,522,500
  - Two-year revenue loss to CSLB in license renewals: $297,450

Fiscal Impact of Proposal for All License Classifications Starting 2025[12]

Annual Cost to CSLB in Lost License Renewal Fees: $5,625,000

Annual Cost to All Licensees in Premiums: $312,520,000

These figures are based on the numbers below.

- Active licensed contractors: 232,085 (October 2019)
  - Licensed contractors with WC insurance: 99,650
  - Licensed contractors with WC exemptions: 125,008 (54%)
  - Licensed contractors required to obtain WC insurance: 125,008
  - Annual cost to licensees in aggregate: $312,520,000
  - Two-year revenue loss to CSLB in license renewals: $5,625,000

WORKERS' COMPENSATION ADVISORY COMMITTEE RECOMMENDATION

Recommend that the full board direct staff to pursue legislation that would immediately require workers' compensation insurance for C-8 Concrete contractors, C-20 HVAC contractors, and D-49 Tree Service contractors and within three years would require workers' compensation for every actively licensed contractor.

LEGISLATIVE LANGUAGE

Require workers' compensation for the C-8, C-20, and D-49 for the first three years, and then require it for everyone by no longer accepting exemptions in 2025.

Section I - Amend BPC § 7125 as follows:

a) Except as provided in subdivision (b), the board shall require as a condition precedent to the issuance, reinstatement, reactivation, renewal, or continued maintenance of a license, that the applicant or licensee have on file at all times a current and valid Certificate of Workers' Compensation Insurance or Certification of Self-Insurance in the applicant's or licensee's business name. A Certificate of Workers' Compensation Insurance shall be issued and filed, electronically or otherwise, by an insurer duly licensed to write workers' compensation insurance in this state. A Certification of Self-Insurance shall be issued and filed by the Director of Industrial Relations. If reciprocity conditions exist, as provided in Section 3600.5 of the Labor Code, the registrar shall require the information deemed necessary to ensure compliance with this section.

b) This section does not apply to an applicant or licensee who meets both of the following conditions:

   1) Has no employees provided that he or she files a statement with the board on a form prescribed by the registrar prior to the issuance, reinstatement, reactivation, or continued maintenance of a license, certifying that he or she does not employ any person in any manner so as to become subject to the workers' compensation laws of California or is not otherwise required to provide for workers' compensation insurance coverage under California law.
   2) Does not hold a ~~C-39 license, as defined in Section 832.39 of Title 16 of the California Code of Regulations.~~ ***a C-8 license, as defined in Section 832.08 of Title 16 of the California Code of Regulations, a C-20 license, as defined in Section 832.20 of Title 16 of the California Code of Regulations, a C-39 license, as defined in Section 832.39 of Title 16 of the California Code of Regulations, or a C-61/D-49 license, as defined in Section 832.61 of Title 16 of the California Code of Regulations.***

c) No Certificate of Workers' Compensation Insurance, Certification of Self-Insurance, or exemption certificate is required of a holder of a license that has been inactivated on the official records of the board during the period the license is inactive.

d)

   1) The insurer, including the State Compensation Insurance Fund, shall report to the registrar the following information for any policy required

under this section: name, license number, policy number, dates that coverage is scheduled to commence and lapse, and cancellation date if applicable.

2) A workers' compensation insurer shall also report to the registrar a licensee whose workers' compensation insurance policy is canceled by the insurer if all of the following conditions are met:
   A. The insurer has completed a premium audit or investigation.
   B. A material misrepresentation has been made by the insured that results in financial harm to the insurer.
   C. No reimbursement has been paid by the insured to the insurer.
3) Willful or deliberate disregard and violation of workers' compensation insurance laws constitutes a cause for disciplinary action by the registrar against the licensee.

e)

1) For any license ~~that, on January 1, 2013,~~ ***that*** is active and includes a ~~C-39 classification~~ ***a C-8, C-20, C-39, or a C-61/D-49 classification*** in addition to any other classification, the registrar shall, in lieu of the automatic license suspension otherwise required under this article, remove ~~C-39 classification~~ ***the C-8, C-20, C-39, or a C-61/D-49 classification*** from the license unless a valid Certificate of Workers' Compensation Insurance or Certification of Self-Insurance is received by the registrar.
2) For any licensee whose license~~, after January 1, 2013,~~ is active and has had the ~~C-39 classification~~ ***C-8, C-20, C-39, or a C-61/D-49 classification*** removed as provided in paragraph (1), and who is found by the registrar to have employees and to lack a valid Certificate of Workers' Compensation Insurance or Certification of Self-Insurance, that license shall be automatically suspended as required under this article.

f) The information reported pursuant to paragraph (2) of subdivision (d) shall be confidential, and shall be exempt from disclosure under the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code).

g) This section shall remain in effect only until January 1, 2025, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2025, deletes or extends that date.

Section II – Amend BPC § 7125 as follows:

a) ~~Except as provided in subdivision (b), the board~~ ***The board*** shall require as a condition precedent to the issuance, reinstatement, reactivation, renewal, or continued maintenance of a license, that the applicant or licensee have on file at all times a current and valid Certificate of Workers' Compensation Insurance or Certification of Self-Insurance in the applicant's or licensee's business name. A Certificate of Workers' Compensation Insurance shall be issued and filed, electronically or otherwise, by an insurer duly licensed to write workers' compensation insurance in this state. A Certification of Self-Insurance shall be

issued and filed by the Director of Industrial Relations. If reciprocity conditions exist, as provided in Section 3600.5 of the Labor Code, the registrar shall require the information deemed necessary to ensure compliance with this section.

~~b) This section does not apply to an applicant or licensee who meets both of the following conditions:~~

~~1) Has no employees provided that he or she files a statement with the board on a form prescribed by the registrar prior to the issuance, reinstatement, reactivation, or continued maintenance of a license, certifying that he or she does not employ any person in any manner so as to become subject to the workers' compensation laws of California or is not otherwise required to provide for workers' compensation insurance coverage under California law.~~

~~2) Does not hold a C-39 license, as defined in Section 832.39 of Title 16 of the California Code of Regulations.~~

c) No Certificate of Workers' Compensation Insurance~~, Certification of Self-Insurance, or exemption certificate~~ ***or Certification of Self-Insurance*** is required of a holder of a license that has been inactivated on the official records of the board during the period the license is inactive.

d)

1) The insurer, including the State Compensation Insurance Fund, shall report to the registrar the following information for any policy required under this section: name, license number, policy number, dates that coverage is scheduled to commence and lapse, and cancellation date if applicable.
2) A workers' compensation insurer shall also report to the registrar a licensee whose workers' compensation insurance policy is canceled by the insurer if all of the following conditions are met:
   A. The insurer has completed a premium audit or investigation.
   B. A material misrepresentation has been made by the insured that results in financial harm to the insurer.
   C. No reimbursement has been paid by the insured to the insurer.
3) Willful or deliberate disregard and violation of workers' compensation insurance laws constitutes a cause for disciplinary action by the registrar against the licensee.

e)

~~1) For any license that, on January 1, 2013, is active and includes a C-39 classification in addition to any other classification, the registrar shall, in lieu of the automatic license suspension otherwise required under this article, remove the C-39 classification from the license unless a valid Certificate of Workers' Compensation Insurance or Certification of Self-Insurance is received by the registrar.~~

~~2) For any licensee whose license, after January 1, 2013, is active and has had the C-39 classification removed as provided in paragraph (1), and who is found by the registrar to have employees and to lack a valid~~

~~Certificate of Workers' Compensation Insurance or Certification of Self-Insurance, that license shall be automatically suspended as required under this article~~.

f) The information reported pursuant to paragraph (2) of subdivision (d) shall be confidential, and shall be exempt from disclosure under the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code).

g) ***This section shall become operative on January 1, 2025, after which date the registrar shall no longer accept certificates of exemption from workers' compensation on behalf of a licensee.***

Section III – Amend BPC § 7125.4 as follows:

(a) The filing of the ~~exemption~~ certificate prescribed by this article that is false, or the employment of a person subject to coverage under the workers' compensation laws ~~after the filing of an exemption certificate~~ without first filing a Certificate of Workers' Compensation Insurance or Certification of Self-Insurance in accordance with the provisions of this article, or the employment of a person subject to coverage under the workers' compensation laws without maintaining coverage for that person, constitutes cause for disciplinary action.

(b) Any qualifier for a license who, under Section 7068.1, is responsible for assuring that a licensee complies with the provisions of this chapter is also guilty of a misdemeanor for committing or failing to prevent the commission of any of the acts that are cause for disciplinary action under this section.

(c) ***This section shall become operative on January 1, 2025, after which date the registrar shall no longer accept certificates of exemption from workers' compensation on behalf of a licensee.***

ENDNOTES

[1] This paragraph is drawn from Smith v. Workers' Compensation Appeals Bd. (2002), 96 Cal.App.4th 117, 121.

[2] Workers' Comp Executive. Flash Report: Here's the 2020 Workers' Comp Assessment Rates. December 2, 2019. Last accessed March 10, 2020. https://www.wcexec.com/flash-report/heres-the-2020-workers-comp-assessment-rates/

[3] This assumes an experience modification of 1.0 for a new employer.

[4] February 20, 2020 email from SCIF

[5] California Department of Insurance. Workers' Compensation Rate Comparison. Last accessed March 10, 2020. www.insurance.ca.gov/01-consumers/105-type/9-compare-prem/wc-rate/

[6] WCIRB Report of Payroll and Loss Data for C-39 Contractors — Roofing Classifications – Policy Year 2016

[7] Between 2005 and 2007 there were between 278,000 and 295,000 licensed contractors, and today there are 283,971 actively licensed contractors

[8] This concern was particularly shared by the California Applicants' Attorneys Association in its opposition to AB 2305 (2010) which extended the roofing requirement from January 2011 to January 2013; CAAA

stated that requiring the C-39s to carry workers' compensation and removing the C-39 classification of those licensees that didn't comply would merely incentivize bad actors to go underground and unfairly shift costs to law-abiding contractors. (June 21, 2010 Senate Business, Professions and Economic Development Committee analysis)

[9] It was pointed out by a member of the advisory committee that residential projects in California, particularly in the bay area, are of a size and scope that much more resemble commercial operations.

[10] Assuming a minimum policy cost of $2,500; assumes all obtain a policy (as opposed to dropping the license); does not assume additional payroll as opposed to having a minimum policy (which would be additional cost).

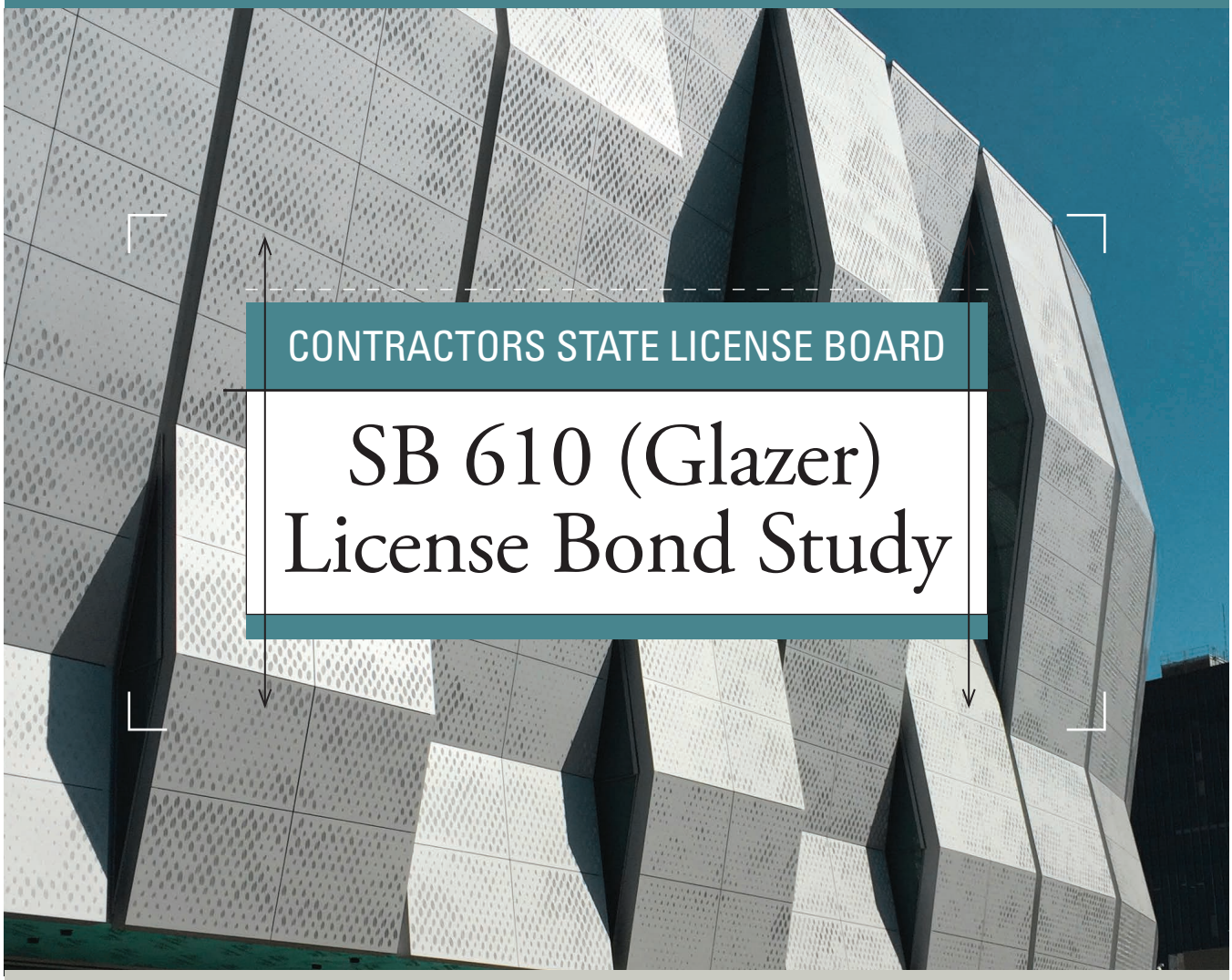
[11] Assuming 10% drop the license class rather than get insurance (based on the 27% drop over 13 years in the C-39 classification). Two years because active license renewals are every two years.

[12] This calculation does not factor in the totals from the previous analysis about the C-8, C-20 and D-49 because it will be unknown how much of that population will exist in three years. It also does not factor in projected increased or decreased costs of workers' compensation premiums or rates as they would be in 2025. Therefore, this calculation is based on the requirement as if it were being imposed on all licensees today.

Attachment C – Major Studies

Senate Bill 610 (Glazer) License Bond Study

January 1, 2021
Sacramento, California



CONTRACTORS STATE LICENSE BOARD

SB 610 (Glazer) License Bond Study

CONTRACTORS STATE LICENSE BOARD

Contractors State License Board

Report to the Legislature

Senate Bill 610 (Glazer) Study

Gavin Newsom, Governor

David De La Torre, Chair, Contractors State License Board

David R. Fogt, Registrar, Contractors State License Board

December 2020

INTRODUCTION

A. Sunset Review and Senate Bill 610

This study derives from an issue raised during the Contractors State License Board's (CSLB) recent "sunset review." CSLB's "sunset" provision is section 7011 of the Business and Professions Code (BPC), which among other things delegates the administrative duties of CSLB to the registrar and provides a quadrennial "sunset" date for CSLB. On January 1, 2020, Senate Bill (SB) 610 (Chapter 378, Statutes of 2019) formally extended CSLB's sunset date from January 1, 2020 to January 1, 2024.

All boards and bureaus within the Department of Consumer Affairs (DCA), and DCA itself, undergo a sunset review in the months before the expiration of their sunset statutes. The Assembly Business and Professions Committee and the Senate Business, Professions and Economic Development Committee jointly oversee this process. Sunset review allows DCA, the Legislature, boards, bureaus, and other stakeholders to discuss performance and recommend improvements in the agency's laws, policies, or practice. Agencies under review can also raise their own issues for consideration by the committees. The process usually culminates in a "sunset bill" extending the date of the sunset statute applicable to the agency under review.

As required by the sunset process, in December 2018 CSLB submitted a Sunset Review Report to the Legislature in preparation for its 2019 sunset review hearings. In Section 10 of that report, CSLB answered 16 questions from the Legislature on specific issues that arose from CSLB's 2014 sunset review. Question eight asked CSLB to describe its plan for "financially protecting consumers" after the 2016 passage of SB 467 (Hill), which eliminated the requirement that contractors have $2,500 in working capital as a condition of licensure. In its answer to that question, CSLB explained that SB 467 raised the contractor license bond amount from $12,500 to $15,000 to compensate for ending the $2,500 working capital requirement. CSLB's answer also stated, "greater consumer protection is realized with the increase in the [contractor] bond because a construction project *can easily exceed $15,000 in costs or potential financial injury to a consumer*" (emphasis added).[1]

In addition, a consumer advocate questioned the sufficiency of the bond in a February 23, 2019 letter to the Joint Committees supporting CSLB's sunset extension, which stated the following:

> The current $15,000 Contractors Bond is wholly insufficient. The intention of the bond is to provide a consumer the financial resources to complete a job which a contractor abandons or causes others to lien on a property to get paid. Effectively, the $15,000 bond covers only one small job, leaving the customers of the contractor exposed in many ways if the contractor defaults. To correct the deficiency, contractors should be required to post a bond which reflects the value of the work the contractor is performing. [2]

The Chair of the Senate Business and Professions Committee also questioned the sufficiency of the bond at CSLB's February 26, 2019 sunset review hearing. The ensuing discussion at that hearing is described in the "Background" section of this study.

B. Question Presented

Existing law provides that CSLB "shall require as a condition precedent to the issuance, reinstatement, reactivation, renewal, or continued maintenance of a license, that the applicant or licensee file or have on file a contractor's bond in the sum of fifteen thousand dollars ($15,000)" (BPC section 7071.6). Section 6 of SB 610 (Glazer), approved by the Governor on September 27, 2019, amends BPC section 7071.6 by adding a new subdivision (e), inclusive of the following subparagraphs:

(1) The board shall conduct a study to obtain information to evaluate whether the current fifteen-thousand-dollar ($15,000) amount of the contractor bond is sufficient, or whether an increase may be necessary.

(2) The board shall report its findings and recommendations to the appropriate policy committees of the Legislature, in accordance with Section 9795 of the Government Code, by January 1, 2021.

Thus, the question presented for this study is: whether the current $15,000 amount of the contractor bond is sufficient, or whether an increase may be necessary.

C. Abstract

This study begins with a brief legislative history that indicates the purpose and policy behind CSLB's bond requirement is the protection of homeowners.

Then the study summarizes the portion of CSLB's February 26, 2019 sunset review hearing during which the question of the sufficiency of the $15,000 bond was raised and discussed. From that discussion, three issues were identified that form Part 1 of this study: A) Barriers to Licensure and the Cost of the $15,000 Contractor License Bond; B) Underwriting and the Impact of Raising the Contractor License Bond; and C) The Cost of Projects in a Typical Home. Three additional issues not discussed at the hearing but possibly relevant to the question presented are raised in Part 2 of the study: A) CSLB's Qualifying Individual's Bond; B) License Bonds in Other States; and C) Survey of Licensed Contractors.

After analysis of research and data related to these issues, the study **concludes that the current $15,000 amount of the contractor bond is not sufficient and that an increase is necessary.**

Note for the reader: *there are many kinds of bonds available to contractors and owners. All references in this study to a "bond," unless indicated otherwise, refer to the license bond that is a prerequisite to a contractor license in California pursuant to BPC Section 7071.6. In addition, this study may use the terms "surety company", "admitted surety insurer" or "bond company" interchangeably, to refer to the licensed entity that promises to answer, via the license bond, for the default of a contractor (the principal).*

BACKGROUND

A. Contractor License Bond: Legislative Purpose and History

A Primary Purpose of the License Bond is Protection of Homeowners

The CSLB bond requirement started in 1963[3] following the addition of Section 7071.9[4] to the BPC to require a bond as a "condition precedent to issuance, reinstatement, reactivation, or reissuance of a license." At that time, the bond was "for the benefit of any person damaged as a result of a violation of this chapter by the licensee, any person damaged by fraud of the licensee in the execution or performance of a contract, and any employee of the licensee damaged by the licensee's failure to pay wages." These persons are known as the bond beneficiaries.

In 1979, the Legislature placed homeowners at the top of the list of contractor bond beneficiaries when it included in subdivision (a) of the statute "any homeowner contracting for home improvement upon his personal family residence damaged as a result of a violation of this chapter by the licensee,"[5] a provision that reads substantially the same today.[6] The bill that added this protection for homeowners was part of a 36-section measure that added various consumer protection provisions to the Contractors State License Law, the Insurance Code, and the Penal Code (adding section 23, which authorizes licensing agencies to appear in a criminal case against a licensee). Section 34.5 of this 1979 measure states the legislative intent for these changes as follows:

> It is the intent of the Legislature and the purpose of this act to promote and protect the interests of consumers as well as law-abiding competitive licensed contractors. It is the intent of the Legislature to protect consumers from grievous injury as a result of the acts of contractors and to protect law-abiding competitive licensed contractors from unfair competition as a result of the acts of unlicensed or non-law-abiding licensed contractors.[7]

While the bond statute has always identified bond beneficiaries as anyone harmed by a willful or deliberate act of a contractor, employees, laborers, and (most recently) an owner contracting to construct a single-family dwelling,[8] only with the addition of homeowners to the bond statute 40 years ago did the Legislature state its specific intent to protect consumers from grievous injury by the acts of contractors. Therefore, the protection of homeowners is a primary purpose of the contractor bond.

History of the Increases to the Amount of the Contractor Bond

The bond amount, currently $15,000, has increased over time by statutory changes. However, legislative history reviewed for this study does not indicate the method or criteria used to determine these amounts (e.g., by calculating inflation, or measuring changes in the Consumer Price Index). On this point, a 2001 CSLB study of the contractor bond notes that each time the bond amount was raised in prior years, it was "described as the highest amount surety companies can afford to pay without forcing new contractors out of business."[9]

The first contractor bond amount was set at $1,000 in 1963.[10] Below is a chart showing each date the bond was raised thereafter, and by how much. The chart also shows what each of those prior amounts is equivalent to in 2020; for example, the $1,000 bond in 1964 would be $8,384.45 today.[11]

Enabling Statute	Bond Amount	Effective Date	Years Between Raise	% Increase from Prior Bond Amount	Amount in 2020
Stats. 1963, c. 1971, § 1	$1,000	January 1, 1964	N/A	N/A	$8,384.45
Stats.1972, c. 7, § 1	$2,500	March 4, 1972	8 years 2 months	150%	$15,545.33
Stats.1979, c. 1013, § 11.5	$5,000	January 1, 1980	7 years 9 months	100%	$15,771.72
Stats.1993, c. 1264, § 6.3	$7,500	January 1, 1994	14 years	50%	$13,153.74
Stats. 2002, c. 1123	$10,000	January 1, 2004	10 years	33.3%	$13,759.56
Stats. 2002, c. 1123.	$12,500	January 1, 2007	3 years	25%	$15,669.64
Stats. 2015, c. 656.	$15,000	January 1, 2016	9 years	20%	$16,244.40

Increase from $5,000 to $7,500 in 1993

The bond amount increased from $5,000 to $7,500 in 1993. An explanation for that increase is not provided in the legislative history reviewed for this study, other than it was done as part of "DCA's annual omnibus bill containing a variety of technical and clean-up changes relating to boards and bureaus."[12] At the time, a contractor association opposed the change with this statement: "Increasing the bond to $7,500.00 would increase the premium by about $30.00, giving the sureties an additional 6 1/2 million dollars pure profit, with little additional protection for the public."[13] Nonetheless, the measure passed, and the bond would not be raised again until 2004.

CSLB Sunset Review in 2000

The current study is not the first time the Legislature has asked CSLB to study the bond, which was a significant topic during CSLB's 2000 sunset review. At that time, the Joint Legislative Sunset Review Committee had noted that the $7,500 bond "is inadequate and often unavailable to consumers."[14] An August 6, 2000 Assembly analysis of CSLB's sunset bill noted "the inadequacy of the current license bond" and suggested that "the surrounding issues need to be studied," noting that often "contractors' surety bonds do not pay out and if they do, the current $7,500 requirement is insufficient to cover injuries that have occurred."[15] As a result, the 2000 sunset bill[16] required CSLB to conduct a "comprehensive study in consultation with the Department of Insurance on the use of surety bonds to compensate homeowners for financial injury" sustained as a result of a contractor's actions. The 2001 mandate included multiple criteria for CSLB to study (which are significantly beyond the scope of this study), but it did not ask CSLB to conclude whether the bond amount should be raised or by how much.

The CSLB issued its findings on October 1, 2001. The 2001 study does not expressly state that the bond amount (or "penal sum" as it is often referred to in the surety business)[17] should be raised but states "that if the penal sum is raised significantly, sureties would need to increase their underwriting of these bonds," and

concludes that "the goal for this bond might be to raise the penal sum as high as it can be raised without requiring the need to comprehensively underwrite it."[18]

Increase from $7,500 to $10,000 and from $10,000 to $12,500 Between 2004 - 2007

As an additional requirement of the 2000 CSLB sunset review,[19] in December of 2001, DCA appointed a CSLB "Enforcement Monitor" (Monitor) charged with the "reform and reengineering of the CSLB's enforcement program and operations, and the improvement of the overall efficiency of the CSLB's disciplinary system."[20] The Monitor was also tasked with recommending new consumer remedies to address the "problem of inadequacy" with "current forms of restitution provided to consumers for financial injury suffered as a result of a contractor's fraud, poor workmanship, malfeasance, abandonment, failure to perform, or other illegal acts."[21] The Monitor studied CSLB's October 2001 bond study, as well as other data about consumer financial injuries, and found that:

> . . . estimates of annual consumer loss in California . . . range from $60 million to $100 million. The surety bond of $7,500 required of most contractors offers no realistic prospect of recovery for many cases of consumer loss because of: the limited amount of the bond, superior knowledge and experience of industry claimants who may be competing with consumers for restitution, and a difficult and burdensome payout process.[22]

The result of these findings was a 2002 bill that established two increases in the bond over the ensuing years.[23] It provided that starting January 1, 2004, all licensees secure a $10,000 bond, up from $7,500. The same bill increased that bond to $12,500 to start two years later, on January 1, 2007. The legislative history of this measure reviewed for this study does not provide a basis for calculating the new amounts, but the Monitor report cites the Consumer Price Index in concluding that $7,500 in 1994 would be valued near $10,000 in 2001.[24]

This 2002 bill also created the "aggregate liability of a surety" provision of the bond requirements in subdivision (b) of BPC section 7071.6, which remains in the law today. It specifies that any amount greater than $7,500 claimed against a bond will be

reserved exclusively for homeowners damaged by a contractor's violation of the law.[25] This precludes a non-homeowner from claiming the entire amount.

Increase from $12,500 to $15,000 in 2015

The bond was raised again from $12,500 to $15,000 in a 2015 bill that extended CSLB's sunset date from January 1, 2016 to January 1, 2020.[26] As stated in the Introduction of this study, that $2,500 increase was the direct result of the elimination of CSLB's "financial solvency" requirement. Prior to the 2015 sunset process, CSLB had a statute that required that "all applicants and all licensees at renewal, demonstrate, as evidence of financial solvency, that his or her operating capital exceeds $2,500." The Monitor commented on this requirement in 2002, as follows:

> This amount - established in 1979 and unchanged in 23 years - is not meaningful as an indicator of financial capacity or solvency in 2002, when $2,500 will not be likely to cover the smallest litigated claim. This minuscule capitalization amount provides no real guarantee of solvency or ability to meet judgment obligations, but the existence of a requirement of "financial solvency" may have the undesired effect of implying to consumers that significant CSLB standards of solvency have been met.[27]

In its analysis of CSLB's 2015 sunset bill, the Senate Rules Committee provided the following statement:

> The CSLB has indicated that this requirement is outdated, and the information is basically unverifiable and recommended that it be eliminated. The CSLB recommended instead that the surety bond requirement be increased from the current $12,500 to $15,000, which this bill does.[28]

As a result, the $2,500 operating capital or "financial solvency" prerequisite to licensure was eliminated, and the $12,500 bond was increased in the corresponding amount. The 2015 sunset bill took effect on January 1, 2016 with a $15,000 bond requirement, which has been the standard ever since.

B. February 26, 2019 Joint Hearing Before the Senate Business, Professions, and Economic Development and the Assembly Business and Professions Committee

On February 26, 2019, the Legislature held its joint oversight hearing of CSLB. Then current Board Chair Marlo Richardson, past Board Chair Kevin Albanese, Registrar David Fogt, and Chief Deputy Registrar Tonya Corcoran represented CSLB at the hearing.[29] At the hearing, Senator Steven M. Glazer, Chair of the Senate Business, Professions and Economic Development Committee stated, "there has been some concern about the contractor's bond amount of $15,000 and whether or not it is sufficient," and asked the panel to comment on this issue.

Registrar Fogt indicated CSLB would be interested in studying the issue and mentioned that discussion of raising the bond in prior years involved concerns about underwriting that may be required. Past Board Chair Albanese agreed, and indicated that $15,000 is not a significant amount to a harmed consumer. Mr. Albanese then stated that any study of this issue should evaluate balancing the interests of limiting barriers to licensure with that of ensuring qualified people enter the industry.

Senator Glazer then asked what the cost to the contractor is of the "typical" $15,000 bond. Mr. Albanese did not believe it is "much" but suggested that underwriting would be required for a contractor to secure a bond of $25,000 or $50,000. Mr. Albanese reiterated the need to strike a balance in the laws because CSLB issues licenses to wide range of professionals with difference expertise.

Senator Glazer inquired as to the percentage of work CSLB finds that "falls beneath [$15,000] in a typical home" before stating that [the $15,000 bond] is "a pretty low threshold." He agreed with CSLB's concern about how [raising the bond] may affect costs but said he would "be interested in evidence that makes it clear that costs are going to create issues," and asked CSLB to study that question.

Public testimony was then received, from two different representatives of various construction industry associations. Both commentors emphasized either the need to

strike a balance in the license laws or the goal of limiting barriers to licensure. Senator Glazer then closed the discussion by agreeing it is a challenge to find the “balance” in the laws referenced by various parties during the testimony, but that it is also important to recognize “circumstances and experiences are changing.”

A few weeks later, the Senate Committee amended Senate Bill 610 to include the requirement that CSLB study whether the current $15,000 amount of the contractor bond is sufficient, or whether an increase may be necessary.

PART ONE:

STUDY OF THE ISSUES RAISED AT THE FEBRUARY 26, 2019 HEARING

A. Barriers to Licensure and the Cost of the $15,000 Contractor Bond

Barriers to Licensure

At the February 26, 2019 sunset hearing, Past Board Chair Albanese indicated that any consideration of raising the bond amount should consider concern about increasing "barriers to licensure." In preparation for this study, CSLB surveyed thousands of licensed contractors.[30] One of the survey questions asked if the cost of the bond is a barrier to licensure, which produced responses reflected in the following chart:

Do you believe the cost of having a contractor's bond prevents people from joining the construction industry?	Number of Respondents	Percentage of Total Responses
Yes	622	15%
No	3,510	86%
TOTAL	**4,132**	**100%**

As the survey indicates, 86 percent of licensed contractors polled do not believe the cost of the $15,000 bond is a barrier to entering the industry. However, the question of whether the bond is a deterrent to those who are not yet licensed – but may wish to become licensed someday – is a significant part of this inquiry.

Limiting "barriers to licensure" is a reference to 2016 report by the state oversight agency Little Hoover Commission (Commission) on California State Government Organization and Economy, "Jobs for Californians: Strategies to Ease Occupational Licensing Barriers" (Report). The Report states that occupational licensing requirements "often serve as a gate, keeping people out of occupations."[31] The report notes:

> Licensing requirements protect those who are already licensed at the expense of those who are not, and California licenses more occupations traditionally entered into by lower-income people than nearly every other state. The financial and time costs to become licensed are not insignificant. Licensing results in higher prices and reduces the availability of services to lower income people.[32]

As such, the Commission suggested that limiting barriers to licensure has the benefit of increasing access to licensed professionals, which keeps prices low, thereby ensuring consumers of all income levels have access to more services.[33] In the time since the Report, boards, bureaus, and the California State Legislature have all introduced various policies or legislation to implement some of the Commission's recommendations. Nonetheless, when the Commission released its biennial "Economy & Efficiency Report" in February of 2019 it found that "more remains to be done" to "help the most vulnerable Californians enter licensed occupations."[34]

For this reason, increasing the bond amount raises questions about the higher costs of obtaining a contractor license and/or limiting the pool of available contractors by doing so. The "barrier to licensure" concern of increasing the bond would be the increase in the cost of the bond precluding new people from entering the construction field, which not only keeps such individuals from earning a living but may increase the cost of construction services by limiting access to the number of available contractors. The result could be a negative impact to consumers in a manner that outweighs the intended benefit of raising the bond, which is to provide more funds for consumers who are injured by the acts of a contractor. Addressing these concerns requires evaluating the cost of the contractor bond itself (discussed below) and the potential impact of raising the amount (discussed in the next section).

Cost of the $15,000 Contractor Bond

The CSLB posed a question about the cost of the $15,000 contractor bond to licensed contractors in its recent survey, and 72 percent of the over 4,000 respondents indicated that the bond costs them between $0 and $600 per year.[35] Bond premium calculations are based on the rate filings by each individual surety company, which are available through California Department of Insurance.[36] Rates are generally expressed as a percentage of the bond;[37] for example, a contractor license bond may cost between 1 percent and 3 percent of the bond amount,[38] which is between $150 and $450 per year. If most licensed respondents to the survey are paying a few hundred

dollars or less a year for their bond, this is not a significant cost or barrier to licensure when compared to other costs assessed on actively licensed contractors.[39]

However, whether this cost poses a barrier to licensure requires also reviewing this question in the context of those who do not have a bond or who may be seeking to obtain a bond. Bond companies say personal credit score is among the most important of factors in determining bond premiums,[40] because it is an indicator of how likely the contractor is to reimburse the bond company for a claim payout, as required on every bond. For an individual with high credit, the $15,000 bond can go as low as $85.00 a year over just over $100 to $200 a year; but for an individual with low credit it can be as high as $1,300 a year.[41] However, preliminary research indicates that an applicant for a contractor license can still obtain a bond inexpensively regardless of credit, in one case $140 a year.[42] Therefore, even if an applicant has poor credit, the $15,000 bond does not appear to be a significant barrier to licensure, for at least the first year of licensure.

In addition, there are mechanisms for those with poor credit, no credit, or no social security number (SSN) to file a bond, possibly at an extra cost. Several bonding companies will issue a bond to an applicant without a SSN and/or with only an individual taxpayer identification number (ITIN). Like an applicant with no credit, such applicants would likely pay a higher rate for the bond. Companies may also accept third party guarantors of a bond on behalf of someone with no credit, poor credit, or with no SSN.[43]

The CSLB studied the issue of bonding and credit when sponsoring a bill to eliminate all bond alternatives and require all contractors obtain a surety bond.[44] CSLB used to allow contractors to file a $15,000 “certificate of deposit” instead of obtaining a $15,000 bond with an admitted surety insurer (a bond company). A contractor could deposit $15,000 in a bank and file evidence of the deposit with CSLB as an alternative to the surety bond. But CSLB was often advised by various consumers claiming against a $15,000 certificate of deposit that the money was no longer available because the funds were removed from the bank some time prior to the claim, or the account simply no longer existed. CSLB had no ability to prevent this from happening, and sponsored Assembly Bill (AB) 3126 (Brough, Chapter 925, Statutes of 2018) to address it.

As AB 3126 progressed through the Legislature, the Senate Judiciary raised the following concern: "because companies issuing surety bonds typically require a social security number, this bill could have the unintended effect of creating a barrier to licensure for undocumented licensees."[45] The CSLB's research at the time confirmed that having a SSN is a critical element when obtaining a bond because the bond is a "credit product," and a SSN is usually required to generate credit. If the applicant has low credit or no credit, they will pay a higher rate for the bond; and if they have higher credit, they will get a preferred rate. The impact is a possible higher cost of licensure for applicants with financial problems or without a credit profile. As such, even if obtaining a bond through a surety without a credit score or SSN is possible, the method for doing so still required extra steps and/or extra costs to those who did not have either.

As a result, the bill author agreed to amend AB 3126 so that securing a bond with a surety insurer was not the only way to obtain a bond. The measure preserved one alternative to the surety bond, the filing of a cashier's check in an interest-bearing account with the state. This allows anyone without a SSN or credit score to avoid bonding through a surety and ensures the funds are available if a claim is made against the bond. Since the implementation of AB 3126, 28 applicants have applied for a license with the cashier's check option instead of a surety bond as of the fall of 2020.

After the foregoing discussion, the complete answer to Senator Glazer's question about the cost of the $15,000 bond is that for those with good credit or just starting out, it costs somewhere between less than $100 a year to $150 to $200 a year. If one has financial liabilities or prior bond claims, it can be hundreds of dollars or over a thousand dollars a year. And credit is the largest factor is because, unlike an insurance policy, the bond requires the contractor to reimburse the bond company if a claim is paid. The bond premium will also need to be paid throughout the life of an active license. But if one does not obtain a surety bond, the cost is the full bond amount up front via cashier's check, but there are no ongoing costs and interest is earned on the bond. And if one does not or cannot obtain a bond at all, they cannot maintain a license with CSLB. There is a risk that such individuals forgo the license entirely and work underground.

B. Underwriting and the Impact of Raising the Contractor License Bond

During the February 26, 2019 sunset hearing, Registrar Fogt explained that when the topic of increasing the bond was discussed in previous years insurance companies opposed increasing the bond to an amount that would require underwriting the bond. Generally, "underwrite" means "the authority to accept or reject risk on behalf of the insurer,"[46] or in this case, on behalf of an admitted surety insurer. Past Board Chair Albanese suggested underwriting might be required for a contractor to secure a bond of $25,000 or $50,000. Senator Glazer shared CSLB's concern about how raising the bond may affect costs but noted would "be interested in evidence that makes it clear that costs are going to create issues," and asked CSLB to study that question.

How Does Underwriting Relate to the License Bond?

A bond, regardless of type, is a guarantee.[47] The surety writing the bond is the party providing the guarantee that they will answer for the debt, default, or miscarriage of the contractor.[48] However, there is a fundamental difference between a bond as a prerequisite to licensure and other available bonds in the construction industry. Understanding that difference is helpful to the discussion of underwriting.

In the case of "contract" surety bonds, such as a bid bond, performance bond, payment bond, warranty bond, or maintenance bond[49] (maintenance bonds are common for public works projects), the surety is focused on whether it can reasonably guarantee that the contractor will perform their obligations in a particular contract or agreement.[50] Contract bonds potentially involve penal sums much larger than $15,000 that are connected to those specific set of promises to perform in a specific way. In contrast, for the $15,000 contractor license bond required by CSLB, the surety is focused only on the guarantee that the contractor will comply – generally – with the rules and regulations of the Contractors State License Law.[51] [52] As such, a contractor license bond does not guarantee a specific contract.[53] It is regarded as a "low" penal sum without specific promises associated with it, other than the general obligation that the contractor comply with the license law, which all contractors have to do anyway.

As a result, the surety undergoes very different analysis when it comes to issuing a contract bond versus a license bond. The underwriting for a contract bond issued for a particular purpose is done on a "case-by-case basis" following a "review the contract documents, especially the scope of work" to "make sure that the work under the contract fits within the contractor's normal abilities and capabilities."[54] Surety writers are evaluating the risk under the specific contract for which the contractor seeks a bond.[55] This requires reviewing the contract or agreement at issue and evaluating factors like the "contractor's entire work portfolio, past performance, experience, operational efficiency, managerial skills, business plan, and reputation for integrity."[56]

In contrast, the license bond is not underwritten[57] in the traditional sense of the word. This is because sureties consider the $15,000 contractor license bonds to be "low-risk due to their relatively low number of claims and/or small penalty sum." [58] Indeed, as of 2020, the industry loss ratio on a license bond remains at about 20 percent,[59] meaning that either up to 80 percent of licensed contractors uphold their obligation on the license bond to comply with CSLB laws, or an unknown number of that 80% received bond claims but they were not sufficiently proven for the bond company to pay out.[60] As a result of this "manageable" ratio, unlike the detailed case-by-case review required by underwriting a contract bond, obtaining a license bond is based only a credit rating, or in some cases only a CSLB application fee number[61] and can be purchased instantly with no underwriting process necessary.[62]

Impact of Raising the Contractor License Bond Amount

At the February 26, 2019 sunset hearing, Senator Glazer shared CSLB's concern about how raising the bond may affect costs, but stated hes would "be interested in evidence that makes it clear that costs are going to create issues," and asked CSLB to look into that question. Given how license bonds are currently written, this requires an analysis of how an increase, and by how much, would affect that process.

As discussed, license bonds are not currently comprehensively underwritten on the contractor's ability to reimburse the surety; instead, the surety simply expects a "loss

ratio" of approximately 20 percent.[63] Thus, a surety might be "exposed" on 200 bonds at $15,000 and 40 of those bonds may pay out, resulting in $600,000 in losses.[64] Sources tell CSLB that with the license bond at $15,000, this is a manageable loss in the event of payouts against the bonds in their portfolios.[65] The CSLB obtained a statement from a surety bond company that increasing the license bond to $25,000 would be manageable for contractors and the surety industry would not require underwriting.[66] However, an increase in the bond amount would likely result in a proportional increase in the premium calculation.[67] For a "typical contractor with a clear bond history" this might result in an increase in the annual bond premium of $100 to $200.[68] And for those utilizing the cashier's check option as opposed to obtaining a bond with a surety, they would need to provide $25,000 cash.

However, there is a correlation between the bond amount and how much underwriting is involved.[69] For example, if the $15,000 bond suddenly triples in size, this would be a "massive change for the industry" and almost certainly would result in "substantially stricter" risk-based underwriting.[70] Surety bonds would no longer reflect a "low risk" penal sum product qualified with a credit rating and small premium based on a basic guarantee of compliance with the license laws. Instead, almost all sureties would begin considering things like a contractor's financial capacity, net worth, cash flow, assets, credit score, existing projects, prior projects, expertise and experience, banking relationships, nature of projects, and character.[71]

There are therefore two issues to consider in evaluating a bond increase in the context of underwriting. First, if the bond is raised to a level that requires underwriting, the concern is that such a change "would force new applicants and contractors with poor credit out of the market, or…into the underground economy,"[72] thus raising some barriers to licensure. Second, if a license bond begins to require underwriting to demonstrate the contractor's ability to perform or pay in some specific way, it becomes another kind of bond entirely. The focus becomes a critical review of the contractor's situation instead of a bond given in the furtherance of meeting a minimum standard for licensure.[73] It may also elongate the license application process.

Keeping the bond below the threshold for extensive underwriting invariably raises consumer protection concerns; indeed, because the bond is not underwritten, California consumers "should not assume that this bond signifies that the contractor is creditworthy or competent."[74] However, the bond is a condition of licensure, which means there is a statutory measure of protection for all consumers associated with the $15,000 bond. This is because CSLB evaluates all applicants for licensure and their fitness to understand and comply with the laws[75] that the license bond ultimately obligates them to. As such, in a sense CSLB already performs a form of "underwriting" for the license bond, which may invariably help keep costs low on the surety side.

Finally, whether the $15,000 amount itself is sufficient is not a question that can fully be answered without evaluating the type of projects for which this bond amount may typically pay out. This is the purpose of the next section of this study, which focuses entirely on residential projects. The focus on residential projects is due to the contention in the first section of this study that, despite the bond having multiple statutory beneficiaries, a primary purpose of the license bond is the protection of residential consumers.

C. The Cost of Projects in a Typical Home

At the February 26, 2019 hearing, Senator Glazer stated he did not know what percentage of work CSLB finds "falls beneath that [amount] in a typical home" but stated $15,000 is "a pretty low threshold." To address this question, CSLB studied: 1) CSLB consumer complaint data; 2) the cost of typical home remodeling projects; and 3) CSLB bond payment of claims information.

CSLB Consumer Complaint Data

The CSLB opens approximately 20,000 complaints a year. Complaints come from different sources and can involve a variety of construction projects, including public works, commercial, and residential. Approximately 80 percent of complaints each year are "reactive," and 20 percent are "proactive." Reactive cases are complaints filed by a consumer who has hired a contractor. Proactive cases are filed by third parties that

direct CSLB to certain jobsites or geographical areas for compliance checks, or they involve undercover sting operations. Between the two types of complaints, approximately 90 percent involve residential projects.

The following chart shows the value of construction contracts found in CSLB reactive complaints filed by residential consumers between 2015 and 2020, for which the price of the contract or invoice is available in the complaint record.

Year	$501 - $5,000	$5,001- $10,000	$10,001 - $15,000	$15,001 - $25,000	$25,001– $50,000	$50,001- $75,000	$75,001 - $100k	$100,001 - $500k	Over $500k
2015	31.10%	17.40%	10.00%	11.40%	12.30%	5.30%	2.50%	7.90%	2.10%
2016	28.90%	16.70%	10.10%	12.50%	12.50%	4.80%	2.80%	9.70%	2.60%
2017	25.40%	16.50%	8.70%	12.30%	16.10%	6.00%	3.20%	9.10%	2.50%
2018	25.30%	15.40%	8.80%	12.70%	16.10%	6.10%	3.40%	9.90%	2.40%
2019	22.40%	15.00%	9.50%	12.90%	16.30%	6.20%	3.80%	10.80%	3.00%
2020	24.30%	13.10%	8.10%	14.50%	17.40%	5.80%	3.50%	10.20%	2.90%
AVG	**26.2%**	**15.7%**	**9.2%**	**12.7%**	**15.1%**	**5.7%**	**3.2%**	**9.6%**	**2.6%**

The chart supports the following conclusions:

- Approximately 48.9 percent of complaints involved contracts over $15,000, the current threshold of the license bond amount.
- Most CSLB consumers (52.7 percent) file complaints for contracts between $5,001 and $50,000.
- More complaints are filed about contracts between $15,001 and $50,000 (28 percent) than between $5,001 and $15,000 (25 percent).
- Every year, the number of complaints filed between $15,001 and $25,000, as well as between $25,001 and $50,000, has steadily increased.
- The value of contracts has risen steadily every year within the range that most consumers seem to complain: between $5,001 and $50,000.

- Even though over a quarter (26.2%) of complaints each year are valued below $5,000, the number of people filing in this category has declined by 27% between 2015 and 2020 (from 31.1% of complaints down to 24.3% of complaints)

In all, it appears the $15,000 bond covers slightly more than half of the residential construction contracts subject to CSLB complaints today.

The Cost of Home Remodeling Projects

This section provides information about the cost of different remodeling projects in the year 2020, in the Pacific U.S. (Hawaii, Alaska, California, Oregon, and Washington).[76] The information in the following chart is drawn from Hanley Wood business intelligence and data service, via their "Metrostudy" feature.

Project	Level	Cost
Bathroom Remodel	Midrange	$24,757
Bathroom Remodel	Upscale	$75,763
Bathroom Addition	Midrange	$58,038
Bathroom Addition	Upscale	$104,722
Deck Addition	Composite	$22,762
Deck Addition	Wood	$18,059
Entry Door Replacement	Steel	$2,048
Garage Door Replacement		$3,874
Major Kitchen Remodel	Midrange	$75,292
Major Kitchen Remodel	Upscale	$148,216
Manufactured Stone Veneer		$10,175
Master Suite Addition	Midrange	$159,510
Master Suite Addition	Upscale	$325,452
Minor Kitchen Remodel	Midrange	$26,150
Roofing Replacement	Asphalt Shingles	$27,769

Roofing Replacement	Metal	$46,932
Siding Replacement	Fiber-Cement	$20,064
Siding Replacement	Vinyl	$16,937
Window Replacement	Vinyl	$19,184
Window Replacement	Wood	$22,976
Average Cost of Improvements in Chart:		**$60,434**

The chart supports the following findings:

- The average cost of a significant remodeling project of the type indicated in the chart is $60,424.
- The lower range of cost is between $2,000 and $3,000 for the replacement of doors of varying types.
- The middle range of cost is between $15,000 and $25,000 for siding replacement or entry level bathroom remodels.
- The higher range of projects for room additions or upscale room remodels well exceed $100,000.

The chart excludes service and repair projects (such as plumbing replacement or repair, heating, ventilation and air conditioning, roof repair, etc.) because they tend to fall beneath the $15,000 bond amount.

Bond Payment of Claims

With an understanding of the type and costs of residential projects that could be subject to a claim, a discussion of the bond claim process is necessary. Contractors State License Law requires that bond companies notify CSLB within 30 days of payment on the $15,000 contractor bond (BPC section 7071.11(e)), the $100,000 LLC bond (BPC section 7071.65), and the $12,500 bond of qualifying individual (BPC section 7071.9). CSLB may suspend the license by operation of law if the licensee does not reimburse the surety or perform an investigation to determine if a good faith payment was warranted and/or if a citation is appropriate.

The CSLB compiled all the bond payment of claims bond companies have filed with CSLB pursuant to BPC 7071.11 between September 1, 2017 and September 1, 2020.[77] The notification to CSLB of these claims does not include the facts underlying the bond payout; CSLB merely records certain information about the claims, like the statutory basis for them, names of parties involved, and whether the payment is the result of a good faith action by the surety. Unpaid claims result in license suspension.

The CSLB may perform an investigation of a payment of claim if a licensee files a protest with CSLB against the bond payout. Not all bond payouts are investigated; for example, between January 1 and September 1, 2020, CSLB was notified of 782 payment of claims against license bonds; 243 (or 31 percent) were investigated due to a licensee protest. As such, not all the information in the chart below can be said to relate to residential projects since the facts are not available for most of the payouts. The claims, therefore, may relate to a payout to any of the beneficiaries named in BPC Section 7071.5: a homeowner; an owner contracting for construction of a single-family dwelling; a person damaged because of a willful and deliberate violation of the law; an employee of a licensee damaged by a failure to pay wages; or a fringe benefits claim.

However, since most CSLB complaints involve residential projects, it is reasonable to assume that most of the payment of claims involve residential projects. This is particularly true given that contracting parties on non-residential projects, as opposed to making a claim against the license bond, tend to consult attorneys or obtain bonds or insurance to protect themselves, which homeowners are less likely to do.[78] Homeowners are more likely than non-homeowners to claim against a license bond.

Time Period	Total Claims	> One Claim	$1,001-$7,499	$7,500	$7,501 - $10,000	$10,001-$14,999	$15,000	Avg. Claim
2017-2018	1,290	124	626	267	67	128	202	$7,302
2018-2019	1,432	146	607	328	93	118	286	$7,766
2019-2020	1,223	111	503	276	75	101	268	$8,144
Averages	**1,315**	**127**	**579**	**290**	**78**	**116**	**252**	**$7,737**

This chart supports the following findings:

- Nearly 10 percent (127) of contractors each year have two or more claims against their bond (indicated by the "> One Claim" column).
- Nearly 20 percent (252) of claims each year max out the $15,000 bond.
- Over 22 percent (290) of claimants each year are limited to the aggregate liability cap of $7,500 because another party has a valid claim to the bond as well.[79]

It is important to note that bond payment of claim information does not provide a complete assessment of damages that are alleged or due on construction projects in California. Many people will not bother to claim against the bond because their perceived damages are much higher than $15,000. For example, between January 1, 2020 and July 3, 2020, the average restitution amount CSLB ordered in a stipulation or proposed decision pursuant to an accusation to suspend or revoke a contractor license was $36,318. The lowest order was for $617, and the highest was for $333,850.

PART TWO:

OTHER ISSUES RELEVANT TO THE CONTRACTOR LICENSE BOND

The following sections of this study address issues that were not raised at the 2019 sunset hearing but are relevant to the topic of the contractor license bond.

A. CSLB'S Qualifying Individual's Bond

The CSLB issues contractor licenses to individual owners, as well as partnerships, corporations, and limited liability companies.[80] All licenses must have an individual that "qualifies" that license entity using their construction knowledge and experience.[81] If the qualifying individual on a license is not the owner of the entity, or a general partner of the entity, the law requires that individual to file a $12,500 "qualifying individual's bond."[82] The qualifying individual's bond is in addition to any other required bond. The named beneficiaries of the qualifying individual's bond are the same as those named for the contractor license bond.[83]

There are two reasons why the qualifying individual's bond is referenced in this study. First, the qualifying individual's bond should be raised concurrently with the contractor license bond. Second, issues surrounding the qualifying individual's bond may warrant a review by the Legislature.

Raising the Qualifying Individual's Bond Concurrently with the Contractor License Bond

The qualifying individual's bond became law in 1967,[84] three years after the contractor license bond, and was correspondingly set at $1,000 to match the contractor license bond. Each time the qualifying individual's bond was raised thereafter, it was done concurrently with an increase in the contractor license bond: from $1,000 to $2,500 in 1972; from $2,500 to $5,000 in 1980; from $5,000 to $7,500 in 1994; and $7,500 to $12,500 in 2007. However, when the license bond increased from $12,500 to $15,000 in CSLB's 2015 sunset bill,[85] the bond of qualifying individual was not correspondingly raised at the same time, for the first time in history. The legislative history for the 2015 sunset bill reviewed for this study does not provide an explanation for the omission; it is assumed to have been inadvertent.

Issues Surrounding the Qualifying Individual's Bond

The person qualifying a contractor's license on behalf of another person or an entity is responsible for "exercising that direct supervision and control of his or her employer's or principal's construction operations to secure compliance with this chapter and the rules and regulations of the board."[86] Direct supervision and control "includes any one or any combination of the following activities: supervising construction, managing construction activities by making technical and administrative decisions, checking jobs for proper workmanship, or direct supervision on construction job sites."[87] Failure to exercise these qualifier responsibilities is cause for administrative discipline of the license, and is punishable as a misdemeanor by imprisonment and a fine up to $5,000.[88]

The requirement that the license qualifier exercise supervision and control over construction operations is a consumer protection measure to ensure that the individual with the construction knowledge and experience is involved in the business. This is particularly important when there are many individuals associated with a license or when an individual is qualifying more than one license. It is for this reason that there is an additional bond for license qualifiers. Unfortunately, when CSLB investigates a complaint against a licensed contractor it is not uncommon to discover that the individuals running the business are not associated with the license qualifier identified in CSLB records. In some cases, the individuals running the license business will pay the license qualifier for the use of their name on the license application. This is known as a "sham RMO" (responsible managing officer), a term used to describe this phenomenon by California Court of Appeal, Second District Court of Appeal.[89] Since January of 2018, CSLB has taken 317 legal actions (citation, accusation to suspend or revoke a license, or criminal referral) against licensees whose qualifiers failed to exercise direction and control over construction operations.

In 2018, CSLB approved a legislative proposal to modify the qualifier bond requirements to address some of these concerns but was unable to locate an author to introduce the measure. Therefore, in addition to the need to raise the bond of the

qualifying individual to match the contractor license bond, the CSLB appreciates the Legislature's consideration of the concerns identified in consumer complaints about the failure of license qualifiers to be sufficiently involved in the construction operations.

B. License Bonds in Other States

Other states also require contractor license bonds, and for comparative purposes CSLB is providing information about the requirements in other selected states.[90] The states are Arizona, Hawaii, Louisiana, Nevada, Oregon, Utah, and Washington, as these states have license classifications or policies with similarities to CSLB.

State	Bond and Financial Requirements
Arizona	License bonds range from $2,500 to $100,000. The amount of the bond is based on the type of license and anticipated volume of work
Hawaii	Bonds in varying amounts are required; the minimum is $5,000. Whether a bond is required at all, as well as the amount of the bond is based on financial statements provided by the applicant and what kind of work is being performed.
Louisiana	Contractors shall post a bond or other surety in the minimum amount of $1,000. Financial statements are provided with the license application.
Nevada	Bonds range from $1,000 to $500,000 based on financial data provided by applicants.
Oregon	Contractors are divided by residential services or commercial services. Required commercial services bonds range from $20,000 to $75,000. Required residential services bond range from $10,000 to $20,000.
Utah	Contractors are classified by the value of their contracts and their annual volume of work. Bonds between $15,000 and $50,000 may be required depending on contractor's debt.
Washington	Contractors are divided between general and specialty. For general contractors, the bond amount is $12,000. For specialty contractors, the bond amount is $6,000.[91]

C. Survey of Licensed Contractors

The CSLB distributed a survey to assess licensed contractors' opinions about the sufficiency of the $15,000 contractor bond for reimbursing consumers harmed by a contractor's actions.[92]

The CSLB asked about accepting a contract to fix another contractor's work because it is common, particularly in bond cases or consumer complaints, that a "correcting contractor" is retained to repair substandard workmanship.

How often have you had to correct or complete another contractor's project?	Number of Respondents	Percentage of Total Responses
0 – 2 times per year	3,395	82%
3 – 5 times per year	470	11%
6 – 10 times per year	105	3%
More than 10 times per year	148	4%
TOTAL	4,118	100%

Most respondents have either not had to correct another contractor's work or have done it only one or two times in a year, with another 11 percent of respondents correcting or completing another contractor's project three to five times a year. And 4 percent have corrected or completed another contractor's project more than 10 times per year. As reflected in the following chart, for those that stated they had to correct or complete another contractor's project, 43 percent stated that $15,000 was a sufficient remedy for the consumer, and 17 percent stated that it was not.

In cases where you have had to correct or complete another contractor's project, was $15,000 sufficient to provide a remedy for the consumer?	Number of Respondents	Percentage of Total Responses
Yes	1,772	43%
No	694	17%
Not Applicable	1,633	40%
TOTAL	4,099	100%

In addition, most respondents stated that the $15,000 contractor bond is sufficient for the residential construction industry, while 27 percent believe the bond amount is not sufficient, as reflected in the table below.

Do you believe the $15,000 contractor's bond is sufficient for the residential construction industry?	Number of Respondents	Percentage of Total Responses
Yes	3,006	73%
No	1,121	27%
TOTAL	4,127	100%

Among those contractors who said it was sufficient, many appeared to represent trades for which the cost of projects tends to fall beneath $15,000. Others objected to anything that would increase costs of doing business generally. And still others commented that more “expensive” projects tend to have other protections associated with them (like required contract bonds discussed earlier in this study). However, of those that responded that the amount of the bond is insufficient, associated comments mentioned that $15,000 is very low compared to the cost of construction, labor, materials, and other factors. And many recommended raising the license bond to specific amounts and suggested minimum bond amounts ranging from $20,000 to $100,000. Significantly, the survey received 94 comments explaining why the bond is insufficient, compared to only 37 comments explaining why it is sufficient.

Contractors were also asked if they believe their bond brings value to their license. This question was premised on the expectation that meeting license standards and having work backed by a bond professionalizes the industry and contributes to a sense of pride in workmanship. As the table below reflects, 69 percent of respondents agreed that the bond brings value to the license, while 31 percent said that it does not.

Do you believe the contractor’s bond brings value to the license?	Number of Respondents	Percentage of Total Responses
Yes	2,850	69%
No	1,294	31%
TOTAL	4,144	100%

Frequent comments to this question cited the inability of the contractor to advertise the fact that they have the bond, an act which is prohibited by BPC Section 7027.4. Other comments indicated that liability insurance would provide more value to the license than a bond. Notably, the requirement that liability insurance be required for all contractors was proposed in a bill 20 years ago, but the measure was not successful.[93]

The CSLB also collected demographic data for this survey. Slightly over half of the survey respondents held the B–General Building license, followed by the C-10 Electrical license at 14 percent, and the A–General Engineering license with 10 percent. Other common classifications included C-36 Plumbing, C-20 HVAC, and C-61 Limited Specialty. It is significant that different license classifications had differing views on the value and impact of the bond. In interviewing industry stakeholders, construction associations, lobbyist groups, and construction law attorneys, a common recommendation was that CSLB consider varied bond amounts for various license types. One construction law attorney stated that the $15,000 bond is sufficient for many of the specialty licenses but not for the general contractor licenses.[94] Similar comments were made by contractors in the comment boxes of the bond survey. Notably, “individualized” bond requirements have existed before at CSLB; from 1979 to 2002, a separate $10,000 bond was required for swimming pool contractors.[95]

CONCLUSION

This study concludes that **the current $15,000 amount of the contractor bond is not sufficient, and an increase is necessary.**

Prior to this study, CSLB noted the insufficiency of the $15,000 bond. In its December 2018 Sunset Review Report CSLB wrote that "greater consumer protection is realized with the increase in the [contractor] bond because a construction project can easily exceed $15,000 in costs or potential financial injury to a consumer." And, Past Board Chair Albanese testified at the February 26, 2019 sunset hearing that, "$15,000 is not a huge dollar amount to a harmed consumer."

In addition, Senator Glazer noted during the hearing that $15,000 is a "pretty low threshold" and that it is important to recognize that "circumstances and experiences are changing." There is direct evidence that circumstances and experiences are changing in the CSLB consumer complaint data that shows increased contract values over the years. The number of residential complaints reflecting contract values between $15,000 and $25,000 as well as between $25,000 and $50,000 have steadily increased each year for the last six years, with a corresponding decline in the number of complaints valued at less than $5,000. In addition, the average home remodel project is just over $60,000, well above the $15,000 bond amount. The evidence shows that the $15,000 bond covers slightly over half of the residential construction contracts subject to CSLB complaints today. These facts demonstrate that an increase in the bond is necessary.

The payment of claims information also suggests that the $15,000 bond is insufficient. Nearly 20 percent of the claims max out the $15,000 bond; and this does not account for the unknown damage on construction contracts that are too large to bother with the $15,000 bond. In addition, each year around 10 percent of contractors subject to payment of claims have more than one claim against their bond. This is concerning, because assuming there is a homeowner involved in a given claim, any time there are multiple good faith claims against a single bond, there is conceivably less money available to the homeowner on that bond. The data reviewed for this study

shows that between 2017-2020, 22 percent of claims paid out at exactly $7,500, which suggests that a non-homeowner took a portion of that bond.[96] Therefore, an increase of the $15,000 bond would ensure sufficient relief exists for homeowners contracting for home improvement upon their personal family residence damaged by a contractor's violation of the law. This may require an evaluation of whether the $7,500 aggregate liability cap should accompany any increase in the bond amount.[97]

Concerns about barriers to licensure associated with raising the license bond can be addressed if it is raised below the point that would require underwriting. The research conducted for this study suggests that this amount is $25,000. That amount could ensure that the bond serves the dual functions of increasing the available funds for consumers harmed by contractors while ensuring that the bond is still accessible for all applicants to meet the minimum standards of licensure. It would not serve the goal of limiting barriers to licensure if the license bond required case by case underwriting of the personal financial affairs of applicants for contractor's licenses.

As reflected in interview and survey comments reviewed for this study, some have suggested that California implement a tiered bond system that prescribes different bond amounts by type of license classification. This assumes that some work, such as that of general contractors, is valued higher than the work of other contractors, such as service and repair. CSLB is willing to explore this option with the Legislature if asked to do so. CSLB also welcomes the opportunity to review some of the concerns with the qualifier individual's bond discussed in this study and recommends that any increase in the license bond correspond with an increase in the qualifier's bond.

In addition to the findings of this study that support an increase in the bond, there are well-stated reasons to raise the bond provided in an April 23, 2002 Senate Committee analysis of SB 1919 that are still valid today. In raising the bond to $12,500, the Committee stated that the increase will "guarantee an increase in restitution available to homeowners, reduce the competition for existing license bond payouts, help professionalize the home improvement industry, and provide the CSLB with a vehicle for consumer relief toward which it could direct consumer complaints."

ENDNOTES

[1] Contractors State License Board Sunset Review, December 2018, page 113. https://www.cslb.ca.gov/Resources/Reports/Sunset/SunsetReviewReport2018.pdf
[2] February 23, 2019 letter from stakeholder to Joint Committee. Redacted copy available upon request. Call 916-255-4000.
[3] Statutes of 1963, Chapter 1971, Section 1.
[4] Section 7071.9 was renumbered to Section 7071.6 by Statutes of 1967, Chapter 1604, Section 5.
[5] Statutes of 1979, Chapter 1013, Section 10.5.
[6] See subdivision (a) of BPC Section 7071.5.
[7] Statutes of 1979, Chapter 1013, Section 34.5, page 3460.
[8] Senate Bill 1432, Chapter 157, Statutes of 2008.
[9] Using Surety Bonds & Insurance to Protect Consumers. California Contractors State License Board. October 1, 2001. Page 31.
[10] Statutes of 1963, Chapter 1971, Section 1.
[11] According to U.S. Inflation Calculator, https://www.usinflationcalculator.com/, last accessed September 30, 2020.
[12] Senate Bill 574, Senate Floor Analysis, July 13, 1993. Page 1.
[13] Senate Bill 574, Senate Floor Analysis, July 13, 1993. Page 3.
[14] Joint Legislative Sunset Review Committee, 2002 Sunset Review Report. Background Paper for the 2001 Public Hearing, and Final Recommendations of the Joint Committee and the Department of Consumer Affairs. Page 8 (describing prior JLSRC findings that let up to SB 2029 in 2000).
[15] Senate Bill 2029, July 3, 2000 Analysis by the Assembly Committee on Consumer Protection, Governmental Efficiency, and Economic Development. Page 8.
[16] Senate Bill 2029 (Figueroa), Chapter 1005, Statutes of 2000.
[17] The bond amount is referred to as "Penal Sum" because the purpose of the bond is to provide restitution when a licensee has caused financial injury by violating contractor's license law. The bond is not an insurance policy and a licensee must reimburse the surety or discharge the payout amount in bankruptcy to maintain licensure.
[18] Using Surety Bonds & Insurance to Protect Consumers. California Contractors State License Board. October 1, 2001. Page 32.
[19] Pursuant to Senate Bill 2029 (Figueroa), Chapter 1005, Statutes of 2000, which created the Enforcement Monitor position.
[20] Senate Bill 1919, April 22, 2002 Analysis by the Senate Committee on Business and Professions, page 3.
[21] Id.
[22] Senate Bill 1919, June 25, 2002 Analysis by the Assembly Committee on Business Professions Analysis, page 2.
[23] Senate Bill 1919 (Figueroa) Chapter 1123, Statutes of 2002.
[24] Second Report, Contractors State License Board, Enforcement Program Monitor. April 1, 2002. Page 56.
[25] Senate Bill 1919, June 25, 2002 Analysis by the Assembly Committee on Business Professions Analysis, page 2.
[26] Senate Bill 467 (Hill), Chapter 656, Statutes of 2015.
[27] Second Report, Contractors State License Board, Enforcement Program Monitor. April 1, 2002, page 58.
[28] Senate Bill 467, September 8, 2015, Analysis by the Senate Rules Committee, page 7.
[29] A recording of the hearing is available to stream on the California State Senate media archives page. Date of Hearing February 26, 2019. https://www.senate.ca.gov/media-archive .
[30] Survey distributed to approximately 124,128 email addresses associated with licensed contractors, via "Survey Monkey." Survey open September 22, 2020 and closed September 29, 2020. The survey received 4,411 responses.
[31] Jobs for Californians: Strategies to Ease Occupational Licensing Barriers. Report #234, October 2016. Little Hoover Commission. Page 5. https://lhc.ca.gov/sites/lhc.ca.gov/files/Reports/234/Report234.pdf.
[32] Id. at pages 22-23.
[33] Id. at page 1.

[34] The Economy & Efficiency Report, 2017-2018. The Little Hoover Commission's Biennial Review of California State Government Operations. Report #246, February 2019. Pages 8-9. https://capitolmr.com/wp-content/uploads/2019/02/Little-Hoover.pdf.
[35] This question was asked in same survey described in endnote 30. Unfortunately, CSLB asked the question in terms how much licensees pay "by month" for the bond. The CSLB later discovered that with rare exceptions, the industry standard for a contractor bond is annual billing, not monthly (as confirmed by October 8, 2020 correspondence from a surety underwriter and senior vice president of a commercial property casualty and surety broker). Therefore, CSLB cannot be certain that all respondents to the "by month" question understood the question or correctly calculated what their annual bill is per month. The data/results from that question were therefore thrown out for the body of this study; nonetheless the results are as follows: 2,923 respondents said they pay $0-$50 per month; 657 respondents pay $51-$100 per month; 324 pay $101-$200 per month; and 165 pay $201 or more a month.
[36] This information is provided courtesy of the Surety and Fidelity Association of America.
[37] Id.
[38] This is drawn from an interview of three surety company representatives conducted by CSLB staff in April 2020.
[39] For example, see many of the CSLB fees in Business and Professions Code section 7137.
[40] Id. at endnote 38.
[41] Id. at endnote 38. Indeed, the Surety and Fidelity Association of America states that the rate can be up to 8% or higher of the bond. 8% is $1,200 a year for the $15,000 bond.
[42] Offer located at https://bond911.com/bond/california-contractors-license-bond, last accessed October 5, 2020. States, "(w)e offer a special program for all NEW CA Contractors applying with an application fee number! We will waive the credit check requirement for underwriting and approve your bond for $140.00 for a one year term."
[43] This sentence and the two sentences before it are drawn from a December 8, 2020 conversation with the head underwriter and head of claims for a national surety company that is a leader in the market for the contractor license bond.
[44] See Assembly Bill (AB) 3126, Brough, Chapter 925, Statutes of 2018.
[45] Assembly Bill 3126, Senate Judiciary Committee Analysis, June 18, 2018. Page 4.
[46] California Insurance Code Section 769.81 subdivision (d).
[47] See generally, The Basic Bond Book, Second Edition. Copyright 2011. The Associated General Contractors of America and National Association of Surety Bond Producers. Page 5.
[48] California Civil Code Section 2787.
[49] National Association of Surety Bond Producers. https://www.nasbp.org/getabond/about-surety/surety-bond. Last accessed October 5, 2020.
[50] See generally, The Basic Bond Book, Second Edition. Copyright 2011. The Associated General Contractors of America and National Association of Surety Bond Producers. Page 6.
[51] National Association of Surety Bond Producers. Copyright 2016 by NASBP. A SuretyLearn Publication. Answers to 51 Questions Small Contractors Ask About Bonding. Page 5.
[52] Indeed, the face of the Contractor's Bond form filed with the Registrar of Contractors by any licensed contractor using a surety bond to comply with the $15,000 bond requirement, states the following: "The conditions of the foregoing obligation are that if the Principal shall comply with and be subject to the provisions of Division 3, Chapter 9 (commencing with Section 7000) of the Business and Professions Code, then this obligation shall be null and void; otherwise to remain in full force and effect."
[53] National Association of Surety Bond Producers. Copyright 2016 by NASBP. A SuretyLearn Publication. Answers to 51 Questions Small Contractors Ask About Bonding. Page 5.
[54] Id.
[55] Id.
[56] Id.
[57] Using Surety Bonds & Insurance to Protect Consumers. California Contractors State License Board. October 1, 2001. Page 7.
[58] Everything you Need to Know About the Surety Underwriting Process. Surety Bonds Direct. Copyright 2020. https://www.suretybondsdirect.com/educate/surety-bond-underwriting-process, last accessed October 5, 2020.

