

California Interconnection Guidebook

- 1 Introduction
 - 1.1 Purpose
 - 1.2 Structure
 - 1.3 Who Should Use This Guidebook
 - 1.4 How to Use This Guidebook
 - 1.4.1 Who is your local electric utility?
 - 1.4.2 What relationship are you planning with the electric utility?
 - 1.4.2.1 Isolated Operation, Not Interconnected to the Utility [Includes links to utility web sites]
 - 1.4.2.2 Net Energy Metering under Utility Tariffs [Includes links to utility web sites]
 - 1.4.2.3 Export and Sell Power [Includes links to CA ISO, FERC and utility web sites]
 - 1.4.2.4 Interconnected to the Utility, but consume power internally and may incidentally Export Power
 - 1.4.2.5 Interconnected, But Never Export Power
 - 1.5 A Brief Overview of Rule 21
 - 1.5.1 Section A: Applicability
 - 1.5.2 Section B: General Rules, Rights and Obligations
 - 1.5.3 Section C: Generating Facility Application and Interconnection Process
 - 1.5.4 Section D: Generating Facility Design and Operating Requirements
 - 1.5.5 Section E: Interconnection Facility and Distribution System Improvement Ownership and Financing
 - 1.5.6 Section F: Metering, Monitoring and Telemetry
 - 1.5.7 Section G: Dispute Resolution Process
 - 1.5.8 Section H: Definitions
 - 1.5.9 Section I: Review Process for Applications to Interconnect Generating Facilities
 - 1.5.10 Section J: Certification and Testing Criteria
 - 1.5.11 Supplemental Review Guidance [Includes link to document]
- 2 An Overview of the Interconnection Approval Process
 - 2.1 Flowchart of the Rule 21 Approval Process
 - 2.2 Matrix of the Rule 21 Process
 - 2.3 Step-by-Step Description of the Process
 - 2.3.1 Application
 - 2.3.2 Review by the Electric Utility
 - 2.3.3 Interconnection Agreement and Other Agreements
 - 2.3.4 Installation and Commissioning

- 3 Technical Requirements
 - 3.1 Generating Facility Technical Requirements (Section D of Rule 21)
 - 3.1.1 Single Phase Interconnection
 - 3.1.2 Three Phase Interconnection
 - 3.1.3 Inverter-based Power Converters
 - 3.1.4 Synchronous Power Converters
 - 3.1.5 Induction Power Converters
 - 3.2 Certified Equipment
 - 3.2.1 Purpose and Value of Certification
 - 3.2.2 Database of Certified Equipment [Includes links to List of Certified Equipment]
 - 3.2.3 How to Certify Equipment [Includes link to a future document]
- 4 How to Apply for Interconnection
 - 4.1 The Application Form
 - 4.1.1 Where to get it
 - 4.1.2 How it is laid out
 - 4.2 Which parts of the application apply to you
 - 4.3 Design topics
 - 4.4 How to fill out the application form
 - 4.4.1 Required Documents
 - 4.4.1.1 Sample Single-Line Drawings
 - 4.4.2 Initial Information
 - 4.4.3 Describing the Generating Facility and Host Customer's Electrical Facilities
 - 4.4.3.1 Questions A-F
 - 4.4.4 Generator Information
 - 4.4.4.1 Questions A-S
- 5 Electric Utility Review
 - 5.1 The review process
 - This section will discuss, by screen, the following:
 - A. How does the electric utility assess an interconnection?
 - B. What are the electric utility's concerns? (Electric utilities need to protect safety and integrity of the electric distribution grid);
 - C. What can you do to make the electric utility Review easier?
 - 5.1.1 The Initial Review Process Screens (Section J of Rule 21)
 - 5.1.1.1 Screen 1
 - 5.1.1.2 Screen 2
 - 5.1.1.3 Screen 3
 - 5.1.1.4 Screen 4
 - 5.1.1.5 Screen 5
 - 5.1.1.6 Screen 6
 - 5.1.1.7 Screen 7
 - 5.1.1.8 Screen 8
 - 5.1.2 Electric Utility Review Staff [Includes contact names and numbers]

- 5.2 Responding to requests for further information
- 5.3 Possible outcomes of review
 - 5.3.1 Simplified Interconnection
 - 5.3.2 Supplemental Review
 - 5.3.3 Detailed Study

- 6 Interconnection Agreements and Other Agreements
 - 6.1 Contract types
 - 6.1.1 SCE
 - 6.1.2 PG&E
 - 6.1.3 SDG&E
 - 6.2 Which one is right for you?
 - 6.3 Completing the contract

- 7 Installation and Commissioning
 - 7.1 Certified Equipment
 - 7.2 Non-Certified Equipment

- 8 Problem and Dispute Resolution
 - 8.1 What to do if there is a problem
 - 8.2 Informal resolution
 - 8.3 Resolution under Rule 21

- 9 Where to go for more information
[Note: This section will contain web links and addresses for documents only. Besides a description of what the link is, there will be no explanatory text.]
 - 9.1 Links to Basic Information about Distributed Energy Resources
 - 9.1.1 California Energy Commission
 - 9.1.2 U.S. Department of Energy
 - 9.1.3 California Power Authority
 - 9.1.4 Links to SMUD, LADWP and other Municipal Utilities with similar tariffs

 - 9.2 Links to Incentives for Distributed Energy Resources
 - 9.2.1 California Energy Commission
 - 9.2.2 California Public Utilities Commission
 - 9.2.3 PG&E
 - 9.2.4 SCE
 - 9.2.5 SDG&E
 - 9.2.6 Other utilities

 - 9.3 Links to Utility Tariffs for Net Metering, Departing Load Charges, Standby Charges, and other costs associated with Distributed Generation
 - 9.3.1 PG&E Tariffs
 - 9.3.2 SCE Tariffs
 - 9.3.3 SDG&E Tariffs
 - 9.3.4 Other Utilities in California

9.4 Links to National Interconnection and Device Standards and Works in Progress

- 9.4.1 IEEE P1547 (and 929)
- 9.4.2 UL 1741
- 9.4.3 National Electrical Code
- 9.4.3 FERC Proposed Rulemaking

9.5 Links to Metering Information

- 9.5.1 Metering Requirements for Non-Bypassable Charges
- 9.5.2 Metering Requirements for Standby Charges
- 9.5.3 Metering Requirements for Gas Cogeneration Rates
- 9.5.4 Metering Requirements for Self-Generation Incentives
- 9.5.5 Metering Requirements for Net Generation
- 9.5.6 CA ISO Metering Requirements

9.6 Links to Utility Services Offered for Distribution System Modifications and System Upgrades

- 9.6.1 PG&E
- 9.6.2 SCE
- 9.6.3 SDG&E

9.7 Links to Regulation and Legislation Affecting Distributed Energy Resources

- 9.8 If You Have Questions that are Not Answered by this Guidebook