



Photovoltaic Systems Training Resource Guide

Contents

Chapter 1: Introduction to Photovoltaic Systems (63 slides)

Solar Technologies • History and Development • Markets and Applications • Industry Sectors

Chapter 2: Solar Radiation (76 slides)

Terminology & Definitions • Geometric & Atmospheric Effects • Solar Power & Energy • Measurements & Data

Chapter 3: Site Surveys and Preplanning (76 slides)

Customer Development • Site Assessment • Locating PV Arrays • Shading Analysis • Project Planning and Preparation

Chapter 4: System Components and Configurations (47 slides)

Major Components • Balance-of-System • System Classifications and Designs

Chapter 5: Cells, Modules and Arrays (71 slides)

Principles of Operation • I-V Characteristics • Response to Irradiance and Temperature • Series/Parallel Connections • Specifications and Ratings

Chapter 6: Batteries (38 slides)

Types and Characteristics • Functions and Features • Specifications and Ratings

Chapter 7: Charge Controllers (37 slides)

Types and Characteristics • Functions and Features • Specifications and Ratings • Sizing

Chapter 8: Inverters (120 slides)

Definitions and Terminology • Types and Applications • Functions and Features • Selection and Sizing • Monitoring and Communications

Chapter 9: System Sizing (33 slides)

Sizing Principles • Interactive vs. Stand-Alone Systems • Calculations and Software Tools

Chapter 10: Mechanical Integration (68 slides)

Design Considerations • Array Mounting Configurations • Structural Loads • Installation

Chapter 11: Electrical Integration (97 slides)

Terminology and Definitions • Circuit Design Requirements • Specifying Electrical Components • Code-Compliant Installation Practices

Chapter 12: Utility Interconnection (66 slides)

Codes and Standards • Utility Considerations • Supply and Load Side Connections • Interconnection Agreements

Chapter 13: Permitting and Inspection (60 slides)

Permit Submittal Guidelines • Plan Review • System Labels • Inspection Checklists

Chapter 14: Commissioning, Maintenance and Troubleshooting (41 slides)

System Commissioning • Maintenance Plans • Diagnostics

Chapter 15: Economic Analysis (27 slides)

Incentives • Value Assessment • Life Cycle Costs Analysis • Financial Tools

Chapter 16: PV System Safety (58 slides)

Hazards and Avoidance • Personal Protective Equipment • Fall Protection • Electrical Safety