[59] September 9, 2020 conversation with a surety underwriter and senior vice president of a commercial property casualty and surety broker.
[60] The 2001 CSLB study, "Using Surety Bonds & Insurance to Protection Consumers," October 1, 2001, page 7, stated that about 27% of the total cost of premiums each year is paid out in bond claims in the California construction industry. The 2001 study does not indicate where this number comes from, and CSLB was unable to locate a source, despite attempts to do so, to provide an updated figure to this amount for 2020. It is unknown as of the date of this study, how many license bond claims are made and paid versus made but denied by surety companies in California in aggregate.
[61] See endnote 42.
[62] Everything you Need to Know About the Surety Underwriting Process. Surety Bonds Direct. Copyright 2020. https://www.suretybondsdirect.com/educate/surety-bond-underwriting-process, last accessed October 5, 2020.
[63] September 9, 2020 conversation with a surety underwriter and senior vice president of a commercial property casualty and surety broker.
[64] Id.
[65] Id.
[66] Id. In addition, the Surety and Fidelity Association of America later concurred with the contention made in this sentence.
[67] This information is provided courtesy of the Surety and Fidelity Association of America.
[68] October 6, 2020 correspondence with a surety underwriter and senior vice president of a commercial property casualty and surety broker. The representatives made it clear the actual amount of bond premium pricing of a license bond set at $25,000 cannot be authoritatively predicted; that these amounts are an "educated guess."
[69] This information is provided courtesy of the Surety and Fidelity Association of America.
[70] September 9, 2020 conversation with a surety underwriter and senior vice president of a commercial property casualty and surety broker.
[71] National Association of Surety Bond Producers. Copyright 2016 by NASBP. A SuretyLearn Publication. Answers to 51 Questions Small Contractors Ask About Bonding. Page 6.
[72] Using Surety Bonds & Insurance to Protect Consumers. California Contractors State License Board. October 1, 2001. Page 7.
[73] See Business and Professions Code Section 101.6., the purpose of DCA licensing agencies is to set minimum standards for licensure.
[74] Using Surety Bonds & Insurance to Protect Consumers. California Contractors State License Board. October 1, 2001. Page 7.
[75] See Business and Professions Code Section 7068 for the minimum qualifications of a contractor.
[76] The data for this section, including how it is presented and organized, is drawn entirely from Hanley Wood business intelligence and data service, via their "Metrostudy" feature. Metrostudy tracks more than 3.2 million lot and land parcels and gathers details on more than 100 million households and over 360 remodeling activity markets. Hanley Wood provides this information through the "Cost vs. Value" feature in their Remodeling Magazine. See https://www.hanleywood.com/about/our-company and https://www.remodeling.hw.net, last accessed October 7, 2020.
[77] The payment of claim data reviewed for this study did not identify what kind of bond against which the claim payment was made (i.e., qualifier bond, license bond, or LLC bond). However, it can be assumed that the data is largely reflective of claims against the license bond, because all licensed contractors have a license bond versus much smaller percentage of contractors having the LLC bond and qualifier bond. In addition, excluded from the claim data for this study were any payments made over $15,000 (i.e. the LLC bond) because they are not the focus of this study (and there were very few of them). And all the payments made over $12,500 cannot be against the qualifier bond.
[78] Nguyen, Terrence. Resolving the Double Liability Problem: A Critique of California's Mechanics Lien Statute. UMass Law Review. 9 U. Mass. L. Rev 136. Page 136.
[79] See BPC Section 7071.6(b). It is impossible to know from the existing data how many $7,500 payouts were because of the liability cap, versus those being simply a bond payment that happened to be valued at $7,500.

However, because there were a large number of payouts at exactly $7,500, more than there were payouts at other specific amounts, it can be assumed that most if not all of the $7,500 payouts were the result of the liability cap.

[80] See Business and Professions Code Section 7065.

[81] See Business and Professions Code Section 7068.

[82] See Business and Professions Code Section 7071.9.

[83] Cf.: Business and Professions Code Section 7071.5 and 7071.10.

[84] See Statutes of 1967, Chapter 1604, Section 7.

[85] See Senate Bill 467 (Hill), Chapter 656, Statutes of 2015.

[86] See Business and Professions Code Section 7068.1.

[87] See Title 16, Division 8, Article 2, Section 823 of the California Code of Regulations.

[88] See Business and Professions Code Section 7068.1.

[89] See Jeff Tracy, Inc. v. City of Pico Rivera (2015), 240 Cal.App.4th 510, at 514.

[90] With the exception of the information in this table about Washington State, this information is drawn from a report published by the National Association of State Contractors Licensing Agencies. www.nascla.org.

[91] This information was obtained from a December 8, 2020 conversation with the head underwriter and head of claims for a national surety company that is a leader in the market for the contractor license bond. See also Washington Code 18.27.040.

[92] This is the same survey referred to in endnote 30. Readers are also encouraged to contact the CSLB Executive Office at (916) 255 – 4000 for a copy of the full survey results with contractor comments.

[93] See Assembly Bill 1288 (Davis), which would have required contractors to demonstrate to CSLB that they carry general liability insurance in an amount of $1 million as a condition of license renewal.

[94] This interview occurred on October 8, 2020.

[95] Enacted by Statutes 1979, Chapter 747, Section 1. Terminated by Senate Bill 1919, Stats.2002, c. 1123, § 1, when all contractor's bonds were raised from $7,500 to $10,000.

[96] The $7,500 liability cap in BPC Section 7071.6 does not apply to homeowners. See also page 10 of this study.

[97] BPC 7071.6 provides that for all non-homeowner claimants, the surety's liability on the bond is $7,500. If the $7,500 liability cap were raised, there could be less money available to the consumer in a situation where, for example, a material supplier or another contractor makes a valid claim against a bond and obtains a bond payout before a homeowner can do so.

Attachment C – Major Studies

2020 Fee Study

CPS HR CONSULTING

October 16, 2020

FINAL REPORT

Contractors State License Board: Fee Study

PREPARED BY:
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Table of Contents

Introduction

The California Contractors State License Board (CSLB) was established in 1929, by the Legislature as the Contractors' License Bureau, under the Department of Professional and Vocational Standards. It was formed to regulate the state's construction industry and protect the public from irresponsible contractors. In 1935, the agency's mission and duties were placed under the auspices of a seven-member board.

In 1938, the Legislature mandated that contractor license applicants be examined for competence in their designated field. By 1947, the board had been given authority to establish experience standards and to adopt rules and regulations for the classification of contractors in a manner consistent with established practice and procedure in the construction business.

Now classified as a board within the California Department of Consumer Affairs (DCA), CSLB operates with a 15-member board and upholds its mission to protect consumers by regulating the construction industry through licensure, enforcement, and education.

CSLB regulates contractors in 44 license classifications and two certifications under which members of the construction industry practice their trades. CSLB issues three license types: 1) general engineering; 2) general building; and 3) specialty contractors. The latter designation contains 42 different classifications for contractors whose construction work requires special skill and whose principal contracting business involves the use of specialized building trades or crafts. CSLB also registers home improvement salespersons.

CSLB's responsibility to enforce California state contractors' license law includes investigating complaints against licensed and unlicensed contractors, issuing citations and suspending or revoking licenses, seeking administrative, criminal, and civil sanctions against violators, and informing consumers, contractors, and the industry about CSLB actions. To support its consumer protection and education objectives, CSLB provides 24/7 access to licensee information, construction guides and pamphlets, forms and applications, and a host of pertinent information about contracting and construction-related topics through its website (www.cslb.ca.gov) and its automated toll-free phone number (800-321-CSLB).

Project Scope and Objectives

CSLB is a consumer protection agency that is entirely funded by license fees and disciplinary action assessments. Despite fee increases in 2011, 2017 and 2019, CSLB's fund has maintained a structural imbalance since FY 2013-14 due to significant increases in expenditures, the majority of which are outside of CSLB's control. CSLB's financial data project insufficient funds for ongoing operations by 2021, with negative 0.1 months in reserve by the end of FY 2020-21 if cost saving measure were not already taken and another fee increase is not implemented.

In March 2020, CSLB contracted with CPS HR Consulting (CPS) to conduct a study of its fee structures to determine if fee levels are appropriate for the recovery of the actual program costs to meet their mandated functions for the next five years. Business and Professions Code section 7138 sets the current legal maximum months in reserve to six months. CSLB management requested that fees be set at a level that would increase the reserve to four to five months over the next five years to be conservative and not exceed the legal maximum. The specific recommended fee levels to recover actual program costs and to increase the reserve to four to five months can be found in the Recommended Fee Levels section of the report.

Approach and Methodology

The CPS HR approach to determining the recommended fees is outlined in the high-level methodology below.

Project Initiation and Project Management

CPS conducted an initial kick-off meeting with CSLB leadership and supervisors to confirm the scope of the study, request the needed background documents, and obtain a high-level understanding of the work performed and the current fee structure. Meetings were held with the project sponsor on a regular basis to provide updates, discuss subsequent steps, and request additional information or clarification as needed.

Revenue and Expense Analysis

The Revenue and Expense Analysis examines historical and projected revenue and expenditures in detail and identifies the causes behind the structural imbalance that has created the need for the fee increase. It also highlights the categories of smallest and largest revenue and expenses to understand CSLB's complete financial picture.

Funding Gap Analysis

The Funding Gap Analysis examines the projected revenues and expenditures in context of the overall fund condition. This analysis determined the required revenue to cover the projected expenditures in addition to building a healthy four to five-month reserve. The difference between the projected revenue and the required revenue was categorized as the funding gap – the amount needed to be covered by the increased fees.

Fee Costing Analysis Methodology

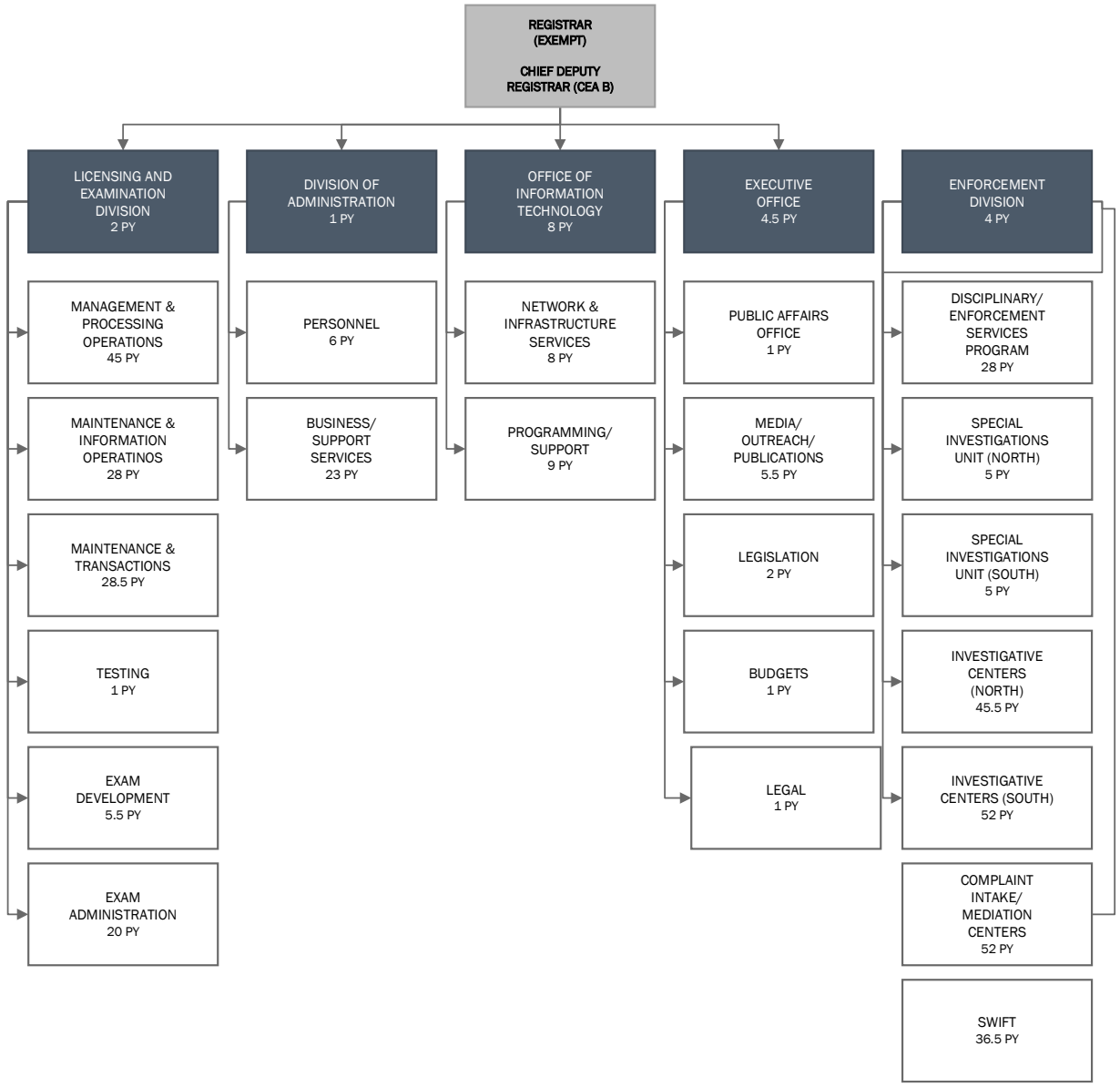
The Fee Costing Analysis determined the revenue needed to cover the expenditures associated with each fee, outlining the work requirements and industry considerations utilized in determining the recommended fees. This analysis involved four distinct phases.

- **Work Time Allocation Analysis** – Describes the quantification of work related to the various fees, including an analysis of staff time through work time allocation spreadsheets and the distribution of administrative position time – one of the two key inputs in determining the needed fee amounts.
- **Licensing, Examination, and Enforcement Workload Statistics Analysis** – Describes the review of historical workload statistics to identify trends or anomalies in the frequency of work in order to project the future workload requirements – the second of the key inputs in determining the needed fee amounts.
- **Distribution of Expenses** – Describes how the Personnel, Operating, Enforcement, and Direct Assessment expenditures outlined in CSLB's budget were distributed among the fees.
- **Determination of Fee Adjustments** – Describes how overall fees were calculated and how adjustments were made to take into consideration the impact on licensees, industry practice, and the practicality of the recommended fee changes.

CSLB Staffing and Functions

CSLB is comprised of programs whose functions, duties and goals are to meet its mandate of consumer protection. CSLB accomplishes this through its Licensing and Enforcement divisions, to which the Executive, Administrative, and Information Technology functions provide support. Figure 1 below presents CSLB's organizational chart, effective 4/30/2020, followed by a brief description of each functional area.

Figure 1: CSLB Organizational Chart



BOARD MEMBERS

CSLB's is overseen by a 15-member board comprised of:

- One "A" General Engineering contractor
- Two "B" General Building contractors
- Two "C" Specialty contractors
- One labor organization representative
- One local building official
- Eight public members, one of whom must represent a statewide senior citizen organization.

EXECUTIVE OFFICE

The Executive Office is managed by Registrar and Chief Deputy Registrar who oversee operations and manage resources and staff. The Executive unit includes Public Affairs, Legislation and Regulations and Budgets.

DIVISION OF ADMINISTRATION

The Administration staff support multiple functions for the Executive Office and Licensing and Enforcement Divisions, including Cashiering, Mailroom, Personnel and other Business/Support Services.

OFFICE OF INFORMATION TECHNOLOGY

The Office of Information Technology provides technology support to all CSLB functions, including Network and Infrastructure Services, the Help Desk and Programming Support.

LICENSING AND EXAMINATION DIVISION

CSLB licenses, certifies, or registers the following:

- "A"—General Engineering contractors
- "B"—General Building contractors
- "C"—Specialty contractors, covering 42 specialties
- Asbestos certification
- Hazardous Substance Removal certification
- Home improvement salesperson (HIS) registrations.

CSLB's Licensing division reviews all applications and develops and administers all required exams to ensure that applicants meet minimum licensure or registration requirements before they provide contracting services.

For all contractor and home improvement salesperson applications, Licensing division staff review criminal background history. For contractor applications, staff also review license history and verify that applicants meet the experience requirements. Additionally, the division processes all documents related to compliance with bond and workers' compensation insurance requirements. The Licensing division processes requests to update licensee and registrant information, including address changes and replacing qualified individuals.

The Licensing division also processes biennial renewals for all licensees and registrants. Renewal fees are collected every two years from contractors with active licenses. Active contractor licenses expire two years from the last day of the month in which the license was issued. Inactive licenses need to be renewed every four years.

The division also performs several other important functions listed below:

Exam Development Unit

CSLB regulates contractors in 44 license classifications and two certifications under which members of the construction industry practice their trades. California must administer both a trade related and law and business examination as part of the licensure process (BPC sections 7065 and 7068). Exams must be empirically linked to the content outline of a recent occupational analysis in order to be valid and legally defensible. CSLB has exam development specialists on staff to ensure that its exams meet psychometric standards for licensure examinations. CSLB performs occupational analyses every five-to-seven years for all exams, and regularly compiles statistics on and updates its examination forms.

Exam Administration Unit (EAU)

The Testing division's EAU administers CSLB's 46 different examinations (43 trade, two certification, and one law and business) at eight computer-based test centers throughout the state (Berkeley, Fresno, Norwalk, Oxnard, Sacramento, San Bernardino, San Diego, and San Jose). Most test centers are allocated two full-time test monitor positions, with part-time proctors filling in as needed. After Licensing staff review and approve an application, candidates are automatically scheduled for their exams at one of the eight test centers, based on their zip code. Typically, applicants must take the California Law and Business Exam and their applicable trade exam. On exam day, applicants sit at randomly assigned seats and take their exams on touchscreen computers. When they finish, they submit their exams for scoring and receive their results immediately.

License Information Center

The License Information Center is CSLB's call center where staff answer questions from consumers, licensees, and applicants and assist in navigating several transactions, including filing complaints and completing applications.

Veterans Application Assistance

The Veterans Application Assistance program assists those transitioning from military service to civilian employment. The program offers expedited application processing to veteran applicants where specially trained staff evaluate transferable military experience and training, as well as education to meet experience requirements.

Judgment Unit

The Judgment unit processes all outstanding judgments, monitor bond payment of claims, and outstanding liabilities reported to CSLB by licensees, consumers, attorneys, credit recovery firms, bonding companies, CSLB's Enforcement division, and other governmental agencies. In calendar year 2017, CSLB collected over $20 million in final judgments, $23 million in outstanding liabilities, and nearly $9 million in payment of bond claims.

ENFORCEMENT DIVISION

CSLB's mission is to protect consumers by regulating the construction industry through policies that promote the health, safety, and general welfare of the public in matters relating to construction. Two of the ways in which CSLB accomplishes this are:

- Enforcing the laws, regulations, and standards governing construction in a fair and uniform manner; and
- Providing resolution for disputes that arise from construction activities.

Enforcement staff are authorized to investigate complaints against licensees, non-licensees acting as contractors, registrants, and unregistered home improvement salespeople. CSLB administrative enforcement actions against licensees are prosecuted pursuant to the Administrative Procedure Act. In addition, CSLB may refer cases involving criminal activity to district attorneys who may prosecute these cases under the Business and Professions Code and other applicable state codes. Most Enforcement division staff work directly on consumer complaints. The majority of complaints CSLB receives are filed by residential property owners who contracted for home improvement and repair projects. CSLB also receives complaints from members of the public, licensees, industry groups, governmental agencies, and others. These complaints cover all aspects of the construction industry. CSLB's complaint process involves several steps through which cases may pass and CSLB uses several corrective and disciplinary tools to compel compliance with contractors' state license law. The Enforcement division is broken up into three broad work groups – the Complaint Intake and Mediation Center, Investigative Centers, and the SWIFT (Statewide Investigative Fraud Team).

Complaint Intake and Mediation Center

CSLB's two Intake and Mediation Centers (Sacramento and Norwalk) review all incoming complaints, focus on the settlement of most consumer complaints against licensed contractors, and prepare unlicensed complaints for field investigation. After a complaint is received, a customer service representative (CSR) contacts both parties and the licensee is

encouraged to settle the complaint. If the complaint is not settled, the CSR may attempt to mediate or escalate the case to a field investigation. After Mediation, mandatory and voluntary arbitration are considered.

Investigative Centers

If a settlement cannot be reached, if a case is complex, if the contractor is a repeat or egregious offender who may pose a threat to the public, or if a complaint moves through arbitration and the licensee fails to implement the decision, an investigation is initiated. CSLB maintains eight Investigative Centers (Fresno, Norwalk, Sacramento, San Bernardino, San Diego, San Francisco, Valencia, and West Covina) and four satellite offices (Bakersfield, Oxnard, Redding, and Santa Rosa) that handle investigations. First, a full review of databases for background on the licensee including any flag reviews is completed. The background information is received from the initial complaint and this review and a meeting with the complainant and licensee is scheduled to collect further information. Any subsequent arrests or convictions related to contractor activity are reviewed along with checking proper licenses and workers' compensation documentation. If an isolated or minor violation is established, an Advisory Notice or Letter of Admonishment is sent, and may warrant an Informal Conference.

If the licensee does not comply with an Advisory Notice and/or Letter of Admonishment or if a serious violation has occurred, then a Citation is issued. If licensee contests the Citation, a Mandatory Settlement Conference is scheduled, followed by a Hearing before an Administrative Law Judge if necessary. If the licensee does not prevail or comply, the license may be Suspended or Revoked.

If a licensee does not comply with a Citation or has made a flagrant violation of the law, an Accusation is sent to the Attorney General with the intent to Suspend or Revoke the contractor's license. A Mandatory Settlement Conference may be offered. If not settled, the licensee can defend themselves at a Hearing before an Administrative Law Judge. As an option, the licensee and the Registrar may negotiate a settlement (Stipulation). If the licensee fails to respond, the Registrar decides on appropriate action and determines the length of time the license is to be Revoked or Suspended. A Disciplinary Bond requirement and recovery of investigation and enforcement costs are established. An Injunction may be filed against unlawful activity and a blatant violation may be referred for a possible criminal filing to a local district attorney. The complaint is disclosed on the CSLB website.

SWIFT

Often without a specific complaint, the CSLB completes Proactive Investigations on the underground economy and unlicensed contractors through the Statewide Investigative Fraud Team (SWIFT). SWIFT may request proof of license and/or workers' compensation insurance at any job site. Undercover stings may be scheduled in partnership with County Sheriffs. SWIFT conducts sweeps to monitor job sites and may include partnerships with other agencies, such as the Department of Industrial Relations. SWIFT personnel may go to

active job sites to review complaints of possible violations. Injunction against unlicensed activity may be pursued and referral to the local District Attorney for criminal actions may be pursued.

Licensing, Exam, and Enforcement Workload Statistics

CSLB provided CPS with the necessary licensing, enforcement, and exam administration workload statistics from FY 2013-14 to FY 2018-19 for each of the fee areas. This included both initial licensing and renewal application statistics, enforcement action statistics, and re-examination statistics which were utilized to identify potential trends or anomalies in the workload. This includes a reflection of potential impacts due to the following factors:

- Implementation of SB 561 in January 2015 changed the HIS Registration requirement to allow the transfer of a HIS registration with one contractor to another contractor.
- A decrease in the pass rate of exams in FY 2016-17 resulting in an increase in re-examinations; acknowledging that exams are re-written every five years to ensure alignment with current standards.
- The splitting of Additional Classification and Supplemental Classification/Replacing the Qualifier in FY 2017-18 into two different tracked metrics (previously combined).
- Started tracking the Added Personnel/Officer Change for existing licenses in FY 2017-18. and
- Started tracking an approximate number of Name Changes in FY 2018-19.

LICENSING PROGRAM

The Licensing Program is responsible for the applications and renewals of all CSLB licenses and registrations, including processing all Initial Contractor's License applications and subsequent license applications. Additionally, staff process Home Improvement Salesperson (HIS) registrations and Hazardous Waste Removal and Asbestos certifications.

The workload statistics for New Applications, License Maintenance, and Renewals for FY 2013-14 through FY 2018-19 are summarized in Tables 1, 2, and 3, respectively.

Table 1: New Application Workload Statistics

Application Type	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Original Contractors Application fee (exam or test waiver)	17,775	18,894	21,023	22,280	23,242	24,394
Initial Contractors License Fee - Sole Owner	8,163	8,865	8,623	10,090	10,003	10,425
Initial Contractors License Fee - Corp/Partners/JV/LLC	4,395	4,986	5,065	6,184	6,395	7,244
Additional Classification, Supplemental Classification/ Replacing the Qualifier (RME/RMO) – (Prior to splitting)	7,940	8,058	8,242	8,484	n/a	n/a
Additional Classification (for original license)	n/a	n/a	n/a	n/a	2,381	2,328
Home Improvement Salesperson (HIS) Initial Registration Fee	9,444	12,515	12,408	9,676	9,353	10,444
Hazardous Substance Removal Certification	209	150	163	164	146	151
Asbestos Certification	148	141	76	73	59	55

The workload statistics provided by CSLB combined the Sole Owner and Corporation/Partners/ JV/LLC (also referred to as "Non-Sole Owner" within this report) Contractor's License applications. However, this study assessed the workload of each individually to determine a recommended fee for each type of contractor license application. In order to calculate the fees separately, the contractor's license applications were split as either Sole Owner or Corporation/Partners/JV/LLC based on historical data reflecting the percentage of applications in each group. On average, an estimated 60% of contractor applications were Sole Owner and 40% were Non-Sole Owner licensees.

A review of the new application workload statistics identified the following trends between FY 2013-14 and FY 2018-19:

- The number of contractor's initial applications *increased* 37.2%.
- The total contractor's license applications *increased* 40.7%.
- Overall, approximately 70% of contractor original applications proceed to licensure.
- The HIS registrations *increased* 10.6%.
- In contrast to the increases of the others, the Asbestos and Hazardous Substance Removal certifications *decreased* 62.8% and 27.8%, respectively.

However, during the development of this report, the workload statistics for FY 2019-20 became available and showed some notable decreases in the new application workload statistics. It is unknown how much of this is due to the economic downturn and/or the impact of the COVID-

19 pandemic. At the time of delivery, the workload statistics analyses had already been completed and it was unclear how representative the workload statistics were given the current environment.

Table 2: License Maintenance Workload Statistics

Application Type	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Supplemental Classification (for existing license)/Replacing the Qualifier (RME/RMO)	n/a	n/a	n/a	n/a	5,997	6,888
Add Personnel/Officer Change (for existing licenses)	n/a	n/a	n/a	n/a	1,844	2,104
Replacement License Pocket or Wall Certificate	7,102	7,025	7,881	8,251	8,996	9,397
Name Change	n/a	n/a	n/a	n/a	n/a	15,954

A review of the License Maintenance Workload Statistics identified the following observations:

- The combination of Supplemental Classification and Replacing the Qualifier increased 14.9% between FY 2017-18 and FY 2018-19; prior to this, the workload statistics were combined with the Additional Classification in the New Licenses.
- Adding Personnel/Officer Changes for existing licenses increased 14.1% between FY 2017-18 and FY 2018-19; prior to this, the workload statistics were not collected as an independent fee.
- The Replacement License Pocket or Wall Certificates increased 32.3% between FY 2013-14 and FY 2018-19.
- The workload statistic/volume count for Name Change was not previously collected so no trends were identified.

A brief review of the corresponding FY 2019-20 workload statistics showed a mild decrease in the Supplemental Classification and Add Personnel and slightly more of a decrease in the Replacement Certificates. Similar to the new applications, this was not incorporated into the analyses, but it is worth noting.

Table 3: License/Registration Renewal Workload Statistics

Renewal Type	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Biennial Contractor Renewal - Active Timely Renewal - Sole Owner	66,734	68,034	64,498	67,467	65,294	62,069
Delinquent Contractor Active Renewal - Sole Owner	*10,382*	*9,112*	*7,937*	*7,865*	*7,422*	*7,061*
Biennial Contractor Renewal-Active Timely Renewal -Corp/Partners/JV/LLC	35,933	38,269	37,879	41,350	41,746	43,132
Delinquent Contractor Active Renewal - Corp/Partners/JV/LLC	*5,591*	*5,126*	*4,661*	*4,821*	*4,746*	*4,907*
4-yr Timely Inactive Renewal - Sole Owner	14,168	13,867	13,617	15,081	12,711	12,500
Delinquent 4-yr Timely Inactive Renewal - Sole Owner	*2,241*	*2,162*	*2,048*	*2,048*	*1,754*	*1,729*
4-yr Timely Inactive Renewal - Corp/Partners/JV/LLC	1,401	1,371	1,347	1,492	1,257	1,236
Delinquent 4-yr Timely Inactive Renewal - Corp/Partner/JV/LLC	*222*	*214*	*203*	*203*	*173*	*171*
Reactivate Inactive Contractors License - Sole Owner	2,068	1,819	1,709	1,648	1,402	1,367
Reactivate Inactive Contractors License - Corp/Partners/JV/LLC	204	180	169	163	139	135
Biennial Renewal – HIS	1,802	2,123	1,969	3,519	4,615	4,744
Delinquent HIS Renewal (Renewal Fee plus penalty)	*421*	*439*	*364*	*660*	*1,178*	*1,467*

Contractor licenses and HIS registrations are due for renewal every two years, while inactive contractor's pay a renewal every four years to remain current. The active contractor renewals, 4-year inactive timely renewals, and reactivations were also split into Sole/Non-Sole Owner fee categories based on historical data of the percentage of renewal applications in each type. The active contractor renewals aligned with the original contractors applications utilizing a 60% Sole Owner and 40% Non-Sole Owner split while the inactive 4-year and reactivations were split using an average of 91% Sole and 9% Non-Sole renewals.

The table above shows the number of each type of renewal with the portion of them that are delinquent in subsequent rows (e.g., In FY 2013-14, of the 66,734 Biennial Sole Owner Contractor renewals, 10,382 were delinquent and paid an additional fee equivalent to half the renewal fee).

A review of the License and Registration Renewal Workload Statistics identified the following observations:

- Active contractor renewals have remained relatively stable, with an overall increase of 2.5% from FY 2013-14 to FY 2018-19, with a four-year average delinquency rate of 11.7% (which is figured into the initial fee calculations in the Fee Costing Analysis).
- HIS renewals increased 34.8% from FY 2016-17 (after the implementation of SB 561) to FY 2018-19, however this includes a 78.7% increase in FY 2016-17 followed by a 31.1% increase in FY 2017-18 and 2.8% in FY 2018-19, showing a decreasing percentage change over time.
- HIS renewals have an average delinquency rate of 23.4%, which is built into the Fee Costing Analysis.
- 4-year timely inactive renewals started decreasing in FY 2017-18 with a 15.7% drop in renewals, followed by a 1.7% decrease in FY 2018-19, while the average delinquency rate remained relatively consistent with an average of 14.1% delinquent over the last four years.
- Similar to the 4-year inactive renewals, the number of Reactivations of Inactive licenses decreased 14.9% between FY 2016-17 and FY 2017-18, and then decreased again by 2.5% by FY 2018-19.

A brief review of the FY 2019-20 workload statistics showed the biennial active contractor and 4-year inactive contractor renewals remaining relatively stable with the reactivation of inactive contractors slightly decreasing. In contrast, the number of HIS renewals showed a notable increase in FY 2019-20.

EXAMINATION PROGRAM

The Examination Program is responsible for the administration of licensure examinations in eight test centers statewide in addition to developing/updating contractor examinations every five years to ensure each examination reflects current standards and required knowledge. Currently, examinations are required for all contractor's, hazardous substance removal and asbestos certifications, additional classifications on an original license, supplemental classifications on existing licenses, and replacing the qualifier.

Table 4 outlines the total examinations administered per year with the portion of them that were re-examinations in the second row.

Table 4: Examination Administration Workload Statistics

Examinations Administered	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Examinations Administered	25,603	29,392	31,000	42,571	42,791	46,586
Re-examinations	*9,714*	*10,871*	*12,076*	*17,127*	*17,110*	*19,033*

The number of examinations administered has increased 82% from FY 2013-14 to FY 2018-19, with a sharp 37.3% increase between FY 2015-16 and FY 2016-17. This is largely attributed to a lower pass rate starting in FY 2016-17 which resulted in a sharp increase (41.8%) in the number of re-examinations.

ENFORCEMENT PROGRAM

The Enforcement Program processes and responds to complaints, determines validity, investigates the complaints, and enforces laws and regulations related to the construction industry, and provides resolution to disputes in order to protect consumers. While the pathway of a complaint can vary depending on the severity and responsiveness of the licensee in remediating the concern, they are initiated through a complaint. Table 5 summarizes the overall number of complaints received for FY 2013-14 to FY 2018-19.

Application Investigations are conducted on contractor applications and 3% are subject to rigorous review or investigation by the Licensing experience verification unit, whose time was distributed as a part of Administrative support in the fee costing analysis.

The remaining complaints are handled by Enforcement unit staff, with Licensee Complaints including both active and inactive licensees and non-licensee capturing any complaints without a license or registration number associated with it.

Table 5: Enforcement Complaint Workload Statistics

Enforcement Complaints Received	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19
Application Investigations	1,000	1,235	854	874	769	777
Home Improvement Salesman (HIS)	31	46	63	106	117	166
Licensee Complaint	12,096	13,247	12,832	13,196	14,809	14,484
Non-Licensee Complaint	5,076	5,194	4,941	4,699	4,979	5,047

Overall, the number of HIS complaints has increased 435.5% from FY 2013-14 to FY 2018-19, largely due to the increase in complaints related to solar salespersons. Meanwhile, licensee complaints increased 19.7% and non-licensee complaints remained relatively consistent between FY 2013-14 and FY 2018-19.

The fees established by this study assumed a consistent level of Enforcement staffing over the next five years; however, if the increasing trends above continue, the Board may have to expand Enforcement staffing to meet the increased need. This will result in the proposed fee schedule being on the conservative side given that only current staffing levels were built into the expenses.

Workload Statistic Projections

The statistics were utilized to identify potential trends or anomalies in the workload. Due to the variation within the statistics, the unknown impact of the downward trends in the economy,

and the unprecedented impact of the COVID-19 pandemic on the future workload, it was determined to primarily utilize the four-year historical average for future workload projections, with the following exceptions:

- Additional Classification – utilized two-year average; Statistics prior to FY 2017-18 also included Supplemental applications.
- Supplemental Classification/Replacing the Qualifier – utilized two-year average; Statistics prior to FY 2017-18 also included Additional Classification applications and after 2017 included Replacing the Qualifier applications.
- Exams Administered, Re-examinations – utilized three-year average; notable drop in pass rate in FY 2016-17, resulting in sharp change in metrics.
- Add Personnel Change/Officer Change – utilized two-year average; only two years historical data available.
- Contractor's License Fee – utilized three-year average; sharp increase in FY 2016-17, data prior to that may not be representative.
- HIS Registration, HIS Renewals – utilized three-year average; change in registration requirements with passage of SB 561 in January 2015.
- Name Change – utilized FY 2018-19 workload count as representative as it was the only available metric.

Enforcement statistics were reviewed primarily for trends and overall workload that needs to be covered through the inclusion of Enforcement staff time into the renewal fees.

Current Fees and Fee History

CPS performed an analysis of CSLB's fees to determine the appropriate fee levels for the recovery of its actual costs. Table 6 presents a description of each fee under study, past fee levels, current fee levels and the current statutory maximums.

Table 6: Summary of Current and Previous Fee Schedules

Fee	Description of Fee	Fees July 2011	Fees July 2017	Current Fees (Feb 2020)	Statutory Maximum
New Applications					
Original Contractors Application fee (exam or test waiver)	Original application fee to apply for licensure (including taking the exam, or not, if exam is waived)	$300.00	$330.00	$330.00	$375.00
Initial Contractors License Fee	Initial license fee for active or inactive license	$180.00	$200.00	$200.00	$225.00
Additional Classification (for original license)	Adds an additional classification to the contractor's license while the contractor is obtaining initial license	$75.00	$75.00	$75.00	$85.00
Home Improvement Salesperson (HIS) Initial Registration Fee	Fee to obtain HIS registration	$75.00	$83.00	$83.00	$95.00
Hazardous Substance Removal Certification	Certification that allows contractor to work on removing hazardous substances	$75.00	$83.00	$83.00	$95.00
Asbestos Certification	Certification that allows contractor to work with asbestos	$75.00	$83.00	$83.00	$95.00
Re-Examination	Fee to retake an exam after failing the initial exam	$60.00	$60.00	$60.00	$70.00
License Maintenance					
Supplemental Classification (for existing license)	Adds an additional classification to a contractor that is already licensed	$75.00	$150.00	$150.00	$175.00
Replacing the Qualifier (RME/RMO)	Replaces the qualifier on an existing license	$75.00	$150.00	$150.00	$175.00
Add Personnel/Officer Change (for existing licenses)	Adds or changes new Personnel/Officer (for existing corporations/LLC), or adds new partner (for existing partnerships)	n/a	$100.00	$100.00	$115.00
Replacement License Pocket or Wall Certificate	Replacement of lost pocket or wall certification of issued license	$11.00	$12.00	$12.00	$14.00
Name Change	Changing the Name on a license or registration *(fee to be developed)*	n/a	n/a	n/a	n/a
Dishonored Check Fee	Fee to process a returned check[1]	$10.00	$10.00	$10.00	$10.00

[1] This fee was not part of the time allocation study or the overall fee costing analysis.

Fee	Description of Fee	Fees July 2011	Fees July 2017	Current Fees (Feb 2020)	Statutory Maximum
Renewal Fees					
Biennial Contractor - Active Timely Renewal	Active contractors' licenses are renewed every two years	$360.00	$400.00	$450.00	$450.00
Delinquent Contractor Active Renewal	*The delinquency fee is equal to 50% of the Biennial Contractor Renewal fee*	*$540.00*	*$600.00*	*$675.00*	*$675.00*
4-yr Timely Inactive Renewal	Inactive contractors' licenses are renewed every four years	$180.00	$200.00	$225.00	$225.00
Delinquent 4-yr Timely Inactive Renewal	*The delinquency fee is equal to 50% of the 4-yr Timely Inactive Renewal*	*$270.00*	*$300.00*	*$337.50*	*$337.50*
Reactivate Inactive Contractors License	Reactivate an inactive contractors' license (fee is equivalent to renewal)	$360.00	$400.00	$450.00	$450.00
Biennial Renewal - HIS	Active HIS registrations are renewed every two years	$75.00	$83.00	$95.00	$95.00
Delinquent HIS Renewal	*The delinquency fee is equal to 50% of the Biennial Renewal - HIS fee*	*$112.50*	*$124.50*	*$142.50*	*$142.50*

FEE LEVEL HISTORY

During the last decade fees have been raised three times – in 2011, 2017 and 2019.

2011: The fees charges by CSLB remained at 1994 levels until July 2011. In July 2011 projected fund shortages compelled the Board to increase its fees to the statutory maximums allowed at the time under Business and Professions Code section 7137.

2017: Passage of SB 1039 granted CSLB the authority to amend Business and Professions Code section 7137 and increase fees by 10 percent (with the exception of the additional classification for original license and the re-exam fee), effective July 2017. The ten percent fee increase was expected to increase revenue by $5M annually, providing the Board with a stable fund.

2019: Emergency regulations were approved in December 2019 (effective February 2020) to immediately raise renewal fees to the statutory limit while pursuing long term fee structure changes through a fee audit. This fee increase was projected to increase revenue by $2.5M in FY 2019-20 and $6M beginning in FY 2020-21 and going forward.

Revenue and Expense Analysis

Important Note: The Revenue and Expense Analysis was completed with financial information as of June 2020.

Beginning in FY 2013-14, CSLB's fund condition has been structurally imbalanced and is projected to remain imbalanced if a fee increase is not implemented.

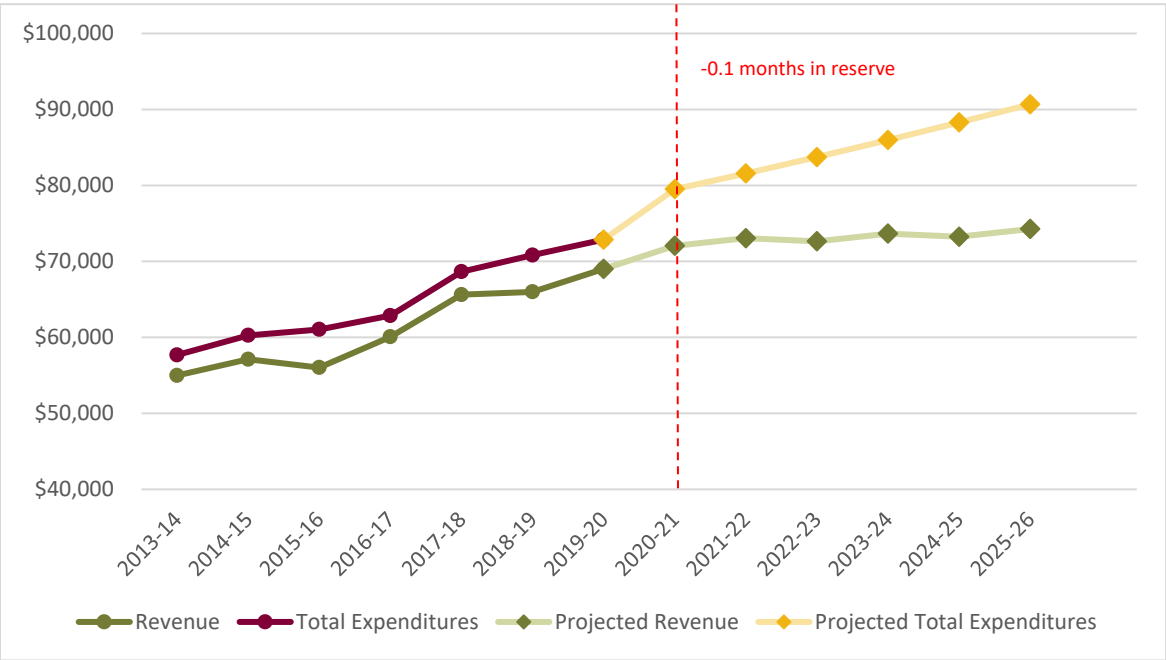
CSLB's revenue has grown from $55M in FY 2013-14 to $69M in FY 2019-20, thanks in part to a 10% fee increase in 2017 and an emergency renewal fee increase effective February 2020. This represents a **25.5% increase** in revenue over the last seven fiscal years. During the same period,

CSLB expenditures have grown from $57.7M in FY 2013-14 to $72.9M in FY 2019-20. This **26.3% increase** in expenditures has exceeded revenues, thus perpetuating the structural imbalance that began in FY 2013-14.

Over the next seven fiscal years, this structural imbalance will continue to grow even wider if a fee increase is not implemented. Current projections incorporating the February 2020 fee increase show revenue growing from $69M in FY 2019-20 to $74.3M in FY 2025-26 – only a **7.6% increase**. Current projections show expenditures growing from $72.9M in FY 2019-20 to $90.7M in FY 2025-26 – this represents a **24.4% increase, which is more than three times the rate of increase compared to revenues.**

Figure 2 shows the historical and projected revenue and expenditures with a growing gap as expenditures outpaces revenues further each subsequent year. CSLB's fund is estimated to have a balance of $6.5 million (1 months-in-reserve) by the end of FY 2019-20 and will be insolvent in FY 2020-21.

Figure 2: CSLB Revenue and Total Expenditures (without cost savings measures)



Dollars in thousands
Source: CSLB Budget Office

Fee and Non-Fee Scheduled Revenue

Table 7 contains a breakdown of the fee and non-fee scheduled revenue CSLB collected from FY 2016-17 through FY 2019-20. CSLB gets most of its revenue from fee scheduled revenue (96.4%) compared to non-fee scheduled revenue (3.6%).

Table 7: Fee and Non-fee scheduled Revenues

Revenue Category	FY 2016-17 Actual	FY 2017-18 Actual	FY 2018-19 Actual	FY 2019-20 Projected	4 Yr. Avg Revenue	% of 4 Yr. Avg Revenue
Fee scheduled revenue - Renewal fees	$42,432	$45,996	$45,219	$48,046	$45,423	69.7%
Fee scheduled revenue - Other regulatory licenses and permits	$12,590	$14,511	$15,472	$15,952	$14,631	22.4%
Fee scheduled revenue - Delinquent fees	$2,511	$2,675	$2,644	$2,623	$2,613	4.0%
Fee scheduled revenue - Other regulatory fees	$116	$136	$137	$136	$131	0.2%
Total fee scheduled revenue	**$57,649**	**$63,318**	**$63,472**	**$66,757**	**$62,799**	**96.4%**
Total non-fee scheduled revenue	**$2,429**	**$2,309**	**$2,519**	**$2,255**	**$2,378**	**3.6%**
Total Revenue	**$60,078**	**$65,627**	**$65,991**	**$69,012**	**$65,177**	**100.0%**

Dollars in thousands
Source: CSLB Budget Office

Fee scheduled revenue categories contain revenue from the first four categories in the table: renewal fees, other regulatory licenses and permits, delinquent fees and other regulatory fees. The renewal fee category includes renewal fee revenue for home improvement salespersons and contractors which constitutes the highest amount of total revenue (69.7%). The other regulatory licenses and permits category includes revenue associated with initial license fees, application fees, certification fees, etc. Delinquent fees revenue covers additional money that contractors and home improvement salespersons are charged for paying their renewal fees late. The other regulatory fees revenue includes citations and fine fees, license pocket/wall replacements, etc.

Non-fee scheduled revenue contains revenue from miscellaneous services to the public, income from surplus money investments, escheat of unclaimed checks and warrants, escheat of unclaimed property, miscellaneous revenue and penalty assessments. The scope of the current study did not involve examining or recommending amounts to charge for non-fee scheduled items.

Selected Fee Revenue Analysis

Table 8 displays the total actual revenue collected for each fee examined in this study.

Table 8: Fee Revenue FY 2016-17 to FY 2019-20

Fees	FY 2016-17 Actual	FY 2017-18 Actual	FY 2018-19 Actual	FY 2019-20 Projected	4-year Average Revenue	4-year Average % Total
New Applications						
Original Contractors Application Fee (exam or test waiver)	$6,684,045	$7,669,706	$8,049,952	$8,291,580	$7,673,821	11.8%
Initial Contractors License Fee	$2,929,230	$3,279,645	$3,533,785	$3,639,800	$3,345,615	5.1%
Additional Classification (for original license)	$636,285	$178,603	$174,575	$174,000	$290,866	0.4%
Home Improvement Salesperson (HIS) Initial Registration	$725,705	$776,279	$866,883	$910,261	$819,782	1.3%
Hazardous Substance Removal Certification	$12,300	$12,118	$12,568	$12,450	$12,359	0.0%
Asbestos Certification	$5,475	$4,892	$4,584	$4,565	$4,879	0.0%
Re-Examination	$1,027,635	$1,026,600	$1,141,964	$1,062,000	$1,064,550	1.6%
License Maintenance						
Supplemental Classification (for existing license) & Replacing Qualifier (RME/RMO)	n/a	$899,483	$1,033,231	$1,050,000	$994,238	1.5%
Add Personnel/Officer Change (for existing licenses)	n/a	$184,400	$210,440	$220,000	$204,947	0.3%
Replacement License Pocket or Wall Certificate	$90,757	$107,955	$112,762	$111,960	$105,859	0.2%
Renewal Fees						
Biennial Contractor Renewal - Active Timely Renewal	$39,184,233	$42,816,073	$42,080,436	$44,700,000	$42,195,186	64.7%
Delinquent Contractor Active Renewal	$2,283,437	$2,433,670	$2,393,611	$2,374,400	$2,371,280	3.6%
4-yr Timely Inactive Renewal	$2,983,580	$2,793,684	$2,747,230	$2,900,000	$2,856,124	4.4%
Delinquent 4-yr Timely Inactive Renewal	$202,410	$192,700	$190,000	$191,800	$194,228	0.3%
Reactivate Inactive Contractors License	$651,780	$616,303	$600,672	$600,000	$617,189	0.9%
Biennial Renewal – HIS	$263,997	$383,022	$393,738	$443,000	$370,939	0.6%
Delinquent HIS Renewal	$24,760	$48,895	$60,880	$56,772	$47,827	0.1%
Selected Fee Totals[2]	**$57,705,629**	**$63,424,028**	**$63,607,311**	**$66,742,588**	**$63,169,685**	**96.9%**
Total Revenue (fee scheduled and non-fee scheduled)	**$60,078,000**	**$65,627,000**	**$65,991,000**	**$69,012,000**	**$65,177,000**	

Source: CSLB Budget Office

[2] Selected fee totals do not match the total fee scheduled revenue row in table 7 because the Board collects revenue from other fees not displayed in table 8.

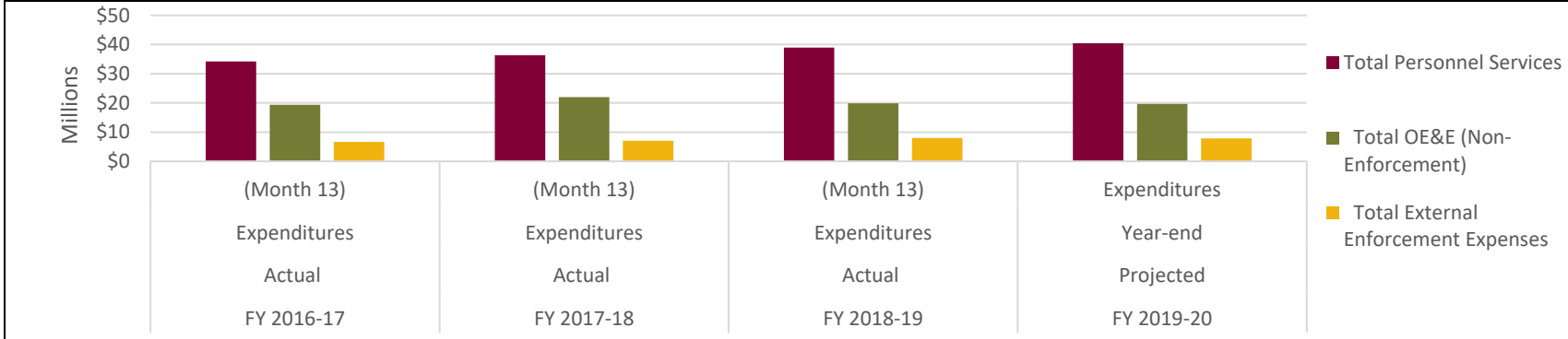
The three fees that constituted the largest percentage of total revenue were the Biennial Contractor Renewal – Active Timely Renewal Fee (64.7%), the Original Contractors Application Fee (exam or test waiver) (11.8%), and the Initial Contractors License Fee (5.1%).

Expense Analysis

The Board's two largest expense categories are Personnel and Operating Expenses and Equipment (OE&E), with the latter further broken down into OE&E (Non-Enforcement) and External Enforcement Expenses. The expenditures for each of these categories for FY 2016-17 through FY 2019-20 are summarized below, with Personnel being the largest expense (58.2%), followed by OE&E (Non-Enforcement (31.4%), and External Enforcement (11.5%). Reimbursements as offsets reduced expenditures by -1.0%.

Table 9: Personnel and OE&E Expenditures FYs 16-17 through 19-20

Total Expenditures	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	4 Year Average	
	Actual Expend. (Month 13)	Actual Expend. (Month 13)	Actual Expend. (Month 13)	Projected Year-End Expend.	Expenditures	% Total
Total Personnel Services	**$34,233,961**	**$36,351,050**	**$38,940,045**	**$40,478,394**	**$37,500,863**	**58.2%**
OE&E (Non-Enforcement)	$19,378,375	$21,997,976	$19,869,332	$19,667,854	$20,228,384	31.4%
External Enforcement Expenses	$6,656,107	$7,055,556	$8,006,624	$7,835,654	$7,388,485	11.5%
Total OE&E	**$26,034,482**	**$29,053,532**	**$27,875,956**	**$27,503,508**	**$27,616,870**	**42.8%**
Total Expenditures	**$60,268,443**	**$65,404,582**	**$66,816,001**	**$67,981,902**	**$65,117,732**	**101.0%**
Total Reimbursements as Offsets	**(606,139)**	**(714,855)**	**(758,185)**	**(563,019)**	**(660,550)**	-1.0%
Net Expenditures	**$59,662,304**	**$64,689,727**	**$66,057,816**	**$67,418,883**	**$64,457,183**	**100.0%**



Source: CSLB Budget Office

The following sections present a more detailed analyses of each major budget category.

PERSONNEL SERVICES EXPENSES

Table 10 details and summarizes Board Personnel Services expenses. At 58.2% of total expenses, Personnel Services is the largest expense under the Board's control. Most of the cost is due to regular staff salary (Civil Service-Perm and BL 12-03 Blanket) and Benefits (96.7%). Temporary help, Exam proctors, Board member compensation and Overtime constitute the remaining personnel expenses.

From FY 2016-17 to FY 2019-20 total Personnel Services expenses increased by 18.2%. Total Personnel Services expenses are expected to increase by 11% from $40.5M in FY 2019-20 to $45M in FY 2020-21. From FY 2020-21 through FY 2025-26 total Personnel Services expenses are expected to increase an annual average of 2.9% per year. These increases are primarily driven by collective bargaining agreements that increase employee salaries, health care and retirement benefits.

Table 10: Personnel Services Expenditures

	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20		
PERSONNEL SERVICES:	**Actual Expend. (Month 13)**	**Actual Expend. (Month 13)**	**Actual Expend. (Month 13)**	**Projected Year-End Expend.**	**4 Year Average**	**% Total**
Civil Service-Perm	$20,977,368	$21,678,180	$23,119,343	$25,000,000	$22,693,723	60.5%
Temp Help (907)	$646,318	$836,455	$730,634	$602,482	$703,972	1.9%
BL 12-03 Blanket	$1,121,536	$1,133,933	$1,192,880	$0	$862,087	2.3%
Exam Proctors (915)	$171,981	$172,107	$178,065	$180,000	$175,538	0.5%
Statutory-Exempt (Registrar)	$233,222	$134,323	$142,612	$142,612	$163,192	0.4%
Board/Commission (901,920)	$13,700	$13,100	$12,400	$6,300	$11,375	0.0%
Overtime (909)	$120,046	$257,433	$182,820	$110,000	$167,575	0.4%
Benefits	$10,949,790	$12,125,519	$13,381,291	$14,437,000	$12,723,400	33.9%
Total Personnel Services	**$34,233,961**	**$36,351,050**	**$38,940,045**	**$40,478,394**	**$37,500,863**	**100%**

Source: CSLB Budget Office

OPERATING EXPENSES AND EQUIPMENT (NON-ENFORCEMENT)

Table 11 details and summarizes the Board's Operating and Equipment Expenses that are not related to External Enforcement. These expenses constitute 31.4 % of the Board's total expenditures. Departmental Services (DCA Pro Rata) constitutes the largest expenditure in this category (34.3%), followed by Facilities Operations (25.0%) and Consolidated Data Center (Teale) (11.8%).

Departmental Services (DCA Pro Rata) – This expense includes all DCA services charged to the Board. This includes Administrative pro-rata costs associated with the salary and benefits of the centralized DCA staff that support the Board, such as Human Resources, Finance, Procurement, the Budget Office, Accounting, the Executive Office, Information Services, etc. Depending on the service or DCA department or division charging the service, DCA allocates or charges these expenses to CSLB annually on the basis of authorized positions or workload units consumed (e.g., license transactions). Pursuant to Business and Professions Code section 7136, DCA pro rata is not to exceed 10% of total revenue.

Facilities Operations - CSLB is one of the largest agencies within the Department of Consumer Affairs. The amount of office space required for this many employees results in a large facilities cost.

Consolidated Data Center (Teale) – This cost goes to support the mainframe legacy system (TEALE) and is through OTECH (California Department of Technology). This includes support, data storage, etc. As CSLB increases online application submittals this cost will continue to rise.

From FY 2016-17 to FY 2019-20, total OE&E Non-Enforcement costs remained relatively stable, increasing only 1.5%. Total OE&E expenses are projected to decline by 6.5% from $19.7M in FY 2019-20 to $18.4M in FY 2020-21. However, total OE&E expenses are projected to increase an annual average of 1% from FY 2020-21 to FY 2025-26.

Table 11: OE&E (Non-Enforcement) Expenditures

	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	4 Year Average	
OE&E (Non-Enforcement)	**Actual Expend. (Month 13)**	**Actual Expend. (Month 13)**	**Actual Expend. (Month 13)**	**Projected Year-End Expend.**	**Expend.**	**% Total**
Fingerprint Reports	$40,850	$36,158	$39,396	$39,396	$38,950	0.2%
General Expense	$673,398	$630,961	$416,168	$538,743	$564,818	2.8%
Printing	$620,032	$547,945	$321,035	$362,863	$462,969	2.3%
Communication	$302,854	$311,176	$333,529	$356,605	$326,041	1.6%
Postage	$555,859	$229,931	$626,650	$306,630	$429,768	2.1%
Insurance	$40,040	$50,208	$170,814	$27,332	$72,099	0.4%
Travel In-State	$418,997	$279,096	$198,666	$162,033	$264,698	1.3%
Travel Out-Of-State	$3,209	$4,629	$572	$2,757	$2,792	0.0%
Training	$10,220	$20,162	$8,473	$28,168	$16,756	0.1%
Facilities Operations	$4,638,096	$6,449,205	$4,474,783	$4,658,318	$5,055,101	25.0%
C/P Services – Internal	$6,639	$18,390	$2,875	$123,376	$37,820	0.2%
C/P Services – External	$1,058,890	$977,278	$853,802	$1,036,500	$981,618	4.9%
Departmental Services (DCA Pro Rata)	$6,772,765	$7,204,480	$6,606,598	$7,209,000	$6,948,211	34.3%
Consolidated Data Center (Teale)	$1,950,376	$2,184,852	$3,316,579	$2,059,132	$2,377,735	11.8%
DP Maintenance & Supplies	$1,166,521	$1,280,244	$1,208,267	$1,486,189	$1,285,305	6.4%
Expert Examiners (SME)	$289,292	$236,511	$310,416	$295,537	$282,939	1.4%
Equipment (Major & Minor)	$702,359	$443,393	$841,743	$878,709	$716,551	3.5%
Other Items of Expense	$6,841	$15,442	$202	$459	$5,736	0.0%
Vehicle Ops	$120,720	$126,415	$129,029	$96,107	$118,068	0.6%
Special Items of Expense	$417	$951,500	$9,735	$0	$240,413	1.2%
Total OE & E (Non-Enforcement)	**$19,378,375**	**$21,997,976**	**$19,869,332**	**$19,667,854**	**$20,228,384**	**100.0%**

Source: CSLB Budget Office

EXTERNAL ENFORCEMENT

Table 12 summarizes the Board's expenses for External Enforcement activities. At 11.5% of the Board's total budget, these external expenses have a significant overall effect which are beyond the Board's control. Of particular concern are the services provided by the Attorney General's office which constituted an average of 71.5% of total External Enforcement expenses. Moreover, effective July 1, 2020, CSLB will be subject to paying the Attorney General's 30% rate increase. The Attorney General (AG) costs are for work performed by State employees who handle escalated investigations of licensed contractors. The Office of Administrative Hearings (OAH) costs are associated with work performed by State employees when a licensee appeals a violation they have been charged with.

From FY 2016-17 to FY 2019-20, total External Enforcement Expenses increased by 17.7%. Total External Enforcement expenses are expected to increase by 48.6% from $7.4M in FY 2019-20 to $11M in FY 2020-21. From FY 2020-21 through FY 2025-26, total External Enforcement expenses are expected to increase an annual average of 5% per year due to increasing Enforcement activities and rising salary and benefits costs for AG and OAH employees.

Table 12: OE&E - Enforcement Expenditures

	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20		
OE&E (Non-Enforcement)	**Actual Expend. (Month 13)**	**Actual Expend. (Month 13)**	**Actual Expend. (Month 13)**	**Projected Year-End Expend.**	**4 Year Average**	**% Total**
Attorney General	$4,731,300	$5,009,960	$5,584,868	$5,800,000	$5,281,532	71.5%
Office of Admin Hearings	$1,050,861	$973,300	$992,670	$1,200,000	$1,054,208	14.3%
Evidence/Witness	$682,060	$828,871	$1,102,829	$632,854	$811,654	11.0%
Court Reporter Servs	$53,631	$95,052	$137,551	$140,000	$106,559	1.4%
DOI Investigation	$138,255	$148,373	$188,706	$62,800	$134,534	1.8%
TOTAL OE&E – External Enforcement	**$6,656,107**	**$7,055,556**	**$8,006,624**	**$7,835,654**	**$7,388,485**	**100.0%**

Source: CSLB Budget Office

REIMBURSEMENT AS EXPENSE OFFSETS

Table 13 shows that scheduled and unscheduled (due to investigative cost recovery) reimbursements have averaged about $661,000 over the last four fiscal years. The reimbursements are treated as expense offsets in determining net budgetary expenditures.

The largest item in this category, accounting for 73.4% of total reimbursements, is Unscheduled Reimbursement – Cost Recovery AG, money recovered from investigations performed by the Attorney General's Office.

The expense projections include $353,000 annually for scheduled and unscheduled reimbursements for FY 2020-21 through FY 2025-26.

Table 13: Reimbursement Offsets

REIMBURSEMENT OFFSETS	FY 2016-17 Actual Expend. (Month 13)	FY 2017-18 Actual Expend. (Month 13)	FY 2018-19 Actual Expend. (Month 13)	FY 2019-20 Projected Year-End Expend.	4 Year Average	% Total
Scheduled Reimbursement - Fingerprints	($39,004)	($40,818)	($41,552)	($38,792)	($40,042)	6.1%
Scheduled Reimbursement - Public Sales	($164,960)	($153,115)	($135,376)	($90,457)	($135,977)	20.6%
Unscheduled Reim. - Cost Recovery AG	($402,175)	($520,922)	($581,257)	($433,770)	($484,531)	73.4%
TOTAL REIMBURSEMENTS	**($606,139)**	**($714,855)**	**($758,185)**	**($563,019)**	**($660,550)**	**100.0%**

Source: CSLB Budget Office

Funding Gap Analysis

Business and Professions codes section 7137 dictates CSLB's current regulatory and statutory fee levels. Business and Professions code section 7138.1 indicates, notwithstanding Section 7137, that the Board shall fix fees to be collected pursuant to that section to generate revenues sufficient to maintain the Board's reserve fund at a level not to exceed approximately six months of annual authorized Board expenditures.

CSLB provided CPS with the historical and projected financial documentation, including 5-year expenditure and revenue summaries, and a fund condition analysis. CSLB's current financial picture was reviewed to document the current status of the fund condition and the projected expenses in order to identify the needed revenue to meet the corresponding expenditures.

Based on financial information as of June 2020, Table 14 shows that CSLB's fund is structurally imbalanced and is estimated to have a fund balance of $6.5 million (1 month-in-reserve) by the end of FY 2019-20 and will have a negative fund balance by FY 2020-21. If CSLB incurs any unexpected costs beyond what is currently authorized, the fund reserve will drop even further to a negative 8.4 months in reserve by FY 2025-26.

Table 14: CSLB's Projected Growth Budget without additional fee increases

CSLB's Projected Growth Budget							
	Projected Year-end Expenditures 2019-20	**Projected Budget FY 2020-21**	**Projected Budget FY 2021-22**	**Projected Budget FY 2022-23**	**Projected Budget FY 2023-24**	**Projected Budget FY 2024-25**	**Projected Budget FY 2025-26**
Beginning Reserve Balance	$10,333	$6,475	($971)	($9,490)	($20,578)	($32,890)	($47,946)
Revenues	$69,012	$72,062	$73,062	$72,649	$73,662	$73,243	$74,269
Total Resources[1]	**$79,345**	**$78,537**	**$72,091**	**$63,159**	**$53,084**	**$40,353**	**$26,324**
Expenditures[2]	$67,419	$74,008	$76,042	$78,156	$80,353	$82,637	$85,008
Direct Assessments[3]	$5,451	$5,500	$5,540	$5,580	$5,621	$5,662	$5,662
Total Expenditures	**$72,870**	**$79,508**	**$81,582**	**$83,736**	**$85,974**	**$88,299**	**$90,670**
Fund Balance	$6,475	($971)	($9,490)	($20,578)	($32,890)	($47,946)	($64,347)
Months in reserve	1.0	(0.1)	(1.4)	(2.9)	(4.5)	(6.3)	(8.4)

[1]Total Resources figures consist of total revenues, transfers, and other adjustments.
[2] Expenditure figures include CSLB's Operating Expenses and Equipment and Personnel Services cost categories. These costs are described in detail in the Expense Analysis section.
[3]Direct assessments are expenses assessed against the fund condition in addition to the OE&E and Personnel Services categories and include Statewide Pro Rata and Supplemental Pension Payments. Statewide Pro Rata is a recovery of statewide general administrative costs (i.e., indirect costs incurred by central service agencies). Supplemental Pension Payments are related to Senate Bill 84 (Chapter 50, Statutes of 2017) that authorized a one-time $6 billion supplemental pension payment in FY 2017/18 to CalPERS. This loan is to be repaid through funds responsible for retirement contributions.
Dollars in thousands
Source: CSLB Budget Office

An overall increase in revenue is required to close the revenue gap and build a satisfactory reserve over the next five years.

Closing the Gap – Identifying Needed Revenue

The following methodology was utilized to identify the total revenue needed to close the gap between the total expenditures and projected revenue with current fees as documented in Table 14 above, including building a four to five-month reserve.

1. The financial information for FY 2014-15 (five years ago) projected through FY 2025-26 was reviewed to identify the beginning balances, revenues, expenditures, and months in reserve if the fees remained at the current level (as of the fee change in February 2020).
2. The expenditures summary was utilized to identify a breakdown of expenditures, including personnel, operations, enforcement, and direct expenses, with consideration to the reimbursements. Each expense category was further distributed among the fees based on the corresponding workload, as discussed in the Distribution of Expenses section.
3. The additional revenue required to build a four to five-month reserve, assuming increased fees in July 2021, was identified based on the projected expenditures for FY 2020-21 through FY 2026-27.[3]
4. The projected expenditures were added to the additional revenue needed to meet the targeted months in reserve to identify the total revenue needed each year. This was compared to the expected revenue for each year to identify the funding gap that would need to be filled by the fee schedule changes.

The following Fee Costing Analysis describes how the needed fees were determined to ensure coverage of the increased revenue requirements.

[3]Projections go out five years to FY 2025/26, however the total expenditure for FY 2026/27 was needed to calculate the needed revenue to have four to five months in reserve for FY 2025/26.

Fee Costing Analysis

Work Allocation Analysis

CPS HR Consultants reviewed the CSLB website, *California Contractors License Law & Reference Book,* and duty statements and work-flow charts to develop a high-level task list defining the key processes associated with the current fee schedule. Consultants worked with Enforcement and Licensing/Examination management to refine the task list to ensure clarity, mutual exclusivity, and comprehensiveness of the included tasks. In addition to defining the key work tasks defining the majority of the work of CSLB staff, each section has general work tasks to capture the miscellaneous tasks related to Licensing, Examination, or Enforcement that are not covered by the key work tasks. The finalized list of tasks including the work area (e.g., Licensing, Enforcement, Administration, etc.), task number, and task definition is provided in Appendix A.

Each supervisor completed a work time allocation spreadsheet identifying the percentage of time spent on each discrete task area over the course of a year for each of their staff (as of April 30, 2020). The completed spreadsheet was then reviewed by a second level manager for accuracy prior to submission to CPS. Once all the results were compiled, the Licensing and Enforcement managers reviewed the overall time allocated to each task prior to utilization.

Administrative Time

In addition to the task list defining the key processes for line staff, three additional tasks were utilized by CPS to document the time managers and Administrative staff whose work supports the entire organization.

- The Overall Administrative task (Task AA-1) was reserved for positions that supported the organization as a whole (such as the Division of Administration, the Office of Information Technology and the Executive Office).
- The Licensing/Examination Administrative task (AA-2) was reserved for positions that supported Licensing or Examination functions overall.
- The Enforcement Administrative task (AA-3) was reserved for positions that supported Enforcement functions overall.

Table 15 summarizes the total annual hours and the equivalent number of Personnel Years (PY) allocated to each task. A Personnel Year is a measure of the number of working hours associated with a full-time employee. While there are technically 2080 hours in a working year (52 weeks * 40 hours/week), the DCA Budget Office uses 1776 hours to define a single "PY" which removes hours for vacation, holiday and leave. CSLB had a total of 430 PY as of April 30, 2020.

