



## CONTRACTORS STATE LICENSE BOARD LICENSE EXAMINATION STUDY GUIDE



### SOLAR (C-46)

#### Content of the Examination

The Solar (C-46) Examination is divided into six major sections:

- 1. Planning and Estimating (14%)**
  - Evaluate client needs and site feasibility
  - Design and engineer systems
  - Interpret plans
  - Estimate job costs
- 2. Solar Panel/Collector Installation (17%)**
  - Install roof mount collectors
  - Install ground-mount collectors
  - Make weatherproof penetrations
- 3. Photovoltaic (PV) System Installation and Commissioning (28%)**
  - Install basic PV systems
  - Install energy storage systems (ESS)
  - Interface with the utility grid
  - Install standalone PV systems
  - Label PV components
  - System testing, configuration, and monitoring; educating the client
- 4. Solar Thermal Installation (7%)**
  - Install hot water systems
  - Install pool heating systems
- 5. Service, Operation, and Maintenance (15%)**
  - Evaluate PV systems
  - Evaluate thermal systems
  - Repair and replace components

#### 6. Safety (19%)

- Protect the public from safety hazards
- Identify and correct unsafe working conditions
- Handle hazardous materials

*\*Percentages are approximate\**

---

#### Test Policy

This is a closed-book examination. No reference materials may be used during the examination.

---

#### Test Strategy

This is a multiple-choice examination with four choices per question. Examination questions are written to provide only one BEST answer. Some questions require mathematical computation. A calculator will be provided.

There is no penalty for guessing. If you are unsure about a particular question, it is better to answer the question than to leave the question blank.

Plenty of time is provided to answer all examination questions. Read each question and its four choices completely and carefully before selecting the BEST possible answer.

## Sample Questions

Below are three typical examination questions.  
The correct answer is marked with an asterisk (\*).

1. A PV source circuit is operating at 346 volts DC. If the current output is 8 amps, how much power is being produced by the array?
  - a. 2.77kW\*
  - b. 43kW
  - c. 277W
  - d. 430W
2. As the temperature of a PV module increases, what will happen to the voltage?
  - a. The voltage will increase.
  - b. The voltage will decrease.\*
  - c. The voltage will be unaffected.
  - d. It depends on the module design.
3. If a swimming pool is 20' by 30' and filled to a depth of 8', what is the volume of water to be solar heated?
  - a. 600 cubic yards
  - b. 4,800 cubic yards
  - c. 33,600 gallons
  - d. 35,904 gallons\*

*\*All questions are written and reviewed by licensed contractors who are actively working in the trade\**

## Resources

*Publisher information for reference books and code is provided below. Other sources for reference books may be found online.*

**California code books can be viewed online:**  
**[www.dgs.ca.gov/bsc](http://www.dgs.ca.gov/bsc)**

**2022 California Building Code.** California Code of Regulations, Title 24. International Code Council.

PHONE: (800) 786-4452

INTERNET: [www.iccsafe.org](http://www.iccsafe.org)

**2022 California Electrical Code.**

California Code of Regulations, Title 24. BNI Publications, Inc.

PHONE: (888) 264-2665

INTERNET: [www.bnibooks.com](http://www.bnibooks.com)

**2022 California Energy Code.** California Code of Regulations, Title 24. International Code Council.

PHONE: (800) 786-4452

INTERNET: [www.iccsafe.org](http://www.iccsafe.org)

**2022 California Fire Code.** California Code of Regulations, Title 24. International Code Council.

PHONE: (800) 786-4452

INTERNET: [www.iccsafe.org](http://www.iccsafe.org)

**2022 California Mechanical Code.** California Code of Regulations, Title 24. International Association of Plumbing and Mechanical Officials (IAPMO).

PHONE: (909) 472-4100

INTERNET: [www.iapmo.org](http://www.iapmo.org)

**2022 California Plumbing Code.** California Code of Regulations, Title 24. International Association of Plumbing and Mechanical Officials (IAPMO).

PHONE: (909) 472-4100

INTERNET: [www.iapmo.org](http://www.iapmo.org)

**California Distributed Generation**

**Programs.** Go Solar California.

INTERNET: [www.californiadgstats.ca.gov](http://www.californiadgstats.ca.gov)

**California Solar Initiative.** California Public Utilities Commission.

INTERNET: [www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/california-solar-initiative](http://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/california-solar-initiative)

**Operating Guidelines for Certifying Solar Water Heating Systems (OG-300).** The Solar Rating & Certification Corporation.

PHONE: (888) 422-7233

INTERNET: [www.solar-rating.org](http://www.solar-rating.org)

**Photovoltaic Systems.** American Technical Publishers.

PHONE: (800) 323-3471

INTERNET: [www.atplearning.com](http://www.atplearning.com)

**Solar Hot Water Fundamentals: Siting, Design, and Installation.** 2011. Peter Skinner. E2G Solar.

PHONE: (518) 369-3208

INTERNET: [www.e2gsolar.com/page12.html](http://www.e2gsolar.com/page12.html)

**Solar Programs.** California Energy Commission.

INTERNET: [www.energy.ca.gov/programs-and-topics/programs](http://www.energy.ca.gov/programs-and-topics/programs)

**Solar Research.** National Renewable Energy Laboratory.

INTERNET: [www.nrel.gov/solar](http://www.nrel.gov/solar)

**State of California General Industry & Electrical Safety Orders (Cal/OSHA) and State of California Construction & Electrical Safety Orders (Cal/OSHA). 2023.** California Code of Regulations, Title 8. Mancomm.

PHONE: (877) 626-2666

INTERNET: [www.mancomm.com](http://www.mancomm.com)

VIEW ONLINE:

[www.dir.ca.gov/dosh/LawsAndRegulations.htm](http://www.dir.ca.gov/dosh/LawsAndRegulations.htm)

**Ugly's Electrical References.** Jones & Bartlett Learning.

PHONE: (800) 832-0034

INTERNET: [www.uglys.net](http://www.uglys.net)

**Understanding NEC Req for Solar Photovoltaic Systems, 2020.** Mike Holt Enterprises.

PHONE: (888) 632-2633

INTERNET: [www.mikeholt.com](http://www.mikeholt.com)

**Uniform Solar, Hydronics and Geothermal Code (2021).** International Association of Plumbing and Mechanical Officials (IAPMO).

PHONE: (212) 642-4980

INTERNET:

<https://epubs.iapmo.org/2021/USHGC/>

\* Publisher information is current as of 3/26\*