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## SOLUTIONS

### Course Downloads

Please follow the instructions provided in the registration letter to download the following items to your laptop and/or print copies for class.

- PV Value® User Manual
- Case Study 6 DCF Template
- Commercial/Industrial Solar Worksheet
- AI Residential Green and Energy Efficient Addendum
- AI Commercial Green and Energy Efficient Addendum
- Also, go to [www.appraisalinstitute.org/education/green/default.aspx](http://www.appraisalinstitute.org/education/green/default.aspx) (Click on “More Green Resources” and find additional solar valuation resources.)

# Overview

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## Course Description

Welcome to *Residential and Commercial Valuation of Solar*. This course is appropriate for appraisers, underwriters, appraisal reviewers, real estate agents/brokers, and quality control personnel.

As the U.S. continues to search for energy alternatives, properties improved with solar PV (photovoltaic) are becoming more common, creating demand for appraisers trained in properly valuing solar PV. A property with a solar photovoltaic (PV) system could present a valuation problem that you may not be prepared to solve. As an appraiser of green properties, it is inevitable that you will encounter solar PV. Even for those who don't specialize in green properties, the likelihood that you will encounter solar PV in your practice is increasing. This hands-on course introduces you to solar terminology and, through real-life examples and case studies on both residential and commercial properties, shows you how to solve solar-related valuation problems. This course will focus on solar PV installations most commonly encountered in commercial and residential appraisal/consulting assignments. It will not focus on utility-scale solar (solar farms), solar thermal, or other forms of on-site renewable energy generation.

Upon completion of the course, participants should be able to:

- Comprehend and identify the solar PV language.
- Identify and understand the documents and data necessary to value solar PV systems.
- Describe, understand, and analyze solar PV components and their relevance to market valuation.
- Develop a credible value opinion using the tools, worksheets, and resources provided.
- Recognize potential valuation problems, including appraisal standards and lender-underwriter concerns.

The course begins with terminology and descriptions of the various types of solar energy systems found in today's marketplace. The course downloads include a link to AI Green Resources. Once a basic understanding of the solar industry is established, the material walks through the three approaches to value with mini case studies involving residential and commercial properties. Some case studies are based on real-world examples provided by others. Addresses and identifying information are fictional and, in some cases, details have been changed to provide an expanded understanding of the valuation problem.

This course is one of a series of courses that make up the Appraisal Institute's *Valuation of Sustainable Buildings* Professional Development Program. For more information about the program, see Professional Development Programs on the Appraisal Institute website at [www.appraisalinstitute.org](http://www.appraisalinstitute.org).

**Note.** Residential and Commercial Valuation of Solar is approved by GBCI for 15 CE hours.

## Learning Enhancements

The course has been designed with a variety of elements to enhance your learning experience.

- **Preview.** To give you a taste of what is to come, each part begins with a *Preview* page, which includes a brief overview of the content, learning objectives to consider as you move through the content, and learning tips that will assist you in understanding the information presented.
- **Learning Objectives.** Each learning objective covers essential information needed to understand the concepts in the course. Review them before the part begins so that you have a frame of reference as you move through the material. At the end of each part, reread the objectives. Are you able to do what is stated? If not, this is the time to ask your instructor for help or review the concepts that you do not understand.
- **Examples & Problems.** To supplement the discussions, we've included examples and problems to help you visualize and practice what you are learning.
- **Case Studies.** The case studies in the course contain exercises that allow practical application of the tools and methods needed to appraise solar photovoltaic installations in commercial and residential properties.
- **Green Resources.** Tap a variety of online Green Resources from our website at: [www.appraisalinstitute.org/education/green/default.aspx](http://www.appraisalinstitute.org/education/green/default.aspx). Topics are expanded regularly and include legislation, national and state government sites and programs, databases, design, and solar energy. This free benefit is available only to class participants. Appraisal Institute Designated members, Candidates for Designation, Practicing Affiliates, and Affiliates receive indefinite access; all other class participants are granted two-year admittance.
- **Review.** Each part ends with a review that includes the learning objectives and key terms and concepts covered.
- **Practice Tests.** These tests are included at various points within the materials. The questions are similar to the types of questions you might find on the exam. Answering the questions will help you assess whether or not you have learned the information that was covered.

## Classroom Guidelines

To make the course a positive experience for everyone attending, we have some guidelines for your consideration:

- 100% attendance is required. No exceptions.
- Limit use of computers and wireless devices to classroom projects.
- Communicate with business associates during break time instead of class time.
- Put away reading materials such as newspapers and books that are not used in class.
- Silence cell phones.
- Please do not record the lectures. Recordings are not permitted.
- Refrain from ongoing conversations with those seated near you and other distracting behavior.

## General Information

- **Laptop computer.** This course uses PV Value,<sup>®</sup> a web-based application. Therefore, a smartphone, iPhone, iPad, or laptop computer is required. Excel and Adobe Reader are not required. Government or corporate participants with security measures in place on their laptops may have issues with accessing the web page and should provide their IT department with the hyperlink to receive access. Participants must be able to access the internet on Day 2.
- **Calculators.** A financial calculator is required. The accepted model used in the course is the HP-12C. **Important Note:** Laptops, cellular phones, tablets, iPads, wearable technology (smart watch, Apple Watch, Google Glass, etc.) and other devices that can store data or connect to the Internet are **NOT** permitted during the exam. In addition, all watches, wallets, bags, and purses must be removed and stored out of reach prior to taking the exam.
- **Breaks.** There will be two 10-minute breaks during the morning session and two 10-minute breaks during the afternoon session unless noted otherwise by the course sponsor. The lunch break is one hour.
- **Attendance sheets** will be distributed during class to verify your attendance during the morning and afternoon sessions.
- **Certificates of completion** may be downloaded after completion of the course, and attendance during the entire course is required.

## Prerequisites

- **Recommended:** *Introduction to Green Buildings: Principles & Concepts* (OR prior attendance at one of these previously offered seminars: *An Introduction to Valuing Commercial Green Buildings* seminar OR *Valuation of Green Residential Properties* seminar)
- Intermediate understanding of valuation procedures, particularly present value calculations, depreciation, and market extraction
- Working knowledge of HP-12C calculator. (As mentioned before, cellphones are not permitted during the exam, so the smartphone app for the HP-12C cannot be used for the exam.)
- Prior to the first day, participants must sign up on the PV® Value website ([www.pvvalue.com](http://www.pvvalue.com)) to be able to use the tool in class. Be aware it can take up to 24 hours after registering to receive an e-mail with the login information.

## Downloads

- Additional items and worksheets that are not included in the print materials are available by download. These are on a secure link connected to the registration process.
- These files should be on your hard drive in an easy-to-locate folder. You may also print copies for class, but having the files available electronically will facilitate your work.

## Recommended Text

- *Residential Green Valuation Tools*, Sandra K. Adomatis, SRA, LEED® Green Associate. Appraisal Institute, 2014.
- *The Valuation of Green Commercial Real Estate*, Timothy P. Runde, MAI, LEED AP, and Stacey L. Thoyre, WELL AP. Appraisal Institute, 2017.

## Exam

- 25 multiple-choice questions