Table 15: Annual Hours and PY spent on Tasks

Task #	Task Description	Annual Hours	Equivalent PY	% of Total PY
ADMINISTRATIVE (attributed to multiple fees and/or program areas)				
AA-1	Overall Administrative functions	151,848.0	85.5	19.9%
AA-2	Licensing/Examination Administrative functions	15,984.0	9.0	2.1%
AA-3	Enforcement Administrative functions	19,536.0	11.0	2.6%
LICENSING				
Application and Initial Licensing Tasks				
LA-1	Original Contractor's Application[4]	27,003.9	15.2	3.5%
LA-2	Contractor's License (Sole Owner)	8,364.0	4.7	1.1%
LA-3	Contractor's License (Non-Sole Owner)	8,002.1	4.5	1.0%
LA-4	Supplemental Class (for existing license)	5,789.8	3.3	0.8%
LA-5	Additional Class (for original license)	550.6	0.3	0.1%
LA-6	Replacing Qualifier (RME / RMO)	3,676.3	2.1	0.5%
LA-7	Hazardous Substance Removal Certificate	195.4	0.1	0.0%
LA-8	Asbestos Certification	301.9	0.2	0.0%
LA-9	HIS Salesperson – Initial Registration	7,992.0	4.5	1.0%
LA-10	Replacement Pocket License or Wall Certificate	2,930.4	1.7	0.4%
LA-11	Add Personnel/Officer Change	3,081.4	1.7	0.4%
LA-12	Name Change	2,974.8	1.7	0.4%
Licensing Renewal Tasks				
LR-1	Biennial Renewal – HIS	1,678.3	0.9	0.2%
LR-2	Biennial Contractor Renewal – Active – Sole Owner	1,678.3	0.9	0.2%
LR-3	Biennial Contractor Renewal – Active – Non-Sole Owner	1,678.3	0.9	0.2%
LR-4	Timely Inactive Renewal – Sole Owner	1,678.3	0.9	0.2%
LR-5	Timely Inactive Renewal – Non-Sole Owner	1,678.3	0.9	0.2%
LR-6	Reactivate Contractor's License (Sole Owner)	1,678.3	0.9	0.2%
LR-7	Reactivate Contractors' License (Non-Sole Owner)	1,678.3	0.9	0.2%
Licensing General Work Tasks (captures other Licensing work not covered above)				
LG-1	Other Licensing Tasks	47,836.6	26.9	6.3%

[4] The work allocation responses allocated all Contractor's Application and License time into the two Licensure tasks, with 12.5 PY allocated to Sole Owner (LA-2) and 11.9 PY allocated to Non-Sole Owner (LA-3). This time was split out between the Contractor's Application (LA-1) and Licensure tasks based on the proportional relationship between the two within the current fee.

Task #	Task Description	Annual Hours	Equivalent PY	% of Total PY
LG-2	Licensing Supervision	13,408.8	7.6	1.8%
EXAM ADMINISTRATION				
XA-1	Exam Administration	23,088.0	13.0	3.0%
Exam Administration General Work Tasks (Exam Administration work not covered above)				
XA-2	Other Exam Administration Tasks	9,679.2	5.5	1.3%
XA-3	Exam Administration Supervision	2,752.8	1.6	0.4%
EXAM DEVELOPMENT				
XD-1	Non-Asbestos and Non- Hazardous Substance Removal Exams	5,860.8	3.3	0.8%
XD-2	Asbestos Certification	177.6	0.1	0.0%
XD-3	Hazardous Substance Removal Certification	177.6	0.1	0.0%
Exam Development General Work Tasks (Exam Development work not covered above)				
XD-4	Other Exam Development Tasks	3,463.2	2.0	0.5%
XD-5	Exam Development Supervision	888.0	0.5	0.1%
ENFORCEMENT				
EA-1	Licensee Complaint (Sole Owner)	26,142.7	14.7	3.4%
EA-2	Licensee Complaint - Non-Sole Owner	45,696.5	25.7	6.0%
EA-3	Non-Licensee Complaint	18,434.9	10.4	2.4%
EA-4	HIS Complaint	8,231.8	4.6	1.1%
EA-5	Licensee Investigation (Sole Owner)	32,465.3	18.3	4.3%
EA-6	Licensee Investigation – Citation (Sole Owner)	31,435.2	17.7	4.1%
EA-7	Licensee Investigation – Accusation (Sole Owner)	18,426.0	10.4	2.4%
EA-8	Licensee Investigation (Non-Sole Owner)	38,343.8	21.6	5.0%
EA-9	Licensee Investigation - Citation (Non-Sole Owner)	39,001.0	22.0	5.1%
EA-10	Licensee Investigation - Accusation (Non-Sole Owner)	22,652.9	12.8	3.0%
EA-11	Non-Licensee Investigation	48,795.6	27.5	6.4%
Enforcement General Work Tasks (Enforcement work not covered above)				
EA-12	Other Enforcement Tasks	25,308.0	14.3	3.3%
EA-13	Enforcement Supervision	31,435.2	17.7	4.1%

While the table above shows the raw distribution of staff time across the different tasks and functions, the analysis of the fee structure required the inclusion of Administrative, Examination, and Enforcement staff into the licensing fees. The total PY allocated to each of the fees is summarized in Table 16 below, including the number of Administrative, Examination, and Enforcement staff contributing to each fee based on the distribution of expenses in the next section.[5]

[5] License Processing PY (time initially allocated to LA-1 through LA-12) work directly on the license-process related tasks; Admin PY support the whole organization (time initially allocated to AA-1 to AA-3); Exam Admin/Develop support fees with an exam component (time initially allocated to XA-1 to XA-3; XD-1 to XD-5); and Enforcement PY support fees that may elicit Enforcement actions (time initially allocated to EA-1 to EA-13).

Table 16: Redistribution of Time to Fees

Task #	Task Description	License Processing PY	Admin. PY	Exam Admin., Dev.	Enforcement PY	Total PY
New Applications						
LA-1	Original Contractor's Application	15.2	20.5	17.0	0.0	**52.7**
LA-2	Contractor's License (Sole Owner)	4.7	6.3	0.0	0.0	**11.1***
LA-3	Contractor's License (Non-Sole Owner)	4.5	6.1	0.0	0.0	**10.6**
LA-5	Additional Class (for original license)	0.3	0.4	1.8	0.0	**2.5**
LA-9	HIS Salesperson – Initial Registration	4.5	6.1	0.0	0.0	**10.6**
LA-7	Hazardous Substance Removal Certificate	0.1	0.1	0.3	0.0	**0.6***
LA-8	Asbestos Certification	0.2	0.2	0.2	0.0	**0.6**
XA-1	Re-examination[6]	0.0	0.0	10.9	0.0	**10.9**
License Maintenance						
LA-4 LA-6	Supplemental Class (for existing license)/Replacing Qualifier (RME/RMO)[7]	5.3	7.2	4.8	0.0	**17.4***
LA-11	Add Personnel/Officer Change	1.7	2.3	0.0	0.0	**4.1***
LA-10	Replacement Pocket License or Wall Certificate	1.7	2.2	0.0	0.0	**3.9**
LA-12	Name Change	1.7	2.2	0.0	0.0	**3.9**
Licensing Renewal Fees						
LR-2	Biennial Contractor Renewal – Active – Sole Owner	0.9	1.3	0.0	105.3	**107.5**
LR-3	Biennial Contractor Renewal – Active – Non-Sole Owner	0.9	1.3	0.0	141.6	**143.8**
LR-4	4-year Timely Inactive Renewal – Sole Owner	0.9	1.3	0.0	22.4	**24.6**
LR-5	4-year Timely Inactive Renewal – Non-Sole Owner	0.9	1.3	0.0	4.5	**6.7**
LR-6	Reactivate Contractor's License (Sole Owner)	0.9	1.3	0.0	2.5	**4.7**
LR-7	Reactivate Contractors' License (Non-Sole Owner)	0.9	1.3	0.0	0.5	**2.7**
LR-1	Biennial Renewal – HIS	0.9	1.3	0.0	9.1	**11.3**

**Total slightly different than sum of categories due to rounding.*

[6] The Re-examination PY was determined by applying the portion of total exams that were re-examinations to the 27.0 total Exam Administration staff (13.0 processing plus 14.0 administrative PY).

[7] LA-4 and LA-6 were combined during analysis to align with available workload statistics and the staff assessment that the processing time for the two were similar.

Key Findings

- A review of the overall staffing allocations in Table 16 above identified the following staff breakdowns, with the remainder making up a small percentage of total PY. Percentages include all staff allocated to the fee (Processing, Administrative, Exam and Enforcement).
- Overall, 30% of staff time was allocated to new applications and license maintenance tasks while 70% was allocated to renewal fees. The 70% includes 3.6% dedicated to processing the renewal applications and 66.4% dedicated to Enforcement actions. It was determined to distribute Enforcement time across the renewals as a part of licensure maintenance.
- 17.3% of staff were allocated to Contractor Application and Licenses (LA-1, LA-2, LA-3), while 58.4% of staff (including Enforcement) were allocated to Contractor Biennial renewals (LR-2, LR-3).
- 2.5% of staff were allocated to HIS applications (LA-9), while 2.6% of staff (including Enforcement) were allocated to HIS renewals (LR-1).
- 1.7% of staff were allocated to re-examinations (XA-1).

Distribution of Expenses

The total revenue required for each year FY 2020-21 through FY 2025-26 (including expenditures plus needed reserve) was determined utilizing projections from the CSLB Fund Condition and Five-Year Expenditures reports. The percentage of expenditures allocated to Personnel, Operating, Enforcement, and Direct Assessment in each projected year was applied to the total required revenue to determine the expenses linked to each category. Table 17 outlines how each expenditure category was further distributed among the fees to determine the total revenue required by each fee to meet overall expenditures.

Table 17: Summary of Distribution Methodology

Expenditure Category	Expenditure Line Item(s)	Distribution Method
Personnel	Exam Proctor	Expenses proportionally distributed among fees requiring examinations (including re-examinations) based on projected workload statistics for each year.
	All Other Personnel	Expenses distributed among fees based on the number of allocated PY identified in the work time allocation spreadsheets. • PY directly attributed to processing applications/renewals • Exam Admin. PY distributed proportionally only on fees with exams based on projected workload statistics • Specific Hazardous Substance Removal and Asbestos Exam Development PY allocated directly to those application fees. • Remaining Exam Development PY distributed proportionally to other exam-based fees based on projected workload statistics. • Enforcement PY distributed among renewals based on methods described in Enforcement distribution within this table. • Administrative PY was proportionally distributed across all fees based on the number of PY attributed in the above methods.
Operating – Non-Enforcement	• Printing, Postage • Consolidated Data Center (Teale) • DP Maint. /Supplies	Operating expenses linked to the number of licenses being maintained/serviced. Expenses proportionally distributed among license application, registration, and renewal fees based on projected workload statistics for each year.
	Expert Examiners	Expenses proportionally distributed among fees requiring examinations (including re-examinations) based on projected workload statistics for each year.
	All Other Operating lines *(travel, training, facilities, vehicles, etc.)*	Operating expenses linked to the number of PY. Expenses distributed among fees based on the number of allocated PY identified in the work time allocation spreadsheets.
	Scheduled Reimbursement – Public Sales	Reimbursement proportionally distributed among application and renewal fees based on projected workload statistics.
Enforcement (under Operating)	All Enforcement	Expenses proportionally distributed among renewals based on number of Enforcement PY allocated to each fee. This includes: • HIS specific Enforcement PY allocated directly to HIS renewal. • PY dedicated to Sole Owner enforcement actions (licensee complaints, investigations, citations, accusations) distributed proportionally based on projected Sole Owner workload statistics (Renewals, Timely Inactive, Reactivation) • PY dedicated to Non-Sole Owner enforcement actions distributed proportionally based on projected workload statistics. • PY dedicated to non-licensed enforcement activity distributed proportionally among all licensed renewal categories based on projected HIS and Contractor renewals, timely renewals, and reactivations. Since it is not possible to attach the enforcement costs to non-licensees, it was distributed across all license/registration renewals as the function keeps the industry as a whole safer.

Expenditure Category	Expenditure Line Item(s)	Distribution Method
Direct Assessments	• Supplemental Pension Payments • Statewide Gen. Admin. Pro Rata	Expenses distributed among fees based on the number of allocated PY identified in the work time allocation spreadsheets.

Determination of Initial Fee Levels and Adjustments

The distribution of expenses (described above) identified the total revenue needed by each fee to meet the total expenditures plus a portion of the targeted months in reserve. This information was utilized in conjunction with the projected workload statistics in each fee to identify an initial recommended fee structure based entirely on workload statistics and financial requirements.

The fees were initially calculated using the projected revenue and expenditures for FY 2020-21 through FY 2026-27, as outlined in the "Revenue and Expense Analysis" section. However, CSLB identified a likely loss in revenue for FY 2020-21 due to the COVID pandemic and economic recession, which are further discussed in the "Additional Considerations" section below. In order to address these financial impacts, CSLB has proactively committed to reducing expenditures by $7.1 million in FY 2020-21 and $4.25 million in FY 2021-22. This includes maintaining vacant positions, savings in reduced travel, delayed or reduced purchases, and a reduction in Attorney General's Office, Administrative Hearing Office, and arbitration costs in FY 2020-21, and a 9.23% salary reduction in both FY 2020-21 and FY 2021-22. These financial adjustments have already been established with concrete numbers which were built into the calculations when determining the recommended fees.

In contrast to the foreseen lost revenue triggering the reduction of expenditures, there are two new sources of fund generation on the horizon. The Governor signed two new bills on 9/30/2020 that will generate an additional projected $1.1 million annually in cost savings and additional revenue for CSLB starting in January 2021. This includes Bill No. SB 1189 which creates a Residential Remodeling Contractor license with an estimated annual revenue of $500,000 in application and license fees and Bill No. AB 3087 authorizing the outsourcing of CSLB's Testing Administration for a cost savings of an estimated $625,000 per year.

Given that these are estimations of future revenue and savings and it is unknown how close these estimates will be until they are put in place, they were not included in the actual calculation of the recommended fees. However, it was considered when determining the goal months in reserve to ensure the additional revenue did not push the reserve beyond the maximum. The projected additional $1.1 million would account for an extra 0.14 to 0.17 months in reserve on top of the current budgeted amount produced by the recommended fees. Similarly, CSLB has historically been able to save approximately $2 million in expenditures each year, which results in a potential for an additional 0.26 to 0.31 months in reserve.

Taking into consideration the budgetary adjustments, projected revenue and savings, the impact of the pandemic and recession, and CSLB's proactive efforts to reduce expenditures where possible, it was determined to target a four to five-month reserve with the recommended fees. This allows CSLB to maintain a balance between building a sufficient reserve without exceeding the six-month maximum.

The recommended initial fee structure was then adjusted to round fee amounts and incorporate CSLB staff feedback on the practicality and acceptable increases with consideration to the current fees and industry standards. Additional consideration was given to minimizing the impact on the current and future licensees/registrants by making small adjustments to high frequency fees to subsidize fees with smaller frequencies that would have required a larger change to the current fee to meet expenditures. Throughout the adjustments, care was taken to ensure the fees were still supported by the work time allocation spreadsheet analysis and that the total revenue did not exceed the expenditures plus targeted months in reserve within the next five years.

Additional Considerations

COVID-19 PANDEMIC IMPLICATIONS

The fiscal impacts of the COVID-19 pandemic can make accurate short- and long-term financial forecasting more difficult. Examples of the impact of COVID-19 on specific revenue and expense areas are shared below.

- In the last quarter of FY 2019-20, the Office of Administrative Hearings and Attorney General costs were less than expected because many in-person hearings were cancelled as a result of the COVID-19 pandemic.
- As of July 2020, there was a backlog of roughly 7,000 exam candidates needing to take an exam because testing facilities were shut down most of the last quarter of FY 2019-20. This means the Board has received less revenue for application types associated with exams, such as the Re-examination fee and the Original Contractors Application fee.
- There was roughly $2M less revenue generated in the last quarter of FY 2019-20 than expected, primarily as result of fewer applications and licenses issued.

POSSIBLE IMPACT OF CURRENT RECESSION ON CSLB REVENUE PROJECTIONS

Since CSLB is entirely self-funded, primarily from fee related revenue (96.4%), having a predictable and consistent influx of license applications, renewals, etc. (Licensing workload statistics) is critical to CSLB maintaining a solvent fund. As suggested in Figure 3 below, in the past, the overall US economy health can affect the California construction economy health, which can then in turn affect CSLB's total Licensing workload statistics. The total Licensing

workload statistics then directly affect the amount of revenue CSLB receives. Therefore, the current recession could impact the CSLB's revenue projections. In FY 2020-21 CSLB's revenue is expected to increase from years prior as a result of the February 2020 fee increase. However, assuming no additional fee increases are made, subsequent year projections anticipate a near flatline in revenue (see Table 14 – CSLB's Projected Growth Budget). Given the current impact of the recession, it is possible that these revenue projections will be less than anticipated.

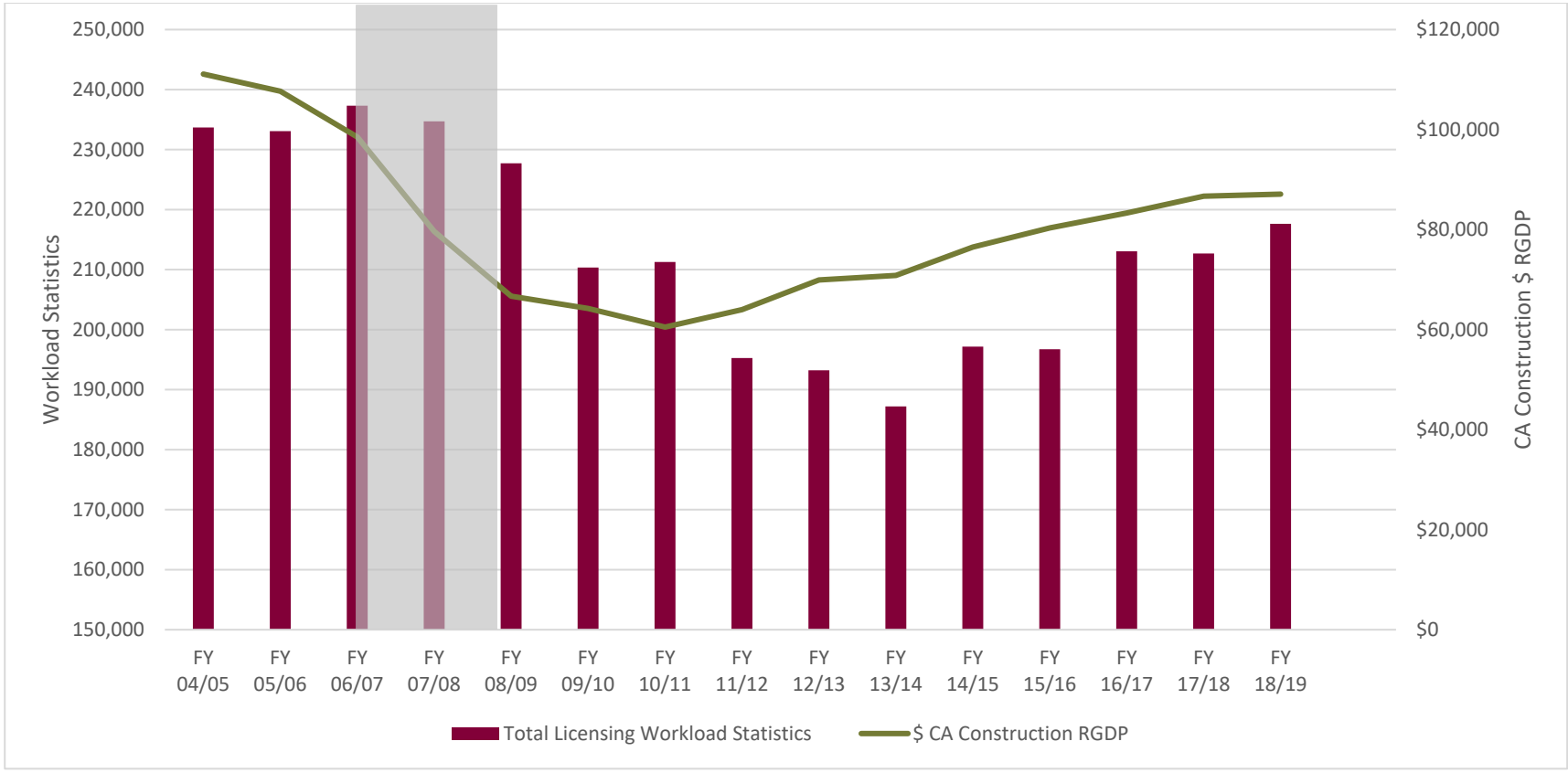
This study examined three historical factors to look at the relationship between the overall US economy, the California construction economy, and CSLB's total licensing workload statistics to evaluate the historical impact of a prior recession on CSLB:

- The last US recession officially lasted from December 2007 to June 2009.
- California Construction RGDP - The California Construction RGDP is the real gross domestic product for the California Construction industry. RGDP is a macroeconomic measure of the value of economic output adjusted for price changes (i.e. inflation or deflation). This adjustment transforms the money-value measure, nominal GDP, into an index for quantity of total output.
- Total Licensing Workload Statistics: This is the summation of all the workload statistic counts for FY 2004-05 through FY 2018-19 for the workload categories listed in Tables 1 through 4 in the *Licensing, Exam, and Enforcement Workload Statistics.*[8]

Figure 3 examines the relationship between the total workload statistics and the CA construction real GDP, with the last recession shaded in gray for comparison. During the last major recession, CSLB saw a decrease in the total Licensing workload statistics. As can be seen in Figure 3 below, the total Licensing workload statistic tends to follow the CA construction real GDP.

[8] Includes Table 1: New Application Workload Statistics, Table 2: License Maintenance Workload Statistics (with the exception of the Name Change fee), Table 3: License/Registration Renewal Workload Statistics, and Table 4: Examination Administration Workload Statistics (only re-examinations are included, since regular exams are processed in conjunction with other licensing fees)

Figure 3: The US Economy, CA Construction RGDP and CSLB Total Licensing Workload Statistics



Shading indicates US 2008 recession

Source: CA Construction Real GDP: U.S. Bureau of Economic Analysis, Real Gross Domestic Product by Industry: Private Industries: Construction for California, Millions of Chained 2012 Dollars, Annual, Seasonally Adjusted Annual Rate[9]

[9] CA Construction RGDP is tracked on a calendar year basis, whereas the CSLB total licensing workload statistics are tracked on a July to July fiscal year basis. To display the data on the graph more simply, the CA RGDP is displayed on the same fiscal year axis. For instance, the 2005 CA RGDP is displayed on the same axis as the FY 04/05 total licensing workload statistics.

The last US recession occurred between December 2007 and June 2009. However, as can be seen by the CA Construction Real GDP, the construction economy in California began declining as early as 2005 and reached its bottom in 2011 before beginning to recover. Despite this trend, the 2019 numbers are still lower than the pre-recession totals. The total Licensing workload statistics seem to follow a similar trend but lags slightly behind the CA Construction RGDP. As the figure shows, total Licensing workload statistics started slightly declining in FY 2008-09 and reached a bottom in FY 2013-14. Similar to the CA Construction real GDP, the workload levels in FY 2018-19 had still not recovered to what they were prior to the 2008 recession. This could be partially attributed to the two-year renewal cycle in which the renewal numbers would not have reflected the downturn until their next renewal cycle.

Based on the current economic downturn and a review of historical patterns correlating the CSLB workload to the CA real GDP during the last recession, there is a level of uncertainty about the workload projections for future years, which in turn impacts projected fee-based revenue. Therefore, it is imperative that CSLB set new fee amounts with this uncertainty in mind.

Business and Professions Code 7137 dictates the current amount that CSLB charges for each fee along with a maximum amount each fee can be increased to. The current fee amount is referred to as the current regulatory amount and the maximum amount is referred to as the statutory maximum amount. If CSLB wishes to increase fees up to the statutory maximum amount they can do so through a relatively straightforward regulatory process. However, if CSLB wishes to increase the statutory maximum amount, they must do so through a more complex and lengthier legislative process.

CSLB needs to have the flexibility to raise fees as necessary to maintain fund solvency if revenues are less or expenses more than forecasted. To achieve this flexibility, we recommend that CSLB set the new statutory maximum amounts 25% higher than the new recommended regulatory amount. This would allow CSLB to be more likely to have to go through the regulatory process for the next fee increase(s) as opposed to the more complex and lengthier legislative process.

Recommended Fee Levels

The fees required to generate sufficient revenue to cover the increase in expenditures and needed funding to approach the four to five-month reserve are outlined in Table 18. The revised statutory max reflects a 25% increase to provide CSLB flexibility and the ability to quickly respond to future funding issues due to the potential uncertainty of licensee workload volumes associated with the current economic downturn as discussed above.

Table 18: Recommended Fee Levels

Fee Category	Current Regulatory Fee	Current Statutory Max	Revised Regulatory Fees	Revised Statutory Max (+25%)	% Increase from Current to Revised Regulatory Fee
New Applications					
Original Contractor's Application fee (exam or test waiver)	**$ 330**	$ 375	**$ 450**	$ 563	36%
Initial Contractor's License Fee - Sole Owner (approx. 60%)	**$ 200**	$ 225	**$ 200**	$ 250	0%
Initial Contractor's License Fee - Corp/Partners/JV/LLC (approx. 40%)	**$ 200**	$ 225	**$ 350**	$ 438	75%
Additional Classification (for original license)	**$ 75**	$ 85	**$ 150**	$ 188	100%
Home Improvement Salesperson (HIS) Initial Registration Fee	**$ 83**	$ 95	**$ 200**	$ 250	141%
Hazardous Substance Removal Certification	**$ 83**	$ 95	**$ 125**	$ 157	51%
Asbestos Certification	**$ 83**	$ 95	**$ 125**	$ 157	51%
Re-Examination	**$ 60**	$ 70	**$ 100**	$ 125	67%
License Maintenance					
Supplemental Classification (for existing license); Replacing the Qualifier (RME/RMO)	$ 150	$ 175	**$ 230**	$ 288	53%
Add Personnel/Officer Change (for existing licenses)	$ 100	$ 115	**$ 125**	$ 157	25%
Replacement Pocket/Wall Certificate	$ 12	$ 14	**$ 25**	$ 32	108%
Name change	n/a	n/a	**$ 100**	$ 125	n/a
Renewal Fees					
Biennial Contractor Renewal - Active Timely Renewal - Sole Owner	**$ 450**	$ 450	**$ 450**	$ 563	0%
Biennial Contractor Renewal-Active Timely Renewal - Corp/Partners/JV/LLC	**$ 450**	$ 450	**$ 700**	$ 875	56%
Delinquent Biennial Contractor Renewal - Active Timely Renewal - Sole Owner	**$ 675**	$ 675	**$ 675**	$ 844.50	0%
Delinquent Biennial Contractor Renewal-Active Timely Renewal -Corp/Partners/JV/LLC	**$ 675**	$ 675	**$ 1,050**	$ 1,312.50	56%
4-yr Timely Inactive Renewal - Sole Owner	**$ 225**	$ 225	**$ 300**	$ 375	33%
4-yr Timely Inactive Renewal - Corp/Partners/JV/LLC	**$ 225**	$ 225	**$ 500**	$ 625	122%
Delinquent - 4-yr Timely Inactive Renewal - Sole Owner	**$ 337.50**	$ 337.50	**$ 450**	$ 562.50	33%
Delinquent - 4-yr Timely Inactive Renewal - Corp/Partners/JV/LLC	**$ 337.50**	$ 337.50	**$ 750**	$ 937.50	122%
Reactivate Inactive Contractor's License - Sole Owner	**$ 450**	$ 450	**$ 450**	$ 563	0%
Reactivate Inactive Contractor's License - Corp/Partners/JV/LLC	**$ 450**	$ 450	**$ 700**	$ 875	56%
Biennial Renewal – HIS	**$ 95**	$ 95	**$ 200**	$ 250	111%
Delinquent Biennial Renewal – HIS	**$ 142.50**	$ 142.50	**$ 300**	$ 375	111%

Dishonored Check Fee

The current dishonored check service charge authorized by Section 6157 of the Government Code is $10 for each check. *(Authority cited: Section 7008, Business and Professions Code. Reference: Section 7008, Business and Professions Code; and Section 6157, Government Code)*. We would recommend, however, that this fee be raised to align with other California state agencies that charge $25. For instance, CalCannabis under the California Department of Food and Agriculture charges $25 for their dishonored check fee: "Returned Checks are subject to a $25 Dishonored Check Fee issued to the California Department of Food and Agriculture" (https://www.cdfa.ca.gov/calcannabis/payments.html). The $25 is the amount that the bank actually charges CSLB for a dishonored check fee, so this amount should be passed on to the applicant.

Projected Fund Condition with Recommended Fees

Table 14 previously showed CSLB's projected growth budget based on financial information as of June 2020 with no fee increase. Table 19, however, shows the projected budget and resulting reserve if the recommended fees are implemented in July 2021 *and* includes cost saving measures updated in September 2020. The September cost saving measures incorporated the proactive reduction of $7.1 million in expenditures in FY 2020-21 (which includes a salary reduction) and a continued 9.23% salary reduction for FY 2021-22. With these expenditure reductions, the budget retains structural balance in FY 2020-21, ending with 1.0 month in reserve. The implementation of the recommended fees allows the structural balance to improve each year, reaching 4.4 months in reserve (equivalent to approximately $33.5 million) by FY 2024-25.

Table 19: CSLB's Projected Growth Budget with Recommended fees (effective 07/2021)

CSLB's Projected Growth Budget							
	Projected Year-end Expenditures 2019-20	**Projected Budget FY 2020-21**	**Projected Budget FY 2021-22**	**Projected Budget FY 2022-23**	**Projected Budget FY 2023-24**	**Projected Budget FY 2024-25**	**Projected Budget FY 2025-26**
Beginning Reserve Balance	$10,333	$6,475	$6,129	$19,478	$26,421	$31,126	$33,506
Revenues	$69,012	$72,062	$90,679	$90,679	$90,679	$90,679	$90,679
Total Resources[1]	$79,345	$78,537	$96,808	$110,157	$117,100	$121,805	$124,185
Expenditures[2]	$67,419	$74,008	$76,042	$78,156	$80,353	$82,637	$85,008
Direct Assessments[3]	$5,451	$5,500	$5,540	$5,580	$5,621	$5,662	$5,662
Budgetary Adjustments[4]	$0	($7,100)	($4,252)	$0	$0	$0	$0
Total Expenditures	$72,870	$72,408	$77,330	$83,736	$85,974	$88,299	$90,670
Fund Balance	$6,475	$6,129	$19,478	$26,421	$31,126	$33,506	$33,514
Months in reserve	1.1	1.0	2.8	3.7	4.2	4.4	4.4

[1]Total Resources figures consist of total revenues, transfers, and other adjustments.
[2] Expenditure figures include CSLB's Operating Expenses and Equipment and Personnel Services cost categories.
[3]Direct assessments are expenses assessed against the fund condition in addition to the OE&E and Personnel Services categories and include Statewide Pro Rata and Supplemental Pension Payments. Statewide Pro Rata is a recovery of statewide general administrative costs (i.e., indirect costs incurred by central service agencies). Supplemental Pension Payments are related to Senate Bill 84 (Chapter 50, Statutes of 2017) that authorized a one-time $6 billion supplemental pension payment in FY 2017/18 to CalPERS. This loan is to be repaid through funds responsible for retirement contributions.
[4] Budgetary adjustments were made as a proactive response to the COVID-19 pandemic and subsequent financial impacts. The FY 2020-21 $7.1M reduction in expenses includes a 9.23% salary reduction, maintaining vacant positions, savings in travel, reduced or delayed purchases, and a reduction in Attorney General's Office, Administrative Hearing Office, and arbitration costs. FY 2021-22 $4.25M reduction includes a 9.23% salary reduction.
Dollars in thousands
Source: CSLB Budget Office

Sole Owner vs. Non-Sole Owner Fees

The major change in the fee structure was creating separate fee levels for Sole Owner vs. Non-Sole Owner. Non-Sole Owners include corporations, joint ventures, LLCs and partnership business entities. The fee separation was proposed by CSLB management due to the longer amount of time it takes staff to complete Non-Sole Owner compared to Sole Owner related tasks. This additional workload primarily stems from multiple individuals being associated with a Non-Sole Owner license compared to only a single individual being associated with a Sole Owner license.

There is additional Licensing staff time to process an initial Non-Sole Owner Contractor's License (corporations, joint ventures, LLC, and partnerships), which includes the additional review to confirm the business entity's status through the Secretary of State; checking that the specific employee bond and insurance requirements have been met and to complete background checks on the officers, partners and owners of these businesses, including the additional work to clear liabilities and judgments.

For the Biennial Contractor – Active Timely Renewal, 4-yr Timely Inactive Renewal and Reactivate Inactive Contractor's License, Licensing staff spend more time reviewing the same items mentioned in the previous paragraph for the Non-Sole Owner Renewal compared to the Sole Owners.

For enforcement related tasks, staff spend significantly more time on complaints, investigations, citations, and accusations associated with Non-Sole Owner than they do for Sole Owners' Licenses due to having to interview multiple parties. It is essential to contact all culpable parties to ensure consumers are protected.

Work Time Allocation Based Processing Times

The overall time allocated to each Sole Owner and Non-Sole Owner Contractor task in the work time allocation spreadsheet was applied to the FY 2018-19 workload statistics to estimate an average time per task. The following table outlines the total staff and equivalent hours per year on each active Initial Contractor's License, Biennial Contractor – Active Timely Renewal, and enforcement actions (including total complaints, investigations, citations, and accusations). The allocated PY is based solely on the positions allocated to doing the specific task and the PY based proportion of the licensing and enforcement general work (tasks LG-1, LG-2, EF-12, EF-13). It does not include the distributed Administrative time (tasks AA-1, AA-2, AA-3) from those that support multiple units that was built into the fees, as this analysis only looks at direct processing time. It applied the historical data records reflecting 59% Sole Owner, 41% Non-Sole Owner to the FY 2018-19 workload statistics to determine the number of Sole and Non-Sole Owner in each area. Table 20 summarizes the total allocated PY, allocated hours, workload statistic for FY 2018-19 (after splitting it into Sole/Non-Sole Owners), and the calculated average processing time per application, renewal or enforcement action.

Table 20: Estimated Workload Allocation Calculated Time per Task standards

Task	Sole/ Non-Sole Owner	Allocated PY	Equivalent Annual Hours	FY 2018-19 workload count	Estimated Average Processing Time
Initial Contractor's License	Sole	8.20	14,563.2	10,425	1.4 hrs.
	Non-Sole	7.85	13,941.6	7,244	1.9 hrs.
Biennial Contractor - Active Timely Renewal	Sole	1.65	2,930.4	62,069	2.8 min.
	Non-Sole	1.65	2,930.4	43,132	4.1 min.
Enforcement Action	Sole	71.6	127,161.6	8690	14.6 hrs.
	Non-Sole	96.2	170,851.2	5794	29.5 hrs.

Based on time allocations and workload statistics, the Non-Sole Owner Initial Contractor's Licenses, renewals, and enforcement actions take longer to process than the Sole Owner Initial Contractor's license, renewals, and enforcement. Overall, the Non-Sole Owner Initial Contractor's license takes 35.7% longer, the biennial renewal takes 46.4% longer, and the average enforcement action takes 102.1% longer than the Sole Owner Contractor counterparts. This is particularly impactful in enforcement where the Non-Sole Owner complaints (and subsequent enforcement actions) take just over twice the time to process than the Sole Owner complaints. This is compounded by the high frequency leading to a need for seven (Sole Owner) to ten (Non-Sole Owner) times as many PY compared to the corresponding PY allocated to the license and renewals combined. These additional time requirements support a higher recommended fee for Non-Sole Owner Contractor actions.

Appendix A: Work Allocation Spreadsheet Task Definitions

Task Code	Task Activity
Administrative Support (not a part of Work Time Allocation Spreadsheets)	
AA-1	**Overall Administrative** – staff time that support the entire organization as a whole.
AA-2	**Licensing/Examination Administrative** – staff time supporting licensing/examination functions as a whole; not dedicated to specific individual licensing fees or functions.
AA-3	**Enforcement Administrative** – staff time supporting enforcement functions as a whole; not dedicated to specific enforcement actions or functions.
Licensing	
LA-1	**Original Contractor's Application:** Receive application and fee. Complete initial review to identify military, disaster area, public works and power of attorney. Send application to data entry (Teale), enter initial review and scan documents (IWAS). Confirm entity type (Sole Owner, Non-Sole Owner: corporation, partnership or LLC). Perform SOS confirmation of non-Sole Owner personnel of record and registration status. Verify qualifier and personnel eligibility. Evaluate exam waivers & reciprocity. Review work experience. Search web for classification and business name compatibility. Perform acceptable 90-day work experience transfers. Complete criminal background review, including research of prior/current enforcement issues such as judgments, payments of claims and outstanding liabilities. Obtain required clearances. Obtain SSN/ITIN, DOB and/or personnel name verification for DOJ. Research and review prior void applications. Verify by phone if missing information and return by mail for multiple corrections. Perform final check of SOS confirmation on Non-Sole Owner applications. Make final check on prior/current enforcement issues. Post application and schedule examination(s). Notify exam of any military, expedite, ADA/translator and update Teale and IWAS. Order Live Scan packet if required. Computer generates 3% random sample for detailed review. Send notification of examination(s) to applicant.
LA-2	**Contractor's License – Sole Owner:** Once examination passed, applicant notified of requirements for issuance of license, including all bonds, workers' compensation certification, exemption forms, qualifier percentage statements, inactivation and disassociations. Review all documents for personnel name, business name/class compatibility and Teale match and completion. Confirm proper completion of bonds and acceptance of Cashier's Check alternative. All information entered into Teale and scanned in IWAS. Confirm criminal background clearance in place. Confirm asbestos open book examination results received. Confirm receipt of License Fee. Obtain single corrections by email/phone and multiple corrections by mail. Perform final check on prior/current enforcement issues. Review IWAS and update Teale with new business records and issued license number. Update Teale to order any additional pocket license card or wall certificate.
LA-3	**Contractor's License – Non-Sole Owner:** Once examination passed, applicant notified of requirements for issuance of license, including all bonds (contractor, qualifier, LLC Worker, disciplinary), workers' compensation certification, exemption forms, liability insurance (confirm amount with additional personnel with supplemental class), inactivation or qualifier percentage statements are reviewed for personnel name, business name/class compatibility and Teale match and completion. SOS confirmation of corporate, LLC, partnership current registration status and personnel of record. Confirm proper completion of bonds and acceptance of Cashier's Check alternative. All information entered into Teale and scanned in IWAS. Confirm criminal background clearance in place. Confirm asbestos open book examination results received. Confirm receipt of License Fee. Obtain single corrections by email/phone and multiple corrections by mail. Perform final check on prior/current enforcement issues. Review IWAS/update Teale with new business mailing, physical, residential address. Perform final check on SOS confirmation. Review IWAS and update Teale with new business records and issued license number. Update Teale to order any additional pocket license card or wall certificate.

Task Code	Task Activity
LA-4	**Supplemental Class (for existing license):** Process is identical to combining the process for Original Contractor's Application and Contractor's License Non-Sole Owner except for the following differences: Perform project class review; Research and confirm multiple entity qualifier issues; Post application in Teale and scan into IWAS and Refer for designated exams (No trade exam for C-61/D Class) (rather than Post application and schedule examination(s) shown in Original Contractor's Application); Note Teale license if multiple qualifier or waiver; Return to technician for processing; Return corrections by mail (rather than one correction by phone); Grant additional classification to license on Teale and update IWAS.
LA-5	**Additional Class (for original license):** Process is identical to combining the process for Original Contractor's Application and Contractor's License Non-Sole Owner except for the following differences: Perform project class review; Research and confirm multiple entity qualifier issues; Post application in Teale and scan into IWAS and Refer for designated exams (No trade exam for C-61/D Class) (rather than Post application and schedule examination(s) shown in Original Contractor's Application); Note Teale license if multiple qualifier or waiver; Return to technician for processing; Return corrections by mail (rather than one correction by phone); Grant additional classification to license on Teale and update IWAS.
LA-6	**Replacing Qualifier (RME / RMO):** See Supplemental (Additional) Class process shown above. Except granting new qualifier to existing license rather than a new additional class to an existing license.
LA-7	**Hazardous Substance Removal Certificate:** Receive application and fee. Complete initial review to identify military, disaster area, public works and power of attorney. Send application to data entry (Teale), enter initial review and scan documents (IWAS). Perform SOS confirmation of Non-Sole Owner personnel of record and registration status. Verify qualifier and personnel eligibility. Confirm eligibility based on current classes held. No experience verification required. Review and verify all questions answered. Review criminal background disclosures and research prior/current enforcement issues, such as judgments, payments of claims and outstanding liabilities. Obtain required clearances. Research and review prior void applications. Obtain single corrections by mail and return app for multiple corrections. Perform final check of SOS confirmation on Non-Sole Owner applications. Make check on prior/current enforcement issues. Post application and schedule examination(s). Notify exam of any military, expedite, ADA/translator and update Teale and IWAS. Upon exam completion, perform final check on prior/current enforcement issues. Update Teale and IWAS with certification. Review IWAS and update Teale additional pocket card or wall license request.
LA-8	**Asbestos Certification:** Same steps as Hazardous Substance Removal Certification shown above. Except verify question 9 – bidding purposes only and confirm certification vs. C-22.
LA-9	**HIS Salesperson – Initial Registration:** Receive application and fee. Complete initial review to identify military, disaster area, public works and power of attorney. Send application to data entry (Teale), enter initial review and scan documents (IWAS). Verify previous HIS registration if renewable. Verify personnel eligibility/age requirement. No experience verification required. Review and verify all questions answered. Review criminal background disclosures and research prior/current enforcement issues, such as judgments, payments of claims and outstanding liabilities. Obtain required clearances. Research and review prior void applications. Obtain single corrections by mail and return app for multiple corrections. Make final check on prior/current enforcement issues. Confirm criminal background clearances in place. Issue license and mail registration.
LA-10	**Replacement Pocket License or Wall Certificate:** Receive request for license with fee, send to IWAS to scan and confirm license in Teale. Order pocket/wall certification in Teale and mail replacement.

Task Code	Task Activity
LA-11	**Add Personnel Change:** Receive application and fee. Send to IWAS to scan and update Teale. Review Teale (CSLB & SOS). Complete criminal background check, flag reviews and clear judgements. Return for correction if needed. Ensure qualifier or officer gets criminal background check. Return for corrections if needed and review when returned. Update Teale and IWAS and complete 2nd flag review. Add personnel on license. Notify licensee Personnel Change is complete.
LA-12	**Name Change:** Receive application and fee. Send to IWAS to be scanned. Enter date in Teale. Confirm change has been within 90 days. Confirm no change in entity status or classes. Review Teale (CSLB and SOS) for flags and clear judgments. Return for corrections if needed and review upon return. Update Teale and IWAS. Mail license if fee paid.
Renewal Tasks	
LR-1	**Biennial Renewal - HIS:** Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Review Teale (CSLB) for flags. Return for corrections if needed and review upon return. Update Teale and IWAS. Send pocket card.
LR-2	**Biennial Contractor Renewal – Active – Sole Owner:** Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Confirm no change in business entity or qualifier. Document change in address. Confirm appropriate signatures. View and clear pending transactions, such as workers' compensation and bonds. Confirm no outstanding judgments or liabilities and clear before renewal. Clear any suspension except for workers' compensation. Includes tasks for delinquent activity renewal: confirm no work completed during unlicensed period and review contractor's petition for retroactive renewal if beyond their control. Return for corrections if needed and review corrections. Update Teale and IWAS.
LR-3	**Biennial Contractor Renewal – Active – Non-Sole Owner:** Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Review Teale (CSLB & SOS) to confirm if active. New corporate registration number requires new license. Cannot renew if SOS suspensions. Corporate name change must be confirmed with SOS and CSLB before renewal. Confirm no change in business entity or qualifier. Confirm all bonds in place, LLC insurance, and workers' compensation or exemption. Document change in address. Confirm appropriate signatures, including officials, partners and qualifier. View and clear pending transactions, such as workers' compensation and bonds. Confirm no outstanding judgments or liabilities and clear before renewal. Clear any suspension except for workers' compensation. Includes tasks for delinquent activity renewal: confirm no work completed during unlicensed period and review contractor's petition for retroactive renewal if beyond their control. Return for corrections if needed and review corrections. Update Teale and IWAS. Pocket card automatically ordered and sent out.
LR-4	**Timely Inactive Renewal – Sole Owner:** Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Review Teale (CSLB). Confirm no change in business entity or qualifier. Document change in address. Confirm appropriate signatures. View and clear pending transactions, such as workers' compensation and bonds. Confirm no outstanding judgments or liabilities and clear before renewal. Clear any suspension except for workers' compensation. Includes tasks for delinquent activity renewal: confirm no work completed during unlicensed period and review contractor's petition for retroactive renewal if beyond their control. Return for corrections if needed and review corrections. Update Teale and IWAS.

Task Code	Task Activity
LR-5	**Timely Inactive Renewal – Non-Sole Owner:** Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Review Teale (CSLB & SOS) to confirm if active. New corporate registration number requires new license. Cannot renew if SOS suspensions. Corporate name change must be confirmed with SOS and CSLB before renewal. Confirm no change in business entity or qualifier. Confirm all bonds in place, LLC insurance, and workers' compensation or exemption. Document change in address. Confirm appropriate signatures including officials, partners and qualifier. View and clear pending transactions, such as workers' compensation and bonds. Confirm no outstanding judgments or liabilities and clear before renewal. Clear any suspension except for workers' compensation. Includes tasks for delinquent activity renewal: confirm no work completed during unlicensed period and review contractor's petition for retroactive renewal if beyond their control. Return for corrections if needed and review corrections. Update Teale and IWAS. Pocket card automatically ordered and sent out.
LR-6	**Reactivate Contractor's License – Sole Owner:** Respond to requests for application. Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Review Teale (CSLB). Confirm no outstanding judgments or liabilities and clear before renewal. Clear any suspension except for workers' compensation. Confirm appropriate bonds in place. Return for corrections if needed and review corrections. Update Teale and IWAS. Post application. No exam is required. Mail license.
LR-7	**Reactivate Contractor's License – Non-Sole Owner:** Respond to requests for application. Receive application and fee. Enter data into Teale and send to IWAS to be scanned. Review Teale (CSLB & SOS). Confirm appropriate signatures. Confirm appropriate bonds in place. Confirm no change in business entity. Document change in address. View and clear pending transactions. Confirm no outstanding judgments or liabilities and clear before renewal. Clear any suspension except for workers' compensation. Return for corrections if needed and review corrections. Update Teale and IWAS. Post application. No exam is required. Mail license.
Licensing General Work Tasks	
LG-1	**Other Licensing Tasks:** Performance measures tracking, updating policies, standards and manuals; research and pilot programs, provide training on related tasks, monitor industry trends; coordination with the Board or with other agencies; respond to inquiries, respond to public records requests; miscellaneous clerical work; travel support and other administrative support. Special projects/assignments outside the normal work duties; could include one-time projects; implementation of new processes. Other work tasks not described in the other licensing tasks.
LG-2	**Licensing Supervision:** Managing staff assignments, schedules and timesheet approvals, conducting meetings, providing guidance/training to staff and reviewing quality and quantity of staff work products. Completing performance management and disciplinary action tasks. Performing analysis and reporting (written and verbal) regarding your program area, answering questions regarding program performance, or issues; meeting with upper level management; monitoring program costs/invoices, and providing feedback into program budget, strategic plan, and/or operational goals. Any other supervisory/program management time not already mentioned in this description.
Exam Administration	
XA-1	**Exam Administration:** Review accommodation and translator requests. Schedule exam, exam proctors and provide exam booklet. Set-up and prepare test station. Monitor/oversee exam. Respond with exam results. Prepare incident reports. Update Teale/IWAS. Forward Original Application to file then back to applicant.

Task Code	Task Activity
Exam Administration General Work Tasks	
XA-2	**Other Exam Administration Tasks:** Performance measures tracking, updating policies, standards and manuals; research and pilot programs, provide training on related tasks, monitor industry trends; coordination with the Board or with other agencies; respond to inquiries, respond to public records requests; miscellaneous clerical work; travel support and other administrative support. Special projects/assignments outside the normal work duties; could include one-time projects; implementation of new processes. Other work tasks not described in the other exam development tasks.
XA-3	**Exam Administration Supervision:** Managing staff assignments, schedules and timesheet approvals, conducting meetings, providing guidance/training to staff and reviewing quality and quantity of staff work products. Completing performance management and disciplinary action tasks. Performing analysis and reporting (written and verbal) regarding your program area, answering questions regarding program performance, or issues; meeting with upper level management; monitoring program costs/invoices, and providing feedback into program budget, strategic plan, and/or operational goals. Any other supervisory/program management time not already mentioned in this description.
Exam Development	
XD-1	**Non-Asbestos and Non- Hazardous Substance Removal Exams:** Select, coordinate and oversee Subject Matter Experts (SMEs) to support occupational analysis and exam development. Update each exam by completing an occupational analysis: research, job audit interviews, SME workshops, survey licensees, finalize exam plan/outline and document validation process. Complete item bank development: reclassify items in SME workshops; write new items in SME workshops; create/revise blueprints, charts, etc. used for tests; research, format, proofread, and edit items; and set pass point for newly updated item bank in SME workshop. Analyze results of pass point workshop in SPSS to set the final pass point for the bank.
XD-2	**Asbestos Certification:** These certifications follow the same Exam Development tasks as Non-Asbestos and Non-Hazardous Substance Removal Exams.
XD-3	**Hazardous Substance Removal Certification:** These certifications follow the same Exam Development tasks as Non-Asbestos and Non-Hazardous Substance Removal Exams.
Exam Development General Work Tasks	
XD-4	**Other Exam Development Tasks:** Perform ongoing statistical analysis of item and exam performance. Create new exam versions/forms as needed. Research candidate comments and appeals. Create and conduct surveys on various CSLB issues. Evaluate/review other national licensing exams; update policies, standards and manuals; research and pilot programs, provide training on related tasks, monitor industry trends in various trades, coordinate with Board or other agencies on exam development and maintenance, classification studies for the department; prepare SME contracts, workshop materials and payment documents; audit and record SME expenses, miscellaneous clerical work, travel support and other administrative support; other work tasks not described in other exam development tasks.
XD-5	**Exam Development Supervision:** Managing staff assignments, schedules and timesheet approvals, conducting meetings, providing guidance/training to staff and reviewing quality and quantity of staff work products. Monitoring 46 item banks' quality, statistics, security, and usage. Completing performance management and disciplinary action tasks. Performing analysis and reporting (written and verbal) regarding your program area, answering questions regarding program performance, or issues; meeting with upper level management; monitoring program costs/invoices, and providing feedback into program budget, strategic plan, and/or operational goals. Any other supervisory/program management time not already mentioned in this description.

Task Code	Task Activity
Enforcement	
EA-1	**Licensee Complaint (Sole Owner):** CSLB receives a Sole Owner complaint and forwards it to the Customer Service Representative (CSR). The CSR determines if the complaint falls within the jurisdiction of the CSLB and reviews databases (such as CLETS, CLEAR, DMV, and Teale) to identify unlicensed contractors. Both parties are contacted, and the licensee is encouraged to settle the complaint. If not settled, the CSR may Mediate or forward the complaint to an Enforcement Representative if complaint meets criteria for a reactive investigation. After Mediation, mandatory and voluntary arbitration are considered. The CSR schedules the Arbitrator and Subject Matter Experts as needed then follows up to ensure the results of the Arbitration are implemented. As an option, the CSR can offer that the complainant contacts the contractor's surety or takes the contractor to small claims or civil court. This task includes all work activity associated with licensee complaints for Sole Owners.
EA-2	**Licensee Complaint (Non-Sole Owner):** CSLB receives a Non-Sole Owner complaint and forwards it to the Customer Service Representative (CSR). The CSR determines if the complaint falls within the jurisdiction of the CSLB and reviews databases (such as CLETS, CLEAR, DMV, and Teale) to identify unlicensed contractors and Secretary of State to confirm corporation status. Both parties are contacted, and the licensee is encouraged to settle the complaint. If not settled, the CSR may Mediate or forward the complaint to an Enforcement Representative if complaint meets criteria for a reactive investigation. After Mediation, Mandatory and Voluntary Arbitration are considered. The CSR schedules the Arbitrator and Subject Matter Experts as needed then follows up to ensure the results of the Arbitration are implemented. As an option, the CSR can offer that the complainant contacts the contractor's surety or takes the contractor to small claims or civil court. This task includes all work activity associated with licensee complaints for Non-Sole Owners, including the time needed to interview multiple license personnel.
EA-3	**Non-Licensee Complaint:** CSLB receives the non-licensee complaint and collects evidence to confirm that the accused operated without a license. Databases (including CLETS, CLEAR, DMV, Teale) are searched to identify unlicensed contractors. An Injunction may be initiated to stop work by working through the Attorney General or a local District Attorney. A Citation may be prepared and issued. If the Citation is appealed, a Mandatory Settlement Conference is held followed by a Hearing before an Administrative Law Judge if necessary. If unlicensed work continues, the complaint may be forwarded to a local District Attorney. This task includes all work activity associated with non-licensee complaints.
EA-4	**HIS Complaint:** CSLB receives the HIS complaint and collects evidence to determine financial injury and to confirm that the accused operated without a license. Databases (including CLETS, CLEAR, DMV, Teale) are searched to identify unlicensed contractors. An Injunction may be initiated to stop work by working through the Attorney General or a local District Attorney. A Citation may be prepared and issued. If the Citation is appealed, a Mandatory Settlement Conference is held followed by a Hearing before an Administrative Law Judge if necessary. If unlicensed work continues, the complaint may be forwarded to a local District Attorney. Action may be taken against contractor of an unlicensed HIS. This task includes all work activity associated with HIS complaints.

Task Code	Task Activity
EA-5	**Licensee Investigation (Sole Owner):** After a Sole-Owner complaint moves through arbitration and the licensee fails to implement the decision, an investigation is initiated. A full review of databases (Teale) for background on the licensee, including any flag reviews, is completed. The background information is received from the initial complaint and this review and a meeting with the complainant and licensee is scheduled to collect further information. Research a legal determination to conclude whether the licensee is operating out-of-class. Any subsequent arrests or convictions related to contractor activity are reviewed along with checking proper licenses and Workman's Compensation documentation. If a violation is established and is isolated or minor, a Warning Letter is sent. If no progress, a Letter of Admonishment is sent, and an Informal Conference is scheduled if requested. No admission of violation is required if violation is addressed. This task includes all work activity associated with licensee investigations for Sole Owners.
EA-6	**Licensee Investigation – Citation (Sole Owner):** If Sole Owner licensee does not comply with a Letter or Warning and Letter of Admonishment or if a serious violation has occurred, then a Citation is issued. If licensee contests the Citation, a Mandatory Settlement Conference is scheduled followed by a Hearing before an Administrative Law Judge if necessary. If licensee does not prevail or comply, license may be Suspended or Revoked. This task includes all work activity associated with Citations for Sole Owners.
EA-7	**Licensee Investigation – Accusation (Sole Owner):** If a Sole Owner licensee does not comply with a Citation or has made a flagrant violation of the law, an Accusation is sent to the Attorney General with the intent to Suspend or Revoke the contractor's license. A Mandatory Settlement Conference may be offered. If not settled, licensee can defend themselves at a Hearing before an Administrative Law Judge. As an option, the licensee and the Registrar may negotiate a settlement (Stipulation). If licensee fails to respond, Registrar decides on appropriate action and determines length of time license is to be Revoked or Suspended. A Disciplinary Bond requirement and recovery of investigation and enforcement costs is established. An Injunction may be filed against unlawful activity and a blatant violation may be referred for a possible criminal filing to a local district attorney. The complaint is disclosed on the CSLB website. This task includes all work activity associated with Accusations for Sole Owners.
EA-8	**Licensee Investigation (Non-Sole Owner):** After a Non-Sole Owner complaint moves through Arbitration and the licensee fails to implement the decision, an investigation is initiated. A full review of databases (Teale) for background on the licensee, including any flag reviews, is completed, including additional review for corporation, LLC or partnership background. The background information is received from the initial complaint and this review and a meeting with the complainant and licensee is scheduled to collect further information. Research is conducted to make a legal determination as to whether the licensee is operating out-of-class. Any subsequent arrests or convictions related to contractor activity are reviewed along with checking proper licenses and Workman's Compensation documentation. If a violation is established and is isolated or minor, a Warning Letter is sent. If no progress, a Letter of Admonishment is sent, and an Informal Conference is scheduled if requested. No admission of violation is required if violation is addressed. This task includes all work activity associated with licensee investigations for Non-Sole Owners.
EA-9	**Licensee Investigation – Citation (Non-Sole Owner):** If a Non-Sole Owner licensee does not comply with a Letter or Warning and Letter of Admonishment or if a serious violation has occurred, then a Citation is issued. If licensee contests the Citation, a Mandatory Settlement conference is scheduled followed by a Hearing before an Administrative Law Judge if necessary. If licensee does not prevail or comply, license may be Suspended or Revoked. This task includes all work activity associated with Citations for Non-Sole Owners.

Task Code	Task Activity
EA-10	**Licensee Investigation – Accusation (Non-Sole Owner):** If a Non-Sole Owner licensee does not comply with a Citation or has made a flagrant violation of the law, an Accusation is sent to the Attorney General with the intent to Suspend or Revoke the contractor's license. A Mandatory Settlement Conference may be offered. If not settled, licensee can defend themselves at a Hearing before an Administrative Law Judge. As an option, the licensee and the Registrar may negotiate a settlement (Stipulation). If licensee fails to respond, Registrar decides on appropriate action and determines length of time license is to be Revoked or Suspended. A Disciplinary Bond requirement and recovery of investigation and enforcement costs is established. An Injunction may be filed against unlawful activity and a blatant violation may be referred for a possible criminal filing to a local District Attorney. The complaint is disclosed on the CSLB website. This task includes all work activity associated with Accusations for Non-Sole Owners.
EA-11	**Non-Licensee Investigation:** Often without a specific complaint, the CSLB completes Proactive Investigations on the underground economy and unlicensed contractors through the Statewide Investigative Fraud Team (SWIFT). SWIFT may request proof of license at any job sit without cause or complaint. Undercover STINGS may be scheduled in partnership with County Sheriffs. SWEEPS to monitor jobsites may include partnerships with other agencies such as the Department of Industrial Relations. LEADS may report to active job site to review complaints of possible violations. Injunction against unlicensed activity may be pursued and referral to the local District Attorney for criminal actions may be pursued. This task includes all work activity associated with Proactive Investigations for non-licensees.
Enforcement General Work Tasks	
EF-12	**Other Enforcement Tasks:** Tracking performance measures; updating policies, standards and manuals; completing research; implementing pilot programs; providing training on related tasks, monitoring industry trends, coordinating with the Board or with other agencies; responding to inquiries and public records requests; performing miscellaneous clerical work, travel support and other administrative support; perform special projects or assignments outside normal work hours including one time projects; implementing new processes; and, any other work tasks not described in the other enforcement tasks.
EF-13	**Enforcement Supervision:** Managing staff assignments, developing schedules and approving timesheets; conducting meetings, providing guidance and training to staff; reviewing quality and quantity of staff work products; completing performance management and disciplinary action tasks; performing analysis and reporting (both written and verbal) regarding the program areas; answering questions regarding program performance; meeting with upper level management; monitoring program costs and invoices; providing feedback into the program budget, strategic plan and operational goals; and, any other supervisory/program management time not already mentioned in this description.

Appendix B: Summary of Fee Revenue Analysis

The fee costing analysis identified the additional revenue required to meet the expenditures and targeted four to five-month reserve. This appendix summarizes the projected revenue using the current fee, the projected revenue using the recommended fee, and the total additional revenue generated by each fee type. The table outlines how the average $21.3 million deficit in meeting the projected expenditures and four to five-month reserve is covered by the recommended increase in fees.

Fee Name	Current Fee	Recom. Fee	Percent Increase	Increase amount	Fiscal Year	Estimated Volume	Current Fee Revenue	Recommended Fee Projected Revenue	Additional Projected Revenue
New Applications									
Original Contractor's Application fee *Estimated volume based on 4-year avg.*	$330	$450	36%	$120	21-22	22,735	$7,502,550	$10,230,750	$2,728,200
					22-23	22,735	$7,502,550	$10,230,750	$2,728,200
					23-24	22,735	$7,502,550	$10,230,750	$2,728,200
					24-25	22,735	$7,502,550	$10,230,750	$2,728,200
					25-26	22,735	$7,502,550	$10,230,750	$2,728,200
Initial Contractor's License Fee - Sole Owner *Estimated volume based on 3-year avg. due to sharp increase in FY 16-17*	$200	$200	0%	$0	21-22	10,068	$2,013,600	$2,013,600	$0
					22-23	10,068	$2,013,600	$2,013,600	$0
					23-24	10,068	$2,013,600	$2,013,600	$0
					24-25	10,068	$2,013,600	$2,013,600	$0
					25-26	10,068	$2,013,600	$2,013,600	$0
Initial Contractor's License Fee - Corp/Partners/JV/LLC *Estimated volume based on 3-year avg. due to sharp increase in FY 16-17*	$200	$350	75%	$150	21-22	6,712	$1,342,400	$2,349,200	$1,006,800
					22-23	6,712	$1,342,400	$2,349,200	$1,006,800
					23-24	6,712	$1,342,400	$2,349,200	$1,006,800
					24-25	6,712	$1,342,400	$2,349,200	$1,006,800
					25-26	6,712	$1,342,400	$2,349,200	$1,006,800
Additional Classification (for original license) *Estimated volume based on 2-year avg.; previously combined with other metrics*	$75	$150	100%	$75	21-22	2,355	$176,625	$353,250	$176,625
					22-23	2,355	$176,625	$353,250	$176,625
					23-24	2,355	$176,625	$353,250	$176,625
					24-25	2,355	$176,625	$353,250	$176,625
					25-26	2,355	$176,625	$353,250	$176,625

Fee Name	Current Fee	Recom. Fee	Percent Increase	Increase amount	Fiscal Year	Estimated Volume	Current Fee Revenue	Recommended Fee Projected Revenue	Additional Projected Revenue
Home Improvement Salesperson (HIS) Initial Registration Fee *Estimated volume based on 3-year avg. after SB 561*	$83	$200	141%	$117	21-22	9,824	$815,392	$1,964,800	$1,149,408
					22-23	9,824	$815,392	$1,964,800	$1,149,408
					23-24	9,824	$815,392	$1,964,800	$1,149,408
					24-25	9,824	$815,392	$1,964,800	$1,149,408
					25-26	9,824	$815,392	$1,964,800	$1,149,408
Hazardous Substance Removal Certification *Estimated volume based on 4-year avg*	$83	$125	51%	$42	21-22	156	$12,948	$19,500	$6,552
					22-23	156	$12,948	$19,500	$6,552
					23-24	156	$12,948	$19,500	$6,552
					24-25	156	$12,948	$19,500	$6,552
					25-26	156	$12,948	$19,500	$6,552
Asbestos Certification *Estimated volume based on 4-year avg.*	$83	$125	51%	$42	21-22	66	$5,478	$8,250	$2,772
					22-23	66	$5,478	$8,250	$2,772
					23-24	66	$5,478	$8,250	$2,772
					24-25	66	$5,478	$8,250	$2,772
					25-26	66	$5,478	$8,250	$2,772
Re-Examination *Estimated volume based on 3-year avg. after change in pass rate in FY 16/17*	$60	$100	67%	$40	21-22	17,757	$1,065,420	$1,775,700	$710,280
					22-23	17,757	$1,065,420	$1,775,700	$710,280
					23-24	17,757	$1,065,420	$1,775,700	$710,280
					24-25	17,757	$1,065,420	$1,775,700	$710,280
					25-26	17,757	$1,065,420	$1,775,700	$710,280
License Maintenance									
Supplemental Classification (for existing license); Replacing the Qualifier (RME/RMO) *Estimated volume based on 2-year avg.; previously combined with other metrics*	$150	$230	53%	$80	21-22	6,443	$966,450	$1,481,890	$515,440
					22-23	6,443	$966,450	$1,481,890	$515,440
					23-24	6,443	$966,450	$1,481,890	$515,440
					24-25	6,443	$966,450	$1,481,890	$515,440
					25-26	6,443	$966,450	$1,481,890	$515,440

Fee Name	Current Fee	Recom. Fee	Percent Increase	Increase amount	Fiscal Year	Estimated Volume	Current Fee Revenue	Recommended Fee Projected Revenue	Additional Projected Revenue
Add Personnel/Officer Change (for existing licenses) *Estimated volume based on 2-year avg.; only 2 years available metrics*	$100	$125	25%	$25	21-22	1,974	$197,400	$246,750	$49,350
					22-23	1,974	$197,400	$246,750	$49,350
					23-24	1,974	$197,400	$246,750	$49,350
					24-25	1,974	$197,400	$246,750	$49,350
					25-26	1,974	$197,400	$246,750	$49,350
Replacement Pocket/Wall Certificate *Estimated volume based on 4-year avg*	$12	$25	108%	$13	21-22	8,631	$103,572	$215,775	$112,203
					22-23	8,631	$103,572	$215,775	$112,203
					23-24	8,631	$103,572	$215,775	$112,203
					24-25	8,631	$103,572	$215,775	$112,203
					25-26	8,631	$103,572	$215,775	$112,203
Name Change Fee *Estimated volume based on FY 18-19, only recorded metric*	n/a	$100	n/a	$100	21-22	15,954	$0	$1,595,400	$1,595,400
					22-23	15,954	$0	$1,595,400	$1,595,400
					23-24	15,954	$0	$1,595,400	$1,595,400
					24-25	15,954	$0	$1,595,400	$1,595,400
					25-26	15,954	$0	$1,595,400	$1,595,400
Renewal Fees									
Biennial Contractor - Active Timely Renewal - Sole Owner *Estimated volume based on 4-year avg.*	$450	$450	0%	$0	21-22	67,231	$30,253,950	$30,253,950	$0
					22-23	67,231	$30,253,950	$30,253,950	$0
					23-24	67,231	$30,253,950	$30,253,950	$0
					24-25	67,231	$30,253,950	$30,253,950	$0
					25-26	67,231	$30,253,950	$30,253,950	$0
Biennial Contractor - Active Timely Renewal - Corp/Partners/JV/LLC *Estimated volume based on 4-year avg.*	$450	$700	56%	$250	21-22	44,821	$20,169,450	$31,374,700	$11,205,250
					22-23	44,821	$20,169,450	$31,374,700	$11,205,250
					23-24	44,821	$20,169,450	$31,374,700	$11,205,250
					24-25	44,821	$20,169,450	$31,374,700	$11,205,250
					25-26	44,821	$20,169,450	$31,374,700	$11,205,250

Fee Name	Current Fee	Recom. Fee	Percent Increase	Increase amount	Fiscal Year	Estimated Volume	Current Fee Revenue	Recommended Fee Projected Revenue	Additional Projected Revenue
4-yr Timely Inactive Renewal - Sole Owner *Estimated volume based on 4-year avg.*	$225	$300	33%	$75	21-22	14,427	$3,246,075	$4,328,100	$1,082,025
					22-23	14,427	$3,246,075	$4,328,100	$1,082,025
					23-24	14,427	$3,246,075	$4,328,100	$1,082,025
					24-25	14,427	$3,246,075	$4,328,100	$1,082,025
					25-26	14,427	$3,246,075	$4,328,100	$1,082,025
4-yr Timely Inactive Renewal - Corp/Partners/JV/LLC *Estimated volume based on 4-year avg.*	$225	$500	122%	$275	21-22	1,427	$321,075	$713,500	$392,425
					22-23	1,427	$321,075	$713,500	$392,425
					23-24	1,427	$321,075	$713,500	$392,425
					24-25	1,427	$321,075	$713,500	$392,425
					25-26	1,427	$321,075	$713,500	$392,425
Reactivate Inactive Contractor's License - Sole Owner *Estimated volume based on 4-year avg.*	$450	$450	0%	$0	21-22	1,532	$689,400	$689,400	$0
					22-23	1,532	$689,400	$689,400	$0
					23-24	1,532	$689,400	$689,400	$0
					24-25	1,532	$689,400	$689,400	$0
					25-26	1,532	$689,400	$689,400	$0
Reactivate Inactive Contractor's License - Corp/Partners/JV/LLC *Estimated volume based on 4-year avg.*	$450	$700	56%	$250	21-22	151	$67,950	$105,700	$37,750
					22-23	151	$67,950	$105,700	$37,750
					23-24	151	$67,950	$105,700	$37,750
					24-25	151	$67,950	$105,700	$37,750
					25-26	151	$67,950	$105,700	$37,750
Biennial Renewal - HIS *Estimated volume based on 3-year avg. after SB 561*	$95	$200	111%	$105	21-22	4,795	$455,525	$959,000	$503,475
					22-23	4,795	$455,525	$959,000	$503,475
					23-24	4,795	$455,525	$959,000	$503,475
					24-25	4,795	$455,525	$959,000	$503,475
					25-26	4,795	$455,525	$959,000	$503,475
TOTAL					21-22		$69,405,260	$90,679,215	$21,273,955
					22-23		$69,405,260	$90,679,215	$21,273,955
					23-24		$69,405,260	$90,679,215	$21,273,955
					24-25		$69,405,260	$90,679,215	$21,273,955
					25-26		$69,405,260	$90,679,215	$21,273,955

Appendix C: About CPS HR Consulting

Report Contributors	
Chris Atkinson, MS	Project Manager
Robert Copp	Project Consultant
Jeffery Mikles	Technical Advisor
Paula North, MA	Project Consultant

CPS HR is an innovative, client-centered human resources and management consulting firm specializing in solving the unique problems and challenges faced by government and non-profit agencies. As a self-supporting public agency, we understand the needs of public sector clients and have served as a trusted advisor to our clients for more than 25 years. The distinctive mission of CPS HR is to transform human resource management in the public sector.

CPS HR offers clients a comprehensive range of competitively priced services, all of which can be customized to meet your organization's specific needs. We are committed to supporting and developing strategic organizational leadership and human resource management in the public sector. We offer expertise in the areas of classification and compensation, organizational strategy, recruitment and selection, and training and development.

CPS HR occupies a unique position among its competitors in the field of government consulting; as a Joint Powers Authority (JPA), whose charter mandates that we serve only public sector clients, we actively serve all government sectors including Federal, State, Local, Special Districts and Non-Profit Organizations. This singular position provides CPS HR with a systemic and extensive understanding of how each government sector is inter-connected to each other and to their communities. That understanding, combined with our knowledge of public and private sector best practices, translates into meaningful and practical solutions for our clients' operational and business needs.

With more than 80 full-time employees as well as 200+ project consultants and technical experts nationwide, CPS HR delivers breakthrough solutions that transform public sector organizations to positively impact the communities they serve.

Attachment C – Major Studies

Battery Energy Storage Systems (BESS) – Evaluation of Alternative Contractor License Requirements for Battery Energy Storage Systems

UC BERKELEY
LABOR CENTER

Evaluation of Alternative Contractor License Requirements for Battery Energy Storage Systems

Final Report for UC Berkeley Contract with the Contractor State License Board for contract CSLB-20-01, entitled "Energy Storage Systems Consultant Services"

June 30, 2021

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Retired, U.S. Chemical Safety Board

Contents

Executive Summary

A. Introduction

This report, carried out at the request of the California State Licensing Board, evaluates alternative proposals for the specific contractor license(s) that should be required for battery energy storage systems (BESS), particularly those installed in conjunction with installations of solar photovoltaic (solar PV) systems. The rapid and safe development of the BESS industry—i.e., businesses that design, install, maintain, and repair BESS—is essential for actualizing California's commitment to achieve 100% carbon-free electricity, as mandated in SB 100 and other laws and orders. Contractor license requirements, including for emerging technologies such as BESS, determine the minimum qualifications that business owners and their workforces must meet to be allowed to install specific technologies; their purpose is to ensure consumer protection, including safety and the general welfare of the public. They are therefore a fundamental component of the California state government's support for and oversight of the construction industry, including of specialty contractors who install emerging technologies such as BESS.

B. Options under Consideration by the CSLB

The California State Licensing Board (CSLB) has been addressing contractor classification jurisdictional issues for BESS since 2015. Currently, the C-10 electrical contractors license is required to perform most BESS installations; the exception to this rule is that C-46 solar contractors are permitted to install BESS in conjunction with a solar PV system. Two trade associations have been very active in arguing their positions, with the California Solar and Storage Association (CALSSA) advocating that the C-46 license include BESS under some conditions and the National Electrical Contractors Association and the International Brotherhood of Electrical Workers (NECA-IBEW) advocating to preclude the C-46 license from installing BESS. After extensive stakeholder input and internal research, the CSLB issued an RFP that called for an independent review of the issues, and in the fall of 2020 it awarded UC Berkeley the contract.

The independent review we present here analyzes the following question: Should C-46 contractors be permitted to install solar-paired BESS, and if so, under what specific conditions? Specifically, the four alternatives that the CSLB asked us to consider are:

Option 1: Preclude the C-46 Solar classification from installing battery energy storage systems.

California Code of Regulations Section (CCR) 832.46 currently defines a solar contactor as follows:

- A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems.
- A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.

Option 2: Permit the C-46 Solar classification to install battery energy storage systems on specified residential units with the following restrictions:

- Limit the BESS installation authority to a PV system up to 10 kilowatts on a single-family dwelling or a duplex, and the BESS must not exceed a 5-kW (backup)/20-kWh (energy);
- The BESS is installed at the same time as the solar photovoltaic energy system; and,
- No upgrade or alteration is made to the existing electrical system of the structure.

Option 3: Permit the C-46 Solar classification to install battery energy storage systems on residential units with the following restrictions:

- Limit the BESS installation authority to a PV system on a residential dwelling;
- The BESS is installed at the same time as the solar photovoltaic energy system;
- No upgrade or alteration is made to the existing electrical system of the structure; and,
- With plans drawn or approved by an electrical engineer.

Option 4: Make no change to the existing C-46 classification

- Assert that current law allows C-46 to install BESS

C. Research Results

Our recommendations are based on three related analyses:

1. A profile of the contractors involved in BESS installations in California, looking at the licenses held for BESS installations by count, capacity, customer class, rural vs. urban, and other subcategories of BESS.
2. An evaluation of the risks and hazards associated with BESS, the qualifications needed for safe and effective installation, and the qualifications that are required of C-10 and C-46 contractors *and* their workforces.
3. An evaluation of the economic implications of alternative licensing scenarios, including the availability of contractors and workers, the implications for installation costs, the transition costs, and economic co-benefits.

Our analysis is based on careful review of the public record; interviews with key stakeholders, CSLB staff, and other relevant government officials; and analysis of data from a variety of sources. The safety analysis evaluates the ongoing research on BESS by organizations such as National Fire Protection Association (NFPA), the Underwriters Laboratory,[1] DNV,[2] and FM Global.[3] We review the relevant codes and standards, which have undergone significant revision over the last five years to address BESS hazards, risks and mitigations. We examine not only the relevant

1 Underwriters Laboratory (UL) is a safety science, testing and third-party certification organization.

2 DNV—formerly DNV GL—is an international organization expert in risk management and quality assurance with corporate headquarters in Norway.

3 FM Global is a mutual insurance company that provides risk engineering services to primarily large corporations. FM Global publishes well-regarded loss prevention data sheets including ESS.

building codes adopted by regulation in California but also the consensus among experts of good practice safety standards and guidelines that have been recently developed to address BESS hazards, including safety data sheets, installation guides, emergency response guidance and battery safety testing data published by BESS manufacturers. We evaluate BESS risks utilizing data related to incident frequency and potential consequences, using recognized and generally accepted risk assessment approaches for electrical and chemical hazards. This includes risk determinations for BESS by the fire service and major insurance companies. Finally, we use existing risk mitigations developed in codes, standards, and technical reports to evaluate the knowledge, skills, and training required for safe BESS work. The economic analysis relies on a dataset produced by matching CSLB contractor license data with data on BESS projects in California from two sources, the Self-Generation Incentive Program (SGIP) dataset and the Interconnection dataset. We also employ data from the National Renewable Energy Lab (NREL) the Bureau of Labor Statistics (BLS) and the Solar Jobs Census.

Our key findings are detailed below:

The profile of contractors performing BESS installations in California reveals that:

1. **Only a very small percentage, by count and by capacity, of BESS installations have been installed by C-46 contractors without a C-10, A, or B license.** This result holds for both the 2015-2020 SGIP dataset the 2020 Interconnection dataset. This aligns with the data and analyses provided by both the NECA-IBEW and the CALSSA stakeholders. While CALSSA correctly asserts that C-46 contractors are involved in a majority of BESS installations, these contractors also hold other licenses that are inclusive of BESS in their scope. The great majority of BESS installations are carried out by contractors with both the C-10 and C-46 licenses.

2. **The very small participation of C-46 only contractors, and the concomitant dominance of contractors with both C-10 and C-46 licenses or C-10 without C-46, holds across the board for every category of BESS project.** It holds for both number of projects and capacity installed, for both residential and commercial projects, for rural as well as urban projects, for different sizes of projects, and for the largest contractors when ranked by number and capacity of installed projects.

3. **The dominance of C-10 contractors, with or without a C-46 license, signifies that the great majority of BESS projects have been carried out by contractors whose electrical workforce must be certified, according to CSLB regulations.** The C-46 contractors who are exempt from this requirement are a tiny percentage of the pool of contractors that have installed BESS in California since 2015.

4. **The very small percentage of contractors holding a C-46 but no C-10, A, or B license leads to the conclusion that precluding or restricting C-46 (no C-10, A or B) contractors will have a negligible effect on the current pool of contractors.**

The evaluation of hazards, risks, and safety issues reveals that:

1. **The hazards of BESS are significant.** The hazards associated with the predominate lithium-ion battery chemistry such as NMC include high energy density, a flammable electrolyte, and potential reactive chemical hazards. The technology poses multiple unique threats to workers, the public, and emergency responders. Serious hazards resulting from thermal runaway events may include reactive chemical hazards, fire, explosion, and venting of toxic gas. Serious electrical hazards are present such arc flash and shock. In addition to thermal runaway, emergency responders potentially face dangers such as deep-seated fires, reignition, and stranded energy.

2. **The risks associated with BESS installations can include deaths and injuries to workers, emergency responders, and occupants of buildings and facilities.** Serious incidents have occurred in all phases of the BESS lifecycle, including construction, installation, and operation. The most significant incident, showing the seriousness of BESS risk in the U.S., occurred in 2019 at the Arizona Public Service (APS) grid utility BESS facility in Surprise, Arizona, during which an LIB thermal runaway led to an explosion. Four firefighters were hospitalized with serious injuries. Other recent lithium-ion BESS incidents include another BESS fire at APS in 2012; a 2013 Port Angeles, Washington, BESS fire connected to a mall; a 2016 fire at a Franklin, Wisconsin, manufacturing plant where BESS were being assembled; a 2017 fire at an Engie Ineo BESS grid-utility facility in Belgium; 29 BESS-related fires in South Korea from 2017 to 2019; and a 2020 BESS fire at an Ørstead grid-utility facility in Liverpool, UK. In late 2020, the U.S. Consumer Products Safety Administration (CPSA) announced a recall of over 1,800 LG RESU 10H LIB related to five fires reported with minor property damage. An additional LG RESU recall was announced in May 2021. Recent documented U.S. commercial and residential BESS incidents have resulted in fires.

3. **BESS risks are significant for grid-utility, industrial, commercial, and residential applications.** Large-scale BESS with greater deployed energy capacity and larger quantities of flammable vent gas and materials have the potential for very high consequence events, but small-scale lithium-ion BESS capacity including residential applications also represents a significant risk. BESS standards and manufacturers' safety documentation acknowledge the potential for BESS hazards such as thermal runaway and arc flash that can threaten workers, occupants, and emergency responders even for smaller-scale applications. Such hazards can be triggered by pre-existing conditions, improper handling, or faulty installation.

4. **The dramatic increase in the number of residential BESS installations exposes a growing number of occupants to BESS hazards.** Compared to commercial BESS installations, residential installations can be even more vulnerable to hazards because residents are at their homes for longer lengths of time, and both day and night. Each residential building is unique with a different electrical system that must be evaluated to mitigate risks associated with BESS installation and operation. Potential residential lithium-ion BESS fires, explosions, and thermal runaway events can also threaten occupants who are unable to respond to alarms or to self-rescue. Small-scale BESS fires can threaten emergency responders and occupants, as was shown in a fire that reignited in the days following the 2013 Port Angeles, Washington, incident.

5. **BESS is a Low Frequency, High Risk technology; while incidents have been rare, they have serious consequences.** Low frequency/high risk technologies pose unique challenges for hazard prevention and mitigation. The chemical safety sector and fire service emphasize the importance of implementation of rigorous, effective safeguards when the hazard is high consequence—even with low frequency events. Available data indicate that BESS incidents are low frequency, with no identified incidents in California. However, we cannot confidently attribute this to a lack of risk, for these reasons:

    - There is no central repository of accident reports that specifically identifies BESS accidents, but lack of reporting does not mean lack of problems.
    - The lack of documented BESS accidents in California may be due to the fact that the great majority of installations have been carried out by contractors holding a C-10 electrical license, as noted above. There is no credible safety record for C-46 contractors without a C-10, A or B license because they have performed so few installations.

6. **Robust safety measures that require significant technical capacity and knowledge are critical to mitigating the risk of BESS systems.** BESS safety measures are embedded in various safety codes which are continually revised to address evolving technologies and risks. The two most relevant are the NFPA and ICC codes, which are developed by panels of subject matter experts who understand BESS hazards, risks, and necessary safeguards. The minimum safety requirements that are established in these codes apply to applications from grid utility to residential, and recognize that BESS in all applications—even in capacities as low as 1kWh—have significant risks that need mitigation. The most recent consensus safety code revisions applicable to BESS have implemented even more rigorous requirements to protect the public and emergency responders. These changes include relatively low kWh thresholds for code coverage, significantly more safety provisions, and the requirement that the design and installation of BESS be performed by "qualified persons," a definition that points unambiguously to the need for electrical training. The serious hazard of thermal runaway events has been a driver of changes to codes, standards, and industry safety guidelines.

7. **There is no specific threshold by size or customer class under which serious safety concerns are absent.** Widely accepted safety standards such as the IFC (2021) NFPA 70 (2020), 70E (2021), and 855 (2020) provide an expert, well-researched, and protective threshold for activation of BESS minimum safety requirements. In the latest codes addressing BESS, safety requirements are triggered at thresholds as low as 1 kWh. For example, the latest version of NFPA 70, the National Electric Code (2020), the California Electric Code 2021 Supplement for R3 and R4 residential occupancies (R3 and R4) and NFPA 855 (2020) for one and two family dwellings all have thresholds for important BESS safety requirements as low as 1 kWh. The codes state that their provisions are based upon minimum requirements to mitigate hazards, and the BESS provisions are needed above this threshold. As the applicable codes and standards illustrate, there is no justifiable threshold, by size or sector, to suggest less hazard or an insignificant risk to apply to BESS installation. There is therefore no basis for distinguishing BESS contractor jurisdiction based upon size or type of application.

8. **Rapidly developing BESS technologies, and codes and standards that perpetually undergo revision in response, require detailed knowledge of multiple hazards and evolving safety requirements.** A broad knowledge of NFPA 70 and 70E, and conformance with multiple sections of NFPA 70, are needed to install BESS. These are listed in existing BESS checklists for building code officials and are generally required in the BESS product installation manuals such as those for the Tesla Powerwall and LG RESU. The safety documentation for both the Tesla Powerwall and LG RESU recognize the serious hazards associated with thermal runaway for their residential use LIB. The Tesla Powerwall 2 has a 90-page installation manual with numerous steps and includes serious safety warnings requiring assessment, decision-making, and knowledge of codes and standards. Installing BESS requires a skilled assessment of the electrical system that is being connected. Manufacturer safety guidance and relevant codes underscore that BESS in any size or application is not a "plug and play" installation, largely due to BESS inherent hazards and because the variability of electrical systems to which BESS is connected requires expert site evaluation.

9. **The main difference between C-10 and C-46 license holders is that the technical capacity of the C-10 workforce is greater than that of the C-46 workforce.** C-10 contractors are required to employ certified electricians to carry out electrical work, whereas C-46 contractors are exempt from the certification requirement. Our analysis of the C-46/C-10 workforces offers a strong contrast of the documented knowledge, skills, and training required by the State of California. Workers performing electrical work under a C-10 contractor must be certified with documented requirements; these include passing a California exam, and 8,000 hours of experience to be a certified general electrician or 4,800 hours of experience to be a certified residential electrician.

10. **Certified electricians must demonstrate experience and training and must pass a test have received training in electrical safety, and have demonstrated to the State a knowledge of the breadth of the safety provisions in NFPA 70E and other codes that address electrical and BESS requirements.** Certification requires demonstrated safety competency, including methods of avoiding electrical shock hazards and arc flash, which are addressed in 70E. These methods involve performing risk assessments and protection calculations, and wearing appropriate PPE for arc flash and electrical shock, which is also referenced, for example, in the LG RESU installation manual. Other key safety concepts for BESS installation addressed in 70E, and part of the competency needed for certification, include lockout/tagout, job safety planning, audits, and incident investigation. In a recent amendment, the BESS-specific article in NFPA 70 (2020) requires installation and maintenance by qualified personnel in part as defined by NFPA 70E. Certified electricians have state-required competencies in both NFPA 70 and 70E.

11. **Solar installers under C-46 contractors have no California requirement for certification.** No experience or exam is required in California to install a solar PV system or perform any necessary incidental and supplementary work.

The analysis of the economic impact of alternative licensing scenarios reveals that:

1. **C-10 contractors, with or without C-46 licenses, are much more numerous than C-46 contractors and have entered the market in greater numbers than C-46 (no C-10) contractors.** The CSLB has on record 25,298 active licensed C-10 electrical contractors and 1,240 active licensed C-46 contractors. 447 contractors hold both licenses.4 C-10 contractors also vastly outnumber C-46 license holders in both the residential and commercial markets and for urban and rural counties.

2. **The number of certified electricians and electrical trainees also exceeds the solar workforce.** As of March 24, 2021, there were 36,550 certified electricians in California, and 11,423 electrical trainees currently enrolled in registered electrical apprenticeship programs.[5,6] Registered apprenticeship programs expand as jobs expand, so if the BESS market requires more certified electricians, the electrical apprenticeship programs can open up more placements in response. EDD data from May 2019 show 72,870 electricians, 4,740 electrician helpers, and 4,970 solar installers (Q1 2020 mean hourly wage: $23.60).[7] Our analysis of survey data from the industry-sponsored Solar Jobs Census reveals similar results.

3. **There are no significant savings in average project costs across all customer classes with installations performed by C-46 (no C-10) contractors, even though the wages of certified electricians are higher than the C-46 non-certified electrical workforce.** The SGIP data, which documents actual project costs, show that the lowest average cost storage systems are installed by contractors holding a dual C-10 and C-46 license, and the highest average cost is installed by C-46 contractors holding an A or B license. Contractors holding a C-10 license without a C-46 license have an average cost per kW just 0.6% higher than contractors holding a C-46 license without a C-10 license.

4 https://www.cslb.ca.gov/Onlineservices/DataPortal/

5 https://data.ca.gov/dataset/dir-electrician-certification-unit-ecu/resource/291bacb8-2fdb-4d9c-a330-113781ce2f59

6 https://data.ca.gov/dataset/dir-electrician-certification-unit-ecu/resource/f0b9e36d-32be-408d-8dd9-4d539becfdc8

7 https://www.labormarketinfo.edd.ca.gov/data/oes-employment-and-wages.html#OES

4. **In the residential sector, the data shows that the lowest average cost BESS is installed by contractors holding both C-10 and C-46 licenses, the contractor group that clearly dominates the market.** Compared to projects installed by C-46 (no C-10, A, or B) contractors, projects installed by C-10 (no 46) are 1.8% higher, which is directly in-line with our analysis using the National Renewable Energy Lab BESS cost benchmark data. Both C-10 (no C-46) contractors and C-46 (no C-10) contractors have higher than average project costs. C-46 contractors are 4% above average, while C-10 contractors are 5% higher than average.

5. **The minor cost increases due to requirements for certification are unlikely to constrict demand for BESS or undermine the effectiveness of government incentives.** Government and industry research documents that consumer demand is driven by end users seeking resiliency due to the increased occurrence of natural disasters and utility power shut-offs, and is not sensitive to very small cost differences. Any CSLB ruling will not change the impact of subsidies and incentives on consumers, which, averaging 37% of total costs, completely overwhelm any cost increases due to the wage differential between electricians and the PV workforce.

6. **Looking more broadly at the economic impacts of certification requirements, research shows that industry-recognized credentials for in-demand jobs, such as the electrical certification, increase workers' income and mobility.** This is reflected in support for industry-recognized credentials in the state's Unified Strategic Workforce Development Plan, where it is identified as a key strategy of the California Labor and Workforce Development Agency.8 Industry recognized credentials such as the electrical certification provide signals to public training institutions on what to train for and help the industry tap into public sources of training and education funding. The lack of a skill standard results in inconsistent training carried out by contractors on the job, poorer wages and benefits, and fewer opportunities for transferability and career advancement for workers.

7. **A CSLB ruling that C-46 (no C-10, A or B) contractors cannot install BESS systems would only minimally impact the current pool of BESS contractors in California, since the share of contractors currently installing BESS who are in this category is very small.** Restricting C-46 contractors could actually improve conditions for current workers if these businesses take advantage of the opportunity to help certify their electricians and learn to compete using business strategies that do not include a lower wage workforce.

8. **A CSLB ruling to allow C-46 to install BESS would, over time, result in downward pressure on wages for electricians and greater competitive pressures on C-10 contractors who invest in a higher skilled workforce.** These adverse impacts would likely not be offset by lower costs to consumers since C-46 contractors without a C-10 license are not consistently the lowest cost contractor group and, in most cases, have higher costs than contractors with both C-10 and C-46 licenses. We therefore conclude that over the longer run, there would be transition costs associated with a ruling to allow C-46 license holders to install BESS, as new contractors without C-10 licenses enter the market.

8 https://cwdb.ca.gov/wp-content/uploads/sites/43/2020/09/Strategic-Planning-Elements.Final_ACCESSIBLE.pdf, p. 29

D. Our recommendation

We strongly recommend that the CSLB limit the scope of the C-46 to its original scope and preclude C-46 license holders from installing BESS even when paired with solar, unless they hold another license under which BESS installation is permitted. We base this recommendation on the research summarized above and presented in detail in the body of the report. We see no public policy justification for the CSLB to encourage a future trajectory of the BESS industry with lower standards and lower requirements for worker qualifications compared to the present pool of contractors. Only a very small share of the current pool of contractors that carry out BESS installations are C-46 (no C-10, A, or B) contractors and are exempt from the requirement that individuals carrying out electrical work be certified electricians. This research result shows that the current pool of BESS installers has higher qualifications than might be the case if the CSLB rules to permit the C-46 license to include BESS.

Our hazards, risks, and safety analysis documents substantial hazards related to this rapidly evolving technology and buttresses the argument that there is a need for qualified personnel to mitigate risks. BESS are a dynamic and expanding technology with inherent hazards that are significant; they have led to continuing serious incidents; they are recognized by NFPA as a "high risk hazard;" they have led to the development of significant ongoing code and standard revisions and new safety mitigations; and they are currently predominately installed by contractors holding C-10 licenses, which requires the use of certified electricians with demonstrated skills and safety training needed to address the safety issues identified. This legal requirement regarding certification holds regardless of the license class documented on a permit application. Finally, we find that there lacks a justifiable threshold by size or sector to suggest less hazard or insignificant risk for BESS installation, and therefore we find that a C-46 license is insufficient for all sizes and customer classes of BESS installation.

While in California there have been no significant incidents with injury or death that we could identify, there are appreciable data gaps that preclude the ability to conclude that risks are low. There have been serious incidents in other regions, particularly in grid-scale BESS, but we found no evidence that the risk of BESS technologies is minimal in residential or commercial applications. Because of this, we classify the BESS technologies in the category of high consequence, low frequency risk, which requires a contractor and workforce with broad knowledge of electrical systems and electrical safety. Since such a small percentage of BESS projects have been installed by C-46 (no C-10, A, or B), we also note that the safety record is extremely limited for this group of contractors, further undermining an assessment that C-46 (no C-10, A, or B) contractors can credibly mitigate safety risks.

Since the main difference between the C-46 and the C-10 is the latter's requirement that their electrical employees be certified, we conclude that the C-10 workforce is more highly trained and trained in the broader safety and electrical system assessment knowledge than the C-46 workforce. The CSLB rule that contractors with both a C-10 and a C-46 license must adhere to the requirement that their electricians have a state certification means that only C-46 (no C-10) contractors do not have to meet the higher standard for their workforce. Our review of the curriculum of the electrical certification shows that certified electricians have the relevant skills, knowledge and experience to confidently be classified as "qualified personnel". No such review of the C-46 (no C-10) electrical workforce is possible since there is no comparable skill standard, and therefore we cannot confidently classify these workers as "qualified personnel."

We also conclude that there will be no adverse economic impacts of precluding the C-46 license from BESS. We document that C-10 contractors and certified electricians are plentiful and the pool can expand as demand for BESS increases. C-10 contractors, with or without C-46 licenses, are much more numerous than C-46 contractors and have entered this market in greater numbers than C-46 (no C-10) contractors. This is true for both the

residential and commercial market and for urban and rural counties. It is also true for the certified electrical workforce, which is much greater in number than the C-46 solar workforce. We also document no significant savings in project costs with installations performed by C-46 (no C-10) contractors, even though there is agreement that the wages of certified electricians are higher than the C-46 non-certified electrical workforce. This is in part because labor costs, and particularly the costs of work that is performed by electricians (certified or not), is a small percentage of total costs, and the consequent differential in total cost is minimal. It may also be that contractors with a certified electrical workforce have developed a more efficient business model that reduces other costs or profit to compensate for higher wages for electricians. The lowest cost contractors for BESS installations hold both C-10 and C-46 licenses and are held to the certification requirement, but have apparently found cost savings that make up for the higher wages of certified electricians.

Finally, we find that the transition costs of precluding C-46 contractors from installing BESS are minimal since C-46 (no C-10) contractors and their electrical workforce are currently such a small share of all contractors and workers who have installed BESS in California. On the contrary, there would be an adverse economic impact from continuing or expanding the scope of the C-46 license with respect to BESS because that would likely undermine the electrical certification and put downward pressure on the wages of certified electricians. We also note that California supports the use of industry-recognized credentials like the electrical certification because these credentials are beneficial to workers and provide clear signals to training institutions on what skills to train for that are actually valued in the labor market.

The decision before the CSLB will shape the future trajectory of the BESS industry. A decision to allow C-46 contractors to install BESS, whatever the size or customer class, could result in lower workforce skill standards and greater risk to the public from inadequate site assessment or faulty installation. All else being equal, it is better to support the expansion of that segment of the existing pool of contractors who invest in a more skilled workforce by hiring certified electricians, rather than increase the safety risks associated with a less qualified workforce.

I. Introduction and Background

This report, carried out at the request of the California State Licensing Board, evaluates alternative proposals for the specific contractor license(s) that should be required for battery energy storage systems (BESS) that are installed in conjunction with installations of solar photovoltaic (solar PV) systems. The rapid and safe development of the BESS industry—i.e., businesses that design, install, maintain, and repair BESS—is essential for actualizing California's commitment to achieve 100% carbon-free electricity, as mandated in SB 100 and other laws and orders. Contractor license requirements, including for emerging technologies such as BESS, determine the minimum qualifications that business owners and their workforces must meet to be allowed to install specific technologies; their purpose is to ensure consumer protection, including safety and the general welfare of the public They are therefore a fundamental component of the California state government's support for and oversight of the construction industry, including of specialty contractors who install emerging technologies such as BESS. Along with building and energy codes, workplace protections, and other regulations, these regulations are designed to support a safe, healthy, efficient, equitable, and environmentally sustainable specialty construction industry.

Currently, the C-10 electrical contractors license is required to perform BESS installations; the exception to this rule is when BESS are installed simultaneously with a solar PV system. Under State law, specialty contractors that are licensed in one class are prohibited from performing work in the field of another class unless they are also licensed in that class or the work is required for and "incidental and supplemental" to the work in the craft for which the contractor is licensed.[1] The California State Licensing Board (CSLB) currently allows C-46 contractors to install BESS under the clause that this work is "incidental and supplemental" when installed with solar PV; however, this interpretation is now under review.

A. Options Under Consideration by the CSLB

The CSLB has been addressing contractor classification jurisdictional issues for BESS since 2015. On July 18, 2017, a letter from the then CSLB Classification Deputy had stated that the C-46 solar classification may install BESS in connection with a PV system and C-10 contractors may install BESS as part of a PV project or separately.[2] At a February 23, 2018, Licensing Committee meeting, the minutes noted that the CSLB staff had been meeting over the previous year discussing stakeholders' concerns related to which license classifications are authorized to install battery energy storage.[3] The CSLB has archived the extensive Board, Committee, and stakeholder discussion from

1 Bus. & Prof. Code § 7059; 16 C.C.R. § 830(b).

2 https://www.cslb.ca.gov/Resources/BoardPackets/ESS_Report20190321.pdf.

3 https://www.cslb.ca.gov/Resources/BoardPackets/CommitteeMeetingPacket20180223.pdf.

2018 to 2019 on this issue.[4] During this time, the CSLB addressed BESS at many Board and Committee meetings, and hosted a variety of events with stakeholder and public input. An 81-page report on the issue was published by CSLB staff in March of 2019. The CSLB staff conducted a survey, received educational videos, and held meetings with C-46 and C-10 contractors to discuss technical and safety issues. At the end of 2019, the CSLB Legislative Committee and the full Board passed a motion to contract for a third-party independent review of the issues.

The independent review we present here analyzes the following question: Should C-46 contractors be permitted to install solar-paired BESS, and if so, under what specific conditions? Specifically, the four alternatives that the CSLB asked us to consider are:

Option 1: Preclude the C-46 Solar classification from installing battery energy storage systems.

California Code of Regulations Section (CCR) 832.46 currently defines a solar contractor as follows:

- A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems.
- A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.

Option 2: Option 2: Permit the C-46 Solar classification to install battery energy storage systems on specified residential units with the following restrictions:

- Limit the BESS installation authority to a PV system up to 10 kilowatts on a single-family dwelling or a duplex, and the BESS must not exceed a 5-kW (backup)/20-kWh (energy);
- The BESS is installed at the same time as the solar photovoltaic energy system; and,
- No upgrade or alteration is made to the existing electrical system of the structure.

Option 3: Permit the C-46 Solar classification to install battery energy storage systems on residential units with the following restrictions:

- Limit the BESS installation authority to a PV system on a residential dwelling;
- The BESS is installed at the same time as the solar photovoltaic energy system;
- No upgrade or alteration is made to the existing electrical system of the structure; and,
- With plans drawn or approved by an electrical engineer.

Option 4: Make no change to the existing C-46 classification

- Assert that current law allows C-46 to install BESS.

4 https://www.cslb.ca.gov/Media_Room/Board_And_Committee_Meetings/2019/Energy_Storage_Systems.aspx.

B. What This Report Does

We approach the question of which alternative should be chosen by the CSLB by analyzing:

1. The distribution of C-46 and C-10 licenses of contractors currently installing BESS paired with solar PV;
2. The hazards, risks, and safety mitigation strategies associated with BESS;
3. The qualifications needed to ensure proper installation and mitigate the identified hazards and risks;
4. The arguments as to whether or not BESS should be considered as "supplemental or incidental" to solar PV work when BESS is installed in conjunction with solar PV;
5. The availability of C-46 and C-10 contractors and their respective workforces currently and their likely future availability;
6. The cost implications of requiring C-10 for all BESS installations compared to allowing C-46 to perform BESS installations;
7. The costs of transition of alternative licensing scenarios;
8. Any other economic co-benefits that can be associated with the alternative licensing scenarios.

The report begins with an overview of the BESS industry and the contractors involved in it, looking at the profile of contractors by the licenses they hold. The next section evaluates the risks and hazards associated with BESS and assesses the role of installation work in the identified hazards. It then evaluates the qualifications needed for safe and effective installation, and links these to the qualifications that are required of C-10 and C-46 contractors *and* their workforces. The following sections address the economic implications of alternative licensing scenarios, including the availability of contractors and workers, the implications for installation costs, the transition costs, and economic co-benefits.

Our analysis is based on careful review of the public record; interviews with key stakeholders, CSLB staff, and other relevant government officials; and analysis of data from a variety of sources. The safety analysis evaluates the ongoing research on BESS by organizations such as National Fire Protection Association (NFPA), the Underwriters Laboratory, DNV, and FM Global. We review the relevant codes and standards, which have undergone significant revision over the last five years to address BESS hazards, risks and mitigations. We examine not only the relevant building codes adopted by regulation in California but also the consensus among experts of good practice safety standards and guidelines that have been recently developed to address BESS hazards, including safety data sheets, installation guides, emergency response guidance and battery safety testing data published by BESS manufacturers. We evaluate BESS risks utilizing data related to incident frequency and potential consequences, using recognized and generally accepted risk assessment approaches for electrical and chemical hazards. This includes risk determinations for BESS by the fire service and major insurance companies. Finally, we use existing risk mitigations developed in codes, standards, and technical reports to evaluate the knowledge, skills, and training required for safe BESS work. The economic analysis relies on a dataset produced by matching CSLB contractor license data with data on BESS projects in California from two sources, the Self-Generation Incentive Program (SGIP) dataset and the Interconnection dataset. We also employ data from the National Renewable Energy Lab (NREL) the Bureau of Labor Statistics (BLS) and the Solar Jobs Census.

II. Overview of the BESS Industry and BESS Contractor Licenses in California

A. What Is a Battery Energy Storage System?

The basic purpose of a battery energy storage system (BESS) is to capture, store, and release the electricity generated by an electrical generating system so that it can be distributed as needed. The 2019 California Building Energy Efficiency Standards defines a battery energy storage system as "[a] rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls, and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, and uninterruptable power supply, load shedding, load sharing or similar capabilities."[5] The CPUC defines energy storage systems as "commercially available technology that is capable of absorbing energy, storing, and dispatching the energy."[6]

B. Scope of C-46 and C-10 Contractor Licenses

The scope of work a licensed specialty contractor may legally perform is set by the classification regulations adopted by the CSLB.[7]

For solar contractors—those with a C-46 license--Section 832.46 of the CSLB regulations authorizes licensees to perform the following work:

> A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems. A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.

For electrical contractors—those with a C-10 license—section 832.10 of the CSLB regulations authorizes licensees to perform the following work:

> An electrical contractor places, installs, erects or connects any electrical wires, fixtures, appliances, apparatus, raceways, conduits, solar photovoltaic cells or any part thereof, which generate, transmit, transform or utilize electrical energy in any form or for any purpose.

5 California Code of Regulations, Title 24, Part 6, Section 100.1 (b).

6 CPUC,20 C.C.R. § 1302 (b)(18).

7 See 16 C.C.R. § 832.

The C-46 license is much narrower in scope than the C-10. While the C-46 license allows a contractor to perform a portion of the work that is under the scope of the C-10, the C-10 license allows a contractor to perform *all* of the work that is under the scope of the C-46. Current CSLB licensing regulations require that all BESS installations be performed by C-10 contractors, except when they are done in conjunction with solar photovoltaic installations (known as solar-paired BESS).

Under State law, specialty contractors that are licensed in one class are prohibited from performing work in the field of another class unless they are also licensed in that class or the work is "incidental and supplemental" to the work in the craft for which the contractor is licensed.[8] The Code of Regulations specifies the scope of the C-46 by explicitly underscoring that contractors with this license shall not undertake or perform building or construction trades, crafts, or skills, *except when required* to install a thermal or photovoltaic solar energy system (emphasis added).

The difference between the solar PV and BESS technologies is that a solar PV system generates and transmits electrical energy, while a BESS utilizes electrical energy, transforms that energy into a storage state, and then transmits back that stored electrical energy when needed for other uses. While these technologies can be complementary—i.e., BESS allows for the storage and use of solar-generated electricity at times when solar panels aren't producing power, and solar PV can be one of the sources of power to be stored in BESS—solar PV and BESS are different technologies with different purposes and ways of interacting with the electrical system of a structure.

This difference has implications for hazards as well as for the skills needed to ensure proper installations, as is discussed in Section IV.

C. Use of Certified Electricians

A very important difference between the C-10 and C-46 contractor licenses is that C-10 contractors who employ electricians are required to employ electricians who have been certified by California's Division of Labor Standards Enforcement (DSLE) in the Labor and Workforce Development Agency's Department of Industrial Relations, while C-46 contractors are not required to use certified electricians. Certification of electricians consists of a competency test administered by the Division of Apprenticeship Standards, based on a set of state-recognized knowledge, skills, and abilities (KSAs), including safety and broad knowledge of electrical systems. To take the general electrician's exam in California the candidate must have a minimum of 8,000 hours of documented electrical experience supervised at all times by a California state certified general electrician.[9] The residential electrician's exam requires 4,800 hours of documented electrical experience.[10] No state-recognized skill standards are required for workers carrying out electrical work who are employed by C-46 contractors.

Contractors who hold both C-46 and C-10 licenses are required to comply with these C-10 requirements, such that any employee performing electrical work must be certified. The Electrician Certification requirements are set forth in Chapter 4.5 of Division 1 of the California Labor Code.[11] Labor Code section 108.2 provides the relevant part: "Persons who perform work as electricians shall become certified pursuant to Section 108. Uncertified

8 Bus. & Prof. Code § 7059; 16 C.C.R. § 830(b).

9 https://www.dir.ca.gov/t8/291_1.html.

10 https://www.dir.ca.gov/DLSE/ECU/EleCat.html#1.

11 https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=LAB&division=1.&title=&part=&chapter=4.5.&article.

persons shall not perform electrical work for which certification is required. Certification is required only for those persons who perform work as electricians for contractors licensed as class C-10 electrical contractors under the Contractors' State License Board Rules and Regulations."[12] In addition, Labor Code section 108 (c) statutorily defines "electrician" to include "all persons who engage in the connection of electrical devices for electrical contractors licensed pursuant to Section 7058 of the Business and Professions Code, specifically, contractors classified as electrical contractors in the Contractors' State License Board Rules and Regulations." The CSLB defines the scope of electrical contractors as follows: "An electrical contractor places, installs, erects or connects any electrical wires, fixtures, appliances, apparatus, raceways, conduits, solar photovoltaic cells or any part thereof, which generate, transmit, transform or utilize electrical energy in any form or for any purpose."[13]

The research team asked the CSLB for specific clarification about how the requirement regarding certified electricians applies to contractors holding both C-10 and C-46 licenses. David Fogt, CSLB Registrar, provided us with the following answer: "The CSLB reads these provisions to mean that anyone working for an employer holding a C-10 license classification who engages in the described activities [electrical work] must use certified electricians, regardless of the other classification(s) the employer holds."[14]

12 Cal. Lab. Code,§ 108.2, subds. (a) and (b)(1).

13 Cal. Lab. Code,§ 108.2, subds. (a) and (b)(1).

14 Letter from David Fogt to Carol Zabin, April 21, 2021.

III. Profile of BESS Installations and Contractors in California

This section profiles the BESS installations in California, looking at the size of the installations, their distribution by sector, and trends in the BESS market. It then takes a very close look at the licenses held by the pool of contractors who have carried out BESS installations over the last five years, examining the overall distribution of installations by type of license(s), and then breaking this distribution down by residential vs. commercial, by specific residential contractors in terms of their relative share of the installations, by size of installations, and by location in rural vs. urban counties.

In the following analysis, we reference data from two different sources: the State of California's Distributed Generation Interconnection Data Sets and the Self Generation Incentive Program (SGIP) data (dated 4-12-2021). The data in the two datasets differs slightly. First, the Interconnection dataset is more comprehensive because it captures all distributed energy projects that are connected to the grid. This makes the dataset very large (>250MB) and difficult to work with. Additionally, with the Interconnection dataset, each utility has its own nomenclature, which makes it difficult to precisely isolate BESS. We address this by assuming that for PG&E and SoCal Edison, the categories that include both solar PV and storage are primarily BESS, and for SDG&E, the category of projects labeled "advanced energy storage" are primarily BESS as well. Second, we reference the SGIP dataset, where we can isolate data that capture only solar-paired electrochemical storage systems. Because it is so specific, the SGIP dataset relates more directly to the four policy options that we were asked to evaluate. We use the SGIP dataset for most of the analysis in this report, but we check the results with the Interconnection dataset for the most important analyses. This check ensures a fuller picture because the SGIP dataset only captures those systems that applied for SGIP incentive payments, which is about 2/3 of the solar-paired storage and advanced energy systems projects captured in the Interconnection dataset.

The SGIP dataset documents information on all energy projects that have received the program's incentive. SGIP provides incentives to support existing, new, and emerging distributed energy resources, including wind turbines, waste heat to power technologies, pressure reduction turbines, internal combustion engines, microturbines, gas turbines, fuel cells, and, since 2017, advanced energy storage systems. The CPUC has authorized funding of more than $1 billion through 2024 for SGIP. Through the Equity and Equity Resiliency budgets, this funding includes prioritization of, and higher levels of rebates for, communities living in high fire-threat areas, communities that have experienced two or more utility public safety power shutoff (PSPS) events, as well as low income and medically vulnerable customers. For the bulk of customers not fitting these criteria, the incentives cover about 25% of the average cost for residential customers and 35% for non-residential customers.[15]

15 https://www.cpuc.ca.gov/sgip/ and https://www.cpuc.ca.gov/sgipinfo/.

CALSSA provided a compiled 2020 Interconnection dataset which was small enough sort, clean, and analyze in Excel, and the electrical industry stakeholders provided a compiled 2015–2020 Interconnection dataset as well. We reference both of these versions of the Interconnection dataset to ensure that the trends captured in the SGIP data reflect those in the broader BESS market.

A. Trends in the Size of BESS Installations in California, and Distribution by Sector

There were 19,104 SGIP solar-paired BESS projects installed from 2015–2020, with 6,742 projects in 2020 alone. For reference, the electrical industry's analysis of the Interconnection data indicates there were 29,436 solar-paired BESS projects installed from 2015–2020, and CALSSA's Interconnection data show a total of 13,073 in 2020 alone. These data show a rapidly growing BESS industry in California. As we will show below, even though these datasets document different numbers of projects, the analysis shows they all produce very similar results in terms of their distribution by type of contractor license. Thus, we are confident that our analysis is robust and not dependent on the particular data extraction performed by our research team, or by the electrical industry and CALSSA.

A key trend documented in the data is that the average size of storage systems in California is declining due to the rapid growth of residential installations. While the average size of the BESS installations has declined, the number of systems has been increasing (see Figure 1). Figure 2, which is based on total storage capacity, shows that in 2017 there were fewer projects with higher total capacity compared to 2018, when there were more projects but lower total capacity. Starting in 2018, the total capacity of BESS per year starts to parallel the number of projects installed, showing that smaller storage projects have been and may likely continue to be responsible for the rapid growth of the storage industry.

Figure 1. Average Size and Total Number of Solar-Paired BESS Installed 2015–2020 (SGIP data)

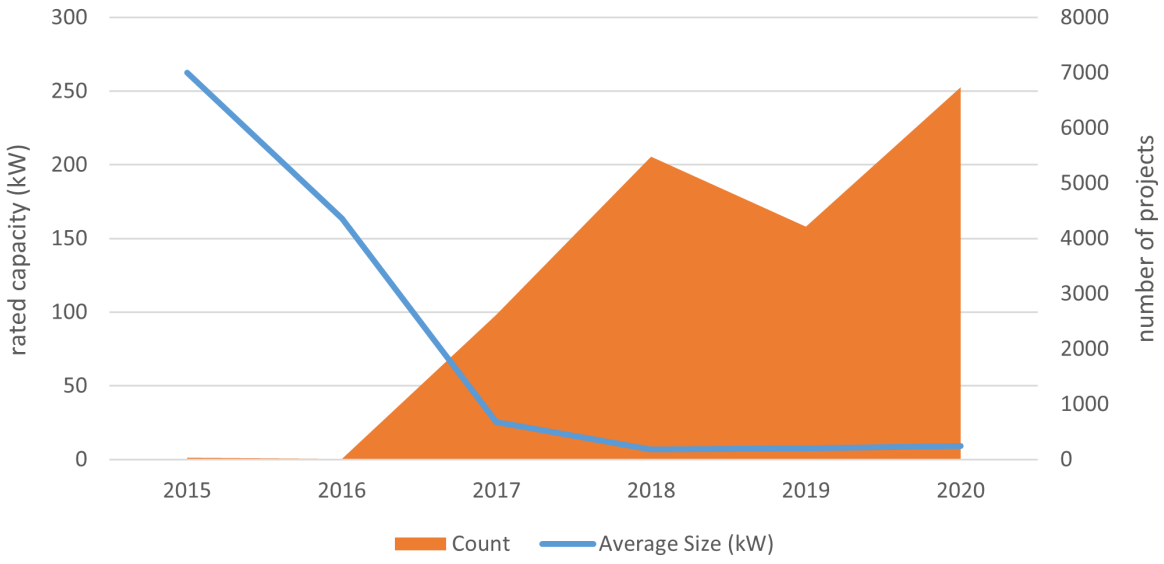


Figure 2. Total Number and Total Capacity of Solar-Paired BESS Installed 2015–2020 (SGIP data)

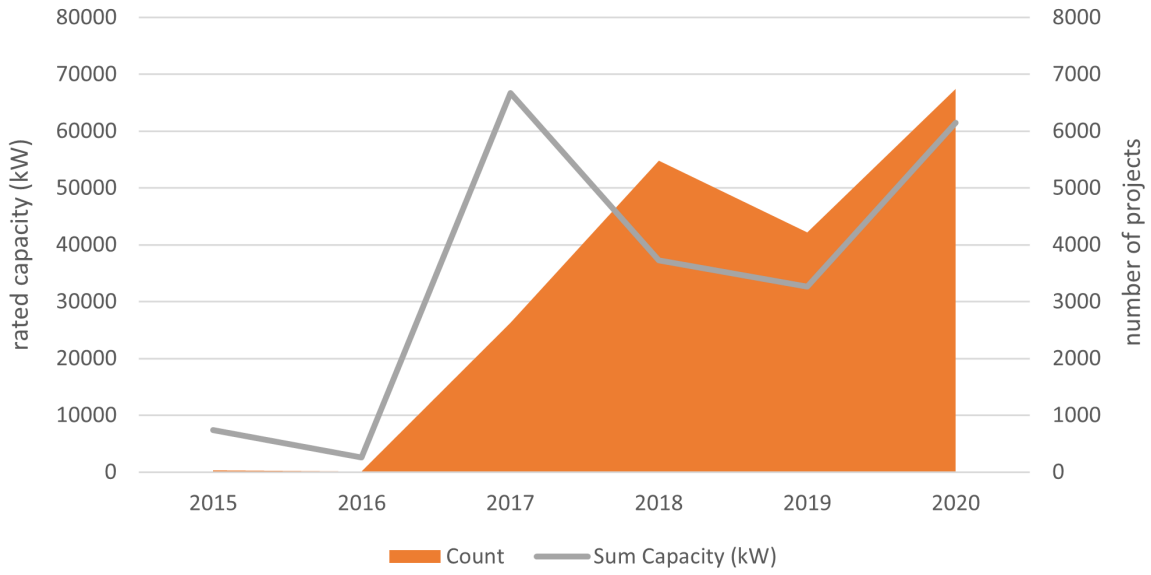
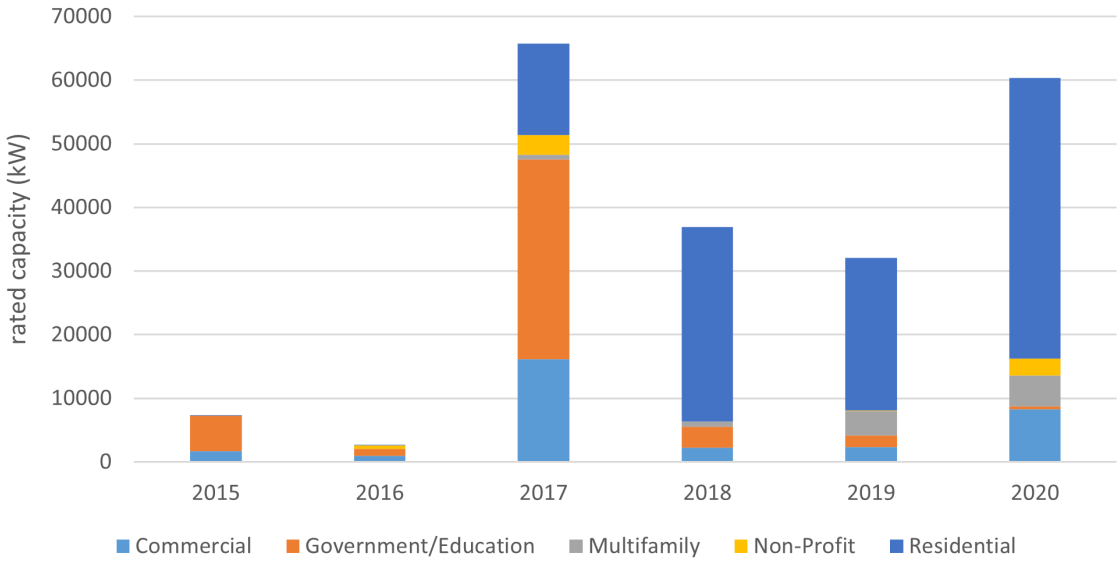


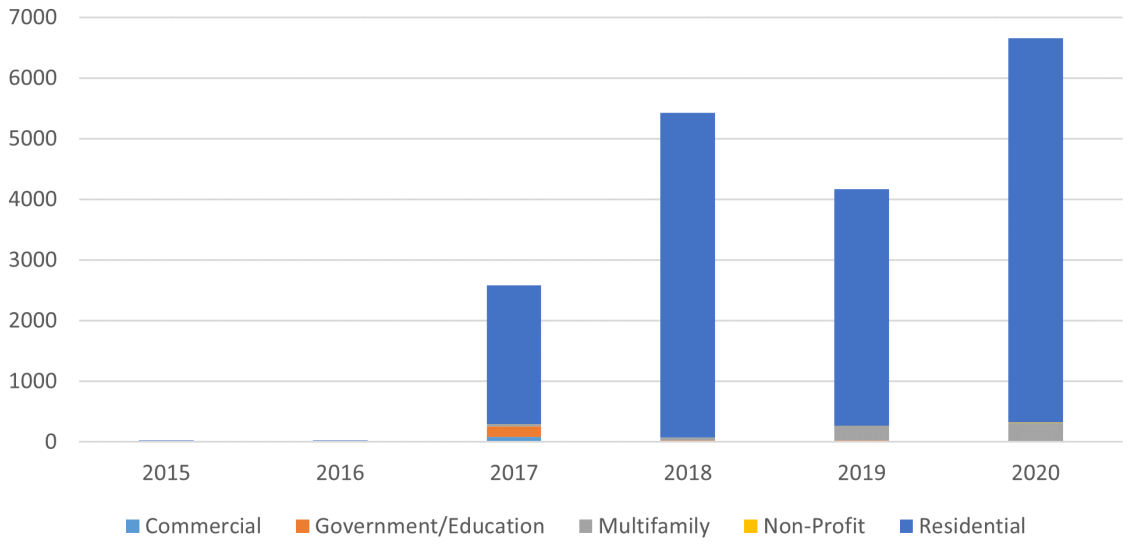
Figure 3 shows the profile of BESS by sector by year. This shows the strong growth of residential BESS and its contribution to total statewide distributed storage capacity. While there were a few government and commercial storage projects in 2015 and 2016, there was significantly more investment in all customer classes in 2017. Since 2017, the residential sector has been responsible for the majority of new BESS capacity in the state. This is all the more striking because the average size of residential systems is small—6.6 kW in 2020. The size of residential BESS is slowly getting larger: the average size in 2020 was 20% larger than in 2015.

Figure 3. Total Capacity of Installed Solar-Paired BESS Projects by Customer Sector (SGIP data)



In 2020, there were almost three times as many residential BESS installed than in 2017, as shown in Figure 4. This growth may well continue in California as more consumers are seeking storage to insulate themselves from extreme weather events or public safety power shutoffs. Other regulatory and legislative decisions, such as revisions to net energy metering and state and federal subsidies, could accelerate or slow this growth by changing the consumer economics. Lithium-ion battery pack prices have fallen 89% since 2010, and improved technologies and economies of scale are projected to continue driving down the cost of BESS, which also could accelerate growth.[16]

Figure 4. Count of BESS Installations by Year (SGIP data)



B. Who is Installing BESS Paired with Solar in California?

For the following analysis of the distribution of contractor licenses among contractors who have installed PV-paired BESS, we matched the datasets on BESS installations with the CSLB data on contractor licenses. We did this for both the 2015–2020 SGIP dataset and the 2020 Interconnection dataset, since both provide the name of the installer, allowing us to match names to CSLB licensing data. The 2020 Interconnection data also included license numbers. Please refer to Appendix A for more detail on our methodology.

The distributed energy storage systems that have been installed in the last five years have ranged in size from less than 0.5 kW for small residential units to projects over 2,500 kW for government and large commercial installations. Matching installer names to CSLB licensing data, we found that these BESS have been installed by C-46 contractors, C-10 contractors, and A and B contractors, as well as self-installs. Three-fifths of the BESS capacity has been performed by contractors holding both C-46 and C-10 licenses, as shown in Figure 5. Another 23% of capacity has been installed by C-10 contractors not holding a C-46 license (we call these "C-10 (no C-46)"). Only 3% of capacity has been installed by C-46 contractors not holding an A, B, or C-10 license (we call these "C-46 (no C-10, A, or B)"). Thus 83% of the BESS capacity was installed by contractors who are held by CSLB rules to the higher standard of using certified electricians when their employees carry out electrical work (including BESS work).

16 https://about.bnef.com/blog/battery-pack-prices-cited-below-100-kwh-for-the-first-time-in-2020-while-market-average-sits-at-137-kwh/.

Figure 5. Distribution of Licenses Held by Contractors Installing Solar-Paired BESS in CA, 2015–2020, by Capacity of BESS (SGIP data)

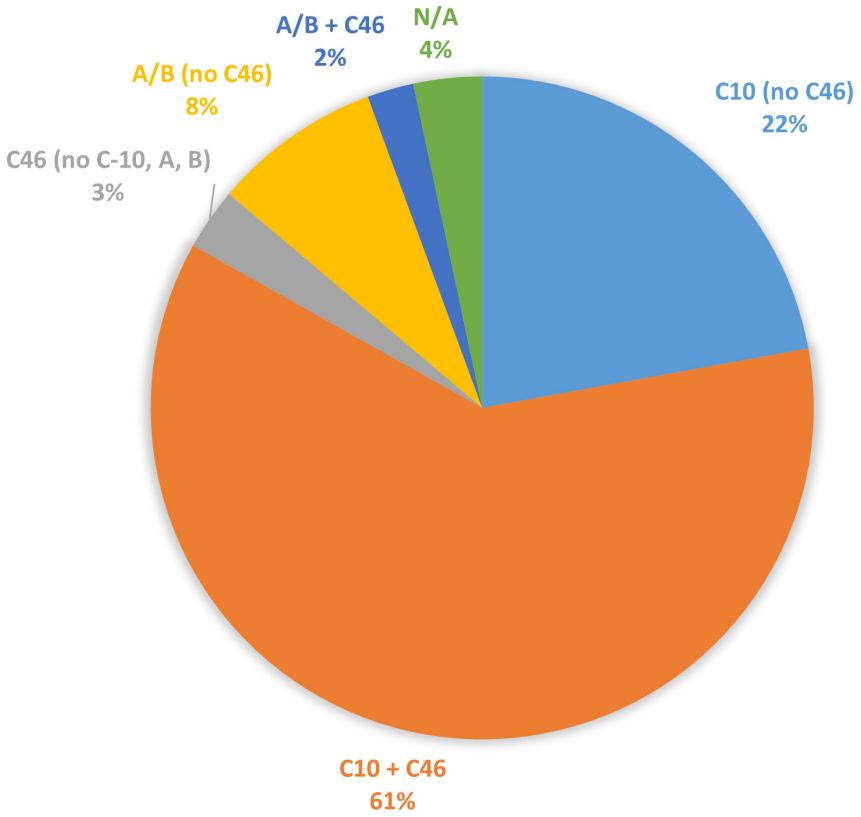


Figure 6 shows that similar trends hold when we document the profile of contractors by number of projects, rather than by capacity. The majority of projects are installed by contractors holding both C-10 and C-46 licenses. C-46 contractors holding no A, B, or C-10 licenses have installed only 6% of total projects.

CALSSA has asserted that 85% of the BESS projects have been installed by C-46 contractors (with or without other licenses). The electrical industry asserts that 89% have been installed by C-10 electricians (with or without other licenses). Our analysis shows C-46 contractors (with or without other licenses) have installed 66% of the capacity and 77% of the solar-paired BESS projects, and C-10 contractors (with or without other licenses) have installed 83% of the capacity and 87% of the projects. The majority of the installations are performed by contractors holding both a C-46 and C-10 license.

By both count and capacity, the data shows that since CSLB regulations require C-10 contractors to hire certified electricians to carry out the electrical tasks in the BESS installations, regardless of the other licenses they hold, very few BESS projects in California have been installed by contractors who are exempt from the certification requirement for their electrical workers.

Figure 6. Distribution of Licenses Held by Contractors Installing Solar-Paired BESS in CA, 2015–2020, by Number of BESS Installations (SGIP data)

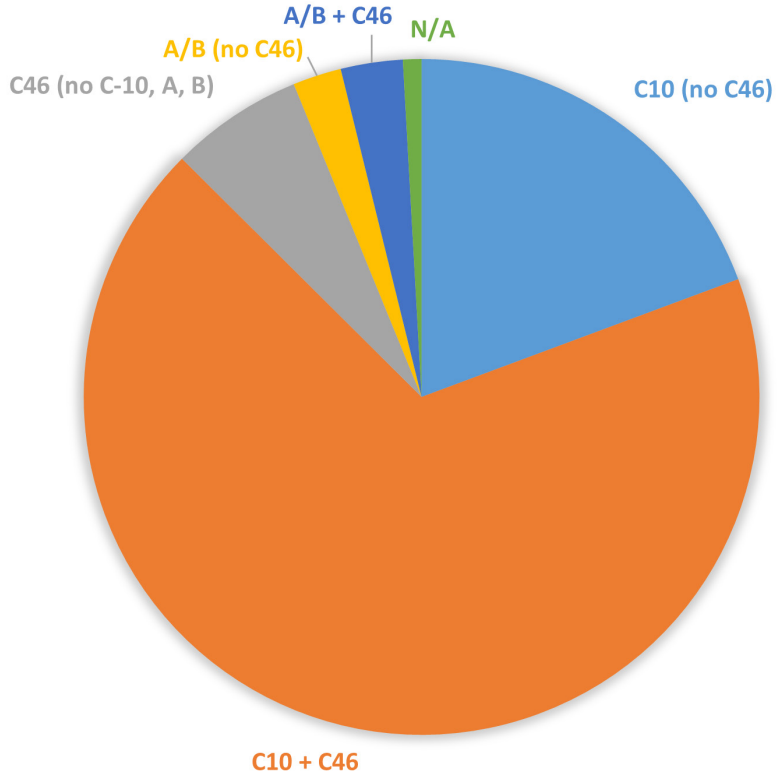


Figure 7 and Figure 8 show the same data as bar charts. In all of these figures, N/A (not available) refers most often to a self-install, although a handful of contractors who installed only a single SGIP project from 2015–2020 may also fall into the N/A category if their installer name in the SGIP data didn't match the exact name in the CSLB data.

Figure 7. Capacity of Solar-Paired BESS Installations by Contractor License, 2015–2020 (SGIP data)

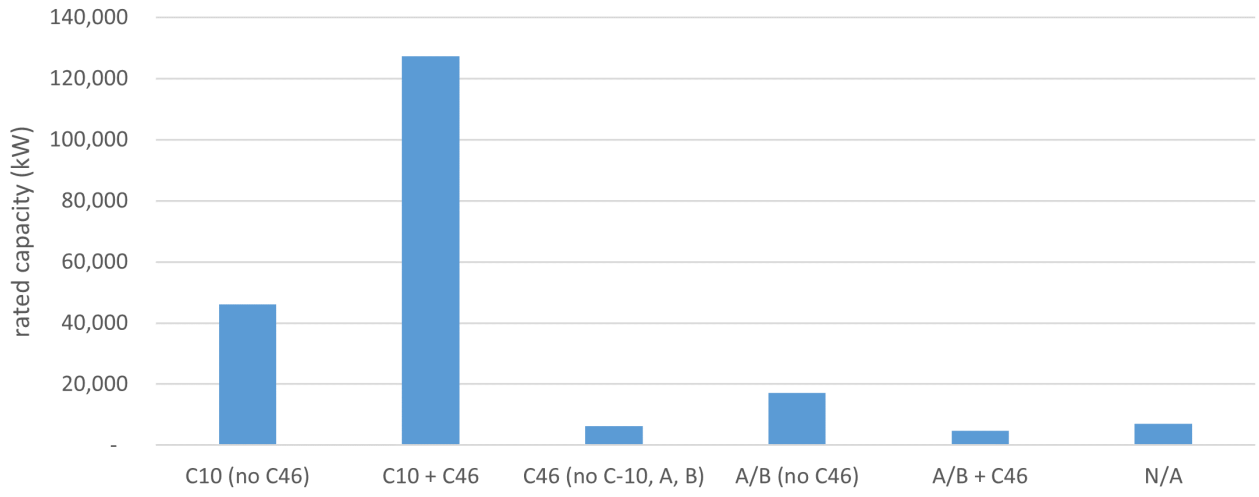


Figure 8. Number of Solar-Paired BESS Installations Projects by Contractor License, 2015–2020 (SGIP data)

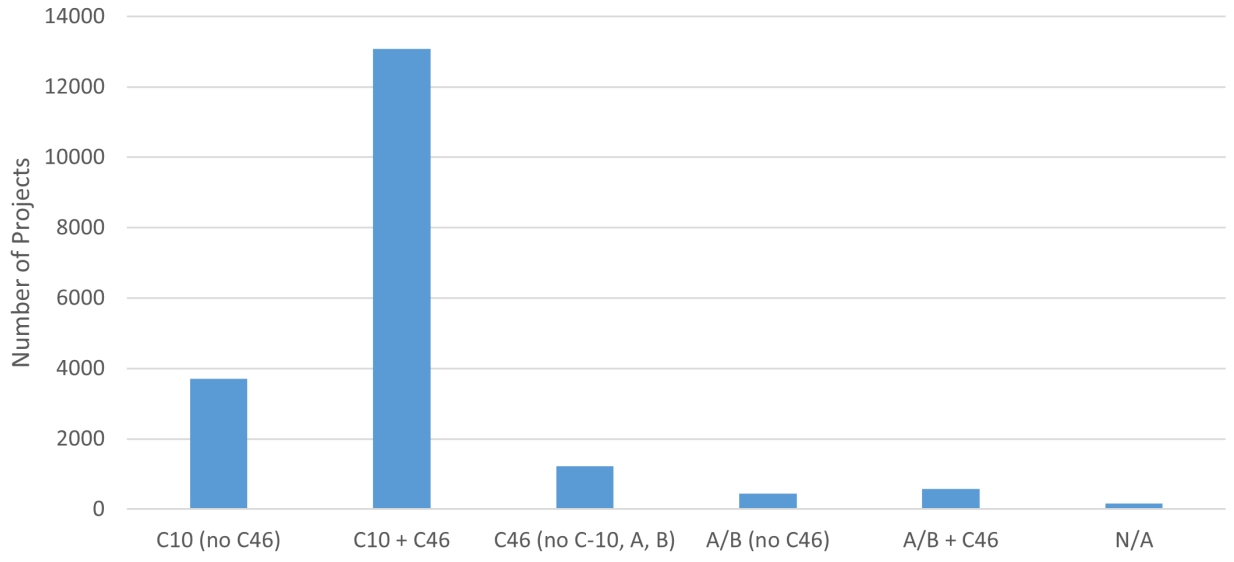


Table 1. 2015–2020 Solar-Paired BESS Data (from SGIP dataset)

License Class	Number of Installations	% Share	Installed Rated Capacity (kW)	% Share of Installed storage capacity	Average Size (kW AC)
C-10 (no C-46)	3,711	19.3%	46,167	22.1%	12.4
C-10 + C-46	13,075	68.1%	127,298	61.0%	9.7
C-46 (no C-10, A or B)	1,223	6.4%	6,299	3.0%	5.2
A/B (no C-46)	446	2.3%	17,161	8.2%	38.5
A/B + C-46	569	3.0%	4,736	2.3%	8.3
N/A	170	0.9%	6,966	3.3%	41.0
TOTAL	**19,194**	**100%**	**208,626**	**100%**	**10.9**

Table 2. 2020 Solar-Paired BESS Data (from 2020 Interconnection data)

License Class	Number of Installations	% Share	Installed Rated Capacity (kW)	% Share of Installed storage capacity	Average Size (kW AC)
C-10	1,486	11.4%	11,279	10.8%	7.6
C-10 + C-46	9,857	75.4%	76,143	72.9%	7.7
C-46 (no C-10, A or B)	601	4.6%	3,992	3.8%	6.6
A/B (no C-46)	637	4.9%	5,322	5.1%	8.4
A/B + C-46	296	2.3%	2,289	2.2%	7.7
N/A / Other / Self	196	1.5%	5,470	5.2%	60.6
TOTAL	**13,073**	**100%**	**104,495**	**100%**	**8.0**

We double checked the results from the SGIP dataset by comparing them with the data from the 2020 Interconnection dataset supplied by CALSSA and found that the two datasets have similar results. Table 1 shows all projects receiving the self-generation incentive for battery storage (SGIP data), whereas Table 2 shows all solar-paired storage and advanced energy systems projects for the year 2020 from the Interconnection dataset. Looking at both datasets together, there are some obvious similarities. First, Table 2 shows that energy storage installation is growing (a trend also reflected in charts below). Second, we see in both datasets that the vast majority of installations are performed by contractors holding both C-10 and C-46 licenses. In both datasets, contractors holding C-10 licenses are involved in 87% of storage installations (a slightly lower percentage than the 89% calculated by the electrical industry). C-46 licensed contractors are also involved in 78–82% of storage projects, but C-46 (no C-10, A, or B) are involved in only 3.0–3.8% of BESS projects. Since most C-46 contractors installing BESS also hold an A, B, or C-10 license, restricting BESS connection would affect only the small number of firms without an A, B, or C-10 license.

In sum, the SGIP data show that, for the pool of contractors who have installed solar-paired BESS in California over the last five years, only 3% of installations by capacity and 6% by number were carried out by contractors who would be excluded if C-46 contractors were precluded from or restricted in carrying out BESS installation. The result—that C-46 contractors without an A, B, or C-10 represent a very small fraction of the pool of BESS installers—is confirmed by all data sources. This means that statewide, neither restricting C-46 contractors from installing BESS nor precluding them altogether would significantly impact the current BESS industry.

C. Who is Installing BESS Projects in the Residential and Commercial Markets?

Since three of the four options CSLB has provided for us to evaluate pertain to licenses for BESS installation in the residential sector, we looked at the profile of licenses separately for the residential and non-residential markets (see Figures 9-12). In the residential market, the SGIP data show that contractors holding a C-10 license have installed 88% of small residential systems. Contractors holding a C-46 license have installed 78% of the systems. The majority of solar-paired storage systems are installed by C-10 and C-46 dual licensed contractors. C-46 (no C-10, A, or B) installed only 7% of the projects from the SGIP data and 4% from the Interconnection data.

In the commercial market, C-10 plus C-46 dual license holders are slightly less common, accounting for 45–52% of installations. A and B contractors have a larger share of the market, and self-installs are more common. C-10 contractors, with or without other licenses, installed 78% of BESS projects as recorded in the SGIP dataset and 64% in the Interconnection dataset. The SGIP data shows negligible participation of C-46 (no C-10, A, or B) while the Interconnection data shows 6% participation by the number of projects. This again confirms the result that C-46 contractors without a C-10, A, or B license are a very small percentage of BESS installers.

Figure 9. Distribution of Licenses Held by Contractors Installing Residential Solar-Paired BESS in CA, 2015–2020, by Number of BESS Installations (SGIP data)

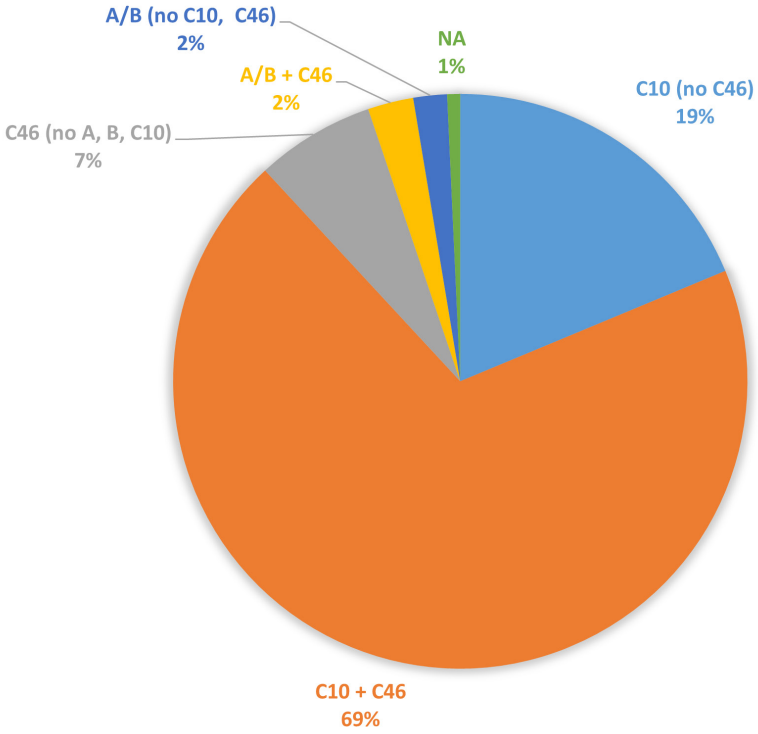


Figure 10. Distribution of Licenses Held by Contractors Installing Residential Solar-Paired BESS in CA, 2020, by Number of BESS Installations (2020 Interconnection data)

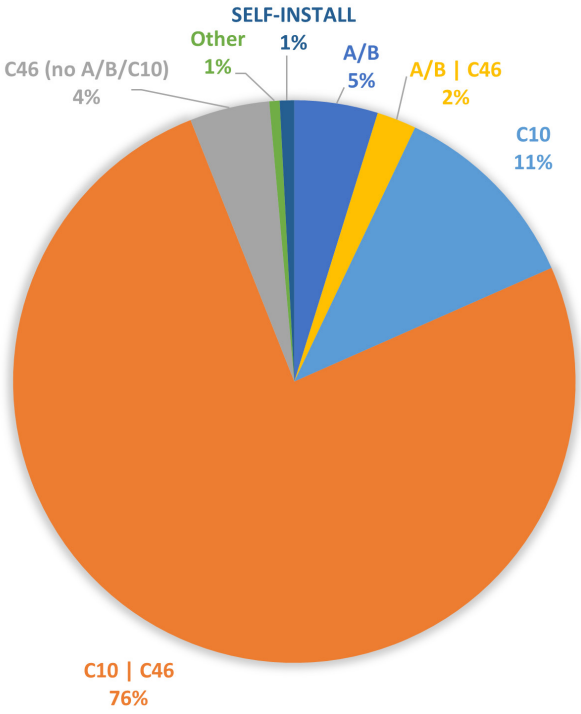


Figure 11. Distribution of Licenses Held by Contractors Installing Commercial Solar-Paired BESS in CA, 2015–2020, by Number of BESS Installations (SGIP data)

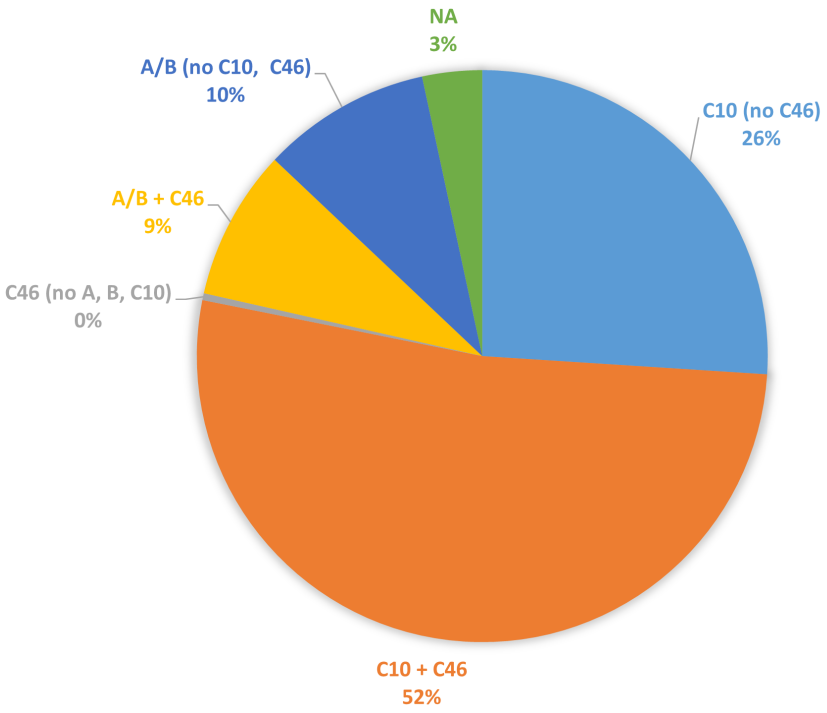
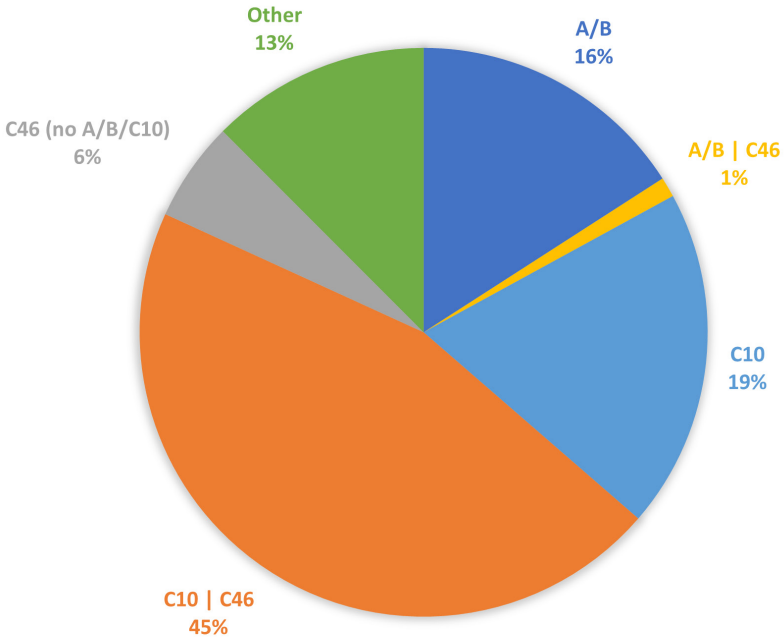


Figure 12. Distribution of Licenses Held by Contractors Installing Commercial Solar-Paired BESS in CA, 2015–2020, by Number of BESS Installations (2020 Interconnection data)



D. Which Specific Contractors are Installing the Most Residential BESS Projects, by Number of Projects and Capacity?

We also analyzed the distribution of installations by specific contractors to see which ones have carried out the bulk of the BESS installations to date, and thus which ones might be significantly impacted by any CSLB ruling. As stated earlier, our analysis (using the SGIP dataset 2015–2020) finds that C-46 contractors have installed 79% of the residential solar-paired BESS systems since 2015, but only 7% of residential solar-paired BESS systems were installed by contractors holding a C-46 license *without* an A, B, or C-10 license. Using the Interconnection dataset, in 2020 82% of residential projects were installed by C-46 contractors, but only 5% of residential projects were installed by contractors holding a C-46 license *without* an A, B, or C-10 license. About 500 different contractors installed BESS in 2020, but 190 installed only a single project, and 419 installed fewer than 10 systems.[17] This makes it critical to separate out those contractors in the top tier ranked by size, since these are much fewer in number.

We took an in-depth look at the C-46 (no A, B, C-10) contractors who have installed BESS using both the SGIP data from 2015–2020 and the Interconnection data from 2020. In the SGIP dataset, a single firm (James Petersen Industries, aka Petersen Dean and Solar 4 America) performed the majority of these installations (85% of capacity and 87% of number of installations). While this company clearly dominates the installations carried out by C-46 (no A, B, C-10), it still represents a very small share of total BESS installations by all contractors. It is important to note that since 2017, this firm has received four citations for violations related to departing from accepted trade standards or plans and specifications, and violation of building code. Since July 2020, five complaints that have been referred to legal action, and the company is at risk of losing its license.[18]

The Interconnection dataset shows less dominance by one firm in 2020, but still shows that just a very few C-46 (no A, B, C-10) contractors carry out the bulk of projects by this class of license holder. In 2020, we found that eighteen C-46 (no C-10, A or B) contractors installed at least four projects and only seven C-46 (no C-10, A or B) contractors installed more than fifteen projects. Again, these installations represent a very small percentage of total residential BESS installations.

Even for these C-46 (no A, B, C-10) contractors who are carrying out most of the BESS installations performed by this category of license holder, BESS represents a small amount of work. By way of illustration, the average cost of installed BESS in California is $15,000, and installation labor is estimated by NREL to be less than 10% of the cost. For those contractors installing fifteen projects, their labor costs would equal less than $22,500, so even firms installing fifteen projects in a year do not require even a single full-time employee to do so. The impact of restricting or precluding C-46 contractors from installing BESS would have a very small and manageable impact on contractors and their employees. Using the BESS installation labor cost estimate of $1000–$1500 per residential system, C-46 (no A, B, C-10) contractors would have spent $600,000 to $900,000 on installation labor for ALL of the BESS projects they installed in 2020. Assuming they are paying average wages of $25 per hour, this equates to 11.5–17.3 full-time equivalent jobs statewide.

17 There are spelling errors and other typos that make the same contractor show up as 2 or more contractors, so this is an estimate.

18 https://www.cslb.ca.gov/OnlineServices/CheckLicenseII/ComplaintDisclosure.aspx?LicType=LIC&LicNum=1050201.

Table 3. Ranking of C-46 Contractors Without C-10, A, or B Licenses, by Number of Projects and Capacity of Projects, SGIP and Interconnection Datasets for BESS in the Residential Sector

Residential Solar-paired BESS installers C-46 (no A, B, C-10 license)	Count of projects	Total Rated Capacity (kW)	% of total residential capacity installed by C-46 (no A, B, C-10)	Count of projects	Total Rated Capacity (kW)	% of total residential capacity installed by C-46 (no A, B, C-10
	2015–2020 SGIP			2020 Interconnection data		
James Petersen Industries Inc dba Solar 4 America	1,049	5,242.5	84.5%	138	727.0	18.5%
Solar Tech Energy Systems				125	928.4	23.5%
Sea Bright Solar Inc dba Sunpower By Sea Bright Solar	21	135.0	2.2%	34	225	5.7%
Skytech Solar	18	129.9	2.1%	26	167.9	4.3%
Phoenix Energy Fulfillment Inc dba Phoenix Solar Energy	15	103.5	1.7%	34	244.9	6.2%
Bay Area Energy Solutions Inc	15	94.8	1.5%	13	174.6	4.4%
Southern California Energy Alternatives				18	160.0	4.1%
West Coast Solar				16	108.6	2.8%
TOTAL OF TOP 8 INSTALLERS	1,118	5,705.7	92%	404	2736.4	69.5%
contractors installing 4–12 projects each		8			18	
contractors installing 2–3 projects each		10			21	
contractors installing single project*		11+			22	

*Most contractors installing a single BESS in California from 2015, who required manual license matching with CSLB licensing data, were not matched. Some of these may be C-46 only contractors.

While there are only seven C-46 contractors installing more than fifteen projects in 2020, there are seventeen C-10 (no C-46) contractors who installed more than fifteen projects in 2020, according to the Interconnection dataset. Twenty-seven dual C-10 and C-46 licensed contractors installed more than fifteen projects in 2020.

The residential BESS market is dominated by fourteen contractors, who each installed over 100 BESS in 2020. Two of these fourteen were C-46 (no A, B, C-10); two were C-10 (no C-46); and the rest were dual (C-10 + C-46) license holders. The top three firms by percent of total projects are Sunrun Installation Services, Tesla, and Semper Solaris Construction Inc. **Together these three firms have installed 41% of the BESS projects from 2015–2020 (SGIP data) and 62% in 2020 (Interconnection data). All three firms have C-10 and C-46 licenses.** This data is presented in Table 4.

Table 4. Top BESS Installers in 2020 with Number of Projects and Licenses (Interconnection data and CSLB data)

Installer	License	Number of Projects
Sunrun	C-10 + C-46	3,458
Tesla	C-10 + C-46	3,166
Semper Solaris	C-10 + C-46	1,019
V3 Electric	C-10	370
Baker Electric (Aka Swell)	C-10 + C-46	355
Vivint Solar	C-10 + C-46	212
Solar Optimum	C-10	199
Infinity Energy	C-10 + C-46	194
Hooked On Solar	C-10 + C-46	148
Freedom Forever	C-10 + C-46	135
James Petersen (Petersen Dean, Solar 4 America)	C-46 (no A, B, C-10)	132
Solartech	C-46 (no A, B, C-10)	127
La Solar Group	C-10 + C-46	110
Hot Purple Energy	A/B + C-46	106

Again, the data show that the firms doing the most work in this space would not be impacted as they are already dual license holders. This data is shown in Appendix C, drawing on both the SGIP and Interconnection datasets.

E. Does Average Size of Projects Vary by Installer License?

While residential projects are smaller than non-residential projects, and contractors holding only a C-46 license have on average small project sizes, there is not a lot of variation in project size between different installer license classes in the residential sector. A 5kW size restriction for C-46 (Option 2) would basically maintain the status quo. From 2015, such a 5kW restriction would have affected just 3% of residential projects statewide. The average size of BESS projects by contractor licenses is shown in Table 5.

Table 5. Average rated capacity (kW) by customer class

	Solar PV-paired storage SGIP Data (2015–2020)		Solar PV-paired storage Interconnection Data (2020)	
	Non-Residential/ Multi-family	Residential	Non-Residential	Residential
C-10 (no C-46)	90.2	6.2	112.3	6.4
C-10 + C-46	90.2	6.4	172.2	7.1
C-46 (no C-10, A, or B)	16.3	5.1	8.4	6.6
A/B + C-46	17.6	6.5	5.0	7.7
A/B (no C-46)	157.2	6.3	102.4	6.2
N/A	176.0	5.7	—	—
Other (no A, B, C-10, C-46)	—	—	380.2	7.2
Self Install	—	—	—	6.8

F. Who is Installing BESS Projects in Rural Counties?

One of the challenges with statewide regulations is that labor market dynamics are different in rural and urban regions of California. Restrictions that wouldn't limit the supply of qualified workers and contractors in urban areas can leave rural areas underserved. In a conversation/interview as part of this project, CALSSA expressed concern that rural C-46 contractors serve more diverse customer types and provide a wider variety of services than their urban counterparts, making a sectoral threshold (i.e., restricting C-46 contractors to the residential sector) unworkable for rural areas. They also suggested that C-46 contractors may be more willing to provide solar-paired BESS in rural counties than C-10 contractors who are less specialized. To evaluate the effect of a possible C-46 BESS restriction across California's rural and urban counties, we looked at the distribution of BESS projects across license type by county. By state definition, California has four rural counties (Alpine, Mariposa, Sierra, and Trinity), colored in green in Table 6, below, and seven mostly rural counties (Amador, Calaveras, Lassen, Modoc, Mono, Plumas, and Siskiyou), colored in blue.[19]

Table 6 is sorted by percent of BESS installed by C-46 contractors not holding a C10, A, or B license. The data do not show a correlation between rural counties and utilization of C-46 contractors. In fact, across all eleven rural or mostly rural counties, C-46 contractors have installed only thirteen SGIP projects, twelve of them installed by James Petersen Inc, which is a large statewide contractor (not a small rural contractor), and one by CalSolar, which has installed just nine BESS projects statewide in five years. Another firm, Aztec Solar, whose license is currently inactive because they recently merged with another firm but had held a B and C-46 license, also installed one project. In short, restricting BESS installation to C-10 contractors would not adversely affect California rural communities, because C-10 contractors have installed many more BESS systems than C-46 (no C-10, A or B) across all rural and mostly rural counties. Seven of California's counties have had no BESS installations, and four counties had only one or two SGIP projects. California's most rural counties represent 0.8% of all in-state solar paired SGIP BESS projects. For resiliency reasons, rural counties might seek expanded BESS investment, but even considering rapid growth, there are 17 times more C-10 contractors than C-46 contractors in rural California (see Table 7).

19 Source: https://ucanr.edu/sites/UC_CCP/files/125967.pdf.

Table 6. BESS Projects by County, sorted by license of contractor

County	% of projects installed by C-10 (no C-46)	number of projects installed by C-10 (no C-46)	% of projects installed by dual C-10 + C-46	number of projects installed by C-10 + C-46	% of projects installed by C-46 (no C-10, A, or B)	number of projects installed by C-46 (no A, B, C-10)	% of projects installed by A/B with or without C-46	number of projects installed by A/B with or without C-46*
Merced	2.63%	1	60.53%	23	34.21%	13	0.00%	0
Kings	4.35%	2	69.57%	32	23.91%	11	2.17%	1
Mariposa	**13.33%**	**2**	**53.33%**	**8**	**20.00%**	**3**	**6.67%**	**1**
Tulare	11.36%	10	67.05%	59	19.32%	17	2.27%	2
Fresno	3.57%	11	72.08%	222	18.18%	56	5.19%	16
Tehama	6.06%	2	75.76%	25	18.18%	6	0.00%	0
Madera	11.11%	8	70.83%	51	16.67%	12	0.00%	0
Stanislaus	21.21%	7	60.61%	20	15.15%	5	3.03%	1
Sacramento	20.93%	18	62.79%	54	13.95%	12	2.33%	2
Contra Costa	5.59%	49	71.72%	629	13.80%	121	8.44%	74
Solano	8.24%	29	67.33%	237	12.78%	45	11.08%	39
Tuolumne	19.15%	9	61.70%	29	12.77%	6	4.26%	2
Glenn	12.50%	1	25.00%	2	12.50%	1	50.00%	4
San Benito	8.57%	3	77.14%	27	11.43%	4	2.86%	1
Alameda	7.22%	62	74.85%	643	10.94%	94	6.29%	54
San Joaquin	6.47%	15	77.16%	179	10.78%	25	2.59%	7
Calaveras	**21.43%**	**15**	**61.43%**	**43**	**10.00%**	**7**	**7.14%**	**5**
Yuba	18.18%	10	67.27%	37	9.09%	5	5.45%	3
San Mateo	18.23%	101	69.86%	387	8.84%	49	2.71%	15
Yolo	11.11%	14	74.60%	94	8.73%	11	5.56%	7
Orange	18.82%	283	68.48%	1,030	7.91%	119	3.39%	51
San Bernardino	18.53%	149	69.90%	562	7.84%	63	3.36%	27
Sonoma	13.03%	65	70.74%	353	7.62%	38	6.61%	33
Santa Clara	17.06%	172	73.71%	743	7.44%	75	1.49%	15
Placer	9.00%	27	78.00%	234	7.33%	22	4.33%	13
Sutter	6.67%	2	80.00%	24	6.67%	2	6.67%	2
El Dorado	23.84%	72	66.23%	200	6.29%	19	2.98%	9
Los Angeles	24.60%	739	64.45%	1,936	5.99%	180	4.06%	122
Butte	4.41%	6	77.94%	106	5.15%	7	11.76%	16
Marin	11.08%	43	70.62%	274	4.90%	19	12.37%	48
Kern	3.48%	7	88.06%	177	4.48%	9	3.48%	7
Lake	25.00%	23	30.43%	28	4.35%	4	35.87%	33

CONTINUED Table 6. BESS Projects by County, sorted by license of contractor

County	% of projects installed by C-10 (no C-46)	number of projects installed by C-10 (no C-46)	% of projects installed by dual C-10 + C-46	number of projects installed by C-10 + C-46	% of projects installed by C-46 (no C-10, A, or B)	number of projects installed by C-46 (no A, B, C-10)	% of projects installed by A/B with or without C-46	number of projects installed by A/B with or without C-46*
Amador	**33.33%**	**23**	**57.97%**	**40**	**4.35%**	**3**	**4.35%**	**3**
Riverside	6.90%	103	72.72%	1,085	4.09%	61	16.02%	239
Napa	10.06%	16	74.21%	118	3.14%	5	10.69%	17
Monterey	14.18%	19	74.63%	100	2.99%	4	5.97%	8
Ventura	17.76%	111	76.16%	476	2.56%	16	2.72%	17
Nevada	31.01%	40	63.57%	82	2.33%	3	2.33%	3
San Diego	38.05%	1189	56.54%	1,767	1.95%	61	2.53%	79
San Francisco	2.00%	5	92.40%	231	1.60%	4	2.80%	7
Santa Cruz	42.76%	121	54.06%	153	1.41%	4	1.06%	3
Santa Barbara	13.45%	30	79.82%	178	0.45%	1	4.04%	9
San Luis Obispo	20.22%	73	78.39%	283	0.28%	1	0.28%	1
Humboldt	6.25%	5	68.75%	55	0.00%		21.25%	17
Mendocino	18.75%	3	75.00%	12	0.00%		6.25%	1
Shasta	37.93%	11	55.17%	16	0.00%		3.45%	1
Colusa	0.00%	0	100.00%	1	0.00%		0.00%	0
Plumas	**0.00%**	**0**	**100.00%**	**1**	**0.00%**		**0.00%**	**0**
Trinity	**0.00%**	**0**	**100.00%**	**2**	**0.00%**		**0.00%**	**0**
Inyo	50.00%	1	50.00%	1	0.00%		0.00%	0
Mono	**100.00%**	**1**	**0.00%**		**0.00%**		**0.00%**	**0**
Alpine	**0.00%**	**0**	**0.00%**		**0.00%**		**0.00%**	**0**
Del Norte	0.00%	0	0.00%		0.00%		0.00%	0
Imperial	0.00%	0	0.00%		0.00%		0.00%	0
Lassen	**0.00%**	**0**	**0.00%**		**0.00%**		**0.00%**	**0**
Modoc	**0.00%**	**0**	**0.00%**		**0.00%**		**0.00%**	**0**
Sierra	**0.00%**	**0**	**0.00%**		**0.00%**		**0.00%**	**0**
Siskiyou	**0.00%**	**0**	**0.00%**		**0.00%**		**0.00%**	**0**
BLANK							45	976
AVERAGE/ TOTAL	19.3%	3,708	68.1%	13,069	6.4%	1,223	5.29%	1,015
AVERAGE RURAL/MOSTLY RURAL	27.9%	41	63.9%	94	2.0%	3	6.1%	9

Table 7. Number of Licensed C-10 and C-46 Contractors by County

County	Active C-46 licenses	Active C-10 licenses	Active dual C-10, C-46
Merced	8	85	3
Kings	5	40	2
Mariposa		**19**	
Tulare	8	173	3
Fresno	38	423	14
Tehama	1	35	1
Madera	6	86	4
Stanislaus	12	268	3
Sacramento	43	867	17
Contra Costa	49	690	23
Solano	13	213	5
Tuolumne	4	59	1
Glenn	1	12	
San Benito	1	49	
Alameda	41	852	14
San Joaquin	17	312	6
Calaveras	**3**	**58**	**2**
Yuba	2	44	1
San Mateo	12	553	6
Yolo	7	90	
Orange	88	2,241	30
San Bernardino	43	1,163	16
Sonoma	39	524	12
Santa Clara	55	1,007	18
Placer	27	485	8
Sutter	3	65	2
El Dorado	18	234	6
Los Angeles	209	6,063	80
Butte	16	156	2
Marin	18	244	10
Kern	26	432	6
Lake	3	52	1
Amador	**9**	**55**	**3**
Riverside	89	1,601	31
Napa	5	118	

CONTINUED Table 7. Number of Licensed C-10 and C-46 Contractors by County

County	Active C-46 licenses	Active C-10 licenses	Active dual C-10, C-46
Monterey	5	272	1
Ventura	21	667	3
Nevada	14	161	5
San Diego	138	1,911	49
San Francisco	19	550	9
Santa Cruz	18	245	7
Santa Barbara	7	274	1
San Luis Obispo	16	315	10
Humboldt	8	89	5
Mendocino	11	90	4
Shasta	15	167	3
Colusa		9	
Plumas		**29**	
Trinity		**15**	
Inyo	1	13	
Mono	**2**	**21**	**1**
Alpine			
Del Norte		9	
Imperial		56	
Lassen	**1**	**17**	
Modoc		**6**	
Sierra		**4**	
Siskiyou		**34**	
BLANK	45	976	19
AVERAGE/TOTAL	1240	25,298	447

*There is a roughly even split

G. Summary of Profile of Licenses Held by BESS Contractors

In sum, after looking at the distribution of licenses of the contractors installing solar-paired BESS projects over the last five years—in terms of number of installations, installed capacity, by customer class, by project size, by the most important firms ranked by number of installations, and by rural vs. urban installation—the data consistently show the same research result. Most installations are carried out by C-10 contractors, including both those with and without C-46 licenses, and the majority of installations have been carried out by contractors holding both a C-46 and a C-10 license. Only a very small percentage of BESS projects have been installed by C-46 contractors who do not also hold a C-10, A, or B license. While C-46 (no C-10, A, or B) contractors are exempt from the CSLB standard that any employee who carries out electrical work must be a certified electrician, all contractors holding a C-10 license are held to the certification requirement, even those that also hold a C-46 license.

We therefore conclude that precluding or restricting C-46 (no C-10, A, or B) contractors will have a negligible effect on the current pool of contractors, because only a tiny fraction of current BESS installations has been carried out by contractors holding only a C-46 license without an A, B, or C-10 license. The C-46 contractors currently engaged in BESS who do not hold a C-10 licenses could of course obtain one, as have the great majority of C-46 contractors performing BESS installations. We have no specific information about why contractors obtain both licenses, but since the C-10 license covers ALL the work allowed by the C-46 license, we surmise that many C-46 contractors have found it advantageous to obtain the C-10 license as well. The large number of dual license holders indicates that, for many C-46 contractors, obtaining the C-10 license has not been an obstacle.

This research finding has significant implications for the CSLB's decision. Any ruling to restrict the scope of the C-46 license would have negligible effect on the current industry profile since so few installations have been carried out by C-46 (no C-10, A, or B) contractors. The question the CSLB is considering is thus at heart about the *future* trajectory of the industry, and whether or not it makes sense for the state to encourage a large increase in the number of BESS installations performed by contractors who hold C-46 licenses but do not hold a C-10, A, or B license. Because certified electricians are not required under the C-46 license, a CSLB ruling that allows C-46 to carry out BESS installations would represent a decision by the CSLB to encourage the growth of a non-certified workforce instead of the continued use of certified electricians and the growth of employment of certified electricians in the future.

This profile of the current pool of contractors also has significant implications for the risk and hazard analysis that follows. The fact that there are very few C-46 (no C-10, A, or B) contractors in the pool of contractors that have installed BESS to date means that we do not have data on the safety record of this set of contractors. The next section presents our safety analysis.

IV. Workplace Hazards/Risks and Needed Contractor Demonstrated Knowledge, Skills, and Training

A. Introduction and Overview of BESS Safety Issues

This section evaluates safety issues that are relevant to our assessment of which specialty contractor classifications are appropriate to perform battery energy storage systems (BESS) work. The CSLB's mission statement and enabling statute emphasizes the importance of the role of public safety to the activities and requirements of the CSLB. The mission statement provides that "(t)he Contractors State License Board protects consumers by regulating the construction industry through policies that promote the health, safety, and general welfare of the public in matters relating to construction."[20] Section 7000.6 of the California Business and Professional Code states:

> Protection of the public shall be the highest priority for the Contractors State License Board in exercising its licensing, regulatory, and disciplinary functions. Whenever the protection of the public is inconsistent with other interests sought to be promoted, the protection of the public shall be paramount.[21]

This section examines the appropriate jurisdiction of C-46 solar contractor and C-10 electrical contractor classifications for ensuring the ***safe*** construction, installation, modification, maintenance, or repair (herein after "installation") of BESS. The CSLB articulated the questions on safety that we were tasked with answering as follows:

- Considering BESS risk, hazard, size, and complexity considerations, is there an existing or prospective harm to public safety, and if so, what is the likelihood of the existing or prospective harm occurring and/or will that harm be fixed by enacting a regulation?
- Whether the solar contractor classification should be authorized in regulation to install a BESS and if so to what extent/in what way?
- Applicability of state and national standards and codes to these inquires.
- An analysis of applicable knowledge, skills and training as it relates to the installation of BESS.

20 https://www.cslb.ca.gov/About_us/.

21 https://law.justia.com/codes/california/2011/bpc/division-3/7000-7020/7000.6/.

B. Our Approach

In accordance with the mission of the CSLB, we evaluate BESS hazards and risk by examining their potential impact on public safety, reviewing the safety of workers, emergency responders, occupants, and the public. Hazard evaluation considers what can go wrong and examines potential harmful events and their impact, separate from any needed controls or mitigation actions. Risk management uses the information about hazards to consider how bad an incident can be, the likelihood of its occurrence, the state of existing technology and safety systems, and the effectiveness of preventative and mitigation measures including regulations and standards. It is important to underscore that the safety of BESS is best evaluated as a system that includes not only the battery but also associated equipment as well as potential risks to the existing electrical infrastructure that the battery connects with.

This safety analysis examines a range of BESS applications including residential, commercial, and grid-utility.[22] First, we review the key safety issues and positions raised by stakeholder parties as documented in the CSLB's BESS meetings and reports. Next, we review the determination of hazards and risks, focusing on the BESS chemistries and technologies that predominate in California. The report reviews serious BESS incidents from media and other data sources, including incident reports where available, and examines both the identified causes and the recommendations for future mitigation.

The report evaluates the ongoing research on BESS by organizations such as National Fire Protection Association (NFPA), the Underwriters Laboratories (UL),[23] DNV,[24] and FM Global.[25] We review the relevant codes and standards, which have undergone significant revision over the last five years to address BESS hazards, risks, and mitigations. We examine not only the relevant building codes adopted by regulation in California but also the consensus among experts of good practice safety standards and guidelines that have been recently developed to address BESS hazards, including safety data sheets, installation guides, emergency response guidance, and battery safety testing data published by BESS manufacturers.

We evaluate BESS risks utilizing data related to incident frequency and potential consequences, using recognized and generally accepted risk assessment approaches for electrical and chemical hazards. This includes risk determinations for BESS by the fire service and major insurance companies. Finally, we use existing risk mitigations developed in codes, standards, and technical reports to evaluate the knowledge, skills, and training required for safe BESS work. From these sources, we present conclusions and recommendations from a safety perspective on the appropriate BESS contractor classification(s) to install BESS.

22 There was some focus in the CSLB review on residential applications of BESS. However, the CSLB did not limit the review of BESS for this report to residential applications. It should also be noted that neither the C-46 nor C-10 stakeholders called for a resolution based upon residential applications.

23 Underwriters Laboratories (UL) is a safety science, testing, and third-party certification organization.

24 DNV—formerly DNV GL—is an international organization expert in risk management and quality assurance with corporate headquarters in Norway.

25 FM Global is a mutual insurance company that provides risk engineering services to primarily large corporations. FM Global publishes well-regarded loss prevention data sheets including ESS.

C. Stakeholder Positions on BESS Hazards, Risk, and Safety Standards

The CSLB has been addressing contractor classification jurisdictional issues for BESS since 2015, and has received extensive input from industry stakeholders, which we have carefully reviewed. We also held two meetings/interviews each with CALSSA and the electrical industry to better understand their concerns. In conducting the review, we interviewed relevant personnel from the CSLB, Interstate Renewable Energy Council (IREC), California Building Industry Association (CBIA), California Department of Industrial Relations/Cal OSHA, California Building Officials (CALBO), California Building Standards Commission (CBSC), and the National Fire Protection Association (NFPA).

The key safety issues and concerns that these stakeholders have highlighted both in the public record and in our interviews are summarized below.[26]

1. C-46 Contractor Stakeholder Positions

CALSSA's arguments to support their position that C-46 contractors can safely carry out BESS projects can be summarized as follows: C-46 solar contractors have been successfully installing BESS connected to PV systems for 40 years.[27] There are no known BESS incidents in residential or commercial applications.[28] Since the connection of batteries to PV systems in off-grid homes, C-46 contractors have been installing BESS.[29] Lithium-ion batteries are safer than lead acid. There are no examples of C-46 related BESS incidents.[30] BESS technologies are getting safer and are described as "plug and play," incorporating circuit protections that prevent arc flash and thermal runaway in residential and commercial applications.[31]

For residential applications, the most common BESS is a UL listed prepackaged unit that is comparable to the installation of a simple appliance unit. Installers have no access to the enclosed battery terminals. A 20% output limit prevents overloading a service panel when connected to a PV system.[32] About 20% of the PV system installs require a service panel upgrade[33]—in this situation, a C-46 would contract for a service panel upgrade with a qualified electrical contractor rather than doing it with non-certified electricians. Regarding any calculations needed to conclude that an existing electrical system can be safely installed with a BESS, C-46 workers have been performing those calculations successfully.[34]

According to CALSSA, voltage and exposure to terminals are key considerations. CALSSA stated NFPA 70 makes an important distinction between exposed BESS DC terminals over 60 volts for application of NFPA 70. If exposed DC terminals are over 60 volts and thus an electrical worker safety hazard, then BESS must be installed by a qualified

26 The key points were gathered from information provided to the CSLB and information received by the UC Berkeley team from CSLB stakeholders.

27 https://www.cslb.ca.gov/Resources/BoardPackets/ESS_Report_revised.pdf.

28 https://www.cslb.ca.gov/Resources/BoardPackets/ESS_Follow_Up_Study_7_26.v7.pdf.

29 *Ibid.*

30 https://www.cslb.ca.gov/Resources/BoardPackets/Leg_Com_Sum_Report_amended.pdf.

31 https://www.cslb.ca.gov/Resources/BoardPackets/ESS_Report_revised.pdf.

32 *Ibid.*

33 *Ibid.*

34 https://www.cslb.ca.gov/Resources/BoardPackets/8-6-19_Leg_Com_Sum_Report_Amended.pdf.

person—and solar installers are qualified.[35] CALSSA stated that it "does not feel that there are any potential safety risks" for BESS installation connected to a PV system.[36] BESS have been part of the C-46 contractor license exam since 2002, showing that C-46 contractors have the required competencies. The exam covers a range of both PV systems and BESS issues, and has more questions related to BESS than the electrical contractor test.[37] The CSLB C-46 license exam study guide lists BESS as a topic. All of this shows that C-46 contractors have the necessary qualifications.

2. C-10 Contractors Stakeholder Positions

The electrical contractors' (NECA and IBEW) arguments to support their position that C-46 contractors should not be allowed to carry out BESS projects can be summarized as follows: Current regulations allow C-46 to install BESS only when coupled with solar PV, but BESS are separate systems from PV systems. NFPA 70 addresses them separately in different chapters. BESS and PV systems can work together or separately—one is not ancillary to the other—so the exception that allows C-46 contractors to install BESS when paired with solar PV is invalid.[38]

Most BESS installs are in existing residential and commercial applications that require an evaluation of existing electrical systems. This evaluation includes calculations to ensure the BESS can be safely installed in the existing system.[39] The existing systems may have wiring and equipment of different sizes, ages, capacities, and conditions that require an assessment by a certified electrician working for a C-10 contractor. This includes a review of the existing grounding and bonding and the condition of overcurrent devices. BESS installation can stress or exceed the existing electrical system's capabilities, leading to serious safety issues. BESS and PV systems can be connected in a variety of configurations. PV systems and BESS can be connected to the same inverter or independent of each other. They can be grid connected or able to disconnect in the event of loss of power, or constructed with the ability to reconnect if power is restored. These various configurations present technical challenges that require a certified electrician.[40]

The electrical industry stakeholders also point out that NFPA 70 requires a qualified person to install BESS.[41] The definition of "a qualified person" is based on documented training and experience. Only certified electricians can perform electrical work for C-10 contractors. Becoming a certified general electrician in California requires passing an exam and 8,000 hours of experience.[42] The experience must be documented and under the supervision of a certified electrician. Certified electricians are trained in NFPA 70E, which addresses electrical safety and worker protection.[43] Solar installers working for a C-46 contractor have no regulatory requirements for experience or testing to assess competency. The C-10 stakeholders stated the OSHA 10-hour and 30-hour trainings address generic safety concerns of which electrical hazards are only one part.

We looked for evidence for and against each of the stakeholder positions and carried out our own independent analysis of safety issues relevant to the CSLB's questions.

35 *Ibid.*
36 *Ibid.* at 11.
37 https://www.cslb.ca.gov/Resources/BoardPackets/ESS_Report_revised.pdf.
38 https://www.cslb.ca.gov/Resources/BoardPackets/CommitteeMeetingPacket2019080506.pdf.
39 https://www.cslb.ca.gov/Resources/BoardPackets/8-6-19_Leg_Com_Sum_Report_Amended.pdf.
40 https://www.cslb.ca.gov/Resources/BoardPackets/8-6-19_Leg_Com_Sum_Report_Amended.pdf.
41 https://www.cslb.ca.gov/Resources/BoardPackets/ESS_Report_revised.pdf.
42 https://www.cslb.ca.gov/Resources/BoardPackets/8-6-19_Leg_Com_Sum_Report_Amended.pdf.
43 *Ibid.*

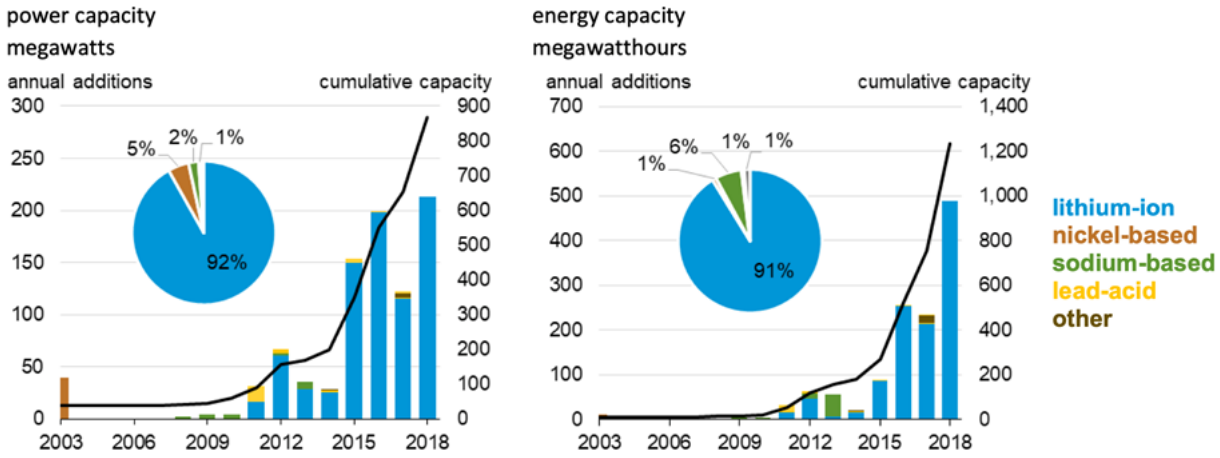
D. BESS Hazards

1. Background and Scope

Historically, energy storage systems (ESS) have varied in technology, but lithium-ion BESS predominate in current applications. This section documents the types of BESS that are relevant to California, highlighting the key role that lithium-ion batteries play. California has installed the largest share by far of small-scale[44] battery energy storage system capacity in the U.S., with 86% of all U.S. capacity in 2018.[45] California's Self-Generation Incentive Program (SGIP) has been credited with driving the state's dominance in small-scale energy storage growth.[46]

Lithium-ion is the predominant BESS technology for residential, commercial, and grid-utility applications in the U.S.[47] According to the U.S. Energy Information Administration (EIA), lithium-ion batteries (LIB) accounted for 90% of the large-scale BESS deployment in the U.S. through 2018 (Figure 13).[48] The EIA notes that most installations and retrofits have used LIB since 2011.

Figure 13. Large-Scale Battery Storage Capacity by Battery Chemistry (2003-2018)



Source: U.S. Energy Information Administration, Form EIA-860, *Annual Electric Generator Report*

The LIB technology has become the nation's preferred technology due to its high energy density, efficiency in retaining energy from recharge to discharge, relatively longer life, and lower cost. Currently, lead acid and other battery technologies play a relatively minor role in all BESS applications. A variety of LIB chemistries have emerged. Lithium-manganese-cobalt-oxide (NMC) is the leading BESS chemistry followed by the increasing deployment of lithium iron phosphate (LFP) (see figure 14).[49]

44 Residential, commercial, industrial, and direct connected. EIA defines small scale as having less than 1 MW in power capacity. Note the data on California ESS growth also reflects some non-battery storage.

45 https://www.eia.gov/analysis/studies/electricity/batterystorage/pdf/battery_storage.pdf.

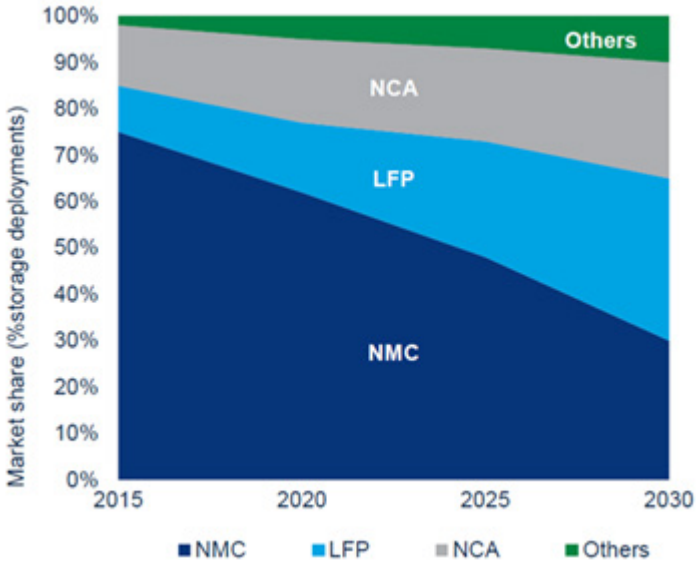
46 *Ibid.*

47 https://www.energy.gov/sites/prod/files/2020/12/f81/Energy%20Storage%20Market%20Report%202020_0.pdf.

48 https://www.eia.gov/analysis/studies/electricity/batterystorage/pdf/battery_storage.pdf.

49 https://www.woodmac.com/press-releases/lfp-to-overtake-nmc-as-dominant-stationary-storage-chemistry-by-2030/.

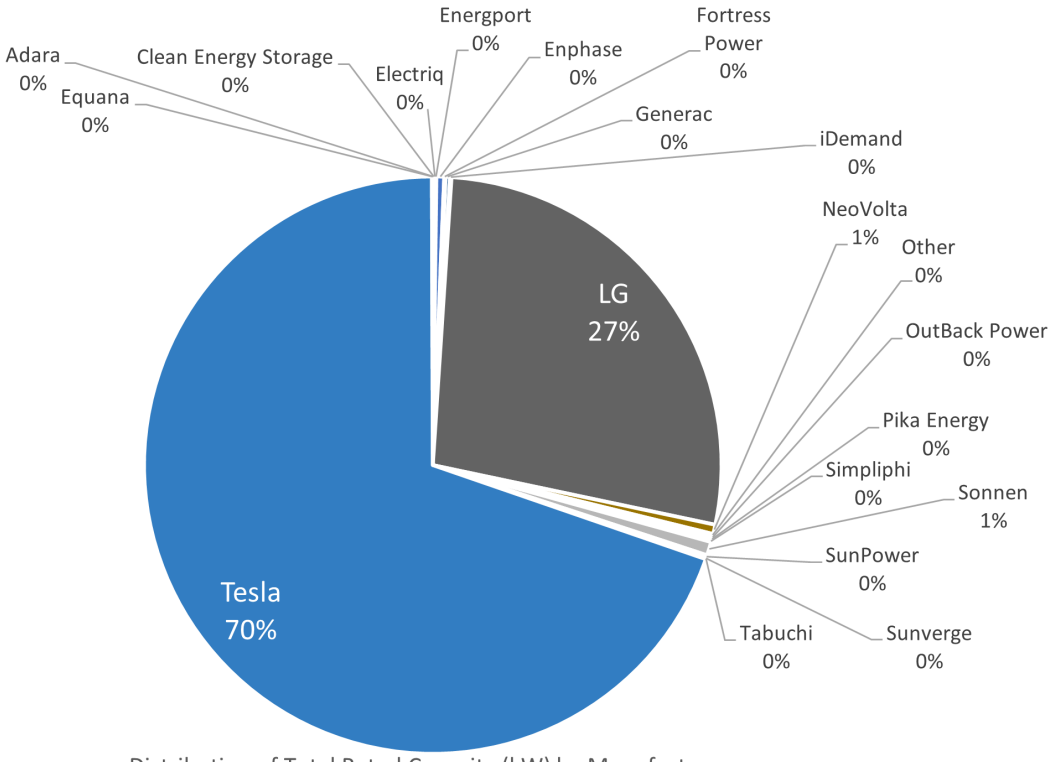
Figure 14. ESS Battery Chemistry Market Share Forecast, 2015–2030



Source: Wood Mackenzie Energy Storage Service

In the California residential energy storage market, lithium-ion batteries dominate the market, as shown in Figure 15. Lithium-manganese-cobalt-oxide (NMC) batteries from Tesla and LG account for 97% of the California residential installations based on SGIP data.

Figure 15. California SGIP Data on Residential ESS from 2015 Onward, Statewide Report (4-12-21)

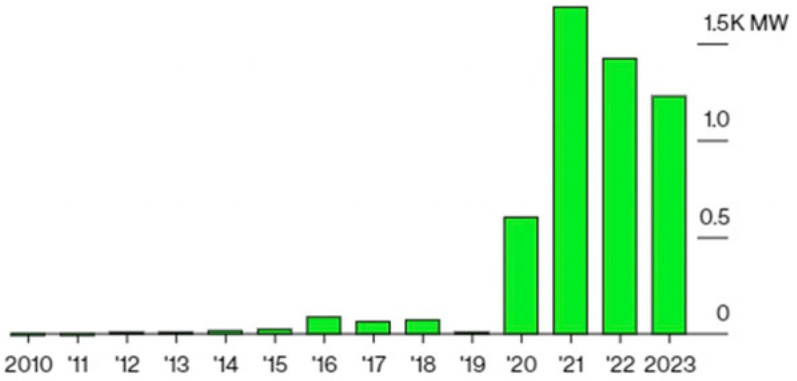


Distribution of Total Rated Capacity (kW) by Manufacturer

Tesla and LG NMC residential lithium-ion BESS also lead the U.S. market share as well.[50] The NMC LIB chemistry has long led the electric vehicle (EV) market, where high energy density in a smaller space is a priority. NMC also entered the home market with a cost advantage that occurred due to its growth in the EV market.[51] However, the higher energy density and chemistry that includes a flammable electrolyte in the NMC technology brings additional hazards. Other developing BESS chemistries are challenging NMC in part based upon safety concerns.[52]

The deployment of BESS in all sectors is rapidly growing in the U.S. California is predicted to more than double its battery energy storage from 2020 in one year, growing to 1.7 GW of new storage in 2021, as shown in Figure 16.[53] The large deployment of BESS is expected to continue through 2023.[54] In California, the demand for BESS is related to both concerns over utility power outages as well as established clean energy goals. This projection of significant growth in deployed BESS in California, with the predominance of lithium-ion chemistries, amplifies the importance of understanding and mitigating LIB hazards and risks.

Figure 16. California Projected to Install 1.7 GW of Battery Storage in 2021



Source: BloombergNEF

2. BESS LIB Chemistries and Hazards

Lithium-ion batteries are a relatively new technology utilized for BESS, so these batteries lack a lengthy track record for an evaluation of hazards and risks. Widespread deployment of LIB technologies is a recent development, with the dominance of NMC evident in 2016.[55] Sandia National Labs reports: "While many technologies have the advantage of a long track record, lithium-ion batteries are a relatively new technology

50 https://www.greentechmedia.com/articles/read/safer-batteries-residential-energy-storage-market.

51 *Ibid.*

52 The proponents of lithium iron phosphate (LFP) battery chemistry state that the risk of fire or explosion is greatly reduced due to its characteristic of requiring a higher temperature to reach thermal runaway. https://www.greentechmedia.com/articles/read/safer-batteries-residential-energy-storage-market. Other experts such as Victoria Carey, senior consultant of energy storage for quality assurance company DNV GL note "Just because the likelihood is different doesn't mean the impact is different."

53 https://www.bloomberg.com/news/articles/2021-04-01/to-avoid-blackouts-california-s-installing-more-big-batteries-than-all-of-china.

54 *Ibid.*

55 https://brandcentral.dnv.com/fr/gallery/10651/others/3f8f647936cf4fcfab7e82b45c79d9ac/3f8f647936cf4fcfab7e82b45c79d9ac_low.pdf.

that is being used in new environments and applications."[56] In response to BESS incidents and identified serious hazards, organizations such as NFPA, Underwriters Laboratories, FM Global, and DNV are conducting ongoing research on lithium-ion battery safety. This research has been leading to more effective mitigation approaches and safer technologies. New editions of codes and standards are continually addressing new BESS issues in what one California code official described as "chasing the technology."[57]

ESS are typically defined as systems that usually include multiple components. NFPA 70 (2020), the National Electric Code, defines ESS as "one or more components assembled together capable of storing energy and providing electrical energy into the premise's wiring system or an electric power production and distribution network."[58] Battery energy storage systems typically include components in addition to the battery, such as converters or inverters, that change stored energy into electrical energy. BESS are also typically provided with a battery management system (BMS). This is an electronic system that monitors and controls the BESS thermal and electronic condition in order to maintain the system within safe operating limits. If abnormal conditions arise, the BMS is designed to control the disconnection from the electrical system that the BESS is connected to.[59]

Factors that make LIB an effective battery design include high energy density and efficiency. These same qualities along with the use of a flammable organic electrolyte create the potential for significant inherent hazards.[60] A typical LIB cell[61] contains an electrolyte composed of a volatile flammable liquid which is hydrocarbon-based and lithium ions from a dissolved lithium salt.[62] Lessons from recent LIB incidents, ongoing research, and battery testing have all identified significant BESS safety issues from these chemistries. LIB chemistries such as NMC present multiple hazards including thermal runaway,[63] fire and explosion, arc flash, flammable and toxic vapor release, deep-seated fires, electric shock, and stranded energy. Inadequate design, construction, installation, maintenance, or repair can contribute to BESS failure modes and hazardous events.

a) Thermal Runaway, Fire, Explosion, and Toxic Gas Release

Of the LIB hazards, thermal runaway is the most significant. A principal engineer and spokesperson for UL[64] has called thermal runaway **"**his top safety concern related to lithium-ion batteries."[65] Thermal runaway is characterized as an uncontrolled exothermic chemical reaction that results in a rapid release of thermal energy from a battery cell at a higher rate than it can remove.[66] The internal chemical reaction can take place without oxygen or visible flame. Battery cells can be constructed to allow external venting of pressure. The thermal

56 https://www.osti.gov/servlets/purl/1662020.

57 Description from a California code official.

58 NFPA 70 (2020) 706. 2 Definitions.

59 NFPA 855 (2020) 3.3.3.

60 https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Hazardous-materials/RFFireHazardAssessmentLithiumIonBattery.ashx.

61 NFPA 70 (2020) the National Electric Code defines a cell as "The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy.

62 *Ibid.*

63 "The condition when an electro-chemical cell increases its temperature through self-heating in an uncontrollable fashion and progresses when the cell's heat generation is at a higher rate than it can dissipate, potentially leading to off-gassing, fire, or explosion." NFPA 855.

64 Underwriters Laboratories (UL) is a third party safety certification agency that tests products and technologies.

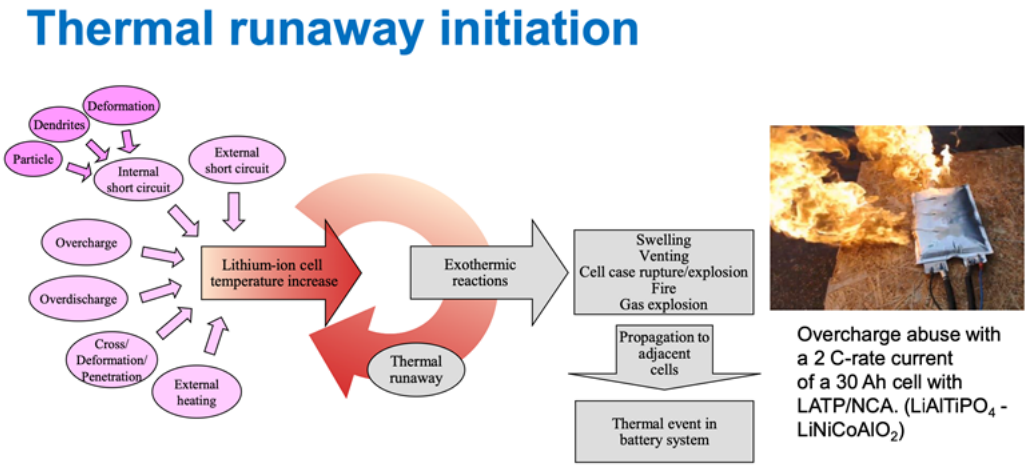
65 https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/burning-concern-energy-storage-industry-battles-battery-fires-51900636.

66 The functional electrochemical unit of a battery generally containing anode, cathode, electrolyte, terminals, etc.

decomposition of the electrolyte in the battery results in a buildup of internal pressure with the cell emitting gases prior to the start of the thermal runaway. Gases evolve from thermal decomposition and include chemical reactions of the electrolyte and electrode materials. The LIB temperatures surge to as high as 1,100°F. The cell releases flammable vapor that can result in a fire or with buildup of flammable vapor and delayed ignition—an explosion. A thermal runaway without a flame can result in a more serious buildup of flammable gases and a larger deflagration event.[67]

The thermal runaway can consume the internal cell constituents and, in the presence of oxygen, initiate a secondary fire involving the battery materials such as the electrolyte and plastic casing. The released vapor is generally toxic, with the gas composition depending on several factors including cell chemistry, the presence of fire, temperature, etc.[68] Vapor emissions can include the highly toxic hydrofluoric acid (HF).[69] The release of heat from one cell can trigger a cascade of similar failures in adjacent cells, leading to a much larger event. As Ben Ditch, a fire researcher at FM Global stated: "Lithium-ion batteries can burn. The fact is the hazard exists. ... It is something a lot of us have been worried about for some time."[70]

Figure 17. LIB Failure Modes—UL Webinar Gas Emissions at Fire, Overheating, and Overcharging Events for Lithium-ion Batteries, September 30, 2020



LIB events that can trigger thermal runaway include electrical, mechanical, environmental, and thermal abuse, as shown in Figure 17.[71] Electrical abuse failure mechanisms include overcharge, overdischarge, and internal and external short circuit.[72] Electrical abuse failure mechanisms include a component failure such as problems with the battery management system, a short circuit, or loose electrical connections. Mechanical abuse examples are penetration, crushing, and drops from sources such as tools, equipment, rough handling, or vehicle impact.

67 https://coaching.typepad.com/files/mcmicken.pdf.

68 https://ul.org/sites/default/files/2020-10/Mellander-Larsson_ULBatterySafetySeminar_Sep2020.pdf.

69 *Ibid.*

70 https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/burning-concern-energy-storage-industry-battles-battery-fires-51900636.

71 https://go.nfpa.org/l/14662/2021-01-11/8h6lwf.

72 https://ul.org/sites/default/files/2020-10/Mellander-Larsson_ULBatterySafetySeminar_Sep2020.pdf.

Environmental impacts include extreme heat, flooding, and seismic events. Thermal abuse can result from a variety of external heat sources including electrical events such as arc flash in proximity to the LIB. As summarized in Chemical Engineering Progress:

> A unique characteristic of Li-ion batteries is their flammable organic electrolytes and cathode materials that can evolve oxygen when heated. Under abuse conditions (i.e., mechanical damage, overdischarge, or overcharge), Li-ion cells may eject electrolyte and other flammable gases that can be a fire hazard if immediately ignited or an explosion hazard if delayed ignition occurs in an enclosed environment.[73]

b) Arc Flash and Electrical Shock

Another hazard that can occur in BESS is arc flash and electrical shock. Federal OSHA defines arc flash as "a phenomenon where a flashover of electric current leaves its intended path and travels through the air from one conductor to another, or to ground."[74] Arc flash temperatures can be over 20,000°F and lead to a serious overpressure event than can exceed 2,000 psi if unmitigated. Persons working with BESS or emergency responders can be exposed to arc flash and electrical shock,[75] and serious injuries and fatalities can result. The increasing power density and size of LIB increases the risk of arc flash impacts.[76]

Workers can be exposed to arc flash and electric shock from an energized BESS or electrical system. For example, the DC current within some lesser kWh capacity BESS can exceed the shock and arc flash threshold requirement of 50v AC or 60v DC.[77] BESS installation requires arc flash protection calculations, and can recommend arc flash protective PPE and propose safe working distances.[78] Emergency responders can be exposed to arc faults and electrical shock due to shorting from damaged equipment and water.[79]

c) Stranded Energy

Workers repairing or replacing a BESS can face the hazard of unquantified electrical energy that is stored in the battery.[80] Even after a fire, a LIB can still retain significant electrical energy that can be a threat to emergency responders. The BESS stranded energy can be difficult to assess or manually discharge due to hazardous conditions or terminal damage because of the fire. This remaining charge can not only present a latent shock hazard but can also serve to reignite a fire after it appeared to be quenched.

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73 https://www.aiche-cep.com/cepmagazine/may_2020/MobilePagedArticle.action?articleId=1583421#articleId1583421.

74 https://www.osha.gov/sites/default/files/2018-12/fy07_sh-16615-07_arc_flash_handout.pdf.

75 https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855.

76 https://www.solarpowerworldonline.com/2019/12/battery-energy-storage-systems-are-at-increasing-risk-for-arc-flash-hazards/.

77 For example, the LG RESU 16H Prime lists a voltage range of 350-450 VDC – "when installing the battery system, the worker shall wear arc-rated clothing in every occasions and places to protect him/her from any possible exposure to an electric arc flash." https://964176.app.netsuite.com/core/media/media.nl?id=20712500&c=964176&h=vLzN7a2AWW4fFIIPHGXKmUOZT3AaOzzGd-VIZQZrJW3kQLa6N&_xt=.pdf; NFPA 855, Standard for the Installation of Stationary Energy Storage Systems (2020), 855-34, "Electrical shock: ESS with voltages above 50 V (per NFPA 70E limits for electrical shock." https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855.

78 *Ibid.*

79 https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855.

80 *Ibid.*

d) Deep-Seated Fire

BESS are typically contained in a metal or plastic case, which, depending on the LIB form factor, can have many cells capable of holding a deep-seated fire. The physical structure of the case and internals designed to protect the battery from mechanical abuse can also obstruct fire water from reaching the burning battery material deep inside the LIB. It can take significant volumes of fire water and many hours to cool and extinguish a deep-seated ire. BESS fires can be a serious challenge for emergency responders due to the possibility of reignition from stranded energy and the difficulty of quenching a fire that is burning deep within the internals of a BESS.

3. BESS Incidents and Data Review

In this section we review the major incidents that have occurred in the recent past as well as other lesser incidents, and survey the major data sources on incidents, including their inadequacies.

a) BESS Major Incident History

Serious BESS incidents have occurred recently both in the U.S. and internationally. These incidents resulted in fires, explosions, and injuries to emergency responders. As major incidents, these serious events are generally well known because they have received media coverage and have been referenced in BESS safety reports.

The most significant incident in the U.S. occurred in 2019 at the Arizona Public Service (APS) grid-utility BESS facility in Surprise, Arizona. The 2019 APS event was a LIB thermal runaway that led to an explosion. Four firefighters were hospitalized with serious injuries. Other recent lithium-ion BESS incidents[81] include another BESS fire at APS in 2012; a 2013 Port Angeles, Washington, BESS fire connected to a mall; a 2016 fire at a Franklin, Wisconsin, manufacturing plant where BESS were being assembled; a 2017 fire at an Engie Ineo BESS grid-utility facility in Belgium; 29 BESS-related fires in South Korea from 2017 to 2019; and a 2020 BESS fire at an Ørsted grid-utility facility in Liverpool, UK.

In late 2020, the Consumer Products Safety Administration (CPSA) announced a recall of over 1,800 LG RESU 10H LIB due to a fire hazard.[82] The CPSA said five fires had been reported with minor property damage. LG followed up with an additional recall of residential LG RESU units in May 2021.[83] A similar recall was initiated in Australia for LG RESU LIB due to reports of overheating incidents.[84]

Concerns about LIB safety first arose from their use in the transportation and consumer electronics sectors. In late 2020 the National Transportation Safety Board (NTSB) published "Safety Risks to Emergency Responders from Lithium-Ion Battery Fires in Electric Vehicles."[85] This study examined LIB EV fires they had investigated, and determined emergency responders were exposed to "safety risks related to electric shock, thermal runaway, battery ignition and reignition, and stranded energy." The NTSB found inadequacies in manufacturers' emergency response guidance and gaps in standards and research addressing transportation-related LIB.[86]

81 The NFPA provided the team with a list of 38 BESS incidents, 37 were LIB-related and 36 were stationary BESS incidents from the U.S. and internationally. The incidents described in more detail are a subset of that NFPA list.

82 https://www.cpsc.gov/Recalls/2020/lg-energy-solution-michigan-recalls-home-energy-storage-batteries-due-to-fire-hazard.

83 https://www.energy-storage.news/news/overheating-reports-prompt-lg-energy-solution-battery-recall.

84 https://www.energy-storage.news/news/overheating-issues-prompt-recall-and-replacement-for-lg-chem-australia-batt.

85 https://www.ntsb.gov/safety/safety-studies/Documents/SR2001.pdf.

86 *Ibid.*

Figure 18. Photo (left) of the APS BESS and low-lying vapor cloud upon the arrival of the Emergency Responders; photo (right) damage to modules and racks inside the BESS container (UL Report Photos)

The 2019 APS incident led to three major reports addressing causes and recommendations. The incident also bolstered the ongoing reforms and standard revisions related to BESS safety. The battery determined to have initiated the thermal runaway was an LG Chem LIB. The battery chemistry was NMC with 28 pouch cells in a module. The BESS included a battery management system (BMS).[87] A smoke alarm led to the arrival of HAZMAT emergency responders who observed low-lying vapor (see Figure 18) near the large shipping-style containers that housed multiple modules and racks of LIB. The source of the observed toxic and flammable vapor was pressure released from the overheated LIB due to a cascading thermal runaway inside the container. Upon opening the doors of the container, the flammable gas found a source of ignition and resulted in a large explosion.

A report from DNV-GL for APS concluded that the thermal runaway initiated from an internal defect in a lithium-ion battery NMC cell.[88] The manufacturer of the battery, LG, determined that an external heat source such as an arc flash initiated the overheating of a LIB cell.[89] Identifying a complete picture of the initiating event from the suspect cell was difficult due to the damage from the thermal runaway. UL reported on lessons relating to emergency response and the serious injuries to four emergency responders.[90] One firefighter was thrown 70 feet through a fence by the force of the explosion.[91] The four firefighters were hospitalized from the BESS explosion with injuries that included broken bones, traumatic brain injury, thermal and chemical burns, spinal damage, and internal bleeding.

Lessons and conclusions from the DNV-GL APS incident report include the need for thermal protection between LIB cells to prevent a cascading failure event, the lack of guidance from manufacturers that the formation of a large flammable cloud was possible, the inadequacy of the fire suppression system to stop a thermal runaway,

87 A battery management system (BMS) "monitors, controls, and optimizes performance of an individual or multiple battery modules in an energy storage system and has the ability to control the disconnection of the module(s) from the system in the event of abnormal conditions." https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855.

88 https://liiontamer.com/wp-content/uploads/APS-DNV-GL-Report.pdf.

89 https://docket.images.azcc.gov/E000007939.pdf?i=1619799672409.

90 https://ulfirefightersafety.org/docs/Four_Firefighters_Injured_In_Lithium_Ion_Battery_ESS_Explosion_Arizona.pdf.

91 https://www.greentechmedia.com/articles/read/arizona-battery-fire-already-prompted-safety-improvements-in-grid-storage.

the lack of deflagration venting in the container (which was required by NFPA 69), and the lack of an effective responder plan with procedures for extinguishing, ventilation, and entry.[92] In addition, the BMS did not effectively prevent the thermal runaway event.

The DNV-GL report recommended that codes and standards should more effectively address a cascading thermal runaway. The report noted that at the time of commissioning of the APS BESS in 2017, codes and standards were still developing and lacked a thorough understanding of thermal runaway and needed mitigations. The report also identified the need for thermal barriers to inhibit thermal cascade.

The report by the battery manufacturer LG Chem[93] identified this as an external "incident initiating event" rather than a manufacturing defect, but lacked explicit preventative recommendations. UL stated that installers should assume that a BESS incident vapor cloud may be capable of an explosion and highlighted the need to define a conservative zone for potential blast radius. UL proposed developing the capacity for remote monitoring of a BESS enclosure of a flammable atmosphere, a more robust communication system for remote access to data, including the status of the BMS that may be compromised, and testing to determine the most effective fire suppression and explosion prevention systems for potential thermal runaway events.

Figure 19 The 2012 BESS electrical fire at the Arizona Public Service facility near McMillan Mesa (Josh Biggs/ Arizona Daily Sun)

A November 2012 fire occurred at an Arizona Public Service (APS) lithium-ion BESS facility near the McMicken substation, as shown in Figure 19. The fire broke out at the 4 MW facility, which had recently been commissioned in February and was undergoing testing.[94] The BESS reportedly suffered serious damage to the $3 million installation.[95]

92 https://liiontamer.com/wp-content/uploads/APS-DNV-GL-Report.pdf.

93 https://docket.images.azcc.gov/E000007939.pdf.

94 https://azdailysun.com/news/local/aps-fire-probed/article_1de2e924-ab0a-5e71-9a3a-6942c2d1c9bb.html.

95 https://www.imia.com/wp-content/uploads/2020/01/IMIA-WGP-112-19-Battery-Storage.pdf.

Figure 20. 2013 BESS Fire at the Landing Mall in Port Angeles, WA

A 2013 lithium-ion BESS fire in a 50-kWh battery room connected to the Landing Mall in Port Angeles, Washington, is shown in Figure 20.[96] The fire triggered an evacuation and closure of streets. The BESS was connected to a wind and solar array. A BESS electric fault was believed to have initiated a thermal runaway. The batteries reignited and led to another fire a few days later.

Figure 21. BESS Fire at S&C Electric Manufacturing Facility in Franklin, Wisconsin (WPI report photo)

A 2016 BESS fire started at the S&C Electric Manufacturing plant in Franklin, Wisconsin. The facility designed, assembled, and constructed BESS to be deployed in customers' facilities. The fire started within the battery manufacturer's BESS DC power and control devices and spread to the LIB. The fire was initiated when a technician was constructing the system. The LIB and related equipment burned as seen in Figure 21. The BESS was in a partially assembled state but was not operational at the time.[97] The damage was stated to exceed $3 million.

96 https://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-b28-w28-study-material.pdf.

97 https://www.sandc.com/globalassets/sac-electric/documents/sharepoint/documents---all-documents/edoc_083520.pdf?dt=637554100599978924.

Figure 22. 2017 fire at an Engie Ineo BESS facility in Belgium (IMIA Report Photo)

An Engie Ineo lithium-ion utility-grid BESS experienced a large fire in 2017 as seen in Figure 22. The incident occurred at the test facility during commissioning. The 6 MW facility was to be used for grid balancing, and was the first time such a facility was to be used for that purpose in Belgium. The damage to the BESS was considered a total loss.[98]

Figure 23. A series of 29 Lithium-ion BESS fires occurred in South Korea from 2017–2019. (IMIA Report and E2 News Photo)

In South Korea, 29 fires initiated at lithium-ion BESS facilities from 2017 to 2019 were investigated by the government (see Figure 23).[99] An expert panel determined that the incidents were caused by a variety of factors including faulty installation, inadequate procedures, insufficient protections against electrical malfunctions, overcharge, manufacturing defects, and lack of effective control systems.[100] The government report revealed that the fires were with both LIB NMC batteries and some LFP batteries. A variety of BESS form factors and system applications experienced fires.[101] As a result of the investigation, South Korea suspended over one-third of the 1,490 BESS facilities in the country. A 47 MWh facility, Daesung Industrial Gas Plant, suffered the biggest loss of $18 million. These fires are significant as South Korea is one of the largest global suppliers of lithium-ion BESS; major manufacturers include LG Chem and Samsung. After the series of fire incidents, LG Chem lost approximately $124 million in BESS business in the first quarter of 2019.

98 https://www.greentechmedia.com/articles/read/engie-investigates-source-of-belgian-battery-blaze.

99 http://www.e2news.com/news/articleView.html?idxno=222794.

100 https://www.spglobal.com/marketintelligence/en/news-insights/trending/bVy2KGU3Opsle5Vv8QG0-Q2.

101 https://liiontamer.com/wp-content/uploads/APS-DNV-GL-Report.pdf.

Figure 24. 2020 Lithium-ion BESS fire at an Ørstead grid-utility facility in Liverpool, UK (Liverpool Echo Photo)

A 2020 LIB fire broke out at a Liverpool, UK, Ørstead 20 MW grid-utility project shown in Figure 24. Residents reportedly heard an explosion[102] and the event was described as a thermal runaway.[103] It took emergency responders several hours to extinguish the blaze.

Figure 25. A BESS container lithium-ion fire at an electric substation in Ariége, France

In December 2020, a lithium-ion BESS fire erupted at the Ariége, France, 0.5 MWh electric substation seen in Figure 25. Approximately 30 firefighters were required to bring the container blaze under control. There were no injuries or fatalities.

102 https://www.liverpoolecho.co.uk/news/liverpool-news/live-updates-fire-rips-through-18934842.

103 https://issuu.com/rizzo48/docs/bat117issuu3/63.

In conclusion, BESS incidents can result in major hazardous events, including thermal runaway fire and explosions. These events have the potential for serious injuries, fatalities, and off-site consequences. BESS incidents can occur at different stages in the BESS lifecycle. Serious BESS fires and explosions can occur during construction, installation, commissioning, or operation. Larger incidents, often in grid-utility settings, are captured in media reports and technical reviews. These incidents are more likely to be identified with greater factual detail. Most BESS incidents lack publicly available investigation reports—the 2019 Arizona Public Service incident being an exception. These gaps impede identifying BESS incident details and causal factors for prevention.

b) Other BESS Incidents and Data Review

As part of the research for this report, several incident databases were reviewed, and inquiries were made to organizations concerning repositories of BESS incident data. While major BESS incidents have typically received coverage in the media and BESS technical reports, other incidents are difficult to track. This is especially true of lesser impact incidents and near misses. There is no single repository of U.S. battery energy storage system incidents or data. BESS incidents, depending on the circumstances, may or may not be tracked by any specific database. BESS incident public impacts may involve workers, emergency responders, building occupants, or the public. The data sources may lack sufficient detail to confirm a BESS event was involved.[104] The 2020 CPSA LG RESU recall reveals that BESS fire events can otherwise go unreported or lack details. The home fires referred to on the CPSA recall did not appear in any other database examined in this report.

BESS incidents may not trigger OSHA's jurisdiction. Small businesses with fewer than 10 employees may be exempt from some requirements for Cal OSHA's Injury and Illness Prevention Program.[105] Self-employed C-10 and C-46 contractors with no employees are not covered by Cal OSHA.[106] As of March 1, 2021, CSLB data shows 54% (11,328) of C-10 contractors declare they have no employees and 39% (758) of active C-46 contractors state they have no employees.

To point out some of the difficulties in BESS incident identification, we review OSHA databases as an example. OSHA has several portals to search for inspection and incident data including Fatality and Catastrophe Investigation Summaries, Severe Injury Reports, a NAICS code search, and Establishment Search. There is no specific NAICS code for battery energy storage. A review of OSHA's Severe Injury Reports from 2015–2020[107] found injuries related to battery incidents such as crushed limbs or burns where the battery served as a source of ignition. Other incident descriptions lacked sufficient detail to identify it as a BESS incident. For example, in 2018 a Tesla solar worker was testing electrical equipment and suffered electrical shock and burns from an arc flash.[108] For a 2018 electrical incident the OSHA database stated an employee was "rewiring replacement batteries in an existing battery string and created a short circuit that resulted in an arc flash."[109] In another, a worker was "taking measurements from a battery interface board" when an arc flash occurred.[110] These descriptions lack

104 Federal agencies studies have found that tracking the occurrence of specific types of incidents can be difficult. The U.S. Chemical Safety and Hazard Investigation Board in its 2002 Improving Reactive Hazard management report found it similarly difficult to track reactive incidents from existing sources. The CSB needed to examine over 40 databases to identify incidents that met the report's definition of a reactive chemical incident. Examining a wide range of databases is beyond the scope of this report. https://www.csb.gov/improving-reactive-hazard-management/.

105 https://www.dir.ca.gov/dosh/dosh_publications/iipp.html; https://www.dir.ca.gov/title8/3203.html.

106 https://www.dir.ca.gov/t8/14300_31.html.

107 https://www.osha.gov/severeinjury/. The severe incidents under the jurisdiction of states that have their own OSHA program such as California (OSHA State Plan States) are not included in the Federal OSHA's Severe Injury Report data on their website.

108 https://www.osha.gov/pls/imis/establishment.inspection_detail?id=1285745.015.

109 https://www.osha.gov/pls/imis/accidentsearch.html.

110 *Ibid.*

sufficient detail to confirm this as a BESS incident. The April 19, 2019, BESS explosion was discovered in the OSHA Establishment Search database with no mention of BESS, an explosion, or the serious injuries to the four firefighters.[111] From the details provided, no incidents could be confirmed as involving a BESS event in the OSHA databases, even though we know from other sources that some of these incidents were BESS events.

One example of fires in the residential sector illustrates both the hazards and risks associated with BESS and the difficulty of ascertaining the cause and preventative measures. In December 2020, CPSA announced the recall of over 1,800 LG Energy Solutions RESU lithium-ion batteries. The recall hazard was identified as "home batteries overheat, posing a risk of fire and emission of harmful smoke."[112] The notice identified five reports of fire associated with the recalled batteries. While it could be assumed the battery recall was related to a manufacturing or software issues, LG has not issued an incident report detailing the causal factors related to the overheating or residential fires.

E. BESS Safety Standards and Guidance

The impacts of major LIB incidents have led to significant activity by safety-related organizations to develop BESS incident mitigation strategies and new, safer technologies. Organizations such as NFPA and FM Global have conducted studies, research, and testing addressing BESS hazards and fire service mitigation approaches.[113] DNV and UL have developed BESS testing regimes. DNV has developed an annual Battery Performance Scorecard,[114] and UL publishes select BESS certification and testing results.[115] In response to all these advances of knowledge and technology, safety codes and standards addressing BESS have undergone ongoing significant revisions over the last five years. Reflecting these developments, DOE publishes a quarterly bulletin updating new developments in ESS codes and standards.[116]

Over 30 codes now address BESS issues, from the built environment in building codes, installation, and application to the BESS and its system components (Figure 26). For purposes of examining safety provisions in the standards related to the activities of solar and electrical specialty contractors, this review focuses on select BESS building and installation related standards. The standards we reviewed include the 2020 NFPA 70 the National Electric Code (NEC); the 2019 California Electric Code (CEC) and the 2021 supplement; the 2021 NFPA 70E Electrical Safety in the Workplace; the 2021 International Fire Code (IFC), the 2019 California Fire Code, and the 2021 supplement; the 2020 NFPA 855 Installation of Stationary Energy Storage Systems; and UL 9540:2020 Standard for Safety, Safety Energy Storage Systems and Equipment, and UL 9540A:2019 Standard for Safety, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.

This review assesses both the enforceable California codes that have already been adopted in state regulation as well as more recent versions of the cited codes not yet adopted by California and voluntary consensus safety standards. California is proactive in adopting enforceable building codes into the California Code of Regulations,[117]

111 The incident was described as a "unprogram related" inspection with few details both under APS and the City of Surprise, Arizona, Fire Department Establishment Search database listings. Note that the Severe Injury Records do not include reports from states with their own state OSHA plan such as California and Arizona other than federal related facilities.

112 https://www.cpsc.gov/Recalls/2020/lg-energy-solution-michigan-recalls-home-energy-storage-batteries-due-to-fire-hazard.

113 https://www.nfpa.org/News-and-Research/Resources/Emergency-Responders/High-risk-hazards/Energy-Storage-Systems.

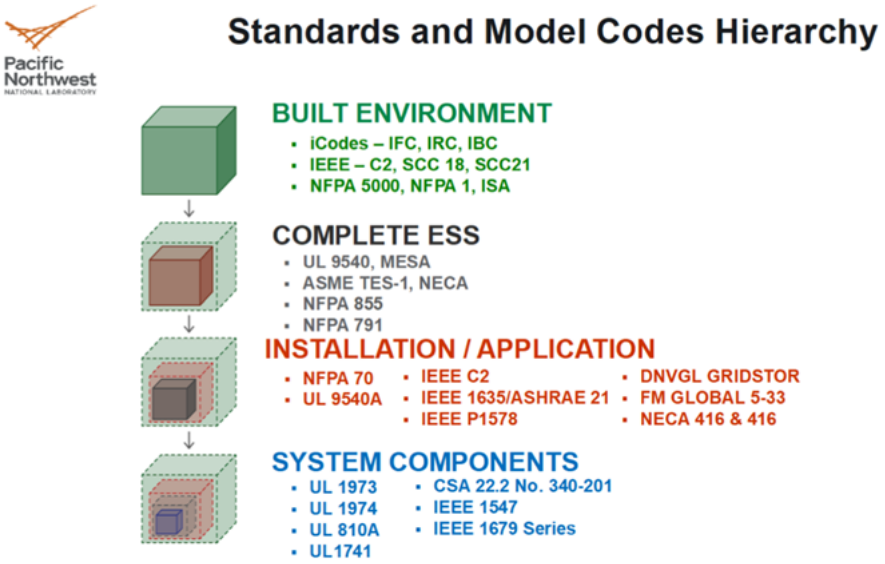
114 https://www.dnv.com/Publications/2020-battery-performance-scorecard-192180.

115 https://iq.ulprospector.com/en/_?p=10005,10048,10006,10047&qm=q:aacd.

116 https://energy.sandia.gov/wp-content/uploads/2021/02/SC-Report-by-SDO-WINTER-2021_Final.pdf.

117 California Code of Regulations, Title 24, the California Building Standards Code.

Figure 26. Hierarchy of Energy Storage System Codes & Standards (DOE Pacific Northwest National Labs, 2021)[118]



with triannual adoption and supplemental updates, but the relevant BESS codes are continually evolving. New knowledge about LIB hazards and the dynamic nature of BESS code updates makes it essential to review the latest requirements.[119] Moreover, the importance of the application of up-to-date consensus standards is well recognized for effective safety protocols, hazard prevention, and risk management.[120] The 2019 Surprise, Arizona, explosion highlights how recent serious incidents reveal new lithium-ion BESS hazards, leading to important revisions in multiple codes. The following illustrates how various codes and standards currently address BESS safety issues.

1. NFPA 70 (2020) National Electric Code and California Electric Code (2017)

The primary safety code for the electrical industry is the National Electric Code (NEC). ESS have been part of the NEC since the first edition of the code, with applications ranging from lead acid batteries, ESS connected to windmills, generators, etc., and Delco systems for low voltage appliances.[121] Due to new hazards related to evolving technologies and battery chemistries, the NEC developed Article 706 Energy Storage Systems in 2017;[122] it was significantly updated in the 2020 edition. California has not yet adopted the 2020 NEC ESS revisions into its Title 24 Building Standards Code, but likely will in the future subject to amendments as they have done in the past.

118 https://energystorage.org/wp/wp-content/uploads/2019/09/Operational-Risk-Assessment-white-paper-final.pdf.

119 Safety programs are typically evaluated by adherence to recognized and accepted industry good safety practices—consensus standards, government research and recommendations and new lessons learned from recent incidents. Regulatory minimal compliance is necessary but insufficient for effective safety prevention and mitigation.

120 For example, the National Technology Transfer and Advancement Act of 1995 requires the use of technical standards developed by consensus standard setting bodies to carry out policy objectives or activities by federal agencies. The National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, 110 Stat. 775 (Mar. 7, 1996.)

121 Interview with code officials.

122 *Ibid.*

In both the 2017 and 2020 editions, the purpose of the NEC is explained as "the practical safeguarding of persons and property from hazards arising from the use of electricity."[123] The inclusion of the provisions of the code is based on what is "considered necessary for safety."[124] The scope of the NEC covers the installation and removal of electrical conductors, equipment, etc., for listed applications.[125] The NEC does not cover installations under the exclusive control of the electrical utility under certain listed conditions.[126] Chapters 1-4 of the standard apply generally to all electrical installations, while Chapter 6 addresses Special Equipment including Solar Photovoltaic (PV) Systems (Article 690) and Chapter 7 covers Special Conditions with an article addressing ESS (706).

The 2020 version of the NEC made significant revisions to the 2017 edition, showing the rapid evolution of standards related to BESS. The 2020 NEC broadened the Article 706 scope to include ESS that have a capacity greater than 1 kWh, replacing the 2017 coverage of systems operating over 50 volts AC and 60 volts DC.[127] The 2020 NEC has also eliminated the 2017 system classification distinctions that called out self-contained and pre-engineered ESS. The 2020 NEC Article 706 has more detailed emergency disconnect provisions and requires a readily accessible means of disconnecting ESS outside the building for one- and two-family dwellings.

Article 706 has had mandatory listing[128] provisions that include specific safety requirements since 2017, but now has ESS system-based requirements. BESS can be listed and labeled by organizations such as UL indicating "the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose."[129] The ESS in the 2020 version of Article 706 now needs to be listed as a complete system, not just a list of separate components such as the lithium-ion cells or battery.[130] Examples of BESS UL listing safety standards are UL 9540 and 9540A, both of which have been recently updated. Other 2020 Article 706 revisions include additional listed nameplate requirements, a new section requiring ESS be maintained in safe operating condition and requirements for working spaces.

A new requirement was added in 2020 that "the installation and maintenance of ESS equipment and all associated wiring and interconnections shall be performed only by qualified persons."[131] The NEC defines a "Qualified Person" as "one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved."[132] The definition includes an informational note referring the reader to NFPA 70E for electrical safety training requirements.

The NEC Article 706 sections are not stand-alone requirements, meaning that it is essential to address safety issues in the whole electrical system that the BESS connects to. The NEC Chapters 1-4 as well as references in 706 to other articles and chapters are important for the safe installation of BESS, which requires broad knowledge of the NEC. A review of BESS electrical checklists demonstrates the need to understand and apply a significant

123 NEC 90.1 Purpose, (A) Practical Safeguarding. The NEC is not intended as a design code or instruction manual.

124 NEC 90.1 Purpose, (B) Adequacy.

125 NEC 90.2 Scope (A) Covered.

126 NEC 90.2 Scope (B) Not Covered.

127 For example, BESS operating at less than 50 volts AC and 60 volts DC such as 48 volts would be covered by NEC (2020) Article 706.

128 For example, for UL "Listing means that UL has tested representative samples of a product and determined that the product meets specific, defined requirements. These requirements are often based on UL's published and nationally recognized Standards for Safety." https://marks.ul.com/about/ul-listing-and-classification-marks/promotion-and-advertising-guidelines/specific-guidelines-and-rules/.

129 NEC (2020) Article 100 Definitions.

130 https://www.ul.com/news/2020-nec-addresses-electrical-safety-what-code-officials-need-know. The UL standard for listing batteries used in stationary applications is UL 1173 (2018) and for lithium battery cells is UL 1642 (2020).

131 NEC (2020) 706.3 Qualified Personnel.

132 NEC (2020 and 2017) Article 100 Definitions.

number of chapters and articles that are required for BESS installation far beyond Article 706 on Energy Storage Systems. For example, the NYSERDA[133] Battery Energy Storage System Electrical Checklist[134] that is referenced by the NFPA[135] requires compliance with over 30 code provisions in addition to those in Article 706 addressing ESS. This has important implications for the technical capacity that contractors need for safe BESS installation, because it requires broader electrical knowledge than just knowledge about the specific BESS codes and technology. The broad scope and detailed requirements provided in NFPA 70 that are needed for BESS installation underscore the importance of the code-related knowledge, skills, and training of the workforce.

Requirements listed in NFPA 70 (2020) Chapters 1-4 are necessary for the safe installation of BESS and for the critical assessment of existing electrical systems. These include Article 240 overcurrent protection, Article 220 load calculations, Article 250 grounding and bonding, Article 310 wiring methods and sizes, Section 230.85. and emergency disconnect requirements for one- and two-family dwellings. Article 705 interconnected electric power production sources requirements are applicable where the ESS is interconnected to a primary power source such as the utility grid.

2. NFPA 70E (2021) Electrical Safety in the Workplace

NFPA 70E (2021) is an ANSI[136] approved standard that outlines electrical safety related practices in the workplace. 70E establishes electrical safety "policies, procedures, and program controls to reduce risk to an acceptable level."[137] It requires employers to develop an electrical safety program for employees to follow, mandating such elements as inspection, condition of maintenance, risk assessment, program procedures and controls, job safety planning, and hierarchy of risk control methods.[138]

The NFPA states that 70E provides prescriptive requirements to meet OSHA's performance-based electrical safety regulations.[139] It requires that electrical conductors and circuit parts operating over 50 volts be placed in an "electrically safe work condition" before an employee can commence work under certain defined conditions.[140] The planning includes identification of electrical hazards, an electrical shock risk assessment, and an arc flash risk assessment. NFPA 70E prescribes a defined risk assessment procedure that examines an employee's exposure to electrical hazards and implements protective risk control methods using the hierarchy of controls.[141] This method prioritizes the most effective safeguards and places an emphasis on eliminating hazards as the top priority.[142] Programs for incident investigation, lockout/tagout, and auditing of the electrical safety program are requirements under 70E.

133 New York State Energy Research and Development.

134 https://www.nyserda.ny.gov/all-programs/programs/clean-energy-siting/battery-energy-storage-guidebook. Similar to 2019 California Electrical Code, the checklist was based upon the 2017 NEC. NYSERDA states "the Electrical Checklist is intended to be utilized as a guideline for field inspections of residential and small commercial battery energy storage systems. It can be used directly by local code enforcement officers or provided to a third-party inspection agency, where applicable.

135 https://go.nfpa.org/l/14662/2021-01-11/8h6lwf.

136 American National Standards Institute.

137 https://www.nfpa.org/-/media/Files/Code-or-topic-fact-sheets/70E2021FactSheet.ashx.

138 NFPA 70E (2021) 110.5

139 *Ibid.*

140 NFPA 70E (2020) 110.3 Electrically Safe Work Condition. The defined conditions are "(1) The employee is within the limited approach boundary. (2) The employee interacts with equipment where conductors or circuit parts are not exposed but an increased likelihood of injury from an exposure to an arc flash hazard exists.

141 NFPA 70E (2020) 110.5 Electrical Safety Program, (H) Risk Assessment Procedure, risk control must implement the hierarchy of controls where elimination of hazards is prioritized over administrative controls such as training and procedures.

142 NFPA 70E (2020) 110.1 Priority; 110.5.

70E establishes training requirements where risks have not been reduced to a safe level. A qualified person is defined by training requirements to avoid hazards specific to a task such as electrical shock or arc flash. The training requires documentation including employee demonstrated proficiency in the specific work task. NFPA 70E provides for training on the safe isolation for work on electrical equipment or lockout/tagout that also requires demonstrated proficiency.

The elements of NFPA 70E require qualified workers installing BESS to perform a hazard assessment of the existing electrical system and the planned installation to identify exposure to electrical hazards and implement effective safeguards using the hierarchy of risk controls. Such an assessment involves an inspection of systems such as grounding and bonding, overcurrent protection, method and sizing of wiring, and arc flash and electric shock hazards.

3. NFPA 855 (2020) Installation of Stationary Energy Storage Systems

NFPA 855 (2020) is a recently developed standard focused on the safe installation of ESS. NFPA 855 was initiated after engagement by NFPA with the California Energy Storage Association (ESA), the state branch of a leading battery installer and manufacturer trade association.[143] One goal of 855 is to provide a consistent framework for safe ESS installation across multiple standards and building codes.[144] NFPA 855 has the stated purpose of providing "minimum requirements for mitigating the hazards associated with ESS."[145] The standard generally applies to lithium-ion BESS with an aggregate capacity of 20 kWh and over. For one- and two-family dwellings and townhouses there is a 1 kWh threshold.[146] The 2021 Supplement to the California Fire Code (CFC) allows ESS in residential R3 and R4 occupancies[147] to have an aggregate capacity of up to 80 kWh depending on the ESS location. NFPA 855 has separate safety requirements for one- and two-family dwellings and townhouse units.

NFPA 855 (2020) is a voluntary consensus safety standard and is not adopted or incorporated by reference into the California Building Standards code. However, the 2021 International Fire Code ESS provisions were revised to be consistent with NFPA 855.[148]

ESS installations over the listed threshold quantities have more stringent requirements that include approved construction plans, spacing between battery packs, a hazard mitigation analysis under certain defined conditions, approved signage, means of egress, and fire mitigation. NFPA 855 states ESS must be listed to UL 9540 to address a thermal runaway. In addition to thermal runaway, LIB need explosion control and have size and separation requirements.[149] For one- and two-family dwellings and townhouses, the NFPA 855 states that ESS installations

143 NFPA 855 (2020) Origin and Development of NFPA 855, 855-1.

144 https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855.

145 NFPA 855 (2020) Table 1.3 Threshold Quantities

146 NFPA 855 (2020) 1.3.2. See Chapter 15 for the one- and two-family dwellings and townhouses requirements.

147 California Fire Code (2021 Supplement effective July 1, 2021 to the 2019 Edition) 1206.11.4 Energy Ratings. R3 Residential Group is defined as a residence where occupants are primarily permanent, and buildings do not contain more than two dwelling units. Occupant numbers are limited depending on the type of facility e.g., care facilities must have five occupants or fewer. R4 Residential Group are described as custodial care facilities for more than five but not greater than 16 persons. International Building Code (2018) Section 310 Residential Group R.

148 https://energy.sandia.gov/wp-content/uploads/2021/02/SC-Report-by-SDO-WINTER-2021_Final.pdf, note that the 2021 CFC supplement has incorporated the ESS provisions of the IFC (2021).

149 NFPA 855 (2020) Table 9.2 Electrochemical ESS Technology-Specific Requirements.

shall also be listed and labeled to the requirements of UL 9450.[150] Installation location is restricted to attached garages with appropriate separations from living areas, detached garages, and utility closets. Other installation provisions include fire detection, ESS protection from impact, and energy capacity limitations.

4. 2019 California Fire Code and 2021 Supplement

As noted, the Article 1206 ESS provisions of the 2021 California Fire Code Supplement (CFC) are largely aligned with NFPA 855. The requirements of the CFC apply to LIB at thresholds 20 kWh and over, with separate provisions for R3 and R4 occupancies. The CFC requires construction permits, a hazard mitigation analysis under certain conditions, an energy storage management system,[151] ESS spacing, electrical disconnects, signage, fire-resistant rated separations, and ESS listing to UL 9540. The CFC Article 1206 contains similar provisions to 855 for LIB (explosion and thermal runaway control). Explosion control can be waived based on large-scale fire testing in accordance with UL 9540A.

5. 2020 UL 9540 Energy Storage Systems and Equipment

UL 9540 (2020) 2nd Ed. was a standard developed to evaluate the safety of ESS. UL has addressed the importance of 9540 to ESS safety:

> Over the past several years, a significant effort has been made to address energy storage system (ESS) safety, especially those systems that use batteries as their source of energy. New technologies are now widely deployed in an already established infrastructure. While innovative, these technologies do not come with a long-standing history of use in our current infrastructure. This can cause concern from regulators, fire marshals, electrical inspectors, building owners and other industry stakeholders about the safety of these systems and how to best integrate them into facilities.[152]

Both NFPA 855 and the California Fire Code (2021 Supplement) as described above require a UL 9540 listing under the conditions of the standard. UL 9540 is a "system standard" that assesses the "compatibility and safety of the various components integrated into a system."[153] The standard restricts the maximum allowable energy capacity for certain applications. For example, the standard restricts residential use ESS to a maximum of 20 kWh per individual unit.[154] UL 9540 establishes safety performance standards for electronics and safety control system software such as battery management systems that have failed to effectively prevent some previous thermal runaway incidents. The 9540 listings and approvals address ESS fire, shock, arc flash, and mechanical hazards. The standard identifies the need for an arc flash risk assessment.[155] The standard also addresses installation issues such as energy limitations, work access and egress, spacing, and fire suppression. An ESS safety and risk analysis

150 NFPA 855 (2020) 15.2 Equipment Listings.

151 The energy storage management system as required by listing "monitors and balances cell voltages, currents and temperatures within the manufacturer's specifications. The system shall disconnect electrical connections to the ESS or otherwise place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected."

152 https://www.ul.com/insights/ul-9540-second-edition-understanding-impacts-required-changes.

153 UL 9540 (2020) 1.1 Scope, "NOTE Energy storage systems may include equipment for charging. discharging. control. protection. power conversion, communication controlling the system environment. air, fire detection and suppression system fuel or other fluid movement and containment, etc."

154 UL 9540 (2020) 1.6 (b).

155 UL 9540 (2020) 10.11.

is required for analyzing failure modes and critical safety components.[156] The standard requires large-scale fire testing under UL 9540A under certain listed conditions; for example, for indoor systems with decreased separation distances and with non-residential use, the standard restricts individual ESS to 50 kWh unless the ESS has been tested under UL 9540A.[157]

6. 2019 UL 9540A Standard for Test Method for Evaluating Thermal Runaway Fire Propagation

UL 9540A was developed to respond to safety issues raised by building and fire code officials.[158] The standard establishes a test methodology for evaluating the susceptibility of a battery to undergo a thermal runaway. UL 9540A establishes testing arrangements and report requirements for thermal runaway large-scale fire testing. The testing does not yield a pass/fail result. The standard's scope states that the "data generated will be used to determine the fire and explosion protection required for an installation of a battery energy storage system" under relevant ESS codes including the International Fire Code (IFC) and NFPA 70.[159] As noted above, NFPA 9540A is used under BESS safety standards to allow for greater individual battery capacity or lesser separation requirements than would otherwise be required. The NFPA 855 and IFC allow the authority having jurisdiction (AHJ)[160] to approve departing from the standards requirements based upon a large-scale fire test conducted under UL9540A.

7. Industry Guidance and Product Safety Data Sheets

In addition to codes and standards, manufacturers' safety guidance also is an important source of information to assess hazards and mitigation controls. BESS manufacturers publish safety data sheets (SDS), installation guides, and emergency response procedures that address safety issues related to BESS installation. These documents identify specific hazards related to BESS installation and needed safety precautions and controls, including requirements for installation by a qualified person. The safety guidance documentation from LG and Tesla recognizes that their lithium-ion batteries have serious hazards including thermal runaway, arc flash, and electrical shock hazards. This report examined documentation for the Tesla Powerwall and LG RESU BESS. Those two brands account for approximately 97% of the residential BESS installed from 2015 to present. Both the Tesla Powerwall and the LG RESU utilize the NMC lithium-ion battery chemistry.

The Tesla installation manual states that "Powerwall installation must be carried out only by a competent electrician who is certified by Tesla and who has been trained in dealing with low voltage electricity."[161] It is important to note that the manual states only a **competent electrician** has the necessary skills, knowledge, and training for Tesla installation. This requirement is flagged by the warning symbol indicating failure to avoid the hazard could result in injury or death.

The Tesla emergency response guide for the Powerwall explicitly warns of a thermal runaway danger.[162] The guide warns against thermal, mechanical, and electrical abuse, the LIB events that can trigger a thermal runaway. The

156 UL 9540 (2020) 15 Safety Analysis and Control Systems.
157 UL 9540 (2020) 1.7.
158 https://www.ul.com/services/ul-9540a-test-method.
159 UL 9540A (2018) Scope 1.2.
160 NFPA 70 (2020) Article 100 Definitions – such as a governmental building code official.
161 https://www.tesla.com/sites/default/files/pdfs/powerwall/Powerwall_2_AC_GW2_NA_EN_Installation_Manual.pdf.
162 https://www.tesla.com/sites/default/files/downloads/2020_Lithium-Ion_Battery_Emergency_Response_Guide_en.pdf.

guide identifies that vented gases are an indication of thermal runaway and can be flammable and toxic. The Tesla guide states that the vented gas can be hazardous and may contain the highly toxic hydrofluoric acid (HF):

> Hazards Associated with Vented Electrolyte. Lithium-ion cells are sealed units, and thus under normal usage conditions, venting of electrolyte should not occur. If subjected to abnormal heating or other abuse conditions, electrolyte and electrolyte decomposition products can vaporize and be vented from cells. Accumulation of liquid electrolyte is unlikely in the case of abnormal heating. Vented gases are a common early indicator of a thermal runaway reaction – an abnormal and hazardous condition. If gases or smoke are observed escaping from a Tesla Energy Product, evacuate the area and notify a first responder team and/or the local fire department. Gases or smoke exiting a lithium-ion battery pack are likely flammable and could ignite unexpectedly as the condition that led to cell venting may also cause ignition of the vent gases. A venting Tesla Energy Product should only be approached with extreme caution by trained first responders equipped with appropriate personal protective equipment (PPE)...[163]

The Tesla Powerwall 2 installation manual warns that the battery can "present a risk of electric shock, fire, and explosion from vented gases."[164] The manual flags steps in the procedure like the battery risks with warning symbols that signify hazards that if not avoided may lead to injury or death. In the section addressing Powerwall and Gateway 2 installation interconnection requirements, the manual states:

> AC isolation and interconnection requirements between the Powerwall system and the electrical panel are subject to local codes. Ensure that the installation meets local isolation and interconnection requirements. All U.S. and Canada electrical installations must be done in accordance with local codes and the National Electric Code (NEC) ANSI/NFPA 70 or the Canadian Electrical Code CSA C22.1.[165]

Four warnings are listed in the interconnection section, including requirements and incorrect methods for installing and connecting the Backup Gateway and the need for protection equipment including fire detection. The warnings of requirements or against incorrect actions are listed in several other sections, including appropriate installation PPE, grounding, lockout/tagout, wiring, Power Control System settings, working on current transformers, and software updates. For multi-Powerwall installations, the manual describes a number of assessments, calculations, and warnings. These include needed AC line impedance measurements, wire oversizing, properly sized overcurrent protection, and review of measurements and system designs by Tesla. For line impedance testing the manual warns:

> WARNING: Impedance tests must be performed on an energized electrical system. Impedance tests should be carried out only by trained electricians using appropriate safety equipment and safety practices.[166]

The Tesla Powerwall 2 is listed as meeting the safety requirements of a UL 9540 in the manufacturer's installation manual.[167] The edition of UL 9540 is not provided. Note that the 2020 edition of UL 9540 contains significant safety-related revisions, including requirements incorporated from NFPA 855 and the IFC, that can require thermal

163 *Ibid.*

164 https://www.tesla.com/sites/default/files/pdfs/powerwall/Powerwall_2_AC_GW2_NA_EN_Installation_Manual.pdf.

165 *Ibid.*

166 *Ibid.*

167 https://www.tesla.com/sites/default/files/pdfs/powerwall/Powerwall_2_AC_Datasheet_EN_NA.pdf.

runaway testing under UL 9540A under certain conditions.[168] The Powerwall 2 is not stated as listed to UL 9540A in their 2020 manual, but Tesla states their product has been subjected to full-scale fire testing and that a thermal runaway in a single cell will not propagate to neighboring cells or represent an explosion hazard.[169] It is not clear if UL 9540A was used by Tesla as the basis for the thermal runaway large-scale fire testing and if not why not.[170] Note that it is UL 9540A (2019) that develops test methodology requirements for evaluating the susceptibility of a battery to undergo a thermal runaway through large-scale fire testing. This includes test arrangements and the development of a report.

The guide notes that under normal conditions of use the battery product is sealed and does not present an electrical shock risk but under conditions of abuse the guide warns of hazards of "significant high voltage and electrocution risk."[171] Even in a discharged condition, a Tesla battery pack "is likely to contain substantial electrical charge and can cause injury or death if mishandled."[172]

The LG RESU10H Gen 2 400V installation manual requires the BESS installation be conducted by a qualified person with specific skills and experience:

> This guide for the tasks and procedures described herein is intended for usage by skilled workers only. A skilled worker is defined as a trained and qualified electrician or installer who has all of the following skills and experience:
>
> - Knowledge of the functional principles and operation of on-grid and off-grid (backup) systems.
> - Knowledge of the dangers and risks associated with installing and using electrical devices and acceptable mitigation methods.
> - Knowledge of the installation of electrical devices
> - Knowledge of and adherence to this guide and all safety precautions and best practices.

A skilled worker is defined as a qualified electrician or installer with specific defined knowledge, skills, and training. These include topics specifically addressed in NFPA 70 and the safety requirements of 70E.

The LG RESU product safety guidance warns against fire, explosion, arc flash, and shock hazards. The LG RESU10H Gen 2 400V installation manual does not specifically reference the term thermal runaway but appears to refer to this danger, noting if heated over 300°F the hazard of explosion and venting of "poisonous gases."[173] The installation manual warns that "over-voltages or wrong wiring can damage the RESU I OH (hereinafter "battery pack") and cause deflagration, which can be extremely dangerous."[174] The LG RESU is not listed to UL 9540 or 9540A.[175]

168 https://collateral-library-production.s3.amazonaws.com/uploads/asset_file/attachment/25784/CT26157086_UL9540A-whitepaper_vDIGITAL1.pdf.

169 *Ibid.*

170 UL has a publicly available database of UL 9540A thermal runaway evaluation reports. See https://iq.ulprospector.com/en/_?p=10005,10048,10006,10047&qm=q:aacd; Only nine reports are listed. There is no report listed for Tesla. There is a report listed for LG Energy Solutions but it is unclear whether the report is for a RESU battery.

171 *Ibid.*

172 *Ibid.*

173 https://www.lgessbattery.com/us/home-battery/product-info.lg.

174 *Ibid.*

175 The LG RESU Gen2 400V is listed to UL 1973 (2018) Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications. UL 1973 addresses a variety of battery technologies and safety issues including topics such as construction, mechanical, electrical and environmental requirements. UL 1973 includes a single cell failure tolerance test. The standard is not comprehensively focused on thermal runaway protections and testing requirements compared to UL 9540 and 9540A that are specifically called out in recent code development.

The LG RESU10H has a charge voltage range of 400 to 450v DC.[176] The manual warns against arc flash and high voltage shock. The installation manual contains detailed instructions for arc flash protections. The installation manual provides arc flash working distances and references NFPA 70E for Incident Energy Calculations and PPE guidance. Appropriate arc flash personal protective equipment is required for LG RESU installation. The manual specifically warns that when installing the RESU10H, "the worker shall wear arc-rated clothing on every occasion" and establishes a working distance "to protect him/her from any possible exposure to an electric arc flash."[177]

The Tesla and LG safety guidance and installation manuals clearly identify potential serious BESS hazards such as thermal runaway, fire, explosion, arc flash, and electrical shock. The BESS are not described as "plug and play" appliances that are devoid of safety risks. The manufacturers' safety guidance emphasizes the importance of broad knowledge of electrical codes by the installer, particularly NFPA 70 and the safety requirements of NFPA 70E. The installer is warned that "over-voltages or wrong wiring" may lead to an explosion. The competence of the installer is clearly linked to worker and public safety by the manufacturers' own safety documentation. The guidance emphasizes the installation must be conducted by a "competent electrician" or "qualified electrician or installer" with specific electrical knowledge, skills, and training.

Lithium-ion batteries are a relatively new technology utilized for BESS and lack a lengthy track record for evaluation of safety and risk. This rapidly proliferating technology has the potential to introduce new hazards on a larger scale. Organizations such as NFPA, DNV, Underwriters Laboratories, and FM Global are conducting ongoing research and testing on lithium-ion battery hazards and researching safer technologies. New chemistries and technologies will themselves introduce uncertainty and potentially new risks. The dominant lithium-ion battery chemistry for BESS in the U.S. has serious inherent hazards beyond high voltage and arc flash. These include thermal runaway, reactive chemical hazards, the venting of toxic and flammable gas, fire, and explosion. Recent incidents such as the 2019 Arizona Public Service utility explosion that seriously injured four firefighters have highlighted that BESS hazards can result in grave potential consequences for workers, occupants, and emergency responders. The NFPA has stated:

> [A]s the Arizona fire illustrates, this technology is not risk free. BESS technologies, which are typically large configurations of chemical batteries, can explode, catch fire, and release toxic gases under certain conditions. They are also subject to the phenomena of thermal runaway, which means they can burn intensely for significant periods of time. These hazards are dangerous for firefighters and for anyone else nearby an emergency incident. Policymakers must make sure first responders and other officials have the tools necessary to deploy BESS safely.

BESS incidents have occurred throughout the lifecycle of LIB, including construction, installation, and operation.

BESS incidents can be described as infrequent but high hazard. Modern building and fire codes have recently highlighted these hazards and developed mitigation provisions in their code requirements. Manufacturer safety data sheets, installation manuals, and emergency response guides have called out these same hazards and cited codes such as NFPA 70 and 70E for safe installation.

176 https://www.lgessbattery.com/us/home-battery/product-info.lg.

177 *Ibid.*

F. BESS Risks

The evidence reviewed for this report suggests that serious BESS accidents are infrequent. While there is no single repository of BESS incidents, available data show no high consequence BESS-related incidents in California. However, because the hazards are significant and can have serious consequences, BESS falls into the category of high consequence, low frequency risk, and should be evaluated with this framework in mind.

Modern approaches to risk assessment go beyond traditional formulas that focus solely on factors like frequency and consequence for all hazards. Hazards that could result in high consequences but are low frequency events pose unique challenges for prevention and mitigation. A primary focus on frequency in evaluating the risk of such events can leave public safety vulnerable to the impacts of known serious hazards. Where the hazard is high consequence, more rigorous approaches are taken that emphasize the importance of implementation of effective safeguards—even with low frequency events. From the incidents reviewed in this report, lithium-ion BESS incidents have the potential for high consequence, including chemical reactive hazards, thermal runaway, fire, and explosion. This is true for residential, commercial, and utility-scale applications.

1. Risk Methodologies

Risk assessment tools from the chemical process safety field are appropriate to employ to BESS because they address some of the same significant hazards of fire, explosion, and chemical reactivity.[178] In the chemical process safety sector it is recognized that the occurrence of these serious chemical safety events is infrequent compared to personal safety incidents.[179] These are typically referred to as "low frequency/high consequence events."[180] The fire service also has a risk category for hazards that are significant and reflect new technology or seldom encountered dangers. They are referred to as "high risk/low frequency" incidents.[181] The NFPA categorizes BESS as a "high risk hazard" for emergency responders.[182] Both of the risk methodologies employed in these two sectors (chemical process safety and the fire sector) will be examined.

Both risk methodologies incorporate safety good practice guidelines. The consensus safety guidelines addressing risk management look at the complexity of effectively managing risk. A key initial step is defining the scope, context, and criteria of risk.[183] The risk context and criteria can include the choice of risk approach, tools, and techniques. These can be customized to the specific subject matter.[184] This allows an appropriate approach that considers the accepted risk methodology for the fire service, chemical, and electrical safety sectors. Risk identification should review causes and events, limitations of knowledge and reliability of information, and emerging risks.[185] The risk analysis should include not only the likelihood and magnitude of consequences, but

178 https://www.aiche-cep.com/cepmagazine/may_2020/MobilePagedArticle.action?articleId=1583421#articleId1583421.

179 Personal safety incidents are often characterized as "slips, trips and falls."

180 Center for Chemical Process Safety (CCPS), Process Safety: Leadership from the Boardroom to the Frontline, American Institute of Chemical Engineers (AICHE), New York, New York (2018), p.17. CCPS is a corporate alliance of the chemical engineering professional society AICHE.

181 https://www.fireengineering.com/firefighting/developing-a-successful-approach-to-high-risk-low-frequency-events/#gref; https://www.fireresCue1.com/preparing-new-officers-be-incident-commanders/articles/tips-for-ics-managing-high-risklow-frequency-incidents-twYow6R0HcUM4It9/; https://www.firefighternation.com/fireresCue/high-risk-low-frequency/#gref.

182 https://www.nfpa.org/News-and-Research/Resources/Emergency-Responders/High-risk-hazards.

183 International Standards Organization (ISO), 31000:2018, Risk Management – Guidelines, p.10.

184 *Ibid.*

185 *Ibid.* at 11.

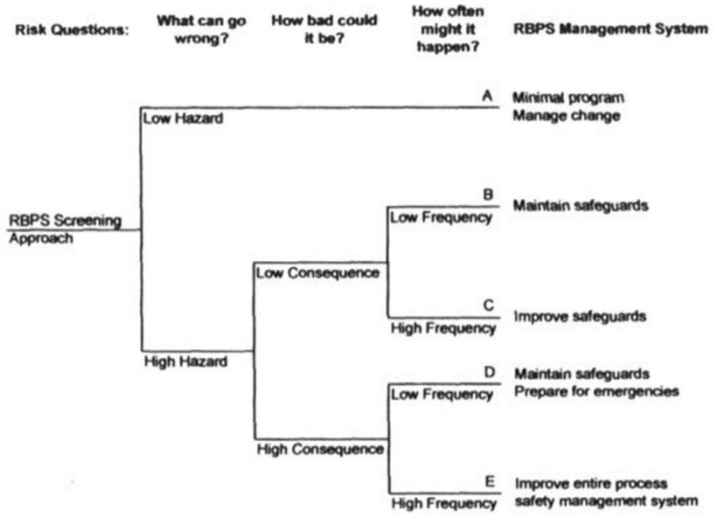
also the complexity of multiple hazards and the effectiveness of existing controls.[186] The ISO standard states, "highly uncertain events can be difficult to quantify" which is "an issue when analyzing events with severe consequences."[187]

In light of the above, it is clear that lithium-ion BESS are an emerging risk with limitations of knowledge. They have multiple hazards, and recent incident findings and causes are not fully understood. Some preventative measures are still in the process of evaluation and implementation. The occurrence of incidents is infrequent but difficult to quantify with no single repository for BESS events.

a) Risk Methodology—Chemical Safety

Chemical safety risk methodologies address events like those possible with BESS, such as fire, explosion, toxic release, and reactive chemical hazards.[188] In this sector, high hazard, high consequence risks—even with low frequency—are treated very seriously. As illustrated in Figure 27, risk alternatives that move toward high consequence require greater attention and reliable system controls to manage.

Figure 27. Risk Diagram showing low frequency/high consequence events receive greater risk management attention. (CCPS, 2007)[189]



The importance of receiving greater preventative focus and maintaining safeguards is elevated for emerging risks where technology and knowledge of multiple BESS hazards is evolving. This is especially true with a rapidly expanding market as seen with BESS deployment in California. California.

186 *Ibid.* at 12.

187 *Ibid.*

188 The U.S. Chemical Safety and Hazard Investigation Board (CSB) defines a reactive hazard incident "as a sudden event involving an uncontrolled chemical reaction–with significant increases in temperature, pressure, and/or gas evolution–that has caused, or has the potential to cause, serious harm to people, property, or the environment."

189 https://onlinelibrary.wiley.com/doi/book/10.1002/9780470925119, CCPS Guidelines for Risk Based Process Safety "provides guidelines for industries that manufacture, consume, or handle chemicals, by focusing on new ways to design, correct, or improve process safety management practices."

b) Risk Methodology—Fire Service

The fire service has also adopted the risk framework of low frequency/high risk events. These incidents are infrequent but have the potential for serious consequences including novel hazards. These new or emerging hazards confront emergency responders with threats they have not experienced or trained for.[190] The NFPA concludes that BESS are a "high risk hazard" and states: "New technologies continue to emerge that have an increased fire safety risk, and new hazardous events or situations become concerning to emergency responders."[191] The NFPA has developed a comprehensive training program and website with links to BESS reports, testing, and code development such as NFPA 855. **The ongoing significant code development and more rigorous protections for BESS by standard-setting bodies is an explicit acknowledgement of the significance of BESS risks.**

Other organizations examining BESS risk have determined that lithium-ion BESS represent a significant risk that needs to be addressed through effective safeguards to prevent incidents. Dr. Josh Lamb, principal technical staff member at Sandia National Laboratories, states that LIB hazards are inherent, and any chemical fuel has "significant risks, so we should understand how to handle fires safely."[192] Marsh Commercial refers to BESS as a "significant emerging risk" where knowledge is still developing.[193] AIG Energy Industry Group states, "The rapid rise of Battery Energy Storage Systems (BESS's) that utilize Lithium-ion (Li-ion) battery technology brings with it massive potential—but also a significant range of risks. At AIG, we believe this is one of the most important emerging risks today."[194]

c) Large-Scale BESS Risks

BESS risks are significant for grid-utility, industrial, commercial, and residential applications. Large-scale BESS with greater deployed energy capacity and quantity of flammable vent gas and materials subject to combustion releasing toxic vapors have the potential for much higher consequence events. Explosions and fire can impact workers and emergency responders as noted in the BESS incident descriptions. Some incidents led to offsite consequences to the public like shelter-in-place orders in the surrounding community.

d) Small-Scale BESS Risks

Small scale lithium-ion BESS capacity, including residential applications, also represents a significant hazard. While the deployed energy capacity and quantity of released hazardous material at a given location would be much less for smaller scale installations, BESS standards and manufacturers' safety documentation acknowledges the potential for thermal runaway, arc flash, and deep-seated fires that can threaten workers, occupants, and emergency responders. Recent U.S. commercial and residential BESS incidents have resulted in fires but no injuries.

190 https://www.firerescue1.com/preparing-new-officers-be-incident-commanders/articles/tips-for-ics-managing-high-risklow-frequency-incidents-twYow6R0HcUM4It9/.

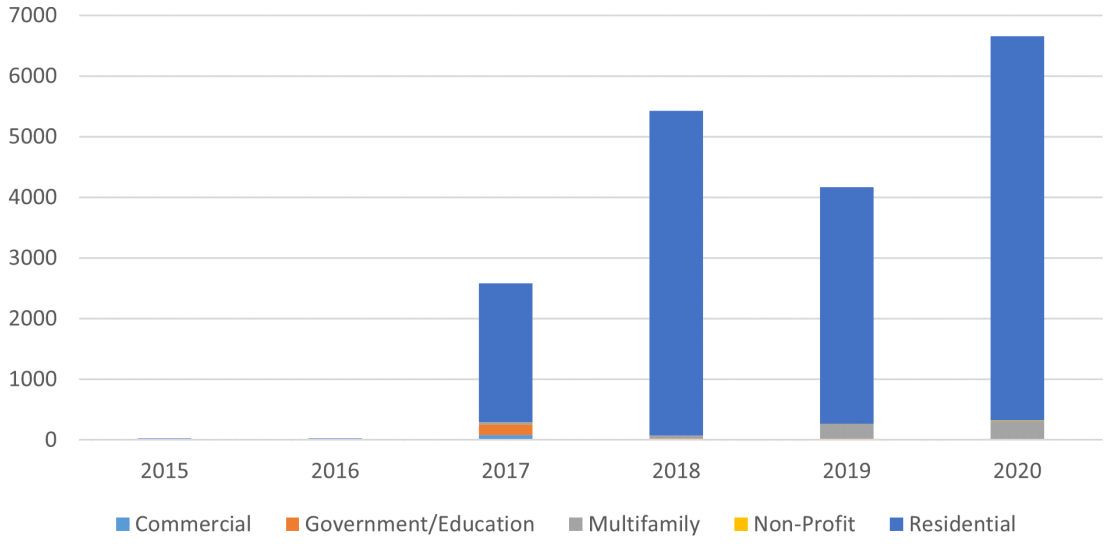
191 https://www.nfpa.org/News-and-Research/Resources/Emergency-Responders/High-risk-hazards/Energy-Storage-Systems.

192 https://www.energy-storage.news/news/safe-lithium-ion-energy-storage-begins-with-knowing-what-to-do-when-things.

193 https://www.marshcommercial.co.uk/articles/battery-energy-storage-fire-risks-explained/.

194 https://www.aig.co.uk/content/dam/aig/emea/united-kingdom/documents/Insights/battery-storage-systems-energy.pdf.

Figure 28. Total Count of California Solar-Paired BESS Projects by Customer Sector 2015–2020



The dramatic increase in the number of residential BESS installations to over 6,500 residential and multi-family projects in 2020 exposes a larger number of occupants to BESS hazards (Figure 28).[195] Residents who are at home for longer periods, day and night, can be more vulnerable to BESS hazards than people near commercial or grid-scale BESS installations. Potential residential lithium-ion BESS fires, explosions, and thermal runaway events can also threaten occupants who are unable to respond to alarms or self-rescue. Small-scale BESS fires can threaten emergency responders and occupants, as was shown in a fire that reignited days later in the 2013 Port Angeles, Washington, incident.

Building codes recognize the serious risks of BESS and establish minimum requirements to mitigate the hazards. NFPA 70 (2020) provides a 1kWh threshold for coverage of application of its ESS safety provisions that would cover nearly all smaller-scale lithium-ion BESS installed in California commercial and residential applications. NFPA 855 has BESS safety requirements for one- and two-family dwellings and townhouse units. The California Fire Code (2021) supplement covers lithium-ion BESS over 20kWh in aggregate. The CEC has a separate section setting requirements for Group R3 and R4 occupancies over 1 kWh.[196] Both NFPA 70 and 855 establish "the minimum requirements for mitigating the hazards associated with ESS." The inclusion of the code provisions in NFPA 70 is based on what is "considered necessary for safety."[197] The CEC has a stated intent of establishing minimum requirements to provide a reasonable level of life safety and property protection from the hazards of fire, explosion and dangerous conditions."[198]

195 Requirements for fire detection systems, restrictions for installation locations and use of non-combustible construction are intended to provide warning and time for escape. Note that some grid-utility projects can be unoccupied or with limited occupancy during work hours.

196 CEC (2021 Supplement) 1206.1, Exceptions 2.

197 NEC 90.1 Purpose, (B) Adequacy.

198 CEC (2021 Supplement) 101.3 Intent.

NFPA and ICC codes are developed by panels of subject matter experts who understand BESS hazards, risks, and necessary safeguards. These codes establish important minimum safety requirements that apply to applications from grid-utility to residential. The low thresholds for building code coverage are a recognition of the significant risk even for small-scale applications. These provisions are not arbitrary but rather recognize that BESS in all applications have significant risks that need mitigation through the provisions of the code. This includes BESS installation. In fact, the focus of NFPA 855 is establishing needed safety requirements for installation to mitigate the hazards associated with ESS.

2. Risk Treatment

The NFPA has adopted a rigorous approach to BESS risk treatment with the use of the hierarchy of risk controls approach to preventing and mitigating electrical hazards in NFPA 70E. The hierarchy identifies risk control methods and examples from most effective to least. That approach prioritizes eliminating the hazard or substituting a less hazardous material, technology, or activity for a more hazardous one (see Figure 29). The approach identifies the most effective risk control method or a combination for a particular hazard. This approach is appropriate for the multiple hazards with lithium-ion BESS addressed in NFPA 70.

Figure 29 the Hierarchy of Risk Controls (NFPA 70E)[199]

The purpose of specifying and adhering to a hierarchy of risk control methods is to identify the most effective individual or combination of preventive or protective measures to reduce the risk associated with a hazard. Each risk control method is considered less effective than the one before it. **Table F.3** lists the hierarchy of risk control identified in this and other safety standards and provides examples of each.

Table F.3 The Hierarchy of Risk Control Methods

Risk Control Method	Examples
(1) Elimination	Conductors and circuit parts in an electrically safe working condition
(2) Substitution	Reduce energy by replacing 120 V control circuitry with 24 Vac or Vdc control circuitry
(3) Engineering controls	Guard energized electrical conductors and circuit parts to reduce the likelihood of electrical contact or arcing faults
(4) Awareness	Signs alerting of the potential presence of hazards
(5) Administrative controls	Procedures and job planning tools
(6) PPE	Shock and arc flash PPE

A lack of higher order risk controls for some LIB NMC hazards highlights the need for even more effective controls lower on the hierarchy. For the predominate lithium-ion BESS chemistry in California, NMC, the flammable electrolyte and reactive chemical hazards are inherent to the design.[200] There are new LIB designs that are in development that may address these issues such as substituting the flammable electrolyte for a less hazardous material.[201] However, for the LIB NMC chemistry the hazards are present—the design is not foolproof or without risk.

199 https://link.nfpa.org/publications/70E/2021/annexes/F#ID00070E000997.

200 DNV-GL reviewing previous L-I incidents in its report of the 2019 APS thermal runaway found "The lessons the industry has learned from these incidents is that Li-ion batteries are inherently fragile, and any electrical, thermal, or mechanical abuse, along with internal defects, can potentially initiate cell failure and thermal runaway." https://liiontamer.com/wp-content/uploads/APS-DNV-GL-Report.pdf

201 https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/burning-concern-energy-storage-industry-battles-battery-fires-51900636; one of many examples of attempts at safer BESS technology is Lockheed Martin Corp.'s development of a BESS with an aqueous electrolyte: "Unlike lithium-ion, we don't have a flammable electrolyte."

Figure 30. Hierarchy of Controls showing less effective controls such as active and procedural safeguards on the right of the figure. From *Process Plants: A Handbook for Inherently Safer Design Second Edition*; Kletz, Trevor Amyotte, Paul; CRC Press 2010.

The NMC design typically has active safeguards such as a battery management system (BMS) that monitors and controls LIB with the ability to isolate battery racks to help mitigate overheating and a thermal runaway. Active engineering controls are distinguished from passive design controls in that the BMS requires active, electrically powered intervention in order for the design to function properly (see Figure 30). We have seen from LIB incidents such as the 2019 Surprise, Arizona, explosion that BMS controls can fail to arrest a thermal runaway. DNV noted in its 2020 Battery Performance Scorecard that "accurate voltage balancing of cells is important for lifetime and safety reasons, and not all battery management systems detect individual cell imbalances." BMS are an important LIB design feature but are lower on the hierarchy than passive design controls, substitution, or elimination of the hazard. The Energy Storage Association guidance supports the implementation of "design for passive safety" approach to BESS hazard mitigations.[202]

The lack of higher order controls for some lithium-ion battery hazards, such as elimination of the flammable electrolyte or reactive hazards, requires that lower order controls, such as effective work practices and training, be more effective and reliable. The effectiveness of **both** active engineering controls such as the BMS **and** administrative controls such as procedures and training then become key for incident prevention. The importance of a trained, skilled workforce is critical for evaluations of the existing electrical system because the trigger for accidents may extend beyond the battery itself. Our assessment of the appropriate CSLB contractor classification for BESS installation places a much greater focus on the knowledge, skills, and training of the licensed contractors and their workforce to protect public safety, because of the lack of higher order BESS controls.

G. CSLB Classifications and Safety Analysis

1. Introduction and Background

This analysis has concluded that BESS have significant safety hazards and risks that are rigorously addressed with requirements in applicable codes and standards. The risk analysis also identified the importance of knowledge, skills, and training for safe BESS installation. This section reviews knowledge, skills, and training of CSLB C-46/C-10 specialty contractor classifications and their associated workforce. That information is examined and then related to the BESS hazards, risks, and safety standards outlined above. The section presents our conclusions of the implications of the evidence on hazards, risks, and safety measures on what is the appropriate CSLB contractor classifications for BESS installation.

202 https://energystorage.org/wp/wp-content/uploads/2019/09/Operational-Risk-Assessment-white-paper-final.pdf.

2. CSLB Specialty Contractor Classifications

The CSLB has established over 40 specialty contractor classifications including the C-46 Solar Contractor and the C-10 Electrical Contractor.[203] Under the CSLB's current interpretation of its enabling statute and regulations, BESS can be installed by C-46 contractors when it is installed in conjunction with a solar installation. C-46 contractors cannot install a stand-alone BESS. C-10 contractors can install a solar system, a solar-paired BESS, or a stand-alone BESS. C-46 contractors are specifically prohibited from performing other building and construction trades crafts and skills.

C-46 and C-10 contractor license requirements both include experience and an exam. The experience requirement is the same for both classifications. A contractor applicant must have four years of experience as a "journeyman," foreman, supervisor, or contractor in the relevant classification within the last ten years.[204] "Acceptable training in an accredited school or completion of an approved apprenticeship program" can count for up to three of the required four years of experience. Specialty contractors must take two exams: one addresses topics related to the relevant classification, and the other addresses law and business topics, and is the same for all specialty contractors.

We could not discern large differences in the competency test for C-10 and C-46 contractors with respect to BESS, although the C-10 exam clearly covers a broader scope of electrical work than the C-46. For specialty contractor exams, the CSLB develops a bank of 800 questions and randomly selects 100 for a test session. The bank of 800 questions is renewed every five years through a process of consultation, workshops, and surveys with licensed contractors in that classification. The questions go through a validation process.

For the relevant classification subject matter exam, the CSLB has developed study guides for each specialty classification.[205] In the study guide for the C-46 exam, BESS is a subtopic, and safety accounts for 15% of the exam questions. Safety topics are generic, including unsafe working conditions, protecting the public, and hazardous materials. For the C-10 study guide, 20% of the questions address safety, including lockout/tagout, PPE, tools and equipment, and hazardous materials. The resources for both exams included references to the 2019 California Electric Code and 2019 California Fire Code. The report team was informed in interviews that both the C-46 and C-10 contractors had questions on BESS. The team was informed the C-46 exam typically had more questions on solar and BESS, and the C-10 exam more broadly covered topics beyond solar and BESS related to NFPA 70, the National Electric Code. The C-10 exam was said to include questions related to NFPA 70E, Standard for Electrical Safety in the Workplace, although neither the C-46 nor C-10 study guides list NFPA 70E. The team was not able to review the questions to further analyze topics or sections of code material covered.

3. Certified Electricians and Solar PV Workforce

From a safety perspective, electrical work and the installation of BESS requires effective management systems, including a proficient licensed contractor and a highly trained and experienced workforce. An analysis of the requirements of the C-46 compared to the C-10 electrical workforce presents a much stronger contrast of documented knowledge, skills, and training as required by the State of California than the contractor license

203 16 CA ADC § 832.46 and § 832.10 https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I-13C856A0D48C11DEBC02831C6D6C-108E&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default).

204 16 CA ADC § 825(a).

205 https://www.cslb.ca.gov/Resources/StudyGuides/C46StudyGuide.pdf.

test itself. Workers performing electrical work under a C-10 contractor must be certified electricians,[206] whereas contractors holding only a C-46 (but no C-10, A, or B) are not required to employ certified electricians. Because of this, the difference between these two contractor types boils down to a difference in the requirements regarding their workforces. It is worth repeating that contractors holding both a C-46 and a C-10 license are mandated by law to follow the requirements of hiring certified electricians as laid out in CSLB regulations.

Certification as a general electrician in California requires specific experience and an exam.[207] The experience requirement can be met by successful completion of an approved apprenticeship program or 8,000 hours of on-the-job experience "for a C-10 electrical contractor installing, constructing or maintaining electrical systems covered by the National Electrical Code."[208] Residential electrician certification requires 4,800 hours of on-the-job experience, and the experience must cover a variety of listed work topics. All applicants must pass an exam that is validated by an independent test validation organization.[209] The subject matter areas for the exam include safety, determination of electrical system requirements, installation, maintenance, and repair. The references for the test include NFPA 70 (2017) and the safety requirements of NFPA 70E (2015).[210]

In contrast, persons performing BESS electric work under a solar contractor with a C-46 license and no C-10 license do not have to be certified electricians. California has no requirements for certification for solar workers. There is no accredited solar-specific installer apprenticeship program listed on the California DIR/DAS website.[211] No experience and no exam are required in California for workers to install a BESS in conjunction with a solar installation. The solar industry does have a voluntary certification program under the North American Board of Certified Energy Practitioners (NABCEP), but it is not a state requirement and is often not required by solar contractors.[212]

NABCEP has a PV Associate and more advanced PV Installer program. The PV Installer certification requires 10 hours of OSHA construction training and 58 hours of advanced PV training in which workers accumulate credits through completion of two to three installations, depending on size, and then they must pass an exam.[213] The California Energy Commission encourages NABCEP certification in their solar incentive program but it is not mandated.[214] Several states require NABCEP certifications for solar installations to be eligible for the state rebate program.[215] In California that is not the case, and there is no publicly available data on the percentage of California solar installers that have received certification.

Our review of the certification requirements clearly demonstrates that the technical capacity of certified electricians includes the knowledge and skills needed to address the safely issues involved in BESS projects. Certified electricians have the training to avoid BESS incidents that could arise due to faulty system wiring,

206 https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=LAB&division=1.&title=&part=&chapter=4.5.&article=.

207 https://www.dir.ca.gov/t8/291_3.html.

208 https://www.dir.ca.gov/t8/291_1.html.

209 https://www.dir.ca.gov/t8/291_3.html.

210 https://candidate.psiexams.com/bulletin/display_bulletin.jsp?ro=yes&actionname=83&bulletinid=343&bulletinurl=.pdf.

211 https://www.dir.ca.gov/databases/das/aigstart.asp; in 2011 the California Department of Industrial Relations, Division of Apprenticeship Standards (DIR/DAS) created the category of a photovoltaic installer in 2011 but the occupation category is not currently listed on the DAS "Find an Apprenticeship Program website. https://www.prnewswire.com/news-releases/dir-establishes-california-s-first-green-apprenticeship-occupation-118188704.html.

212 https://www.nabcep.org/about-us/ NABCEP states it "is the most respected, well-established and widely recognized certification organization for professionals in the field of renewable energy."

213 http://www.nabcep.org/wp-content/uploads/2018/02/NABCEP-Certification-Handbook-V2018.compressed.pdf#page=14.

214 https://www.labormarketinfo.edd.ca.gov/file/OccGuide/Solar-PV-Installers-Green.pdf.

215 https://www.solarenergy.org/state-licensing-requirements/.

undetected non-code alterations, electrical faults, and weaknesses in bonding and grounding. The items that need to be evaluated in order to assure safety are provided in Chapters 1-4 in NFPA 70 (2020), which apply generally to electrical installations. NFPA requires that certified electricians evaluate these and other issues prior to the initiation of work, including a risk assessment of an employee's exposure to electrical hazards including the potential for human error prior to the start of work,[216] and an evaluation of the condition of maintenance of existing electrical equipment.[217] NFPA 70E states "Without proper maintenance, equipment cannot be depended upon to perform its required safety functions, such as interrupting fault currents within its characteristic time–current curves."[218] In addition, NFPA 70E requires that, under certain conditions, an electrical shock and arc flash risk assessment be performed.[219] This assessment is also required in LG's safety guidance. These evaluations must be performed by a qualified person with demonstrable proficiency under 70E. Because the electrical certification includes this proficiency, it clearly meets this skill standard, whereas there is no comparable standard to ensure that C-46 workers can demonstrate such proficiency.

Failure to perform these assessments can lead to not only a danger to workers but also to a potential LIB thermal runaway. The Tesla and LG manufacturers' safety guidance has numerous warnings against improper installation actions and the need for qualified electricians or persons to conduct the installation. For example, the LG RESU installation manual warns that "over-voltages or wrong wiring can damage the RESU 10H … and cause deflagration, which can be extremely dangerous." One of the immediate causes stated in one of the investigation reports for the 2019 Surprise, Arizona, disaster was overheating initiated by an external arc flash. One of four cited causes of the 29 Korean BESS fire incidents was faulty installation. Again, only certified electricians have demonstrable experience and a California exam validated by the state of California covering codes such as NFPA 70 and 70E to more effectively prevent BESS incidents.

UL 9540 (2020) requires a system evaluation of all BESS components and whether they are compatible and function safely as a system.[220] Mismatched BESS components may lead to a "fire and electrical shock hazard."[221] UL 9540 (2020) requires a safety analysis of the BESS. This analysis may be performed by the installer that integrates the components together:

> A safety analysis consisting of a hazard identification. risk analysis and risk evaluation including a safety analysis such as a failure modes and effects analysis (FMEA) that identifies critical safety components and circuits of the system shall be conducted on the equipment forming the ESS and components of the ESS considering any interactions that provide a safety function. The analysis shall consider the compatibility of the parts of the ESS (e.g. battery system, charger, inverter. Etc.) with regard to safety of the overall system.[222]

216 NFPA 70E (2021), 110.5(H)(1) and (2).

217 NFPA 70E (2021) 110.5(C).

218 *Ibid.* From NFPA 70E's enhanced content for 110.5(C). The section also cites NFPA 70B R*ecommended Practice for Electrical Equipment Maintenance*.

219 NFPA 70E (2021), 130.1, 130.4 and 130.5. "Safety-related work practices shall be used to safeguard employees from injury while they are exposed to electrical hazards from electrical conductors or circuit parts that are or can become energized."

220 https://code-authorities.ul.com/about/inspection-resources-for-code-authorities/energy-storage-systems/can-pv-inverters-be-used-with-battery-energy-storage-systems/.

221 *Ibid.* "However, for ESS system components such as inverters—unless they are Certified (Listed) for use with a specific input source type such as a battery in this case and have the appropriate input short circuit current rating—the installation of mismatched system components may present a catastrophic fire and electric shock hazard if there is a short circuit condition on the battery output."

222 UL 9540 (2020) 15.1.

Installing BESS requires an assessment of the entire system that is being connected, which certified electricians are trained and certified to do. Solar workers under a C-46 contractor installing BESS do not have the demonstrated knowledge, skills, and training related to NFPA 70 and 70E.

Rapidly developing BESS technologies and ongoing codes and standards revisions require detailed knowledge of multiple hazards and evolving safety requirements. Manufacturer safety guidance and relevant codes underscore that BESS in any size or application is not a "plug and play" installation. A broad knowledge of NFPA 70 and 70E is required as well as compliance with multiple sections of NFPA 70. Certified electricians are trained in all these areas of knowledge of electrical systems.

In sum, the main distinguishing characteristic between the C-10 and C-46 licenses that is relevant to this report is the difference in the required skill standard for their electrical workforces. C-10 contractors, whether or not they hold other licenses, are held to the requirement that their electrical workforce must be certified, whereas C-46 contractors are exempt from this requirement. Electricians certified by the state of California have the demonstrated knowledge, skills, and training to address the multiple safety considerations and are best suited to perform BESS installation from a public safety perspective. There are no equivalent California requirements or necessary demonstration of knowledge, skills, and training for installers working under a contractor with solely a C-46 license.

H. Is BESS Incidental and Supplemental to Solar PV?

The CSLB asked us to investigate whether or not BESS should be seen as "incidental and supplemental" to solar PV. Specialty contractors are permitted to perform work in other classifications if it is "incidental and supplemental," defined in the regulatory language as being "essential to accomplish the work in which the contractor is classified."[223] The CSLB made a determination that a BESS installation in conjunction with a solar installation is allowed as "incidental and supplemental," but has asked us to review this determination.

BESS is not essential to solar installation. BESS is not included in the C-46 solar contractor regulatory description, which states "a solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems."[224] The C-46 Contractor regulatory provision has an explicit requirement to "not undertake or perform building or construction trades, crafts, or skills, except when *required* to install a thermal or photovoltaic solar energy system" (italics added).[225] While § 834, Limitation of Classification, restricts specialty contractors from performing work of another classification, the restrictive language in the C-46 Contractors description is uniquely specific and explicit compared to all the other specialty contractor descriptions. BESS is not a thermal or photovoltaic solar energy system. BESS is listed as a distinct system in a separate Chapter 7 Special Conditions of NFPA 70 (2020) from solar photovoltaic (PV) systems in Chapter 6 Special Equipment.[226] BESS is not essential or required to be installed with a PV system. BESS can be installed as a stand-alone system or with other equipment including wind turbines, PV systems, or engine generators. Examples of supplemental and incidental work that is essential to solar installation include flashing and sealing roof penetrations from rack attachment, installing poles and tracking systems for ground mounted solar systems, and installing required photovoltaic system signage.

223 16 CA ADC § 831.

224 16 CCR § 832.46.

225 *Ibid.*

226 https://link.nfpa.org/publications/70/2020.

Unlike BESS, these installations may be required for solar installation. Our review of code and of the regulations determining scope for the C-46 leads us to conclude that BESS is therefore not "incidental or supplemental" to solar work.

Most importantly, the hazards and risks associated with BESS are significantly different than PV systems. Lithium-ion BESS have a high energy density and a thermal runaway hazard that can lead to fires, explosions, and venting of toxic gas. The public safety underpinnings of California regulations requiring certified electricians to perform electrical work under C-10 contractors also support the interpretation that BESS installations should be performed by C-10 contractors.

I. Conclusions from Safety Analysis

In conclusion, the review of the hazards, risks, and safety strategies, as well as the differences in the workforce requirements between C-10 and C-46 contractors, point to a preponderance of evidence in favor of restricting C-46 contractors from BESS work even when paired with solar PV. This report's review of the hazards and risks inherent to BESS underscores the importance of technical and safety capabilities necessary for safe BESS installation. Since the main difference between contractors is the certified electrician requirement, and in California certified electricians working under a C-10 contractor have significantly greater documented regulatory requirements for knowledge, skills, and training to safely perform electrical work and BESS installations, the CSLB can best ensure safety by requiring the C-10 license for all BESS installations.

We recommend that C-10 contractors be required for installing all residential, commercial, and utility-scale BESS for the following summary reasons: BESS are a dynamic and expanding technology with inherent hazards that are significant; they have led to serious incidents; they are recognized by NFPA as a "high risk hazard;" they have led to the development of significant ongoing code and standard revisions and new safety mitigations; they are currently predominately installed under C-10 contractors requiring the use of certified electricians with demonstrated skills and safety training needed to address the safety issues identified; only a tiny percentage of BESS projects have been installed by C-46 contractors without a C-10, A, or B license and therefore a significant safety record for these contractors simply does not exist. Finally, we find that there lacks a justifiable threshold by size or sector to suggest less hazard or insignificant risk for BESS installation, and therefore we recommend C-10 licenses be required for all sizes and customer classes of BESS.

V. The Economic Impact of Alternative Licensing Scenarios

The overriding purpose of the CSLB contractor license requirements is to protect public safety, but it is also critical to ensure that changes in requirements do not have significant adverse economic impacts that could impede the growth of the BESS market or hurt California businesses and workers. This section first presents an analysis of contractor and worker availability and then turns to an analysis of the installation costs of different contractor types, the transition costs of alternative scenarios for license classifications, and other economic considerations.

A. Contractor and Workforce Availability

It is important to document both the availability of contractors as well as of workers, particularly because of the certifications needed for electricians hired by C-10 license holders.

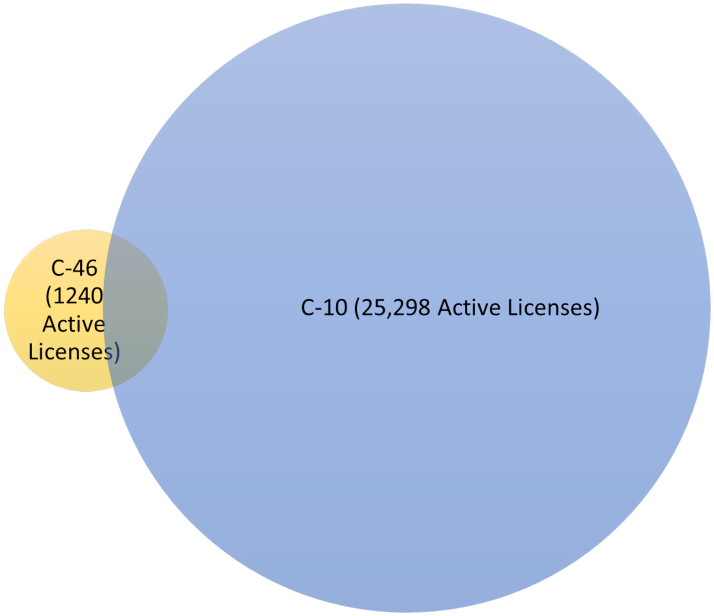
1. Availability of C-46 and C-10 Contractors

As of this writing, the CSLB has on record 25,298 active licensed C-10 electrical contractors and 1,240 active licensed C-46 contractors; 447 contractors hold both licenses.[227] More than a third (36%) of C-46 contractors hold a C-10 license, while just 2% of C-10 contractors hold a C-46 license. The low share of C-10 contractors who hold C-46 licenses makes sense since a C-10 license holder can already perform all the work under the scope of the C-46 license. Figure 31 presents a Venn diagram showing the respective pools of C-10 and C-46 contractors. The overlap represents those holding both licenses. This diagram is drawn generally, but not precisely, to scale, showing that a little over one-third of C-46 license holders also have a C-10 license. For every C-46 contractor in the state, there are 20 electrical contractors. Both C-46 and C-10 contractors engage in work other than solar-paired BESS; in fact, given that the BESS industry is still in its infancy, BESS makes up a small portion of the business of both C-46 and C-10 contractors. As stated earlier, the majority of BESS projects are installed by contractors holding both licenses. Contractors holding neither a C-46 nor C-10 license have also installed BESS.

While growing demand for BESS could increase the labor market demand for contractors and skilled workers ready and able to carry out this work, the large pool of C-10 contractors throughout the California and the relatively low labor demand associated with BESS installation should put to rest concerns about labor shortages being caused by restricting the BESS work of C-46 contractors. As covered above, the great majority of BESS are already installed by C-10 contractors (with or without a C-46 license), showing their interest in this market. Over one-third of C-46 contractors have already obtained a C-10 licenses, indicating that obtaining a C-10 license is possible for C-46 contractors and has been seen as advantageous for many of them.

227 https://www.cslb.ca.gov/Onlineservices/DataPortal/.

Figure 31. Active C-46 and C-10 Licenses in California, CSLB, 2021



We also looked at the distribution of BESS contractors in rural areas to examine differences in the relative availability of C-10 and C-46 contractors in areas that can be harder to serve. This confirms the result presented in Section III. F. showing the much smaller participation of C-46 (no C-10, A, or B) in rural counties, compared to the participation of C-10 contractors and dual C-46 plus C-10 license holders. The distribution of BESS-installing contractors by license that have installed solar-paired BESS in California's eleven rural counties is shown in Table 7. In California's rural counties, C-46 (no A, B, C-10) contractors installed 8% of SGIP projects from 2015–2020 and only 3% of BESS projects from the Interconnection dataset for 2020. The decline is attributable to reduced activity by James Petersen Industries (aka Petersen Dean and Solar 4 America). Interestingly, in rural counties in 2020, it was C-10 contractors (not holding a C-46 license) who installed 42% of the projects (a share equal to that held by dual C-10 plus C-46 contractors).

Table 8. Rural Storage Installers by Number of BESS Installations, 2015–2020 (SGIP)

Contractors by Licenses	Storage Project Count in CA's Rural Counties (SGIP data)	Storage Project Count in CA's Rural Counties (Interconnection data 2020)
C-10	**41**	**64**
Berger Solar Electric	1	1
SST Construction LLC dba Sunsystem Technology	1	
V3 Electric Inc	36	53
Kurios Energy	1	
Offline Solar	2	5
Gold Rush Energy Solutions		2
Sunpower Corporation		1
Sbrega Electric		1
Porter Graham Construction		1

CONTINUED Table 8. Rural Storage Installers by Number of BESS Installations, 2015–2020 (SGIP)

Contractors by Licenses	Storage Project Count in CA's Rural Counties (SGIP data)	Storage Project Count in CA's Rural Counties (Interconnection data 2020)
C-10 + C-46	**94**	**65**
1st Light Energy Inc	2	1
Apex Solar Inc	1	
Freedom Forever LLC	2	2
Future Energy Corporation dba Future Energy Savers	1	
Hooked on Solar Inc	21	10
I Love My Solar	1	1
Infinity Energy Inc	14	5
La Solar Group Inc dba A P Electrical	1	
Luminalt Energy Corporation	1	
Semper Solaris Construction Inc	7	3
Sunrun Installation Services Inc	26	24
Swell Services Inc dba Swell Contractors	2	1
Technical Specialty Solutions	2	
Tesla Energy Operations Inc	5	11
Valley Solar Inc	1	1
Westhaven Inc dba Westhaven Power	7	4
California Solar Innovators		1
SIG Solar		1
C-46 (no A, B, C-10)	**13**	**5**
CalSolar	1	
James Petersen Industries Inc dba Solar 4 America	12	2
ACR Solar International		1
West Coast Solar		1
SolarUnion		1
A/B	**10**	**17**
Ambrose Construction Inc	2	1
Quality Home Services	2	1
Sunworks	4	1
Acosta and Daughters	1	
Aztec Solar Inc (also C-46)	1	
Sol Sierra		5
Kirk Reuter		1
Tomsik Greg		1
Solar Savings Direct (also C-46)		1
High Point Solar (also C-46)		2
Solar Energy Collective		2
Infinite Energy Construction		1
Capital Remodel and Design (Also C-46)		1

In terms of contractor availability for a future market, across the state and in every county, including rural counties, there are far more C-10 electrical contractors than there are C-46 solar contractors. Ten California counties have no C-46 contractors with active licenses. Alpine County is the only county without any active C-10 contractors, and four counties have fewer than ten C-10 contractors. In Table 9, the green color indicates a rural county and the blue indicates counties that are mostly rural.

Table 9. Number of Active Contractor License Holders by Type of License, Rural and Urban Counties

County	Active C-46 licenses	Active C-10 licenses	Active dual C-10, C-46
Alameda	41	852	14
Alpine			
Amador	9	55	3
Butte	16	156	2
Calaveras	3	58	2
Colusa		9	
Contra Costa	49	690	23
Del Norte		9	
El Dorado	18	234	6
Fresno	38	423	14
Glenn	1	12	
Humboldt	8	89	5
Imperial		56	
Inyo	1	13	
Kern	26	432	6
Kings	5	40	2
Lake	3	52	1
Lassen	1	17	
Los Angeles	209	6,063	80
Madera	6	86	4
Marin	18	244	10
Mariposa		19	
Mendocino	11	90	4
Merced	8	85	3
Modoc		6	
Mono	2	21	1
Monterey	5	272	1
Napa	5	118	
Nevada	14	161	5
Orange	88	2,241	30
Placer	27	485	8
Plumas		29	
Riverside	89	1,601	31
Sacramento	43	867	17

CONTINUED Table 9. Number of Active Contractor License Holders by Type of License, Rural and Urban Counties

County	Active C-46 licenses	Active C-10 licenses	Active dual C-10, C-46
San Benito	1	49	
San Bernardino	43	1,163	16
San Diego	138	1,911	49
San Francisco	19	550	9
San Joaquin	17	312	6
San Luis Obispo	16	315	10
San Mateo	12	553	6
Santa Barbara	7	274	1
Santa Clara	55	1,007	18
Santa Cruz	18	245	7
Shasta	15	167	3
Sierra		4	
Siskiyou		34	
Solano	13	213	5
Sonoma	39	524	12
Stanislaus	12	268	3
Sutter	3	65	2
Tehama	1	35	1
Trinity		15	
Tulare	8	173	3
Tuolumne	4	59	1
Ventura	21	667	3
Yolo	7	90	
Yuba	2	44	1

1. Availability of Certified Electricians and PV installers

In addition to the number of contractors who are available to perform BESS installations, it is also important to document the size of their workforces, particularly since the main impact of any change in license requirements is most fundamentally about whether or not contractors are held to the rule that certification is required for their electricians installing solar PV-paired BESS (or BESS generally, since Option 4 would allow C-46 license holders to install BESS even when not paired with solar). It should also be noted that with solar PV and BESS alike, there are both electrical and non-electrical tasks, and the certification requirement in the C-10 license only applies to electrical tasks.

There are several ways to capture information on the number of certified electricians and PV workers. The workforces of C-10 and C-46 include both sole proprietors who work for themselves and employees of C-10 and C-46 contractors. As of March 1, 2021, CSLB data shows that the C-10 class has 13,700 active licensees with workers' compensation (WC) exemptions on file (claiming they have no employees and are therefore self-employed) and 11,328 with a certificate of WC insurance on file, indicating they have employees. The C-46 class has 478 WC exemptions and 758 with a policy. According to this CSLB data, 54% (11,328) of C-10 contractors claim to have no employees and 39% (758) of active C-46 contractors claim to have no employees.

Although some C-10 contractors are self-employed and do not have employees, C-10 contractors who do have employees carrying out electrical work are required by law to employ certified electricians. A key data point required for this analysis is the number of certified electricians in the state, which we obtained from the certifying body, the Division of Labor Standards Enforcement in the Department of Industrial Relations in the California Labor and Workforce Development Agency. As of March 24, 2021, there were 36,550 certified electricians in California, and 11,423 electrical trainees currently enrolled in registered electrical apprenticeship programs.[228,229]

Since there is no parallel skill standard or training pathway for workers employed by C-46 contractors, there is no comparable data to document how many workers there are. However, we can turn to Employment Development Department (EDD) occupational data that includes both electricians and solar installers for an apples-to-apples comparison. EDD data from May 2019 shows 72,870 electricians (Q1 2020 mean hourly wage $34.89), 4,740 electrician helpers (Q1 2020 mean hourly wage $19.71), and 4,970 solar installers (Q1 2020 mean hourly wage: $23.60).[230]

Another data source is the National Solar Jobs Census by the Solar Foundation. This survey reports 74,255 solar jobs in California in 2019, a figure that includes manufacturing, sales, administration, and management staff in addition to installation and repair workers. The survey methodology used by the Solar Foundation differs from government data collection methods, so it does not allow for a reliable comparison.[231] However, to approximate an apples-to-apples comparison, we estimated the installation workforce from this data source by applying the Solar Jobs Census estimate that 29.8% of solar workers are involved in installation and repair occupations. Calculating this share of the total number of 74,255 solar workers produces an estimated 22,128 solar installation and repair workers in CA.[232] The Solar Jobs Census also reports that of installation employees, 19% work in the field as electrical installers.[233] Again, using these percentages to estimate the size of the California solar workforce, we estimate there are 6,317 non-electrical solar installers (a figure close to the EDD data) and 4,204 electrician solar installers.

Both sources of data indicate that the electrical workforce vastly outnumbers the PV workforce in California. There is no evidence to suggest that workforce availability will limit the growth of BESS installations were the CSLB to restrict or exclude sole license C-46 contractors since C-10 vastly outnumber C-46 contractors both in general and specifically in their participation in BESS projects.

Finally, it is important to note that the number of electricians, as with all construction workers, fluctuates with the business cycle. Scholars have noted that skilled trades workers who have gone through apprenticeship programs, like many certified electricians, have strong attachments to their occupation even when they are laid off during a recession.[234] This attachment is due to the significant investments they have made in the five-year training period during their apprenticeship. While we have no comparable data for the PV workforce, in general workers with less training show less attachment to their occupation when demand for their labor fluctuates during the business

228 https://data.ca.gov/dataset/dir-electrician-certification-unit-ecu/resource/291bacb8-2fdb-4d9c-a330-113781ce2f59.

229 https://data.ca.gov/dataset/dir-electrician-certification-unit-ecu/resource/f0b9e36d-32be-408d-8dd9-4d539becfdc8.

230 https://www.labormarketinfo.edd.ca.gov/data/oes-employment-and-wages.html#OES.

231 https://www.thesolarfoundation.org/national/.

232 https://www.thesolarfoundation.org/wp-content/uploads/2020/03/SolarJobsCensus2019.pdf, Appendix A and Table 16.

233 https://www.thesolarfoundation.org/wp-content/uploads/2020/03/SolarJobsCensus2019.pdf, Figure 13.

234 Philips, P., & Bosch, G. (Eds.). (2002). *Building Chaos: An International Comparison of Deregulation in the Construction Industry* (1st ed.). Routledge. https://doi.org/10.4324/9780203166130.

cycle. This indicates that the certified electrical workforce might be more stable over time and will come back to their careers even if laid off during a recession. This is a benefit to the industry, consumers, and the workers themselves. We also underscore the fact that the number of apprentices in electrical apprenticeship programs fluctuates with demand, and that there are always many more applicants than can be accepted into the limited slots. If BESS grows and significantly increases the demand for certified electricians, the apprenticeship programs will be able to expand accordingly.[235]

B. Cost Differentials between Contractors by License Type

We analyze the cost differentials of C-46 (no C-10, A, or B) and C-10 contractors to assess whether or not a change in the scope of the C-46 license would have adverse impacts on the cost of BESS systems, possibly impeding the growth of the industry. We used two data sources, the cost benchmark modeling data from the National Renewable Energy Lab (NREL) and the SGIP dataset, which provides project cost data for all BESS incentive applications. The SGIP provides total project costs and incentives amounts, which we used to estimate costs per kW.

1. Cost Differential Analysis from NREL models

The NREL model allowed us to calculate the share of total costs of a BESS system installation that are attributable to installation labor. As illustrated in Table 10, installation labor ranges from 6% to 12% of total costs, depending on the specific technology used. This small percentage of installation labor as a share of total costs confirms that higher wages paid to installation workers can only have a minimal impact on total project costs. The NREL model does not permit a comparison between contractors with different licenses, nor does it provide the breakdown of work between electricians and laborers. We created bookends by comparing total project costs if all installation labor were paid at an electrician's wage versus at a laborer's wage. This provides a range of estimates between more expensive labor and less expensive labor, which sheds light on the difference between C-46 contractors, who do not hire certified electricians, and C-10 contractors, whose electrical workers must be certified, thus generally commanding higher wages. The model shows that hiring all laborers would lower costs from the mean by 1% to 2%, and that hiring all electricians would raise costs by 1% to 2%. This is a very small cost differential that is unlikely to slow or reduce consumer demand. A detailed explanation of our calculations is presented below.

The NREL cost data is shown in Table 10 and is illustrated for different storage technologies in Figure 32. We adjusted NREL's cost data to reflect the wage premium enjoyed in California by workers, compared to the national averages employed in the original NREL model.

As shown in Figure 32, the equipment (kit) for a 3kW/6kWh storage system costs approximately $4,200 to $4,600, with a total installed cost of $11,823 (DC-coupled) to $12,287 (AC-coupled). The kit for a 5-kW/20-kWh storage system costs approximately $10,400 to $10,800, with a total installed cost of $21,471 (DC-coupled) to $22,041 (AC-coupled). The figure also shows that BESS that are designed to be AC-coupled require slightly more labor hours than BESS that are DC-coupled.

235 Zabin, C, et al. 2020. "Putting California on the High Road: A jobs and Climate Action Plan for 2030. UC Berkeley Labor Center and California Workforce Development Board. https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf.

Table 10. NREL Solar + Storage Cost Benchmarks[236]

NREL Category	NREL Modeled Value	CA Labor Cost Adjustor	NREL Description
Supply chain costs	5% of cost of equipment	—	Includes costs of inventory, shipping, and handling of equipment
Sales tax	5.1% (national average)		Sales tax on equipment
Installation labor cost	Electrician: $27.47 per hour Laborer: $18.17 per hour AC systems require more hours of work to integrate with an existing inverter and monitoring system	Electrician: $34.89 per hour (mean per EDD Q1 2020) [27% higher than NREL average] Laborer: $24.61 per hour (mean per EDD Q1 2020) [35% higher than NREL average]	Assumes national average pricing
Engineering fee	$99		Engineering design and processional engineer-stamped calculations and drawings
Permitting, Inspection, Inter-connection	$297 permit fee $594 - $951 in labor		20–32 hours (DC-coupled/AC-coupled) of commissioning and interconnection labor, and permit fee
Sales and marketing (customer acquisition)	$0.61/W DC		20 hours more time for DC system, and 32 hours more for AC system, per closed sale, associated with selling a storage system versus selling a PV system
Overhead (general and admin)	$0.28/W DC		Rent, building, equipment, staff expenses not directly tied to PII, customer acquisition, or direct installation labor
Profit (%)	17%		Fixed percentage margin applied to all direct costs including hardware, installation labor, direct sales and marketing, design, installation, and permitting fees

236 https://www.nrel.gov/docs/fy21osti/77324.pdf.

Figure 32. NREL Installed Cost of Residential Storage Only

The NREL model does not provide the ratio of electrician to laborer hours, but we assume that 50% of installation is performed by laborers and 50% by electricians. Under this assumption, the average NREL wage would be $22.82 per hour, and the average California wage would be $29.75. Since the California electrician wage is 27% above the national average and the laborer wage is 35% above the national average, we assume that California installation labor is approximately 30% more than the NREL-reported amount.

Table 11. Installation Labor Costs from NREL BESS Models

	DC- coupled 3 kW, 6kWh	AC- coupled 3 kW, 6kWh	DC- coupled 5 kW, 20kWh	AC -coupled 5 kW, 20kWh
Installation Labor Cost (California)	$1,182	$1,557	$1,308	$1,804
Total Cost	$12,098	$12,650	$21,776	$22,461
Installation Labor as Percent of Total Cost (California)	9.8%	12.3%	6.0%	8.0%
Installation Labor Cost (no electricians)	$978	$1,288	$1,082	$1,492
Reduced total cost	1.7%	2.1%	1.0%	1.4%
Installation Labor (100% electricians for installation labor)	$1,386	$1,826	$1,534	$2,116
Increased total cost	1.7%	2.1%	1.0%	1.4%

In order to bookend the range of cost differentials for lower- and higher-wage labor, we looked at the costs if all the installations were done either at the laborers' wage rate or at the electricians' rate. If all installation were performed by general laborers, the low end of the cost range, there would be a potential cost savings of 1.0% to 2.1%. Conversely, if all installation were performed by licensed electricians on the expensive side, the potential increase in total BESS costs ranges from 1.0% to 2.1%.

We also reviewed the study carried out by Peter Philips, which was submitted in the record to CSLB, based on NREL cost models.[237] Philips estimated the cost impacts using NREL solar benchmark data. (The storage benchmark data from NREL only became available this year.) Philips estimated a 3% cost increment due to higher potential labor costs that would occur if the CSLB restricted the scope of the C-46 license. Compared to solar installations where installation labor represented an average of 9.9% of total costs in 2018 (the year evaluated by Philips), BESS is even less labor intensive (6% to 12%, with a mean of 9%). Furthermore, as battery storage systems get bigger, installation labor becomes a progressively smaller percentage of total costs, because, according to NREL, labor costs are a fixed cost and not a function of the size of the system.

Our California-adjusted labor cost increases of up to 1–2% are likely overestimates for a few reasons. First, the size of residential BESS is likely to increase generally, as consumers are installing BESS for resiliency purposes and want to be able to run their homes during power outages. Larger systems do not correlate with higher labor costs, so the project cost increase due to hiring electricians will shrink as average size increases. Second, there are facets of BESS installation that do not involve the electrical connections requiring C-10 contractors to hire certified electricians or apprentices. The law is clear that electrical connections over 100 volt-amperes must be performed by certified electricians. Since not 100% of the work will require electricians, assuming 100% electrician wages is likely an overestimate.

Moreover, our finding that most installations are performed by contractors with both C-46 and C-10 licenses means that the change in workforce will be limited to the very few C-46 (no C-10, A, or B) contractors doing BESS installations, and the C-46 contractors who also hold C-10 licenses and who are illegally employing non-certified electricians to do electrical work. As Phillips notes,

> …certified electricians are already used to install some percentage of ESS units that are installed concurrently with a solar photovoltaic system. C-10 contractors also install both solar photovoltaic systems and ESS units; and they are required by law to use certified electricians. Contractors with both a C-10 and a C-46 license employ both certified electricians and solar installers. While not required by law, C-46 contractors can employ certified electricians as part of their installation crews. In those cases, there is either no swap-out of high-wage for low-wage labor or only a partial swap-out.

He goes on to write,

> for non-electrical installation work, lower-wage labor may continue to be used as part of the installation crew for units above the threshold. The estimated solar photovoltaic and ESS labor costs cited above include both electrical and nonelectrical work. Only the electrical work would have a potential labor cost increase. Thus, the estimated 3% cost impact of the proposed

237 Philips, Peter. 2019. "The Economic Impact of Limiting C-46 Contractors to 10kW/20kWh Thresholds in Installing Energy Storage Systems" CSLB public record.

> thresholds is a conservative, high-end estimate. Due to 1) the falling share of labor costs compared to total cost, 2) the continuity in some use of certified electricians on larger units, and 3) the continuity of use of less-paid labor on non-electrical tasks, the future cost impact of the proposed regulation is likely to be less than 3% of total costs.

While our analysis generally draws the same conclusions as Philips's, the potential cost impact we arrive at is even smaller because the NREL's reported installation labor costs for BESS are lower than what Philips had estimated. Additionally, unlike with solar, many labor costs in BESS installation don't increase with the capacity of the system. A Stanford study on the costs of BESS installations reports that some "installation costs, which consist of permitting, inspection/commissioning and workforce mobilization are considered fixed costs, FC, which do not scale with the size of the system."[238] This is based on the authors' review of customer feedback within online forums related to Tesla Energy Powerwall, which presented the actual cost of installations, and on interviews with three Tesla Energy employees. The Stanford authors estimate $400 in fixed costs for the installation of a residential system.[239]

2. Cost Differentials Between Contractors with Different Licenses in California, SGIP Dataset

This section analyzes the costs of BESS installation by contractor license type using real cost data for contractors in California who reported their installations for the SGIP reporting requirements. It relies on individual project data rather than modeling data as in the NREL dataset, and thus is a particularly credible data source for this analysis. The analysis includes an examination of all BESS installations and also breaks down costs for residential and commercial installations separately. Using the cost data provided in the SGIP data, we determined an average cost per kW for solar PV-paired BESS across different licenses. We examined whether a C-10 license correlated with higher BESS costs, and if so, what the cost differential across different license types is. Our analysis confirms very small cost differentials by contractor license type, as explained below.

Our analysis shows an average BESS installation project cost of $25,538, with an average cost per kW of $2,348 and an average size of 10.9 kW. On average, across all customer classes, the data shows that the lowest average cost storage systems are installed by contractors holding a dual C-10 and C-46 license, and the highest average cost is installed by C-46 contractors holding an A or B license. In addition, contractors holding a C-10 license without a C-46 license have an average cost per kW just 0.6% higher than contractors holding a C-46 license without a C-10 license, as shown in Figure 33 and Table 12. This is less than the modeled impact using NREL data.

Of course, averages across customer classes don't tell the whole story, so we used the same data to separately examine projects for commercial and residential customers. The average size of a residential system is 6.3 kW and the average cost is $14,255. The average size of a commercial system is 216.2 kW and the average cost is $532,400.

In the residential sector, the data show that the lowest average cost BESS is installed by contractors holding both C-10 and C-46 licenses, the contractor group that clearly dominates the market. Compared to projects installed by C-46 (no C-10, A, or B) contractors, projects installed by C-10 (no 46) are 1.8% higher, which is directly in line with our analysis using NREL cost benchmark data.

238 Comello, Stephen and Stevan J. Reichelstein, 2018. "The Emergence of Cost Effective Battery Storage." Working Paper No. 3696, p. 24, https://www.gsb.stanford.edu/gsb-box/route-download/463541.

239 *Ibid.*, p. 28

Figure 33. Average Cost per kW by Contractor License Type, 2015–2020 (SGIP data)

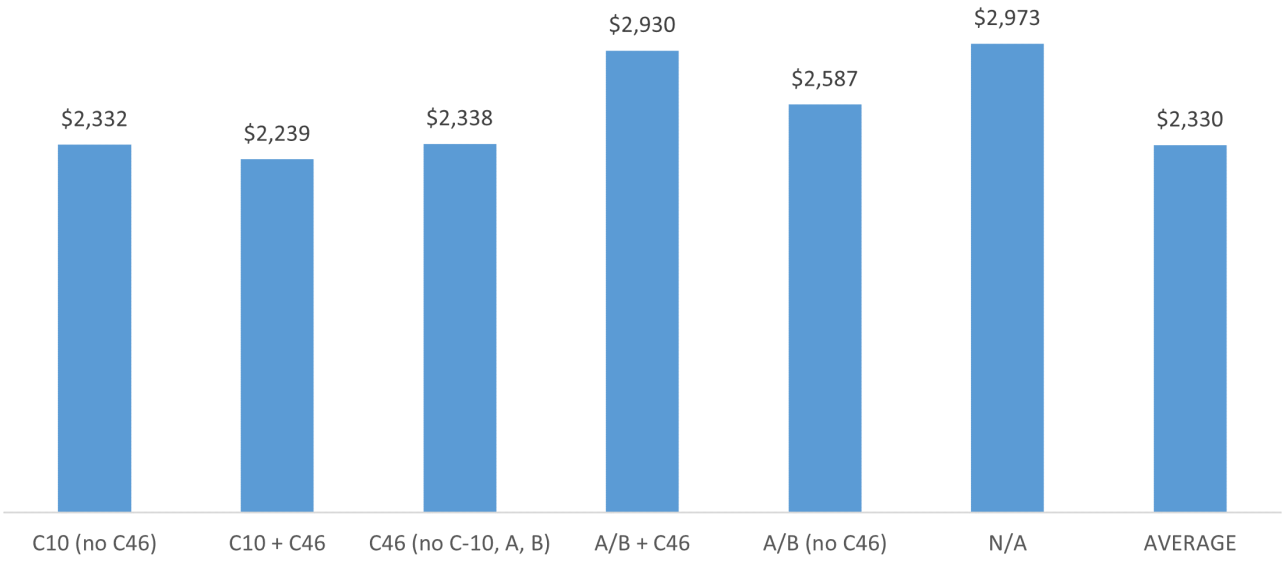


Table 12. Average Cost per kW by Contractor License Type, 2015–2020, SGIP data

	C-10 (no C-46)	C-10 + C-46	C-46 (no C-10, A, or B)	A/B + C-46	A/B (no C-46)	NA	AVERAGE
Grand Total	$2,332.12	$2,239.10	$2,337.71	$2,929.96	$2,586.71	$2,973.25	$2,330.29
percent of average	100.1%	96.1%	100.3%	125.7%	111.0%	127.6%	100.0%

Both C-10 (no C-46) contractors and C-46 (no C-10) contractors have higher than average project costs. C-46 contractors are 4% above average, while C-10 contractors are 5% higher than average. A and B contractors also had much higher than average costs for residential BESS, regardless of whether they held a C-46 license.

In the commercial sector, the data show that the lowest average cost BESS installation projects were self-installs (depicted by the blue bar labeled "N/A" in Figure 34), followed by C-10 contractors. C-46 contractors who hold an A, B, or C-10 license have higher than average costs, as do A or B contractors without a C-46 or C-10 license. No commercial BESS installations performed by C-46 contractors without an A, B, or C-10 license were found in the SGIP dataset.

Figure 34. Residential and Commercial Average Cost per kW, Solar-Paired BESS, 2015–2020 (SGIP data)

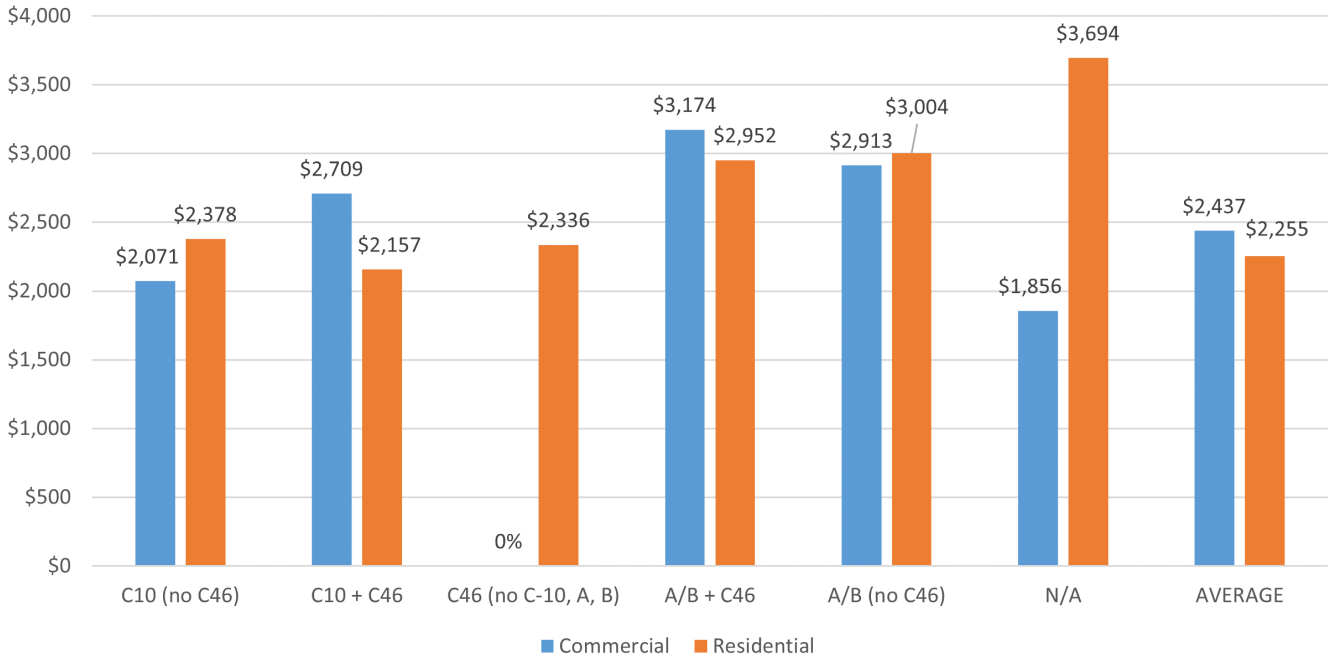


Table 13. Average Cost per kW of BESS in California, 2015–2020 (SGIP data)

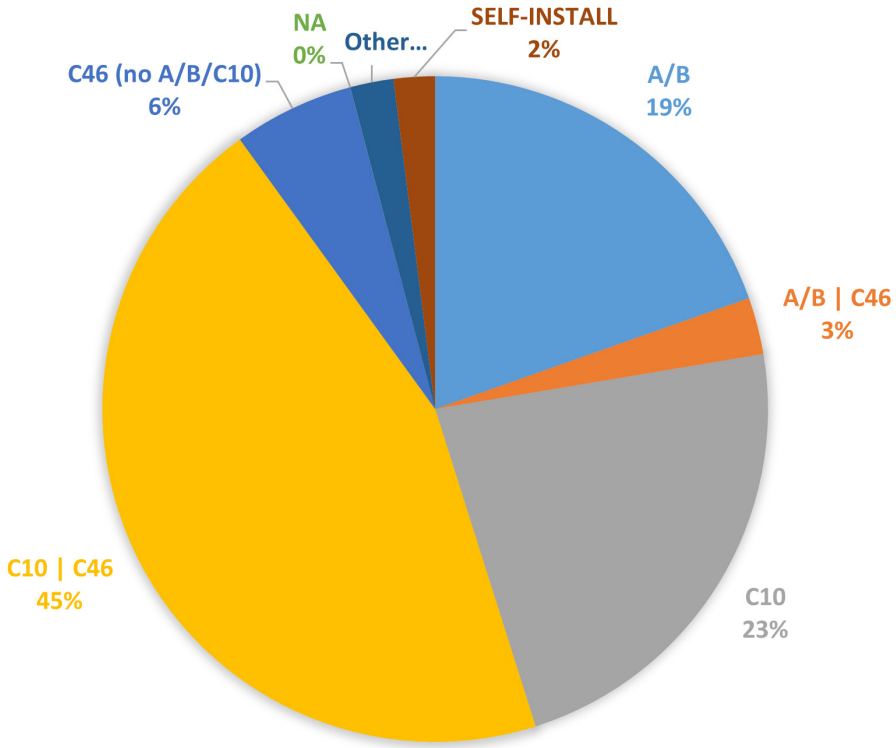
	C-10 (no C-46)	C-10 + C-46	C-46 (no C-10, A, or B)	A/B + C-46	A/B (no C-46)	NA	AVERAGE
Commercial	$2,071	$2,709	—	$3,174	$2,913	$1,856	$2,437
Residential	$2,378	$2,157	$2,336	$2,952	$3,004	$3,694	$2,255
Commercial percent of average	85%	111%	—	130%	120%	76%	100%
Residential percent of average	105%	96%	104%	131%	133%	164%	100%

3. Would the Cost Differential Change if a Ruling to Restrict C-46 Contractors Would Also Change their Solar Workforce?

CALSSA has made the argument that requiring certified electricians to connect battery storage systems when they aren't required to connect solar PV systems would have ripple costs on the solar industry, where solar contractors would also change their hiring practices. If they had to obtain C-10 licenses, then solar contractors would be required to use certified electricians for solar connections as well, putting upward pressure on costs.

The data from the Interconnection dataset shows that contractors holding a C-46 (no A, B, C-10) license install only 6% of residential solar-only systems, as shown in Figure 35. For projects approved in 2020, C-46 contractors installed 54% of residential solar projects, but most of these were installed by C-46 contractors holding another license, usually a C-10. Thus, even in solar installations without battery storage, only a small minority of installations are carried out by sole license C-46, and only these would have the cost advantage of not hiring certified electricians. Any differential in costs between those who are required to hire certified electricians and those who are not has little significance if most contractors have both licenses.

Figure 35. Residential Solar PV Installations by Contractor License Type (Interconnection Dataset, 2020)



4. The Impact of Small Cost Differentials on Consumer Demand, including the Impact of Subsidies

CALSSA stakeholders also expressed concern that CSLB restrictions of C-46 contractors will add costs to projects that are already price-sensitive. The above analysis of both modeled and actual cost differentials shows that these concerns are not borne out by the evidence.

Furthermore, price alone is not driving BESS growth. NREL interviews show that storage customers are not particularly cost-sensitive.

> Based on our industry interviews, increasing numbers of end users are willing to pay a premium for larger, more-resilient PV-plus-storage systems with enhanced back-up power capabilities, owing to the increased occurrence of superstorms and natural disasters. This decision may not always be driven by economics, given the higher costs of PV-plus-storage systems today;

> however, consumer-adoption motivations extend beyond economics to concerns about security, safety, and resiliency (EuPD Research and Greentech Media 2016)."[240]

Other industry analysis draws the same conclusion. A January 2021 articled in Solar Power World Online states, "[t]he residential storage market has been growing steadily every quarter since early 2019. Wood Mackenzie is predicting that the sector will expand by six-times through 2025, *largely attributed to the desire for resiliency*."[241] [italics inserted for emphasis].

CALSSA also expressed concern that cost increases associated with the use of certified electricians could undermine the impact of governmental subsidies on the BESS market. There are several types of subsidies for BESS. The Investment Tax Credit applies to battery storage systems that are charged at least 75% of the time with renewable energy. California's Self-Generation Incentive Program also provides subsidies for storage, with a focus on resiliency. Both the federal and state incentives are subsidizing the BESS market, and some of these incentives are decreasing, expiring, or their funds exhausted.

Reviewing the SGIP data, which provides total costs for solar-paired BESS as well as incentive amounts, we found that the SGIP incentives average 37% of total costs. CALSSA's argument that contractor restrictions would raise costs enough to counteract this entire incentive does not appear to be accurate since the modeled cost impact of C-46 restrictions are 1–2% of project costs, a fraction of the incentive. The total of the residential incentives as of the April 12, 2021, weekly report was $101.5 million. Even estimating a 2% cost increase in residential BESS costs if C-46 contractors were restricted from BESS (and the 2% increase is the maximum modeled increase and higher than the actual project cost data), the potential impact would have been only $5.3 million to date, accounting for only 5% of the state subsidy. When we evaluate actual project cost data, the most reliable data we have, we see no cost impact of C-46 contractor restrictions, since the contractors conducting the majority of the BESS installations at the lowest cost already hold a C-10 license.

Table 14. SGIP Incentive Data (as of April 12, 2021)

	Sum of Current Incentive ($)	Sum of Total Eligible Costs	Incentive as % of total cost
Commercial	$ 28,433,527	$ 88,225,316	32%
Government/Education	$ 37,881,529	$ 111,415,520	34%
Multifamily	$ 7,213,802	$ 26,041,367	28%
Non-Profit	$ 11,440,426	$ 22,530,896	51%
Residential	$ 101,486,207	$ 262,622,383	39%
Grand Total	**$ 186,455,490**	**$ 510,835,481**	**37%**

In sum, the increase in wages, if it in fact occurs, is unlikely to change consumer behavior or dampen demand for BESS. Moreover, it will certainly not wipe out the impact of subsidies and incentives on consumers, which at 37% of total costs completely overwhelm any cost increases due to the wage differential between electricians and the PV workforce.

240 https://www.nrel.gov/docs/fy21osti/77324.pdf, p.52.

241 https://www.solarpowerworldonline.com/2021/01/the-energy-storage-market-is-blowing-up-in-the-united-states/.

5. The Costs of Training and Turnover

CALSSA has argued that there are other, potentially more significant, costs to consider such as higher employee turnover. Their argument is that since solar installers are trained by their employers (rather than formally) with a highly specialized skill set, they are less likely to leave their employer for work elsewhere, and this reduces turnover and benefits the industry. Certified electricians, on the other hand, have a range of skills and a wider choice of employment options. This means that if there is a better paying job, they are likely to pursue it, leaving the solar employer without a skilled worker. There are a few arguments against this point. First, if required to hire a certified electrician, the training required of the employer decreases because there is a certification process that employers can rely on to verify knowledge and skills. Second, according to government data and best available industry data, there are far more certified electricians than solar installers in California. We reason that any cost to employers of higher turnover would be mitigated by the reduced training needs and higher availability of workers. We also note that if all contractors are held to the same standard in terms of the qualifications of the workforce, this is likely to increase the wages of electricians who were formerly not certified and avoid competition based on lower wages for non-certified electricians. Also, it should be noted that higher wages reduce turnover.

We both acknowledge and agree with CALSSA's position that employer-based training can reduce employee turnover and associated costs. A U.S. Department of Labor synthesis of research on many different styles of job training reports that employers often benefit from workplace training. "For employers, who are more likely to provide firm-specific training than general training that could be valuable in the labor market outside the firm, firm training can reduce worker turnover and associated costs, and improve productivity."[242]

However, from a broader look at the economic impacts of certification requirements, our concern extends beyond industry and employer impacts to include impacts on workers and the broader economy. Through that lens, we reference research showing that broader occupational training, "particularly a degree or industry-recognized credential related to jobs in demand, is the most important determinant of differences in workers' lifetime earnings and incomes."[243] The DOL report cites research showing that individuals (with less than a bachelor's degree) with professional certifications or licenses earned more than those without these credentials, and that post-secondary training programs that result in credentials related to technology, state licensure, and in-demand occupations are associated with particularly positive outcomes.[244] The electrical certification falls into this category.

While task-specific or employer-specialized skill training can help employers, it does so by limiting the options, flexibility, and career mobility that would better serve workers in both the short term and over the course of their careers. Restricting worker mobility might keep wages low and benefit the BESS businesses, but the short- and

242 https://www.dol.gov/sites/dolgov/files/OASP/legacy/files/jdt.pdf (Citing Wagner, Shelbye (2004). An Examination of the Utility of Training: Relationships with Turnover and Promotion. Emploria State University Department of Psychology and Special Education. Unpublished manuscript; and Wagner, Richard and Robert Weigand (2004). Can the Value of Training be Measured? A Simplified Approach to Evaluating Training. Health Care Manager, Vol. 23, Issue 1, pp. 71-77. And Laurie J. Bassi, Jens Ludwig, Daniel P. McMurrer, and Mark Van Buren (2000), "Profiting From Learning: Do Firms" Investments in Education and Training Pay Off?" Research White Paper, ASTC and SABA; and Almeida, Rita and Pedro Carneiro (2008). The Return to Firm Investments in Human Capital. The World Bank Social Protection and Labor Discussion Paper No. 0822.).

243 *Ibid.*

244 *Ibid.,* citing (Holzer, H. J. & Lerman, R. I. (2009). The Future of Middle-Skill Jobs. Brookings Institution. https://www.brookings.edu/research/the-future-of-middle-skill-jobs/; and Jacobson, L. S., LaLonde, R. J., & Sullivan, D.G. (2005). Estimating the Returns to Community College Schooling for Displaced Workers. *Journal of Econometrics*, 125(1-2). Retrieved from http://repec.iza.org/dp1017.pdf; and Jepsen, C., Troske, K., & Paul Coomes. 2009. The Labor-Market Returns to Community College Degrees, Diplomas, and Certificates. University of Kentucky Center for Poverty Research Discussion Paper Number 2009-08. Retrieved from http://www.ukcpr.org/Publications/DP2009-08.pdf.)

long-term economic benefits of broader occupational training and industry-recognized credentials need to be weighed against the benefits that accrue to employers from the restriction of such training. We do not find there to be a compelling argument or evidence that enhancing worker mobility by requiring the use of certified electricians for the electrical work associated with battery installation will have devastating consequences for the BESS industry.

On the contrary, skills certifications help California workers and the economy. This is reflected in support for industry-recognized credentials in the State's Unified Strategic Workforce Development Plan, where it is identified as a key strategy of the California Labor and Workforce Development Agency.[245] Industry recognized credentials such as the electrical certification provide signals to public training institutions on what to train for and helps the industry tap into public sources of training and education funding. The lack of a skill standard results in inconsistent training carried out by contractors on the job, poorer wages and benefits, and fewer opportunities for transferability and career advancement for workers.

Further, while not all certified electricians have been trained through registered apprenticeship, the DOL report indicates that registered apprenticeship is particularly valuable to workers, resulting in $8,000 higher earnings initially and over $200,000 in their lifetime more than a comparison group of individuals who did not participate in registered apprenticeships.[246] The Newsom administration has identified expanding the number of apprentices in registered apprenticeship programs, like the electrical apprenticeship programs, as a key goal of his labor and workforce development policy.[247] Although apprenticeship is not the only path to obtaining an electrical certification, it is a common path and one that can help disadvantaged workers access earn-while-you-learn training into a middle-class skilled construction career, especially when paired with pre-apprenticeship. The electrical certification also aligns with the state's policies to support increased equity through its investments in and commitment to registered apprenticeship and pre-apprenticeship programs. This is reflected in the state's commitment to its High Road Construction Careers program.

6. Transition Costs for Alternative Rulings by the CSLB

Whenever a State regulation changes the status quo, there can be transition costs as companies adjust their business and labor practices. We analyze the likely costs of transition for two scenarios: 1) Prohibiting C-46 license holders from installing BESS projects, no matter their size or customer class, and 4) Allowing C-46 license holders to install BESS. Since the safety analysis showed that there was no logical threshold at which risks were minimal and at which lower worker qualifications would be unnecessary, we do not evaluate transition costs for these partial restrictions.

a) Transition Costs for Restricting BESS Installations by C-46

Because C-46 contractors without an A, B, or C-10 license install such a small number and percentage of distributed BESS installations, we anticipate very small transition costs. The firm with the most at stake in terms of

245 https://cwdb.ca.gov/wp-content/uploads/sites/43/2020/09/Strategic-Planning-Elements.Final_ACCESSIBLE.pdf, p. 29.

246 *Ibid.,* citing Kleinman, Liu, Mastri, Reed, Reed, Sattar, & Ziegler (2012). An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States. Mathematica Policy Research. Prepared for the U.S. Department of Labor, Employment and Training Administration.

247 https://cwdb.ca.gov/wp-content/uploads/sites/43/2020/09/Strategic-Planning-Elements.Final_ACCESSIBLE.pdf, p. 23.

the size of their BESS work is James Petersen Industries (aka Solar 4 America and Petersen Dean), the only large C-46 (no A, B, C-10) contractor installing a fair number of BESS. This contractor already has several violations and problems that will require changes if the firm hopes to stay in business.

It is also important to note that C-46 contractors who would be affected by a CSLB ruling to restrict the use of C-46 licenses for BESS could obtain C-10 licenses, as have so many other C-46 contractors already. In addition, these employers could assist their non-certified electricians by supporting them to becoming certified electricians, which would benefit the workers.

CALSSA has expressed concerns about the costs of transition if the CSLB rules that BESS is not within the scope of C-46 license. This seems to stem from the fact that some solar companies who hold both C-46 and C-10 are following the practice of hiring non-certified electricians for solar and BESS electrical work, justifying this by asserting that this work is carried out under their C-46 license. As stated earlier, we asked for clarification about this practice from the CSLB, who stated unequivocally that contractors holding both C-46 and C-10 licenses are legally required to use certified electricians for all electrical work, including the specific electrical tasks associated with solar PV and BESS. We were not able to ascertain how many contractors with both C-46 and C-10 are violating the law by employing non-certified electricians, and it appears enforcement is limited. Enforcement of the regulation requiring certified electricians for contractors with both a C-10 and a C-46 is a separate issue which is outside the scope of this study. For these dual license holders, a ruling by the CSLB to restrict the C-46 license from installing BESS would not affect their businesses since they already have C-10 licenses. The cost impact of a transition would only be significant if a CSLB ruling to restrict C-46 was accompanied by more vigorous enforcement of the certified electrician requirement, and if violations of this requirement were widespread.

As noted in Section III. D., restricting C-46 (no A, B, C-10) contractors will affect very few jobs. Even for those contractors who are carrying out most of the BESS installations performed by this category of license holder, BESS represents a small amount of work. To repeat the illustration, the average cost of installed BESS in California is $15,000, and installation labor is estimated by NREL to be less than 10% of the cost. For those contractors installing 15 projects, their labor costs would equal less than $22,500, so even firms installing 15 in a year do not require even a single full-time employee to do so. Restricting or precluding C-46 contractors from installing BESS would have a very small and manageable impact on contractors and their employees. Using the BESS installation labor cost estimate of $1,000 – $1,500 per residential system, C-46 (no A, B, C-10) contractors would have spent $600k – $900k on installation labor in 2020. Assuming they are paying average wages of $25 per hour, this equates to 11.5 – 17.3 jobs measured in full time equivalent (FTE) statewide.

It is also important to note that while the project costs vary only slightly between projects using certified vs. non-certified electricians, job quality varies substantially, with certified electricians earning substantially more than non-certified electricians. While there is no data source that credibly specifies this wage differential, both CALSSA and the electrical industry confirmed that it is substantial. Evidence from government data as well as both CALSSA and NECA show higher wages for certified electricians than the solar workforce including non-certified electricians. Restricting C-46 contractors would help support companies that hire, invest in, and remunerate a higher skilled workforce, as is the goal of the state's high road strategy as expressed in the Strategic Workforce Plan.[248]

248 https://cwdb.ca.gov/wp-content/uploads/sites/43/2020/09/Strategic-Planning-Elements.Final_ACCESSIBLE.pdf, p. 29.

We therefore conclude that the transition costs for restricting C-46 contractors would be minimal. Restricting C-46 contractors could actually improve conditions for current workers if these businesses take advantage of the opportunity to help certify their electricians and learn to compete using business strategies that do not include a lower wage workforce.

b) Transition Cost for Allowing BESS Installations by C-46

Since the share of contractors currently installing BESS who are C-46 (no A, B, or C-10) is small, a ruling that these contractors cannot install BESS systems would only minimally impact the current pool of BESS contractors in California. It would, however, impact the future trajectory of the industry, because it would likely expand the number of C-46 (no A, B, or C-10) contractors. Evidence from government data as well as both CALSSA and NECA show higher wages for certified electricians than the solar workforce including non-certified electricians. In a competitive market, lower wages provide a competitive edge, all else being equal. This could result in downward pressure on wages for electricians and greater competitive pressures on C-10 contractors who invest in a higher skilled workforce. These adverse impacts would likely not be offset by lower costs to consumers since C-46 contractors without a C-10 license are not consistently the lowest cost contractor group and, in most cases, have higher costs than contractors with both C-10 and C-46 licenses. We therefore conclude that there are transition costs associated with a ruling to allow C-46 license holders to install BESS.

VI. Conclusion

In conclusion, we strongly recommend that the CSLB limit the scope of the C-46 to its original scope and preclude C-46 (no C10) license holders from installing BESS. We see no public policy justification for the CSLB to encourage a future trajectory of the BESS industry with lower standards and lower requirements for worker qualifications compared to the present pool of contractors. Only a very small share of the current pool of contractors that carry out BESS installations are C-46 (no C-10, A, or B) contractors and are exempt from the requirement that individuals carrying out electrical work be certified electricians. This research result shows that the current pool of BESS installers has higher qualifications than might be the case if the CSLB permits the C-46 license to cover BESS.

Our hazards, risks, and safety analysis shows substantial hazards related to this rapidly evolving technology and buttresses the argument that there is a need for qualified personnel to mitigate risks. BESS are a dynamic and expanding technology with inherent hazards that are significant; they have led to continuing serious incidents; they are recognized by NFPA as a "high risk hazard"; they have led to the development of significant ongoing code and standard revisions and new safety mitigations; they are currently predominately installed under C-10 contractors requiring the use of certified electricians with demonstrated skills and safety training needed to address the safety issues identified. Finally, we find that there lacks a justifiable threshold by size or sector to suggest less hazard or insignificant risk for BESS installation, and therefore we recommend C-10 licenses be required for all sizes and customer classes of BESS. While in California there have been no significant incidents with injury or death that we could identify, there are significant data gaps that preclude definitive statements that risks are low. There have been serious incidents in other regions, particularly in grid-scale BESS, but we found no evidence that the risk of BESS technologies is minimal in residential or commercial applications. Because of this, we classify the BESS technologies in the category of high consequence, low frequency risk, which requires a contractor and workforce with broad knowledge of electrical systems and electrical safety. Since such a small percentage of BESS projects have been installed by C-46 (no C-10, A, or B), we also note that the safety record is extremely limited for this group of contractors, further undermining an assessment that C-46 (no C-10, A, or B) contractors can credibly mitigate safety risks.

Since the main difference between the C-46 and the C-10 is the latter's requirement that their electrical employees be certified, we conclude that the C-10 workforce is more highly trained and trained in the broader safety and electrical system assessment knowledge than the C-46 workforce. The CSLB rule that contractors with both a C-10 and a C-46 license must adhere to the certified electricians requirement means that only C-46 (no C-10) contractors do not have to meet the higher standard for their workforce. Our review of the curriculum of the electrical certification shows that certified electricians have the relevant skills, knowledge, and experience to confidently be classified as "qualified personnel." No such review of the C-46 (no C-10) electrical workforce is possible since there is no comparable skill standard, and therefore we cannot confidently classify these workers as "qualified personnel."

We also conclude that there will be no adverse economic impacts of precluding the C-46 license from BESS. We document that C-10 contractors and certified electricians are plentiful and can expand as demand for BESS increases. C-10 contractors, with or without C-46 licenses, are much more numerous than C-46 contractors and have entered this market in greater numbers than C-46 (no C-10) contractors. This is true for both the residential and commercial markets and for urban and rural counties. We also document no significant savings in project costs with installations performed by C-46 (no C-10) contractors, even though there is agreement that the wages of certified electricians are higher than the C-46 non-certified electrical workforce. This may be because labor costs, and particularly the costs of work that is performed by electricians (certified or not), is a small percentage of total costs, and the consequent differential in total cost is minimal. The lowest cost contractors have both C-10 and C-46 licenses and are held to the certification requirement, but have apparently found cost savings that make up for the higher wages of certified electricians. Finally, we find that the transition costs of precluding C-46 contractors from installing BESS are minimal since C-46 (no C-10) contractors and their electrical workforce are currently such a small share of all contractors and workers who have installed BESS in California. There would be an adverse economic impact from allowing C-46 contractors to install BESS because that would likely undermine the electrical certification and put downward pressure on the wages of certified electricians.

The decision before the CSLB will shape the future trajectory of the BESS industry. A decision to allow C-46 contractors to install BESS, whatever the size or customer class, could result in lower workforce skill standards and greater risk to the public from faulty installations. All else being equal, it is better to support the expansion of that segment of the existing pool of contractors who invest in a more skilled workforce by hiring certified electricians, rather than increase the risks associated with a less qualified workforce.

VII. Appendices

A. Data Sources and Methodology for Profile of Contractors by Licenses

This analysis was conducted by mapping the CSLB contractor database against the California Self Generation Incentive Program (SGIP)[249] (for electrochemical projects paired with solar PV) with program years from 2015 onward. The SGIP dataset lists project data, including manufacturer, size of system, location, and customer sector as well as the name of the installer. In addition, we analyzed the 2020 Interconnection data provided to us by CALSSA at our request, and matched all contractors to their license using the SGIP file and the CSLB data. The Interconnection dataset includes more information on the installers that could be used to identify the contractor license, including phone numbers and, starting in 2020, license numbers. The sheer size of the Interconnection dataset across 5 years, however, made it difficult to properly clean the data to match installers against the CSLB files.

The electrical industry stakeholders conducted license matching analysis on the Interconnection dataset and provided their data as well as a summary. We compare the trends in our findings from the SGIP dataset against the electrical industry's summary findings using the Interconnection dataset for 2015 – 2020.

To match the installer provided in each dataset to the CSLB contractor databased, we first cleaned the installer record to a single name that match the CSLB file. In some cases, this meant adding or removing a period from "Inc," and for firms using "doing business as" (dba) names, we made the names consistent with the CSLB data. Several firms such as James Petersen Inc (dba Solar 4 America), Tesla, Baker Electric, and others use a wide range of names; these were standardized manually. Once cleaned, we applied VLOOKUP function in MS Excel to then the installer names with the CSLB active license file. And then, for those records that showed no results, we manually searched the CSLB database to find the appropriate licenses for each installer.

249 2015-2021_Weekly Statewide Report_04_12_2021(posted 04_12_21)

B. Contractors Installing 15 or More Storage Projects

Table 15. Contractors Installing 15 or More Storage Projects

C-46 (no C-10, A or B) Contractors who've installed more than 15 projects since 2015 (SGIP dataset)	**C-46 (no C-10, A or B) Contractors who installed more than 15 projects in 2020 (Interconnected dataset)**
James Petersen Industries Inc dba Solar 4 America	James Petersen Industries Inc dba Solar 4 America
Sea Bright Solar Inc dba Sunpower By Sea Bright Solar	Solar Tech Energy Systems Inc
Skytech Solar	Phoenix Solar Energy
Bay Area Energy Solutions inc	Sea Bright Solar Inc
Phoenix Energy Fulfillment Inc dba Phoenix Solar Energy	Southern California Energy Alternatives Inc
	West Coast Solar Inc
	Skytech Solar
A/B + C-46 Contractors who've installed more than 15 projects since 2015 (SGIP dataset)	**A/B + C-46 Contractors who installed more than 15 projects in 2020 (Interconnected dataset)**
Hot Purple Inc dba Hot Purple Energy	Hot Purple Inc dba Hot Purple Energy
Sun First! Inc	Sun First! Inc
Green Air Heating and Air Conditioning Inc	Green Air Heating and Air Conditioning Inc
Treeium Energy Inc	
Ho So Po Corp dba Horizon Solar Power	
C-10 Contractors who've installed more than 15 projects since 2015 (SGIP dataset)	**C-10 Contractors who installed more than 15 projects in 2020 (Interconnected dataset)**
Sullivan Solar Power Of California Inc	Sullivan Solar Power Of California Inc
Solare Energy Inc	Solare Energy Inc
V3 Electric Inc	V3 Electric Inc
Cobalt Power Systems Inc	Solar Optimum Inc dba Solar Optimum Design & Electrical
Sunlux	Stellar Energy GP Inc dba Stellar Solar
Joe Anthony Flores	Kuubix Energy Inc
Tlp Electric Integrations Inc dba Infinity Electric	AM Sun Solar

Plug It In Systems Inc	Tlp Electric Integrations Inc
Solar Forward Electric Inc	Gold Rush Energy Solutions
SST Construction LLC dba Sunsystem Technology	Sunergy Construction
AM Sun Solar	Quality Home Services
California Solar Electric Cooperative Corp dba California Solar Electric Co	Green Convergence
Jilbert Electric Inc	Coastal Constructors
SolarCo Inc	American Solar Corporation
Stellar Energy GP Inc dba Stellar Solar	Northern Pacific Power Systems Inc
Sunergy Construction Inc	Your Energy Solutions
Photon Brothers Inc	Sunlux
G C Electric Corporation dba G C Electric Solar	
Summit Technology Group Inc	
Perk Solar Inc dba Perk Solar Electric	
Renewable Energy Advantage	
Solar Optimum Inc dba Solar Optimum Design & Electrical	
Allterra Environmental Inc dba Allterra Solar	
Green Convergence	
Pacific Electric Solar	
Northern Pacific Power Systems Inc	
Santa Cruz Westside Electric Inc dba Sandbar	
Synergy Power	
N R G Clean Power Inc	
Gold Rush Energy Solutions	

C-10+ C-46 dual license contractors who've installed more than 15 projects since 2015 (SGIP dataset)	**C-10 + C-46 Contractors who installed more than 15 projects in 2020 (Interconnected dataset)**
Sunrun Installation Services Inc	Sunrun Installation Services Inc
Tesla Energy Operations Inc	Tesla Energy Operations Inc
Semper Solaris Construction Inc	Semper Solaris Construction Inc
Swell Services Inc dba Swell Contractors	Baker Electric Inc

La Solar Group Inc dba A P Electrical	Vivint Solar
Baker Electric Inc	Infinity Energy Inc
Infinity Energy Inc	Hooked on Solar Inc
Hooked on Solar Inc	Freedom Solar Co
Xero Solar	LA Solar Group
Luminalt Energy Corporation	Westhaven Inc dba Westhaven Power
Renova Energy Corp	Swell Services Inc dba Swell Contractors
Solarponics Inc	Simply Solar dba Rockin Roofers
Freedom Forever LLC	Xero Solar
Westhaven Inc dba Westhaven Power	Renova Energy Corp
Clean Solar Inc dba Clean Electrical	Luminalt Energy Corporation
Home Energy Systems Inc	Solarmax Renewable Energy Provider Inc
Alternative Energy Systems Inc	Home Energy Systems Inc
Future Energy Corporation dba Future Energy Savers	Asi Hastings, Inc
Jaj Roofing dba Citadel Roofing And Solar	Pure Power Solutions
Distribugen Inc dba Pure Power Solutions	Got Watts Electric & Solar
Solarmax Renewable Energy Provider Inc	Clean Solar Inc dba Clean Electrical
Home Networks Electric & Solar Incorporated	Jaj Roofing dba Citadel Roofing And Solar
Synergy Solar & Electrical Systems Inc	Precis Solar
Simply Solar dba Rockin Roofers	Solar Technologies
Solar Technologies	Sunpro Solar Inc
Sunpro Solar Inc	Synergy Solar & Electrical Systems Inc
Valley Solar Inc	Solarponics Inc
Rochlin Corporation dba Blue Sky Energy	
1st Light Energy Inc	

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Carol Zabin directs the UC Berkeley Labor Center's Green Economy Program. She is a labor economist whose research has addressed low-wage labor markets, labor standards, workforce development, and other economic development and labor issues in the United States and Mexico. Dr. Zabin has consulted with numerous unions and non-profits on strategies and policies to improve jobs in human services and the green economy. Her current research focuses on the impact of climate and clean energy policy on California's economy, workers, and labor unions. Recent publications include *Diversity in California's Clean Energy Workforce*, *Advancing Equity in California Climate Policy*, and *Workforce Issues and Energy Efficiency Programs*. Appointed by Governor Brown, Dr. Zabin sits on the executive council of the California Workforce Development Board and chairs the board's Green Collar Jobs Council. Before joining the Labor Center, Dr. Zabin was on the faculty at Tulane University and UCLA. She earned her PhD in economics at the University of California, Berkeley.

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Betony Jones is founder and principal at Inclusive Economics. She has been conducting economic research on the employment impacts of clean energy policies in California for the past 10 years. Prior to starting Inclusive Economics, she was the associate director of the Green Economy Program at the UC Berkeley Labor Center. She has a master's degree from the Yale School of Forestry and Environmental Studies, where she studied economics and sustainable development.

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Attachment C – Major Studies

Battery Energy Storage Systems (BESS) – CSLB Staff Report in Consultation with Expert Consultants

Battery Energy Storage Systems

CSLB Staff Report in Consultation with Expert Consultants

June 3, 2022

Introduction

Battery energy storage systems (BESS), and particularly lithium-ion BESS, developed substantially and expanded rapidly in use in recent years. In response to the changing technology and uses, national and state regulatory bodies and standards authorities adopted (and then amended) health and safety standards that are designed to ensure that BESS are developed and installed safely. The Contractors State License Board (CSLB or Board), for its part, is reviewing the extent to which C-46 solar contractors should be permitted to install BESS in light of recent technological developments and their expanded use.

Fundamentally, the C-46 solar contractor classification was established to enable solar contractors to install, modify, maintain, or repair thermal and photovoltaic solar energy systems, not modern BESS. The C-46 classification regulation does not expressly include BESS within its scope, and there are important reasons why modern BESS should be considered separate electrical systems.

Nonetheless, C-46 contractors undoubtedly perform BESS installations, but the appropriate limit for such installations is the subject of much debate. To clarify the appropriate scope of C-46 BESS installations, CSLB must revise the classification regulations through the regulatory rulemaking process in the Administrative Procedure Act.[1]

To assist in this effort, in March of 2022, the Board directed staff to retain outside consultants or experts to: (1) evaluate information already received and perform additional fact finding, as necessary; and (2) assess whether allowing C-46 contractors to install BESS within a kilowatt-hour (kWh) threshold would be supported by existing building codes, is prevalent among C-46 contractors in the construction business, and is consistent with the Board's public safety mandate.

After consulting with subject matter experts, staff makes the following recommendation:

Recommendation

The Board should consider amending the C-46 solar contractor classification to expressly permit them to install a BESS up to and including 80 kWh when installed at the same time a solar photovoltaic (PV) energy system is installed, as incidental and supplemental to the solar photovoltaic energy system installation.

As discussed below, 80 kWh would be an appropriate threshold to limit C-46 contractor installation, when installed as incidental and supplemental to the installation of a photovoltaic energy system, for the following reasons:

- Establishing an 80 kWh threshold as the point at which BESS installation is no longer incidental and supplemental to a C-46 contractor's installation of a solar photovoltaic energy system, and is instead a separate electrical system, is consistent with and preserves the existing regulatory classification framework.
- Establishing an 80 kWh threshold will preclude C-46 contractors from installing larger systems that are more appropriate for a C-10 contractor.
- C-46 contractors (holding no "A", "B", or "C-10" license) typically perform installations within an 80 kWh threshold commonly found in the residential market, where there is typically no need for BESS in excess of 80 kWh.
- The available evidence does not demonstrate increased incidents of consumer harm within an 80 kWh threshold based on the classification type of the installer.
- Establishing an 80 kWh threshold will aid C-46 licensees in knowing and complying with a clear standard and will aid the Board in enforcing the classification standard.
- Pursuant to the Residential and Fire Codes, 80 kWh is the maximum allowable capacity that can be installed for a residential occupancy within common residential locations. Above 80 kWh, more rigorous safety standards can apply to the installation.
- The codes, standards, and regulations in California are established to ensure public safety at the 80 kWh threshold, and a C-46 contractor following the applicable standards would not create an increased risk of consumer harm.

Report

1. Background.

For several years, CSLB staff has received written and oral testimony on whether and to what extent C-46 contractors should install BESS from the two primary stakeholders with differing views on the issue: the California Solar and Storage Association (CALSSA) representing the C-46 solar contractors and the National Electrical Contractors Association / International Brotherhood of Electrical Workers Labor Management Cooperation Committee (IBEW-NECA) representing the C-10 electrical contractors.

Since 2019, the full Board and its Legislative Committee on several occasions directed staff to research BESS, meet with stakeholders, and/or develop draft regulatory language for inclusion of BESS in CSLB regulations.[2] After CSLB staff received conflicting stakeholder information on the economic, market, and risks or hazards of

limiting BESS by contractor license classification,[3] in December 2020, the Board contracted with the University of California (UC) Berkeley to review and make a recommendation regarding the appropriate classifications to install BESS between C-46 solar contractors and C-10 electrical contractors.

In July of 2021, UC Berkeley released a report (UC Berkeley Report)[4] recommending the Board restrict C-46 contractors from installing BESS in any capacity.[5] The UC Berkeley Report concluded that precluding C-46 solar contractors from installing BESS would have public safety benefits, minimal adverse economic impacts, and benefit the workforce.[6]

In November of 2021, CSLB staff developed a proposal to preclude C-46 contractors from installing BESS consistent with the UC Berkeley recommendation, but it was not approved by the Board. The Board raised concerns about the impact of the proposed rule to small businesses and directed staff to seek more input and possible resolution between the industry stakeholders and develop draft regulatory language that may be acceptable to the electrical and solar stakeholders.[7]

Staff met with stakeholder groups multiple times between December 2021 and March 2022, but was unsuccessful in developing a proposal agreeable to both the solar and electrical industry representatives.

A review of the materials indicates the disputed issues between CALSSA and IBEW-NECA include, but are not limited to, the following:

Whether BESS is incidental and supplemental to the installation of a photovoltaic solar energy system.

Existing law provides that specialty contractors (such as C-10 and C-46 contractors) may take contracts in trades other than those in which they are licensed, if the work is "incidental and supplemental" to the work in the craft for which they are licensed.[8]

- CALSSA states that if a BESS size limit is placed on the C-46 classification, it must be considered part of the authorized work for solar contractors, and not simply incidental and supplemental to it.[9]
- IBEW-NECA states that if a BESS size limit is placed on the C-46 classification, the installation should only be considered incidental and supplemental to a solar energy system installation up to a certain point,[10] after which the BESS should be considered a separate electrical system that cannot be installed by a C-46 contractor.[11]

Whether there are increased risks of hazards or safety concerns in authorizing C-46 contractors to install BESS of a certain size.

- IBEW-NECA states that there is substantial evidence that battery energy storage systems pose significant fire and life safety risks[12] that increase with the size of

the system.[13] They further state that contractors holding a C-10 license performed 89% of solar-paired storage installations in California.[14]

- CALSSA states that C-46 contractors have safely and without incident installed more than 80% of the solar and energy storage systems in California.[15] CALSSA states that risks of larger battery systems are hypothetical and fail to recognize existing product and regulatory protections, installer trainings, and the proven effectiveness of those protections.[16]

The role of certified electricians in solar-paired storage projects.

Existing law provides that persons who engage in the connection of electrical devices for contractors licensed as class C-10 electrical contractors are required to be certified electricians when performing electrical work.[17] This includes all persons who engage in the connection of electrical devices 100 volt-amperes and up.[18]

- CALSSA states that dual license holders (those holding both a C-10 and C-46 license) commonly use solar installers, not certified electricians, to install batteries.[19] CALSSA states that if BESS is removed from the C-46 scope of work, it would require C-46 solar contractors to replace their workers with certified electricians for solar and storage jobs.[20]
- IBEW-NECA states that as dual license holders begin performing more BESS work, they will need to hire more certified electricians; that current workers who are not certified electricians will continue to be able to perform work; and, that there are plenty of installation requirements for BESS that do not involve electrical work and do not require use of a certified electrician.[21]

Whether a C-46 contractor can add BESS to an existing photovoltaic solar energy system or maintain BESS they previously installed.

Existing law provides that a C-46 contractor may not perform work in building or construction trades, crafts, or skills except when "required to install a . . . photovoltaic solar energy system."[22] With this classification limitation in mind, C-46 contractors may take contracts in trades other than those in which they are licensed if the work is "incidental and supplemental" to the work in the craft for which they are licensed.[23]

- CALSSA states there is no justification for allowing the installation of batteries at the same time as solar panels but prohibiting battery installation if it occurs later in time under a separate contract.[24] CALSSA also proposes to allow solar contractors to maintain or repair any BESS the contractor previously installed to fulfill warranty and contractual obligations.[25]
- IBEW-NECA states that CALSSA's proposal to expand the scope of the C-46 license to allow installation of energy storage projects as stand-alone projects that are installed after a solar system is installed is unacceptable (because it would be a standalone electrical contract).[26]

What is an appropriate kWh threshold for a C-46 contractor to install a solar-paired BESS.

CALSSA and IBEW-NECA agree that a regulatory threshold can be based on the capacity of the BESS,[27] and that a capacity limitation would make the most sense from a technical, safety, economic and regulatory perspective.[28] However, they disagree on the appropriate threshold, as follows:

- CALSSA proposes 1 Megawatt-hour (MW) and 600 kWh thresholds.[29] CALSSA believes 1 MW is the most appropriate threshold, but if BESS is to be tied to safety codes, it should set it at 600 kWh, below which an extensive safety analysis is not required.[30] CALSSA states that a 50 kWh threshold would be arbitrary.[31]
- IBEW-NECA states CSLB could use the 10 kWh / 20 kWh / 70 kWh technology-based thresholds set forth in the Fire Code or set a single threshold to ease compliance and enforcement.[32] Or CSLB could set a 20 kWh threshold for lithium-ion batteries, the most prominent in battery in residences.[33]

2. Materials reviewed in preparation of the report.

This report considers the following resources, which are referred to or cited herein as follows:

- California Business and Professions Code (B & P Code), Division 3, Chapter 9, Contractors State License Law
- Title 16, Division 8, Articles 1 through 9 of the California Code of Regulations (CCR)
- 2019 California Building Code, Title 24, Part 2, Volume 1 with July 2021 Supplement (CBC)
- 2019 California Residential Code, Title 24, Part 2.5 with July 2021 Supplement (CRC or Residential Code)
- 2019 California Electrical Code, Title 24, Part 3 (CEC or Electrical Code)
- 2019 California Energy Code, Title 24, Part 6 with Jan 2020 Errata (Ca. Energy Code)
- 2022 California Energy Code (Approved by California Energy Commission August 2021, effective January 2023) (2022 Ca. Energy Code)
- 2019 California Fire Code, Title 24, Part 9 with July 2021 Supplement (CFC or Fire Code)
- C-46 Solar Examination, Occupational Analysis Report. CSLB Examination Development Unit, August 2017 (C-46 Occupational Analysis)
- C-10 Electrical Examination, Occupational Analysis Report. CSLB Examination Development Unit, September 2018 (C-10 Occupational Analysis)
- October 14, 2019, CALSSA letter to CSLB (October 2019 CALSSA Letter)

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- November 24, 2021, CALSSA letter to CSLB (November 2021 CALSSA Letter)
- November 30, 2021, California Energy Commission letter to Suzan Granzella (November 2021 CEC Letter)
- January 19, 2022, IBEW-NECA letter to David Fogt (January 2022 IBEW-NECA Letter)
- February 23, 2022, CALSSA letter to David Fogt (February 2022 CALSSA Letter)
- March 4, 2022, IBEW-NECA Response to February 23, 2022, CALSSA Letter (March 2022 IBEW-NECA Letter)
- March 29, 2022, CALSSA letter to David Fogt (March 2022 CALSSA Letter)
- May 3, 2022, meeting of CSLB staff, Board Member Susan Granzella, and four CSLB-licensed C-10 and C-46 contractor subject matter experts (SMEs) with CSLB exam development experience on the topic of BESS. (May 2022 SME Meeting)
- May 9, 2022, meeting of CSLB staff with Assistant Fire Marshal, Assistant Deputy Director, and Chief of Code Development and Analysis, for the Office of the State Fire Marshal. (May 2022 SFM Meeting)

In addition, staff consulted with Joe Barragan, a CSLB licensee holding A, B, C-7, C-10, C-16, and C-46 specialty classifications. He also holds International Code Council certifications as a building official, residential building inspector, commercial electrical inspector, and fire inspector, and he is a National Fire Protection Association certified fire inspector. Mr. Barragan has inspected and reviewed plans for hundreds of solar projects. Mr. Barragan reviewed the staff report and provided input in the drafting, and he concurs in the recommendation.

3. **The Board may reasonably establish in regulation an 80 kWh threshold as the point at which BESS installation is no longer incidental and supplemental to a C-46 contractor’s installation of a solar photovoltaic energy system, and is instead a separate electrical system.**

There are multiple kWh thresholds for BESS installations that Title 24 Codes cite: 1 kWh, 3 kWh, 10 kWh, 20 kWh, 40 kWh, 50 kWh, 70 kWh, 80 kWh, 200 kWh, 280 kWh, or 600 kWh or more. The different thresholds often trigger different safety standards depending on BESS type, chemistry, location, and spacing, building occupancy, listing, and proximity to combustible construction, among other factors.[34]

The cited Residential and Fire Codes set minimum safety standards for the installation of BESS, and do not directly address the electrical complexity required to install BESS, or expressly specify the point at which the installation of BESS is more appropriate for an electrical contractor or solar contractor.

Nonetheless, the Board may reasonably establish in regulation an 80 kWh threshold as the point at which BESS installation is no longer incidental and supplemental to a C-46 contractor's installation of a solar photovoltaic energy system, and is instead a separate electrical system that should not be installed by a C-46 contractor.

This approach would be consistent with the existing contractor classification framework, which limits out-of-classification work to instances where it is incidental and supplemental to the installation of in-classification work.

Also, installations within the 80 kWh threshold are typical among C-46 contractors in the construction business. C-46 contractors (holding no "A," "B," or "C-10" license) installed approximately 1,800 solar-paired BESS systems between 2015 and 2020.[35] The number of solar-paired BESS installed in California increased substantially in recent years and demand for BESS is expected to continue because of utility power outages in California and the need to meet California's clean energy goals.[36] However, the average size of C-46 contractor installations was fairly small, between 5.2 and 6.6 kilowatts (kw),[37] within the 80 kWh threshold recommended in this report.[38]

In addition, the available evidence within this threshold does not demonstrate increased risks of consumer harm based on license classification. On the other hand, installations above 80 kWh can involve electrical knowledge and experience that is beyond the skillset of a C-46 contractor. Finally, setting a clear threshold will assist the Board in ensuring compliance and in enforcement efforts.

a. Within an 80 kWh threshold, the available evidence does not demonstrate increased incidents of consumer harm based on the classification type of the installer.

As it relates to the hazards of BESS, the UC Berkeley report concluded that "BESS is a low frequency, high risk technology; while incidents have been rare, they have serious consequences."[39] The report also stated, "BESS risks are significant for grid-utility, industrial, commercial, and residential applications," and that "[s]erious incidents have occurred in all phases of the BESS lifecycle, including construction, installation, and operation."[40]

On the other hand, the report noted that there were "no identified incidents in California," and that "[l]ithium-ion batteries are a relatively new technology utilized for BESS, so these batteries lack a lengthy track record for evaluation of hazards and risks."[41] And "[s]ince such a small percentage of BESS projects have been installed by C-46 (no C-10, A, or B), . . . the safety record is extremely limited for this group of contractors . . . ."[42]

In addition to the limitations on available information, the hazardous incidents identified in the UC Berkeley Report were criticized as being distinguishable from the types of installations that a C-46 contractor would normally perform.[43] The reported incidents involved defective batteries, manufacturing problems, installations that exceeded 80 kWh, and/or installations outside California and, consequently, not subject to the same regulatory standards.[44]

As the UC Berkeley Report and IBEW-NECA have articulated, thermal runaway is the most significant of BESS hazards.[45] Thermal runaway is the result of a chemical reaction within a cell that releases flammable vapors resulting in a fire or explosion.[46]

At the May 2022 meeting of subject matter experts, they stated that higher capacity BESS may result in a more substantial fire (if a fire occurs at all); however, the kWh total of a BESS or multiple BESS strung together does not, by itself, create more complexity in the electrical installation or create a higher risk of a fire occurring.[47] Mr. Barragan concurs in this conclusion. In fact, as discussed below, the risk of thermal runaway is more a function of the internal circuitry and chemistry of a battery (or possible mishandling), and there are protections in place to prevent or preclude a fire from occurring at all.

As it relates to arc flash and electrical shock from an energized BESS or electrical system, which were also identified by UC Berkeley and IBEW-NECA as significant risks in BESS installations,[48] CALSSA stated, "[i]t is patently false to claim that energy storage systems represent a higher risk of [main service] panel overloads than solar systems alone," and that, "[t]he formulas for wire sizing and breaker sizing are the same."[49] Subject matter experts supported this view generally and indicated that "the electrical theory does not change" when installing a single 20 kWh BESS, or when connecting multiple BESS together to reach a higher threshold.[50]

Furthermore, the kWh thresholds in the Title 24 Codes are already set relatively low for safety. Underwriters Laboratories (UL) is the joint standard for the United States and Canada for which ESS are evaluated for safety.[51] During a discussion of UL 9540A (large scale fire testing for ESS), UL stated that the kWh quantity thresholds set by the International Fire Code (that California has adopted) were set "fairly low" because the systems are still new, and the codes will be updated when more information is learned about what quantities are truly "safe" or "unsafe."[52] For example, NFPA 855, the standard for ESS adopted by the Fire Code, provides that lithium ion BESS over 20 kWh must be certified to UL 9540.[53] This is a manufacturing standard to show that the

product prevents thermal runaway, which, in turn, prevents the battery from being the cause of a fire.[54] To be certified to UL 9540, the product must undergo a compatibility system safety analysis to evaluate hazard, risk, and failure mode, and undergo standard mitigation strategies to ensure no system hazards are introduced due to any BESS components interacting with each other.[55] It appears that the standards were developed in part due to hazardous incidents occurring with much larger systems. Indeed, UL has indicated that the battery incidents "of particular interest in developing 9540A" were in other countries and one state outside of California, at a size between 50 kw and 20 megawatts.[56] (For comparison, a Tesla Powerwall is 5.8 kw). By contrast, from the information available so far, small residential batteries perform well.[57]

Both C-46 and C-10 contractors are required to know the portions of California Electrical Code (based on the National Electrical Code) applicable to their trades: for C-46 contractors, this includes the Electrical Code articles that relate to solar PV systems and the devices that connect to them, including BESS, and for electrical contractors, this includes the entirety of the Electrical Code.[58] The C-46 license examination tests on safety procedures when working with solar system components of low, medium, and high voltage to avoid electrical fire, arc-flash, and shock in accordance with Cal/OSHA requirements.[59] While it is possible through negligence (such as penetrating, crushing, dropping the battery, loose connections) that a contractor can cause thermal runaway[60] or electric shock, negligence is a risk factor in any installation by any contractor.

Based on the foregoing, it is reasonable to infer that if a contractor is licensed to make electrical connections to a solar system through meeting the minimum standards of C-46 or C-10 licensure, such as by taking the CSLB license examination, they have the skill and ability needed to make electrical connections required for smaller BESS installations within an 80 kWh threshold when paired to solar PV system, and that those activities alone would not create greater risk to building occupants or consumers. Mr. Barragan concurs in this conclusion.

b. Establishing an 80 kWh threshold as the point at which BESS installation is no longer incidental and supplemental to a C-46 contractor's installation of a solar photovoltaic energy system, and is instead a separate electrical system, is consistent with the existing regulatory framework.

The CSLB C-46 solar contractor classification regulation provides:

> A solar contractor installs, modifies, maintains, and repairs thermal and photovoltaic solar energy systems. A licensee classified in this section shall not undertake or perform building or construction trades, crafts, or skills, except when required to install a thermal or photovoltaic solar energy system.[61]

The regulation precludes C-46 contractors from engaging trades, crafts or skills outside the scope of the classification, unless required to install a photovoltaic solar energy system. In light of this regulatory limitation, Board staff previously stated that BESS may

be installed concurrently with the installation of a photovoltaic solar energy system, when such installation is incidental and supplemental to the installation of the solar energy system.

Nonetheless, there is some question whether BESS installations should ever be considered incidental and supplemental to the installation of a photovoltaic solar energy system. Photovoltaic systems and battery systems are separately defined systems in the Electrical Code.[62] They are governed by different provisions of the Electrical and Fire Codes.[63] They are "different technologies with different purposes and ways of interacting with the electrical system of a structure."[64] "[A] solar PV system generates and transmits electrical energy, while a BESS utilizes electrical energy, transforms that energy into a storage state, and then transmits back that stored electrical energy when needed for other uses."[65]

Although they are separate systems, they can, however, be complementary—the Electrical Code provides that solar photovoltaic systems "may be interactive with other electrical power production sources or stand-alone or both, and may or may not be connected to energy storage systems such as batteries."[66]

In light of the differences between the two electrical systems, the UC Berkeley Report concluded that BESS should not be considered within the scope of the C-46 classification, or incidental and supplemental to the installation of a solar energy system:

> *BESS is not essential to solar installation. BESS is not included in the C-46 solar contractor regulatory description . . . . BESS is not a thermal or photovoltaic solar energy system.* BESS is listed as a distinct system in a separate Chapter 7 Special Conditions of NFPA 70 (2020) from solar photovoltaic (PV) systems in Chapter 6 Special Equipment. *BESS is not essential or required to be installed with a PV system.* BESS can be installed as a stand-alone system or with other equipment including wind turbines, PV systems, or engine generators.[67]

The UC Berkeley Report recommended that "CSLB limit the scope of the C-46 to its original scope and preclude C-46 license holders from installing BESS even when paired with solar . . . ."[68] But the Board previously considered this regulatory option in November 2021 and did not support it. The C-46 and C-10 participating stakeholders agreed, and the Board encouraged, a kWh threshold should be used to clarify the scope of the work performed by C-46 contractors.

To remove any possible doubt in the regulations about whether BESS installation should be considered incidental and supplemental to the installation of a solar photovoltaic energy system, the Board should consider amending the regulations to state expressly that BESS installations are incidental and supplemental to the installation of photovoltaic solar energy systems, up to 80kWh. This approach preserves the regulatory and practical differences between BESS and photovoltaic solar energy systems by treating BESS installations as out-of-classification work for C-46

contractors, but also recognizes that BESS have become a desirable supplemental system to photovoltaic solar energy system installations, and that C-46 contractors perform BESS installations contemporaneously with the installation of photovoltaic solar energy systems.

c. Electrical system connections required at thresholds above 80 kWh are more appropriate for a C-10 contractor.

The higher the kWh threshold, the more likely the solar-paired BESS installation exceeds what is typically installed for residential or light commercial applications and requires connections to, upgrades to, or changes to, main service panels that require skills and knowledge that are more appropriate to the C-10 electrical contractor than the C-46 solar contractor.

During the May 2022 subject matter expert meeting, the stakeholders agreed that a challenge in identifying a single kWh threshold to distinguish between C-46 and C-10 installations is that the kWh of a BESS does not neatly determine the complexity of the electrical installation.[69] The subject matter experts stated that complexity of the installation changes depending on what the BESS "is tying into," i.e., the electrical system of the structure or distribution network of the grid.[70] The subject matter experts were concerned about whether C-46 contractors would have sufficient knowledge of transformers and voltages needed and skills required if, for example, a BESS is tied into a "three phase system" versus a "single phase system" as it relates to the electrical main service panel system.[71] The subject matter experts noted that tying into a single-phase system is relatively straightforward, but connecting to a three-phase system, in their view, would fall outside of the C-46 classification because it involves knowledge and skill of a more complex electrical system[72] that operates independently of any photovoltaic solar energy system that is installed at the stie. Mr. Barragan concurs that this work would typically exceed the knowledge and skill of a C-46 contractor.

Single-phase systems are used in homes with a smaller power load and in residential buildings where, in Mr. Barragan's opinion, it would be more common to find BESS within an 80 kWh threshold, and three-phase systems are used in factories and commercial buildings with heavy power load.[73] These topics deal with voltages, phases, breakers, terminals and amperage. Indeed, the National Electrical Code provides that the primary BESS function is "providing electrical energy into the premises wiring system or an electric power production and distribution network."[74] The C-10 license examination contains extensive questions on the tools, methods, and procedures to test for voltage, current, resistance, phase rotation, and polarity, the methods for calculating electrical loads, voltages, and currents (e.g., Ohm's Law), protection devices (e.g., overcurrent, overload, fault current, GFCI, GFEP, and shunt-trip devices) for circuits, and equipment in commercial and industrial applications.[75] According to the subject matter experts, such wiring systems and electric power production and distribution networks are more complex than single-phase systems commonly seen in residential applications.[76]

CALSSA previously stated, “the largest risk of improper system installation is incorrectly connecting the solar or storage system to the electrical service.”[77] CALSSA notes that the “Main Service Panel (MSP) is typically the critical component that must be considered when configuring the interconnection method,” and stated that it “is essential that no device ever feeds or draws more current through the service panel than it is designed to handle.”[78] CALSSA has also acknowledged that “commercial properties nearly always have three-phase lines, and multifamily properties are a mix of three-phase lines and single-phase lines,”[79] and has suggested that multifamily housing properties and commercial properties could have power needs as high as 200 kw.[80]

Indeed, the average U.S. home uses about 30 kWh of electricity each day[81] but the kWh usage of the average commercial building in the U.S. appears much higher.[82] The average rated power of nonresidential installations in California was between 91 and 130 kw between 2015-2020.[83] As such, commercial, industrial, or large multifamily structures with heavier power loads more commonly use a BESS with a much higher kWh, which typically require connecting to a complex main service panels that require broader electrical knowledge. BESS installations at these higher thresholds are more appropriate for C-10 contractors than C-46 contractors.

d. C-46 contractors (holding no “A”, “B”, or “C-10” license) typically perform installations within an 80 kWh threshold commonly found in the residential market.

The UC Berkeley Report studied the size of solar-paired BESS installations in California broken down by license classification. The data shows that C-46 solar contractors holding no C-10, A, or B license typically install smaller projects with sizes more commonly found in the residential market, and that establishing a low BESS threshold for C-46 contractors would have minimal impact in the industry.[84] CSLB data similarly shows that C-46 contractors are more likely to work on residential projects than commercial projects.[85] The recommended 80 kWh threshold will continue to permit C-46 contractors to install BESS at a level that is prevalent among C-46 contractors in the construction business.

Even though BESS is a rapidly growing industry in California, the average size of storage systems in California is declining due to a rapid growth of residential installations,[86] which tend to be smaller. An example of the smaller residential BESS systems is the Tesla Powerwall with a 5.8 kw power rating and 13.5 kWh storage capacity, well below the proposed 80 kWh threshold. Likewise, the LG RESU has a 5 kw power rating and 9.8 kWh storage capacity, below the proposed threshold. These two brands comprise approximately 97% of the residential BESS installed from 2015 to present.[87]

The UC Berkeley Report shows that between 2015-2020, the average rated power of residential BESS installations in California was between 6 and 7 kw.[88] The average

rated power of nonresidential installations was between 91 and 130 kw, far greater than for residential installations.[89]

As it relates to license class, of all solar-paired BESS installations in California, the average rated power of a system installed by a C-46 solar contractor (that did not hold a C-10, A or B) was 5.2 kw between 2015 and 2020 and up to 6.6 kw in 2020, which is within the overall 6-7 kw range commonly found for residential projects reported above, and far less than the overall 91-130 kw average for commercial projects.[90] And focusing more specifically on C-46 residential projects, the average size of a residential BESS installed by a C-46 contractor holding no other license class was between 5.1 kw and 6.6 kw, again within the overall 6-7 kw range commonly found in residential projects.[91] For non-residential projects, the average size of a BESS installed by a C-46 contractor that did not hold a C-10, A or B license class was 12.35 kw, also well below the 91-130 kw overall average for non-residential projects.[92]

The UC Berkeley Report presented its data in kilowatts (kw) only. However, the UC Berkeley raw data includes the kilowatt-hour (kWh) totals. The raw data shows that the average kWh installed by C-46 contractors not holding an A, B, or C-10 license was 17.15 kWh between 2015 and 2020.[93] The raw data shows that the average kWh installed by C-46 contractors not holding an A, B, or C-10 was 19.2 kWh in 2020.[94]

This compares with an average conversion rate from kw to kWh. The kw power of a BESS can generally be multiplied by 2.7 to convert to a reasonable correlating kWh capacity.[95] Using this calculation method, the kw data above can be presented in kWh for C-46 contractors that do not hold a C-10, A or B license for all solar-paired BESS projects, as follows:

- The average capacity was 14.04 kWh between 2015 and 2020 and 17.82 kWh in 2020.
- The average capacity for residential projects was 15.79 kWh and for non-residential projects was 33.34 kWh.

By either measure, the data demonstrates that C-46 contractors that hold no A, B, or C-10 license perform BESS installations within an 80 kWh threshold. The raw UC Berkeley data shows capacities between 17 and 19 kWh, and the average shows capacities between 14 and 34 kWh. Both measures support the conclusion that the average kWh capacity of a BESS installed by a C-46 in residential and nonresidential applications in California is well within 80 kWh and that threshold covers the projects prevalent in the C-46 construction business (for a C-46 that does not hold a C-10, A or B).

e. An 80 kWh threshold is supported in the Title 24 Codes because it is the maximum allowable capacity that can be installed at common residential locations, and establishing a uniform threshold does not diminish applicable safety standards and will ease compliance and enforcement.

The Title 24 Codes provide several variations in the type of BESS installations that can be performed at different kHw capacities in compliance with codes, standards and regulations. Generally speaking, 80 kWh is the maximum kWh of a BESS allowed in one location by the Residential Code and in specified residential occupancies in the Fire Code, within attached or detached garages and detached accessory structures, on exterior walls, or outdoors on the ground.[96]

Installations above this standard can be subject to more rigorous safety standards because they present greater risks.[97] Since C-46 contractors that do not hold a C-10, A or B license typically install BESS within an 80 kWh threshold, in sizes more commonly found in residential applications, this report recommends that the Board consider establishing in regulation an 80 kWh standard, beyond which C-46 contractors may not install BESS.

Establishing a uniform 80 kWh standard will also assist licensees with complying with the regulations, and assist the Board in enforcing them.[98] A variable threshold, on the other hand, based on the different variable standards present in the codes, would make it difficult to define in regulation every possible scenario under which a C-46 contractor may install BESS, and could become out-of-date at each code revision cycle.

Here are the examples of some possible installations for a BESS in the Residential Code or Fire Code that would make it difficult to account for all the scenarios in a CSLB regulation:

- An individual BESS unit shall have a maximum energy rating of 20 kWh.[99]
- The 20 kWh requirement applies to battery size in nonresidential[100] and residential occupancies, as follows: every detached one- and two-family dwelling and townhouse three stories or less[101] and to residential R-3 and R-4 occupancies[102] (which include occupancies such as day-care homes, lodging houses, boarding houses, and assisted living facilities).
- Multiple individual BESS units of no more than 20 kWh a piece can be installed up to an aggregate total rating of 80 kWh, by locations that are identified in the codes.[103]
- The maximum for each location type is 40 kWh within utility closets and storage or utility spaces; 80 kWh in attached or detached garages and detached accessory structures; 80 kWh on exterior walls; and 80 kWh outdoors on the ground.[104]
- The individual BESS may be separated throughout different locations, or all in one location, as long as the aggregate total for any of the locations is not exceeded.[105]
- The 80 kWh maximum requirement applies to every detached one- and two-family dwelling and townhouse three stories or less and to residential R-3 and R-4 occupancies.[106] However, the Residential Code and Fire Code provide that if the 20 kWh rating is exceeded for an individual BESS, or if any of the aggregate

capacities in any one location is exceeded, more rigorous provisions of the Fire Code apply to the installation.[107]

- In such scenarios, or if the C-46 is installing a BESS in a nonresidential structure, the BESS must be segregated into groups not exceeding 50 kWh.[108]

This report recommends a single 80 kWh threshold, but without regard to occupancy. Both IBEW-NECA and CALSSA stated that they do not believe the BESS determination should be made by considering occupancy,[109] and depending on how a BESS is deployed, a residential application of BESS may be subject to more rigorous Fire Code rules for commercial systems. For example, the installation of multiple BESS in a utility closet and storage or utility space at a residence could be subject to the more rigorous Fire Code rules for nonresidential large scale fire testing.[110] This includes a fire official approval of a special permit based on a hazard mitigation analysis and large-scale fire testing, based on UL 9540A.[111]

A contractor installing BESS would need to comply with the codes and other related safety standards when installing in a residential or non-residential setting. These requirements cover safety-related aspects of BESS technologies and installations, from development to installation and commissioning and then operation, maintenance, and through to decommissioning and even beyond that to any repurposing for a second use.[112] The Electrical Code provides for the practical safeguarding of persons and property from hazards arising from the use of electricity.[113] And the Fire Code establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety and general welfare from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations.[114]

Contractors must also comply with applicable state or local laws relating to the issuance of building permits, and they must adhere to accepted trade standards for good and workmanlike construction in accordance with plans and specifications, with limited exceptions.[115]

These requirements apply irrespective of the contractor classification installing BESS. Consequently, establishing a uniform 80 kWh standard above which C-46 contractors cannot install BESS will not diminish the safety standards applicable to the installation or otherwise increase the risks mitigated by the codes. A uniform standard will aid C-46 licensees in knowing and complying with the standard, aid the Board in enforcing the classification standard, and would eliminate the need to regularly revise the classification each time there is a revision to the building codes.

UNRESOLVED ISSUES

Unresolved issue one: BESS "only" contracts. CALSSA states that if there is a new regulation that precludes C-46 contractors from maintaining or repairing a BESS on a PV system they previously installed, that it would unlawfully impair contracts.[116]

CALSSA also states that for each BESS paired solar PV installation, there is a contract that includes a warranty as a requirement of participating in the state's Self Generation Incentive Program, which provides rebates to consumers for installing BESS.[117] Ten-year installation and equipment warranties are also a required condition of interconnection, meaning that any consumer wishing to connect a storage system to the grid must contract with the installing contractor for such a warranty.[118] These issues should be considered further through the regulatory rulemaking process, if specific contractual or warranty provisions are presented through public comments raising the issues.

Unresolved issue two: **Economic Impact of regulatory limitation on BESS.** The UC Berkeley Report concludes that there will be no adverse economic impacts of precluding the C-46 from BESS.[119] The report finds that C-10 contractors and certified electricians are plentiful and can expand as demand for BESS increases, whether commercial or residential, or rural and urban.[120] The report documents significant savings in project costs in installations by C-46 contractors partly because the portions of the work that may require certified electricians is a small portion of the costs.[121]

Most writings provided by CALSSA, as well as the economic impact provided by UC Berkeley, are predicated on the assumption that C-46s would be precluded from installing BESS *entirely*, which is not what this report recommends. However, the potential impact of regulatory action on the labor workforce of C-10 and C-46 contractors will be a factor in any regulatory action taken on this matter and will require an articulation of the economic impact of the rulemaking.

ENDNOTES

[1] Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of the Government Code. See also, generally November 29, 2021, Contractors State License Board meeting packet, p. 23-24
[2] CSLB regulations are codified in Title 16, Division 8, Articles 1 through 9 of the California Code of Regulations (CCR)
[3] See generally, materials and video for November 7, 2019 Legislative Committee meeting
[4] Evaluation of Alternative Contractor License Requirements for Battery Energy Storage Systems. UC Berkeley Labor Center. July 9, 2021
[5] UC Berkeley Report, p. 95
[6] From July 27, 2021 slide show presentation of UC Berkely report authors at July 27, 2021 Board Meeting.
[7] November 29, 2021 Board Meeting Minutes
[8] B & P Code § 7059 (a); CCR § 831
[9] February 2022 CALSSA Letter, p. 6
[10] January 2022 IBEW-NECA Letter, p. 4
[11] January 2022 IBEW-NECA Letter, p. 2
[12] January 2022 IBEW-NECA Letter, p. 7

[13] March 2022 IBEW-NECA Letter, p. 2
[14] January 2022 IBEW-NECA Letter, p. 16
[15] February 2022 CALSSA Letter, p. 5
[16] February 2022 CALSSA Letter, p. 3
[17] Labor Code § 108.2 (a), (b), & (k)
[18] Labor Code § 108 (c)
[19] November 2021 CALSSA Letter, p. 5
[20] November 2021 CALSSA Letter, p. 4
[21] March 2022 IBEW-NECA Letter, p. 4
[22] CCR § 832.46
[23] B & P Code § 7059 (a); CCR § 831
[24] February 2022 CALSSA Letter, p. 6
[25] February 2022 CALSSA Letter, p. 6
[26] March 2022 IBEW-NECA Letter, p. 1
[27] February 2022 CALSSA Letter, p. 6; January 2002 IBEW-NECA Letter, p. 2
[28] January 2022 IBEW-NECA Letter, p. 2
[29] March 2022 CALSSA Letter, p. 2
[30] March 2022 CALSSA Letter, p. 2-3
[31] March 2022 CALSSA Letter, p. 3
[32] January 2022 IBEW-NECA Letter, p. 11
[33] January 2022 IBEW-NECA Letter, p. 11
[34] See generally CRC § R327, *et seq* and CFC § 1206, *et seq*
[35] UC Berkeley Report, p. 25, Tables 1 and 2
[36] UC Berkeley Report, p. 20, 44
[37] UC Berkeley Report, p. 25, Tables 1 and 2.
[38] See Section d of this report.
[39] UC Berkeley Report, p. 7
[40] UC Berkeley Report, p. 7
[41] UC Berkeley Report, p. 7, 44
[42] UC Berkeley Report, p. 11
[43] November 2021 CALSSA Letter, p. 6
[44] UC Berkeley Report, p. 48-54
[45] UC Berkeley Report, p. 45-46
[46] UC Berkeley Report, p. 45-46
[47] May 2022 SME Meeting
[48] See UC Berkeley report p. 47 and January 2022 IBEW-NECA Letter, p. 8-9
[49] October 2019 CALSSA Letter, p. 15
[50] May 2022 SME Meeting
[51] UL July 2020 Webinar
[52] UL July 2018 Webinar
[53] UL July 2020 Webinar; see CFC §§ 1206.3.1, 1206.11.1; CRC § R327.2
[54] May 2022 SFM Meeting
[55] UL July 2020 Webinar
[56] UL July 2018 Webinar
[57] May 2022 SFM Meeting
[58] See generally C-46 and C-10 occupational analyses

[59] C-46 Occupational Analyses, p. 10
[60] UC Berkeley Report, p. 47
[61] CCR § 832.46
[62] CEC Art. 100
[63] CEC Arts. 690 and 706; CFC, §§ 1204, et seq., 1206, et seq.
[64] UC Berkeley Report, p. 17
[65] UC Berkeley Report, p. 17; see also definition of photovoltaic system in CEC, Arts. 100 and 690, CRC § 202
[66] CEC § 690.1
[67] UC Berkeley Report, p. 74 (emphasis added)
[68] UC Berkeley Report, p. 11
[69] May 2022 SME Meeting
[70] May 2022 SME Meeting
[71] May 2022 SME Meeting
[72] May 2022 SME Meeting
[73] Definitions of panel board, single-phase and three-phase power. Craftsman's Illustrated Dictionary of Construction Terms. Frane, James T. Craftsman Book Company. 1994. Pgs. 236, 319, and 356-357
[74] National Fire Protection Association (NFPA) § 70 (2020) (National Electric Code), Section 706.2, ESS definition.
[75] C-10 Occupational Analysis, p. 30-34
[76] May 2022 SME Meeting
[77] October 2019 CALSSA Letter, p. 15
[78] October 2019 CALSSA Letter, p. 15
[79] October 2019 CALSSA Letter, p. 14
[80] October 2019 CALSSA Letter, p. 14
[81] Ardani, Kristen, et al. "Installed Cost Benchmarks and Deployment Barriers for Residential Solar Photovoltaics with Energy Storage: Q1 2016." National Renewable Energy Laboratory, Rocky Mountain Institute, U.S. Department of Energy. February 2017. P. 13. https://www.nrel.gov/docs/fy17osti/67474.pdf
[82] U.S. Energy Information Administration. Commercial Buildings Energy Consumption Survey. December 2016. https://www.eia.gov/consumption/commercial/data/2012/c&e/cfm/pba4.php
[83] UC Berkeley Report, p. 32 (average of Self-Generation Incentive Program (SGIP) data (2015-2020) and utility interconnection data (2020))
[84] UC Berkely Report, p. 25 (Tables 1 & 2), 31 (finding that a 5 kW / 20 kWh size restriction for C-46 contractors "would basically maintain the status quo"), 32 (Table 5)
[85] C-46 Occupational Analysis, p. 9, finding "C-46 respondents to the occupational analysis survey for the last C-46 examination development showed that 73% of C-46 contractors work was on residential projects, and 21% on commercial projects." Similarly, SGIP data from 2015-2020 showed that C-46 contractors performed 7% of residential installations and a "negligible" percentage (reported as 0%) of commercial installations. (UC Berkeley Report, p. 26.)
[86] UC Berkeley Report, p. 20
[87] UC Berkeley Report, p. 61

[88] UC Berkeley Report, p. 32 (the average of Self-Generation Incentive Program (SGIP) data (2015-2020) and utility interconnection data (2020))
[89] UC Berkeley Report, p. 32 (the average of Self-Generation Incentive Program (SGIP) data (2015-2020) and utility interconnection data (2020))
[90] UC Berkeley Report, p. 25 (2015-2020 SGIP data for the 5.2 kw and 2020 interconnection data for the 6.6 kw)
[91] UC Berkeley Report, p. 32 (either 5.1 kw or 6.6 kw, according to SGIP data between 2015-2020, or 2020 interconnection data respectively, with a combined average of 5.85 kw)
[92] UC Berkeley Report, p. 32 (either 8.4 kw or 16.3 kw, according to SGIP data between 2015-2020, or 2020 interconnection data respectively)
[93] UC Berkeley raw data table, "2015-2021_Weekly Statewide Report_04_12_2021(posted 04_12_21)(SUMMARY4-30-21) 11.30.21"; 2015-onward tab, average of column I (kWh), sorted by C-46, no other license
[94] UC Berkeley raw data table, "2020 Interconnections"; Sheet 6, sorted by C-46 no A, B, or C-10, average of column K, (kWh)
[95] This was extrapolated from a review of the 556 battery energy storage systems on the California Energy Commission solar equipment list for compliance with CEC's Building Efficiency Standards and participation in utility programs (https://solarequipment.energy.ca.gov/Home/EnergyStorage). The average kw power of all 556 systems was 25.85 and the average kWh for all 566 was 69.9, or 2.7 times the kw amount. This was the average for all systems, but the relationship between kw and kWh for the two most common batteries on the residential market was lower. For the Tesla Powerwall, its 13.5 kWh storage capacity was a factor of 2.3 times its 5.8 kw power, and for the LG RESU, its 9.8 kWh storage capacity was a factor of 1.96 times its 5 kw power.
[96] CRC § 327.5; CFC § 1206.11
[97] CFC § 1206.11.4
[98] Ease of compliance and enforcement was among the rationale that IBEW-NECA proposed as a reason to select a kWh threshold. See p. 11 of January 2022 IBEW-NECA Letter
[99] CRC § R327.5, CFC § 1206.1 and Table 1206.1 (Lithium-ion), CFC § 1206.11.4, and Office of the State Fire Marshal, Code Interpretation 21-004, Electrical Energy Storage Systems, March 30, 2022, p. 1.
[100] CFC § 1206.1 and Table 1206.1
[101] CRC § 1.1.3
[102] CFC § 1206.11
[103] CRC § R327.5, CFC § 1206.11.4
[104] CRC § R327.5, CFC § 1206.11.4, and Office of the State Fire Marshal, Code Interpretation 21-004, Electrical Energy Storage Systems, March 30, 2022, p. 1.
[105] May 2022 SFM Meeting; Office of the State Fire Marshal, Code Interpretation 21-004, Electrical Energy Storage Systems, March 30, 2022, p. 1.
[106] CRC § R327.5, CFC § 1206.11.4
[107] CRC § R327.5, CFC § 1206.11.4
[108] CFC § 1206.5.1
[109] January 2022 IBEW-NECA Letter, p. 5 and February 2022 CALSSA Letter, p. 1

[110] CRC § R327.5, CFC § 1206.11.4, in which case CFC §§ 1206.1 through 1206.9 would apply.
[111] CFC § 1206.1.5
[112] U.S. Department of Energy. Energy Storage System Guide for Compliance with Safety Codes and Standards. June 2016. P. 2.2-2.3 https://www.energy.gov/sites/prod/files/2016/08/f33/Energy%20Storage%20System%20Guide%20for%20Compliance%20with%20Safety%20Codes%20and%20Standards%202016.pdf
[113] CEC § 90.1 (A)
[114] CFC § 1.1.2
[115] B & P Code §§ 7090, 7109
[116] November 2021 CALSSA Letter
[117] July 13, 2021 SGIP Handbook, pp. 66-67.
[118] California Public Utilities Commission Decision 16-01-44, Conclusion of Law ¶ 28.
[119] UC Berkeley Report, p. 96
[120] UC Berkeley Report, p. 96
[121] UC Berkeley Report, p. 96

Attachment D – Year-End Organization Charts for Last Four Fiscal Years

Attachment E – *Quarterly and Annual* Performance Measure Reports

Board Name	Performance Measure	Year	Quarter	Month	Date	Target	Complaints Volume	Conviction/ Arrest Volume	Total Volume	Intake Time	Investigation Time	Post Investigation Time	Pre AG Transmittal	Post AG Transmittal	Cycle Time
CSLB	PM1	6/30/2022	Q3	March	3/31/2022	0	1664	96	1760	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q3	March	3/31/2022	10	0	0	1749	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q3	March	3/31/2022	180	0	0	1002	0	0	0	0	0	112
CSLB	PM4	6/30/2022	Q3	March	3/31/2022	540	0	0	65	0	0	0	0	0	795
CSLB	PM7	6/30/2022	Q3	March	3/31/2022	10	0	0	3	0	0	0	0	0	1
CSLB	PM8	6/30/2022	Q3	March	3/31/2022	15	0	0	12	0	0	0	0	0	1
CSLB	PM1	6/30/2022	Q3	February	2/28/2022	0	1442	50	1492	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q3	February	2/28/2022	10	0	0	1482	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q3	February	2/28/2022	180	0	0	844	0	0	0	0	0	109
CSLB	PM4	6/30/2022	Q3	February	2/28/2022	540	0	0	46	0	0	0	0	0	448
CSLB	PM7	6/30/2022	Q3	February	2/28/2022	10	0	0	9	0	0	0	0	0	1
CSLB	PM8	6/30/2022	Q3	February	2/28/2022	15	0	0	4	0	0	0	0	0	1
CSLB	PM1	6/30/2022	Q3	January	1/31/2022	0	1384	32	1416	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q3	January	1/31/2022	10	0	0	1415	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q3	January	1/31/2022	180	0	0	851	0	0	0	0	0	108
CSLB	PM4	6/30/2022	Q3	January	1/31/2022	540	0	0	44	0	0	0	0	0	687
CSLB	PM7	6/30/2022	Q3	January	1/31/2022	10	0	0	7	0	0	0	0	0	1
CSLB	PM8	6/30/2022	Q3	January	1/31/2022	15	0	0	15	0	0	0	0	0	15
CSLB	PM1	6/30/2022	Q2	December	12/30/2021	0	1327	74	1401	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q2	December	12/30/2021	10	0	0	1399	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q2	December	12/30/2021	180	0	0	880	0	0	0	0	0	98
CSLB	PM4	6/30/2022	Q2	December	12/30/2021	540	0	0	74	0	0	0	0	0	665
CSLB	PM7	6/30/2022	Q2	December	12/30/2021	10	0	0	10	0	0	0	0	0	1
CSLB	PM8	6/30/2022	Q2	December	12/30/2021	15	0	0	22	0	0	0	0	0	13
CSLB	PM1	6/30/2022	Q2	November	11/30/2021	0	1275	22	1297	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q2	November	11/30/2021	10	0	0	1283	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q2	November	11/30/2021	180	0	0	885	0	0	0	0	0	93
CSLB	PM4	6/30/2022	Q2	November	11/30/2021	540	0	0	62	0	0	0	0	0	761
CSLB	PM7	6/30/2022	Q2	November	11/30/2021	10	0	0	9	0	0	0	0	0	10
CSLB	PM8	6/30/2022	Q2	November	11/30/2021	15	0	0	10	0	0	0	0	0	15
CSLB	PM1	6/30/2022	Q2	October	10/31/2021	0	1457	96	1553	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q2	October	10/31/2021	10	0	0	1532	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q2	October	10/31/2021	180	0	0	976	0	0	0	0	0	88
CSLB	PM4	6/30/2022	Q2	October	10/31/2021	540	0	0	59	0	0	0	0	0	892
CSLB	PM7	6/30/2022	Q2	October	10/31/2021	10	0	0	6	0	0	0	0	0	2
CSLB	PM8	6/30/2022	Q2	October	10/31/2021	15	0	0	2	0	0	0	0	0	1
CSLB	PM1	6/30/2022	Q1	September	9/30/2021	0	1551	224	1775	0	0	0	0	0	0

CSLB	PM2	6/30/2022	Q1	September	9/30/2021	10	0	0	1757	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q1	September	9/30/2021	180	0	0	937	0	0	0	0	0	96
CSLB	PM4	6/30/2022	Q1	September	9/30/2021	540	0	0	73	0	0	0	0	0	762
CSLB	PM7	6/30/2022	Q1	September	9/30/2021	10	0	0	5	0	0	0	0	0	2
CSLB	PM8	6/30/2022	Q1	September	9/30/2021	15	0	0	9	0	0	0	0	0	1
CSLB	PM1	6/30/2022	Q1	July	7/31/2021	0	1440	36	1476	0	0	0	0	0	0
CSLB	PM2	6/30/2022	Q1	July	7/31/2021	10	0	0	1467	0	0	0	0	0	2
CSLB	PM3	6/30/2022	Q1	July	7/31/2021	180	0	0	890	0	0	0	0	0	97
CSLB	PM4	6/30/2022	Q1	July	7/31/2021	540	0	0	53	0	0	0	0	0	979
CSLB	PM7	6/30/2022	Q1	July	7/31/2021	10	0	0	8	0	0	0	0	0	2
CSLB	PM8	6/30/2022	Q1	July	7/31/2021	15	0	0	7	0	0	0	0	0	1
CSLB	PM1	6/30/2021	Q4	June	6/30/2021	0	1591	32	1623	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q4	June	6/30/2021	10	0	0	1614	0	0	0	0	0	2
CSLB	PM3	6/30/2021	Q4	June	6/30/2021	180	0	0	700	0	0	0	0	0	92
CSLB	PM4	6/30/2021	Q4	June	6/30/2021	540	0	0	34	0	0	0	0	0	843
CSLB	PM7	6/30/2021	Q4	June	6/30/2021	10	0	0	8	0	0	0	0	0	2
CSLB	PM8	6/30/2021	Q4	June	6/30/2021	15	0	0	2	0	0	0	0	0	1
CSLB	PM1	6/30/2021	Q4	May	5/31/2021	0	1268	56	1324	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q4	May	5/31/2021	10	0	0	1322	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q4	May	5/31/2021	180	0	0	663	0	0	0	0	0	98
CSLB	PM4	6/30/2021	Q4	May	5/31/2021	540	0	0	33	0	0	0	0	0	799
CSLB	PM7	6/30/2021	Q4	May	5/31/2021	10	0	0	6	0	0	0	0	0	4
CSLB	PM8	6/30/2021	Q4	May	5/31/2021	15	0	0	3	0	0	0	0	0	1
CSLB	PM1	6/30/2021	Q3	March	3/31/2021	0	1412	55	1467	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q3	March	3/31/2021	10	0	0	1459	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q3	March	3/31/2021	180	0	0	789	0	0	0	0	0	99
CSLB	PM4	6/30/2021	Q3	March	3/31/2021	540	0	0	59	0	0	0	0	0	840
CSLB	PM7	6/30/2021	Q3	March	3/31/2021	10	0	0	12	0	0	0	0	0	3
CSLB	PM8	6/30/2021	Q3	March	3/31/2021	15	0	0	10	0	0	0	0	0	1
CSLB	PM1	6/30/2021	Q3	February	2/28/2021	0	1170	43	1213	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q3	February	2/28/2021	10	0	0	1199	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q3	February	2/28/2021	180	0	0	766	0	0	0	0	0	103
CSLB	PM4	6/30/2021	Q3	February	2/28/2021	540	0	0	62	0	0	0	0	0	834
CSLB	PM7	6/30/2021	Q3	February	2/28/2021	10	0	0	6	0	0	0	0	0	2
CSLB	PM8	6/30/2021	Q3	February	2/28/2021	15	0	0	5	0	0	0	0	0	1
CSLB	PM1	6/30/2021	Q3	January	1/31/2021	0	1071	71	1142	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q3	January	1/31/2021	10	0	0	1135	0	0	0	0	0	4
CSLB	PM3	6/30/2021	Q3	January	1/31/2021	180	0	0	670	0	0	0	0	0	100
CSLB	PM4	6/30/2021	Q3	January	1/31/2021	540	0	0	46	0	0	0	0	0	977
CSLB	PM7	6/30/2021	Q3	January	1/31/2021	10	0	0	17	0	0	0	0	0	1

CSLB	PM8	6/30/2021	Q3	January	1/31/2021	15	0	0	4	0	0	0	0	0	1
CSLB	PM1	6/30/2021	Q2	December	12/31/2020	0	1075	48	1123	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q2	December	12/31/2020	10	0	0	1110	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q2	December	12/31/2020	180	0	0	634	0	0	0	0	0	91
CSLB	PM4	6/30/2021	Q2	December	12/31/2020	540	0	0	73	0	0	0	0	0	1036
CSLB	PM7	6/30/2021	Q2	December	12/31/2020	10	0	0	12	0	0	0	0	0	1
CSLB	PM8	6/30/2021	Q2	December	12/31/2020	15	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2021	Q2	November	11/30/2020	0	1151	49	1200	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q2	November	11/30/2020	10	0	0	1198	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q2	November	11/30/2020	180	0	0	691	0	0	0	0	0	100
CSLB	PM4	6/30/2021	Q2	November	11/30/2020	540	0	0	39	0	0	0	0	0	870
CSLB	PM7	6/30/2021	Q2	November	11/30/2020	10	0	0	13	0	0	0	0	0	1
CSLB	PM8	6/30/2021	Q2	November	11/30/2020	15	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2021	Q2	October	10/31/2020	0	1307	78	1385	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q2	October	10/31/2020	10	0	0	1382	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q2	October	10/31/2020	180	0	0	712	0	0	0	0	0	100
CSLB	PM4	6/30/2021	Q2	October	10/31/2020	540	0	0	43	0	0	0	0	0	795
CSLB	PM7	6/30/2021	Q2	October	10/31/2020	10	0	0	10	0	0	0	0	0	2
CSLB	PM8	6/30/2021	Q2	October	10/31/2020	15	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2021	Q1	September	9/30/2020	0	1221	71	1292	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q1	September	9/30/2020	10	0	0	1286	0	0	0	0	0	3
CSLB	PM3	6/30/2021	Q1	September	9/30/2020	180	0	0	836	0	0	0	0	0	92
CSLB	PM4	6/30/2021	Q1	September	9/30/2020	540	0	0	54	0	0	0	0	0	805
CSLB	PM7	6/30/2021	Q1	September	9/30/2020	10	0	0	8	0	0	0	0	0	2
CSLB	PM8	6/30/2021	Q1	September	9/30/2020	15	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2021	Q1	July	7/31/2020	0	1106	86	1192	0	0	0	0	0	0
CSLB	PM2	6/30/2021	Q1	July	7/31/2020	10	0	0	1185	0	0	0	0	0	4
CSLB	PM3	6/30/2021	Q1	July	7/31/2020	180	0	0	796	0	0	0	0	0	101
CSLB	PM4	6/30/2021	Q1	July	7/31/2020	540	0	0	69	0	0	0	0	0	767
CSLB	PM7	6/30/2021	Q1	July	7/31/2020	10	0	0	3	0	0	0	0	0	2
CSLB	PM8	6/30/2021	Q1	July	7/31/2020	15	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q4	June	6/30/2020	0	1189	15	1204	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q4	June	6/30/2020	10	0	0	1200	0	0	0	0	0	3
CSLB	PM3	6/30/2020	Q4	June	6/30/2020	180	0	0	742	0	0	0	0	0	88
CSLB	PM4	6/30/2020	Q4	June	6/30/2020	540	0	0	68	0	0	0	0	0	876
CSLB	PM7	6/30/2020	Q4	June	6/30/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q4	June	6/30/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q4	April	4/30/2020	0	1223	27	1250	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q4	April	4/30/2020	10	0	0	1248	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q4	April	4/30/2020	180	0	0	924	0	0	0	0	0	83

CSLB	PM4	6/30/2020	Q4	April	4/30/2020	540	0	0	112	0	0	0	0	0	723
CSLB	PM7	6/30/2020	Q4	April	4/30/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q4	April	4/30/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q3	March	3/31/2020	0	1350	55	1405	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q3	March	3/31/2020	10	0	0	1396	0	0	0	0	0	3
CSLB	PM3	6/30/2020	Q3	March	3/31/2020	180	0	0	1087	0	0	0	0	0	81
CSLB	PM4	6/30/2020	Q3	March	3/31/2020	540	0	0	62	0	0	0	0	0	616
CSLB	PM7	6/30/2020	Q3	March	3/31/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q3	March	3/31/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q3	February	2/28/2020	0	1604	73	1677	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q3	February	2/28/2020	10	0	0	1672	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q3	February	2/28/2020	180	0	0	1060	0	0	0	0	0	89
CSLB	PM4	6/30/2020	Q3	February	2/28/2020	540	0	0	116	0	0	0	0	0	763
CSLB	PM7	6/30/2020	Q3	February	2/28/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q3	February	2/28/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q3	January	1/31/2020	0	1519	64	1583	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q3	January	1/31/2020	10	0	0	1580	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q3	January	1/31/2020	180	0	0	972	0	0	0	0	0	90
CSLB	PM4	6/30/2020	Q3	January	1/31/2020	540	0	0	112	0	0	0	0	0	817
CSLB	PM7	6/30/2020	Q3	January	1/31/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q3	January	1/31/2020	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q2	November	11/30/2019	0	1329	61	1390	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q2	November	11/30/2019	10	0	0	1386	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q2	November	11/30/2019	180	0	0	923	0	0	0	0	0	82
CSLB	PM4	6/30/2020	Q2	November	11/30/2019	540	0	0	109	0	0	0	0	0	683
CSLB	PM7	6/30/2020	Q2	November	11/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q2	November	11/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q2	October	10/31/2019	0	1626	75	1701	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q2	October	10/31/2019	10	0	0	1689	0	0	0	0	0	1
CSLB	PM3	6/30/2020	Q2	October	10/31/2019	180	0	0	1050	0	0	0	0	0	86
CSLB	PM4	6/30/2020	Q2	October	10/31/2019	540	0	0	93	0	0	0	0	0	1015
CSLB	PM7	6/30/2020	Q2	October	10/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q2	October	10/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q1	September	9/30/2019	0	1605	55	1660	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q1	September	9/30/2019	10	0	0	1645	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q1	September	9/30/2019	180	0	0	1042	0	0	0	0	0	85
CSLB	PM4	6/30/2020	Q1	September	9/30/2019	540	0	0	70	0	0	0	0	0	991
CSLB	PM7	6/30/2020	Q1	September	9/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q1	September	9/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q1	August	8/31/2019	0	1516	64	1580	0	0	0	0	0	0

CSLB	PM2	6/30/2020	Q1	August	8/31/2019	10	0	0	1577	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q1	August	8/31/2019	180	0	0	1045	0	0	0	0	0	88
CSLB	PM4	6/30/2020	Q1	August	8/31/2019	540	0	0	84	0	0	0	0	0	918
CSLB	PM7	6/30/2020	Q1	August	8/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q1	August	8/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2020	Q1	July	7/31/2019	0	1551	66	1617	0	0	0	0	0	0
CSLB	PM2	6/30/2020	Q1	July	7/31/2019	10	0	0	1608	0	0	0	0	0	2
CSLB	PM3	6/30/2020	Q1	July	7/31/2019	180	0	0	1072	0	0	0	0	0	82
CSLB	PM4	6/30/2020	Q1	July	7/31/2019	540	0	0	68	0	0	0	0	0	793
CSLB	PM7	6/30/2020	Q1	July	7/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2020	Q1	July	7/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q4	June	6/30/2019	0	1722	78	1800	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q4	June	6/30/2019	10	0	0	1784	0	0	0	0	0	1
CSLB	PM3	6/30/2019	Q4	June	6/30/2019	180	0	0	1088	0	0	0	0	0	84
CSLB	PM4	6/30/2019	Q4	June	6/30/2019	540	0	0	102	0	0	0	0	0	773
CSLB	PM7	6/30/2019	Q4	June	6/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q4	June	6/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q4	May	5/31/2019	0	1705	86	1791	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q4	May	5/31/2019	10	0	0	1787	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q4	May	5/31/2019	180	0	0	1106	0	0	0	0	0	83
CSLB	PM4	6/30/2019	Q4	May	5/31/2019	540	0	0	130	0	0	0	0	0	761
CSLB	PM7	6/30/2019	Q4	May	5/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q4	May	5/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q4	April	4/30/2019	0	1642	86	1728	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q4	April	4/30/2019	10	0	0	1717	0	0	0	0	0	1
CSLB	PM3	6/30/2019	Q4	April	4/30/2019	180	0	0	1073	0	0	0	0	0	79
CSLB	PM4	6/30/2019	Q4	April	4/30/2019	540	0	0	129	0	0	0	0	0	928
CSLB	PM7	6/30/2019	Q4	April	4/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q4	April	4/30/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q3	March	3/31/2019	0	1616	91	1707	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q3	March	3/31/2019	10	0	0	1702	0	0	0	0	0	1
CSLB	PM3	6/30/2019	Q3	March	3/31/2019	180	0	0	1072	0	0	0	0	0	83
CSLB	PM4	6/30/2019	Q3	March	3/31/2019	540	0	0	133	0	0	0	0	0	871
CSLB	PM7	6/30/2019	Q3	March	3/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q3	March	3/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q3	February	2/28/2019	0	1638	33	1671	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q3	February	2/28/2019	10	0	0	1662	0	0	0	0	0	1
CSLB	PM3	6/30/2019	Q3	February	2/28/2019	180	0	0	995	0	0	0	0	0	85
CSLB	PM4	6/30/2019	Q3	February	2/28/2019	540	0	0	156	0	0	0	0	0	887
CSLB	PM7	6/30/2019	Q3	February	2/28/2019	0	0	0	0	0	0	0	0	0	0

CSLB	PM8	6/30/2019	Q3	February	2/28/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q3	January	1/31/2019	0	1661	41	1702	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q3	January	1/31/2019	10	0	0	1696	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q3	January	1/31/2019	180	0	0	981	0	0	0	0	0	82
CSLB	PM4	6/30/2019	Q3	January	1/31/2019	540	0	0	77	0	0	0	0	0	765
CSLB	PM7	6/30/2019	Q3	January	1/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q3	January	1/31/2019	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q2	December	12/31/2018	0	1228	72	1300	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q2	December	12/31/2018	10	0	0	1294	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q2	December	12/31/2018	180	0	0	920	0	0	0	0	0	83
CSLB	PM4	6/30/2019	Q2	December	12/31/2018	540	0	0	112	0	0	0	0	0	850
CSLB	PM7	6/30/2019	Q2	December	12/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q2	December	12/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q2	November	11/30/2018	0	1367	29	1396	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q2	November	11/30/2018	10	0	0	1391	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q2	November	11/30/2018	180	0	0	878	0	0	0	0	0	83
CSLB	PM4	6/30/2019	Q2	November	11/30/2018	540	0	0	67	0	0	0	0	0	887
CSLB	PM7	6/30/2019	Q2	November	11/30/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q2	November	11/30/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q2	October	10/31/2018	0	1791	86	1877	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q2	October	10/31/2018	10	0	0	1863	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q2	October	10/31/2018	180	0	0	1135	0	0	0	0	0	80
CSLB	PM4	6/30/2019	Q2	October	10/31/2018	540	0	0	107	0	0	0	0	0	818
CSLB	PM7	6/30/2019	Q2	October	10/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q2	October	10/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q1	September	9/30/2018	0	1600	82	1682	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q1	September	9/30/2018	10	0	0	1680	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q1	September	9/30/2018	180	0	0	1087	0	0	0	0	0	83
CSLB	PM4	6/30/2019	Q1	September	9/30/2018	540	0	0	127	0	0	0	0	0	793
CSLB	PM7	6/30/2019	Q1	September	9/30/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q1	September	9/30/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q1	August	8/31/2018	0	1709	63	1772	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q1	August	8/31/2018	10	0	0	1768	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q1	August	8/31/2018	180	0	0	1034	0	0	0	0	0	90
CSLB	PM4	6/30/2019	Q1	August	8/31/2018	540	0	0	62	0	0	0	0	0	885
CSLB	PM7	6/30/2019	Q1	August	8/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q1	August	8/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM1	6/30/2019	Q1	July	7/31/2018	0	1646	77	1723	0	0	0	0	0	0
CSLB	PM2	6/30/2019	Q1	July	7/31/2018	10	0	0	1709	0	0	0	0	0	2
CSLB	PM3	6/30/2019	Q1	July	7/31/2018	180	0	0	1096	0	0	0	0	0	82

CSLB	PM4	6/30/2019	Q1	July	7/31/2018	540	0	0	75	0	0	0	0	0	780
CSLB	PM7	6/30/2019	Q1	July	7/31/2018	0	0	0	0	0	0	0	0	0	0
CSLB	PM8	6/30/2019	Q1	July	7/31/2018	0	0	0	0	0	0	0	0	0	0

Fiscal Year Ending	DCA Entity	License Type	License Population	Applications Received	License Issued	License Renewed
6/30/2021	Contractors State License Board	Home Improvement Salesperson Registration	22814	11653	6545	6673
6/30/2021	Contractors State License Board	Original Contractors License	286044	22190	13082	125671
6/30/2020	Contractors State License Board	Home Improvement Salesperson Registration	20597	9681	5822	4742
6/30/2020	Contractors State License Board	Original Contractors License	285550	21401	13568	114603
6/30/2019	Contractors State License Board	Home Improvement Salesperson Registration	19213	10549	6013	4683
6/30/2019	Contractors State License Board	Original Contractors License	288805	24648	16818	116348
6/30/2018	Contractors State License Board	Home Improvement Salesperson Registration	17562	9371	5203	3962
6/30/2018	Contractors State License Board	Original Contractors License	288954	22857	15320	117377

Fiscal Year	DCA Entity	License Type	Application Type	Target Cycle Time Complete Applications	Volume Complete Applications	Cycle Time Complete Applications	Volume Incomplete Applications	Cycle Time Incomplete Applications
6/30/2021	CSLB	Contractor	Contractor Original Exam Application (Received to Posted)	60	5208	60	4408	109
6/30/2021	CSLB	Contractor	Contractor Original License Issuance (Received to Issuance)	175	1396	186	1067	218
6/30/2021	CSLB	Contractor	Contractor Original Waiver Application (Received to Posted)	50	3010	40	2925	70
6/30/2021	CSLB	Contractor	Contractor Original Waiver License Issuance (Received to Issuance)	65	2234	80	2143	109
6/30/2021	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Application (Received to Posted)	30	8255	28	961	65
6/30/2021	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Issuance (Received to Issuance)	30	4773	55	731	80
6/30/2020	CSLB	Contractor	Contractor Original Exam Application (Received to Posted)	60	5640	30	5321	77
6/30/2020	CSLB	Contractor	Contractor Original License Issuance (Received to Issuance)	175	2003	124	1842	157
6/30/2020	CSLB	Contractor	Contractor Original Waiver Application (Received to Posted)	50	2870	24	4151	52
6/30/2020	CSLB	Contractor	Contractor Original Waiver License Issuance (Received to Issuance)	65	2403	64	3244	91
6/30/2020	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Application (Received to Posted)	30	8123	14	681	42
6/30/2020	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Issuance (Received to Issuance)	30	5061	52	595	73
6/30/2019	CSLB	Contractor	Contractor Original Exam Application (Received to Posted)	60	5046	19	6215	63
6/30/2019	CSLB	Contractor	Contractor Original License Issuance (Received to Issuance)	175	2343	104	2700	140
6/30/2019	CSLB	Contractor	Contractor Original Waiver Application (Received to Posted)	50	2926	11	5284	35

Fiscal Year	DCA Entity	License Type	Application Type	Target Cycle Time Complete Applications	Volume Complete Applications	Cycle Time Complete Applications	Volume Incomplete Applications	Cycle Time Incomplete Applications
6/30/2019	CSLB	Contractor	Contractor Original Waiver License Issuance (Received to Issuance)	65	2450	49	3994	74
6/30/2019	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Application (Received to Posted)	30	8584	10	796	47
6/30/2019	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Issuance (Received to Issuance)	30	5072	43	595	63
6/30/2018	CSLB	Contractor	Contractor Original Exam Application (Received to Posted)	60	5748	33	6644	77
6/30/2018	CSLB	Contractor	Contractor Original License Issuance (Received to Issuance)	175	3610	135	3996	169
6/30/2018	CSLB	Contractor	Contractor Original Waiver Application (Received to Posted)	50	3564	20	4628	49
6/30/2018	CSLB	Contractor	Contractor Original Waiver License Issuance (Received to Issuance)	65	3157	63	3971	94
6/30/2018	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Application (Received to Posted)	30	8014	11	532	59
6/30/2018	CSLB	Home Improvement Salesperson (HIS)	HIS Registration Issuance (Received to Issuance)	30	4847	48	424	78

Fiscal Year	Year	Quarter	Month	Date	DCA Entity	License Type Code	License Type	Transaction Code	Application Type	Target Cycle Time Complete Applications	Volume Complete Applications	Cycle Time Complete Applications	Volume Incomplete Applications	Cycle Time Incomplete Applications	Volume Renewal Applications	Cycle Time Renewal Applications
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Home Improvement Salesperson	N/A	HIS Registration Application□ (Received to Posted)	30	872	47	58	74	0	0
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Home Improvement Salesperson	N/A	HIS Registration Issuance□ (Received to Issuance)	30	477	69	42	93	0	0
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Home Improvement Salesperson	N/A	Renewal Application	30	0	0	0	0	571	9
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Home Improvement Salesperson	N/A	HIS Registration Application□ (Received to Posted)	30	466	26	79	69	0	0
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Home Improvement Salesperson	N/A	HIS Registration Issuance□ (Received to Issuance)	30	447	59	66	88	0	0
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Home Improvement Salesperson	N/A	Renewal Application	30	0	0	0	0	538	9
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Home Improvement Salesperson	N/A	HIS Registration Application□ (Received to Posted)	30	802	24	88	61	0	0
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Home Improvement Salesperson	N/A	HIS Registration Issuance (Received to Issuance)	30	653	59	69	83	0	0
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Home Improvement Salesperson	N/A	Renewal Application	30	0	0	0	0	571	10
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Exam Application□ (Received to Posted)	60	795	54	531	109	0	0
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original License Issuance (Received to Issuance)	175	430	203	453	304	0	0
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Waiver Application□ (Received to Posted)	50	267	42	288	82	0	0
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Waiver License Issuance (Received to Issuance)	65	249	89	286	136	0	0
6/30/2022	2022	Q2	December	12/31/2021	CSLB	N/A	Original Contractors License	N/A	Renewal Application	30	0	0	0	0	10694	12
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Exam Application (Received to Posted)	60	520	57	559	114	0	0
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original License Issuance (Received to Issuance)	175	399	206	392	304	0	0
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Waiver Application (Received to Posted)	50	205	30	274	69	0	0
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Waiver License Issuance (Received to Issuance)	65	285	72	264	122	0	0
6/30/2022	2022	Q2	November	11/30/2021	CSLB	N/A	Original Contractors License	N/A	Renewal Application	30	0	0	0	0	8737	15
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Exam Application (Received to Posted)	60	716	52	536	114	0	0

Fiscal Year	Year	Quarter	Month	Date	DCA Entity	License Type Code	License Type	Transaction Code	Application Type	Target Cycle Time Complete Applications	Volume Complete Applications	Cycle Time Complete Applications	Volume Incomplete Applications	Cycle Time Incomplete Applications	Volume Renewal Applications	Cycle Time Renewal Applications
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original License Issuance (Received to Issuance)	175	441	203	437	276	0	0
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Waiver Application (Received to Posted)	50	348	24	298	68	0	0
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Original Contractors License	N/A	Contractor Original Waiver License Issuance (Received to Issuance)	65	302	80	258	118	0	0
6/30/2022	2022	Q2	October	10/31/2021	CSLB	N/A	Original Contractors License	N/A	Renewal Application	30	0	0	0	0	8112	14

Attachment F – Customer Satisfaction Surveys

Customer Satisfaction Survey

The CSLB issues customer satisfaction surveys to applicants for licensure and to consumers who file complaints against contractors. The results of each are provided below by fiscal year with a short discussion.

APPLICANT SURVEYS

The CSLB Licensing Division began surveying applicants for licensure in March 2020, to coincide with transitions to services online, efforts which started prior to the COVID-19 pandemic, and were greatly accelerated thereafter. The online survey is extended to every individual who has recently received their license with the Board to assess the applicant's satisfaction with the licensure process. The surveys are sent at the beginning of each month and licensees are given a month to respond to questions designed to assess various aspects of the licensure process. Question 9 was added in November of 2022.

To date, the responses have indicated relatively high levels of agreement. CSLB is pleased to report that most applicants routinely agree they were treated courteously by CSLB's representatives. Most applicants responded that they prefer an online application process, which is helpful to CSLB's ongoing efforts to transition application and license maintenance services entirely online.

Question 1: Was the licensure process easy to understand?

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Yes	1,204	87%	1,630	87%	1,198	82%
No	180	13%	239	13%	257	18%
No Response	10	-	7	-	6	-
Total	1,394	100%	1,876	100%	1,461	100%

Question 2: Was the licensure process timeframe acceptable?

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Yes	1,023	74%	1,387	74%	1,076	74%
No	363	26%	478	26%	378	26%
No Response	8	-	11	-	7	-
Total	1,394	100%	1,876	100%	1,461	100%

Question 3: I would prefer to use an online application process.

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Agree	916	66%	1234	66%	940	64%
Somewhat Agree	144	10%	197	11%	167	11%
Neutral	247	18%	353	19%	274	19%
Somewhat Disagree	38	3%	32	2%	31	2%
Disagree	45	3%	59	3%	47	3%
No Response	4	-	1	-	2	-
Total	1,394	100%	1,876	101%	1,461	99%

Question 4: I received timely communication from CSLB.

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Agree	762	55%	1013	54%	734	50%
Somewhat Agree	269	19%	325	17%	252	17%
Neutral	131	9%	241	13%	159	11%
Somewhat Disagree	108	8%	139	7%	123	8%
Disagree	123	9%	155	8%	188	13%
No Response	1	-	3	-	5	-
Total	1,394	100%	1,876	99%	1,461	99%

Question 5: I was treated courteously by CSLB's representatives.

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Agree	1181	85%	1587	85%	1156	79%
Somewhat Agree	93	7%	122	7%	110	8%
Neutral	68	5%	91	5%	117	8%
Somewhat Disagree	17	1%	35	2%	33	2%
Disagree	30	2%	35	2%	39	3%
No Response	5	-	6	-	6	-
Total	1,394	100%	1,876	101%	1,416	100%

Question 6: I am satisfied with the bond and fee process.

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Agree	1003	72%	1394	74%	965	66%
Somewhat Agree	182	13%	201	11%	229	16%
Neutral	128	9%	170	9%	144	10%
Somewhat Disagree	41	3%	61	3%	57	4%
Disagree	38	3%	46	2%	59	4%
No Response	2	-	4	-	7	-
Total	1,394	100%	1,876	99%	1,461	100%

Question 7: I am satisfied with the online Asbestos Open Book Examination process.

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Agree	1100	80%	1573	85%	1185	82%
Somewhat Agree	72	5%	85	5%	62	4%
Neutral	182	13%	177	10%	172	12%
Somewhat Disagree	7	1%	8	0%	9	1%
Disagree	6	0%	7	0%	12	1%
No Response	27	-	26	-	21	-
Total	1,394	99%	1,876	100%	1,461	100%

Question 8: I am satisfied with the service provided by CSLB.

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Agree	1032	74%	1391	74%	989	68%
Somewhat Agree	162	12%	230	12%	185	13%
Neutral	96	7%	109	6%	113	8%
Somewhat Disagree	52	4%	68	4%	77	5%
Disagree	51	4%	75	4%	88	6%
No Response	1	-	3	-	9	-
Total	1,394	101%	1,876	100%	1,461	100%

Question 9: Did you attend a school, college, or classes in order to prepare or take the Trade Exam and/or Law and Business Exam? (CSLB is not affiliated with any schools or colleges.)

Rating	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Yes	n/a	n/a	738	61%	855	59%
No			475	39%	589	41%
No Response			16	-	17	-
Total			1,229	100%	1,461	100%

CONSUMER COMPLAINANT SURVEYS

The Consumer Satisfaction Survey Report is issued to individuals who have filed complaints with the CSLB Enforcement Division against licensed or unlicensed contractors. The report measures consumer satisfaction for complaints closed in the fiscal year indicated. The complaints are sent monthly by email to all consumers who provided an email address with their complaint.

The Board is extremely concerned by the decrease in customer satisfaction over the past several years. The number of survey respondents who strongly agreed with the prompts below has decreased an average of over 8 percent between July 2017 and June 2023, which directly corresponds to an over 8 percent average increase in the number of survey respondents who strongly disagreed with the prompt in this same time. The largest decrease in satisfaction is in the areas of prompt contact by CSLB (question 1), CSLB clearly explaining the process (question 2), courteous treatment by CSLB (question 4), CSLB's timely processing of the complaint (question 5) and agreement with CSLB's action taken on the complaint (question 7).

CSLB believes the decrease in satisfaction is the result of a combination of factors that developed throughout the reporting period. In FYs 2019/20 and 2020/21, CSLB faced budget challenges that restricted the use of the CSLB industry expert and arbitration programs. Enforcement staff production decreased with the onset of COVID stay at home orders with a corresponding decrease in consumer field visits and inspections. Finally, between FY 2018/19 and 2022/23, CSLB witnessed a 176 percent increase in solar complaints. This results in at least 200 complaints a month that CSLB's Intake and Mediation Centers are not staffed to handle. As of November 1, 2023, CSLB has more than 900 open solar complaints which constituents more than 2 percent of all CSLB open complaints.

CSLB has taken the following steps to address these issues. First, the budget challenges have been resolved and staff production has stabilized with a hybrid workforce that includes field workdays. At the Board's November 29, 2023, Enforcement Committee meeting, staff announced development of the new multiple solar offender unit. The unit is designed to target the solar contractors with the most open complaints, assign all the complaints against a single contractor to a single investigator, and take swift, aggressive action to persuade the contractor to resolve pending complaints, and implement business practices that address their customer complaints before their customer finds a need to file a CSLB complaint.

Question 1: The CSLB contacted me promptly after I filed my complaint.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	523	38%	485	37%	445	34%	355	28%	350	30%	372	28%
Agree	430	31%	435	33%	382	29%	360	28%	325	28%	337	26%
Mildly Agree	124	9%	114	9%	124	9%	143	11%	120	10%	139	11%
Neutral	64	5%	57	4%	75	6%	90	7%	68	6%	91	7%
Mildly Disagree	56	4%	47	4%	63	5%	77	6%	56	5%	75	6%
Disagree	92	7%	74	6%	94	7%	95	7%	97	8%	125	9%
Strongly Disagree	77	6%	98	7%	125	10%	155	12%	164	14%	181	14%
Number of Responses	1,366	100%	1,310	100%	1,308	100%	1,275	99%	1,180	101%	1,320	101%
No Response	7	--	3	--	7	--	1	--	4	--	2	--

Question 2: The procedures for investigating my complaint were clearly explained to me.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	516	38%	459	35%	421	32%	369	29%	347	29%	373	28%
Agree	368	27%	388	30%	353	27%	338	27%	327	28%	336	25%
Mildly Agree	137	10%	126	10%	137	10%	123	10%	131	11%	119	9%
Neutral	102	7%	96	7%	100	8%	108	8%	81	7%	102	8%
Mildly Disagree	72	5%	58	4%	66	5%	77	6%	59	5%	71	5%
Disagree	56	4%	74	6%	97	7%	99	8%	99	8%	118	9%
Strongly Disagree	116	8%	110	8%	135	10%	159	12%	134	11%	201	15%
Number of Responses	1,367	99%	1,311	100%	1,309	99%	1,273	100%	1,178	99%	1,320	99%
No Response	6	--	2	--	6	--	3	--	6	--	2	--

Question 3: The CSLB kept me informed of my case's progress during the investigation.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	443	33%	424	32%	377	29%	326	26%	327	28%	333	25%
Agree	344	25%	322	25%	293	22%	269	21%	262	22%	252	19%
Mildly Agree	142	10%	124	9%	135	10%	119	9%	118	10%	130	10%
Neutral	87	6%	109	8%	104	8%	125	10%	82	7%	105	8%
Mildly Disagree	89	7%	70	5%	82	6%	84	7%	59	5%	88	7%
Disagree	108	8%	115	9%	126	10%	134	11%	117	10%	150	11%
Strongly Disagree	149	11%	146	11%	187	14%	211	17%	212	18%	258	20%
Number of Responses	1,362	100%	1,310	99%	1,304	99%	1,268	101%	1,177	100%	1,316	100%
No Response	11	--	3	--	11	--	8	--	7	--	6	--

Question 4: I was treated courteously by the CSLB's representative(s).

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	806	59%	752	57%	707	54%	640	51%	628	53%	616	47%
Agree	324	24%	316	24%	319	24%	298	24%	268	23%	320	24%
Mildly Agree	51	4%	36	3%	55	4%	40	3%	52	4%	53	4%
Neutral	67	5%	87	7%	91	7%	134	11%	96	8%	129	10%
Mildly Disagree	23	2%	25	2%	29	2%	26	2%	21	2%	46	3%
Disagree	34	2%	28	2%	32	2%	41	3%	33	3%	43	3%
Strongly Disagree	59	4%	66	5%	73	6%	83	7%	77	7%	112	8%
Number of Responses	1,364	100%	1,310	100%	1,306	99%	1,262	101%	1,175	100%	1,319	99%
No Response	9	--	3	--	9	--	14	--	9	--	3	--

Question 5: My complaint was processed in a timely manner.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	480	35%	450	35%	383	29%	327	26%	311	26%	325	25%
Agree	285	21%	298	23%	273	21%	263	21%	232	20%	238	18%
Mildly Agree	138	10%	100	8%	109	8%	103	8%	92	8%	102	8%
Neutral	93	7%	101	8%	97	7%	125	10%	96	8%	116	9%
Mildly Disagree	64	5%	66	5%	80	6%	62	5%	64	5%	87	7%
Disagree	110	8%	107	8%	108	8%	119	9%	110	9%	134	10%
Strongly Disagree	192	14%	181	14%	249	19%	265	21%	269	23%	314	24%
Number of Responses	1,362	100%	1,303	101%	1,299	98%	1,264	100%	1,174	99%	1,316	101%
No Response	11	--	10	--	16	--	12	--	10	--	6	--

Question 6: I understand the outcome of the investigation (whether or not I agree with the action taken).

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	544	40%	500	39%	461	35%	400	32%	409	35%	428	33%
Agree	325	24%	332	26%	300	23%	291	23%	260	22%	285	22%
Mildly Agree	68	5%	77	6%	63	5%	49	4%	47	4%	58	4%
Neutral	103	8%	103	8%	105	8%	129	10%	116	10%	103	8%
Mildly Disagree	42	3%	43	3%	49	4%	39	3%	51	4%	57	4%
Disagree	84	6%	74	6%	84	6%	81	6%	71	6%	96	7%
Strongly Disagree	185	14%	166	13%	239	18%	269	21%	214	18%	282	22%
Number of Responses	1,351	100%	1,295	101%	1,301	99%	1,258	99%	1,168	99%	1,309	100%
No Response	22	--	18	--	14	--	18	--	16	--	13	--

Question 7: The action taken on my complaint was appropriate.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	496	37%	443	34%	392	30%	349	28%	349	30%	374	29%
Agree	202	15%	217	17%	202	16%	184	15%	176	15%	173	13%
Mildly Agree	57	4%	50	4%	67	5%	49	4%	51	4%	67	5%
Neutral	131	10%	128	10%	125	10%	138	11%	121	10%	129	10%
Mildly Disagree	67	5%	53	4%	46	4%	46	4%	48	4%	47	4%
Disagree	120	9%	113	9%	106	8%	113	9%	107	9%	105	8%
Strongly Disagree	275	20%	291	22%	360	28%	375	30%	314	27%	415	32%
Number of Responses	1,348	100%	1,295	100%	1,298	101%	1,254	101%	1,166	99%	1,310	101%
No Response	25	--	18	--	17	--	22	--	18	--	12	--

Question 8: I am satisfied with the service provided by the CSLB.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Strongly Agree	524	39%	508	39%	446	34%	391	31%	399	34%	405	31%
Agree	249	18%	220	17%	223	17%	189	15%	191	16%	180	14%
Mildly Agree	73	5%	66	5%	69	5%	55	4%	43	4%	69	5%
Neutral	104	8%	90	7%	88	7%	114	9%	80	7%	94	7%
Mildly Disagree	51	4%	54	4%	47	4%	58	5%	48	4%	46	4%
Disagree	97	7%	93	7%	110	8%	115	9%	109	9%	145	11%
Strongly Disagree	254	19%	270	21%	320	25%	341	27%	305	26%	371	28%
Number of Responses	1,352	100%	1,301	100%	1,303	100%	1,263	100%	1,175	100%	1,310	100%
No Response	21	--	12	--	12	--	13	--	9	--	12	--

Question 9: Before hiring, I inquired about my contractor's license status with CSLB.

Rating	FY 17/18 Total	FY 17/18 %	FY 18/19 Total	FY 18/19 %	FY 19/20 Total	FY 19/20 %	FY 20/21 Total	FY 20/21 %	FY 21/22 Total	FY 21/22 %	FY 22/23 Total	FY 22/23 %
Yes	511	37%	592	45%	602	46%	540	42%	509	43%	584	44%
No	806	59%	681	52%	668	51%	694	54%	630	53%	695	53%
Number of Responses	1,317	100%	1,273	100%	1,270	100%	1,234	99%	1,139	100%	1,279	100%
No Response	56	4%	40	3%	45	3%	42	3%	45	4%	43	3%