
November 17, 2000

ADVICE 1498-E
(U 338-E)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
ENERGY DIVISION

SUBJECT: Revision to Rule 1, Definitions, Replacement of Existing Rule 21, Generating Facilities Interconnection, and Establishment of Form 14-371, Generating Facility Interconnection Agreement, and Form 14-372, Application To Interconnect A Generating Facility

In compliance with Decision 00-11-001 (D.00-11-001), Southern California Edison Company (SCE) hereby submits for filing the following changes to its tariff schedules. The revised tariff sheets are listed on Attachment A and are attached hereto.

PURPOSE

This advice filing replaces SCE's Rule 21 tariff consistent with the Model Tariff provided in D.00-11-011 as Appendix A, with minor modifications for clarification and to conform with SCE's existing Rules and Tariffs. In addition, this advice filing: (1) revises Rule 1 to expand certain definitions, (2) establishes Form 14-731, Generating Facility Interconnection Agreement, and Form 14-732, Application To Interconnect A Generating Facility.

BACKGROUND

In response to Rulemaking 99-10-025, the California Energy Commission (Energy Commission) initiated a workshop process to consider revisions to the current interconnection rules. Its goal was to simplify and standardize utility interconnection protocols and to develop proposed tariff language that could apply to all distributed generation facilities seeking to interconnect with the utilities. The Energy Commission filed the "Recommendations Regarding Distributed Generation Interconnection Rules" with the California Public Utilities Commission (Commission) on June 27, 2000. A modified version of the Distributed Generation

Interconnection Rules was also filed October 25, 2000. The documents sets forth the Energy Commission's recommendations for changes to existing interconnection rules that are part of utility tariff Rule 21. In D.00-11-001, the utilities are advised to incorporate any modifications in this filing.

The proposed Rule 21, as recommended by the Energy Commission, contains ten sections. Section A governs applicability, followed by the general rules and obligations of both the distributed generation customer and SCE. Sections C and D describe the non-technical and technical considerations for completing an interconnection agreement. Specific technical details on the screening procedures are detailed in the Appendix. Sections E, F, and G address the ownership and operation considerations, as well as procedures for settling disputes. Section H provides a common set of definitions to ensure consistency in the rule language. Section I lays out procedures and a flowchart for determining whether a generating facility is eligible for SCE's simplified interconnection process. Section J provides test procedures to be used for generating facility approval and certification.

The Commission, in D.00-11-001, adopted the Rule 21 language recommended by the Energy Commission on June 27, 2000 with the modification to Section 2.7 or (B.7 in SCE's format) as described below. The Commission also encouraged the utilities to implement consensus procedures recommended by the Energy Commission in the October 25, 2000 Supplemental Recommendation.

2.7 “Confidentiality of Information. Any information pertaining to Generation and/or Interconnection Facilities provided to Electrical Corporation by an Electricity Producer shall be treated by Electrical Corporation in a confidential manner. Electrical Corporation shall not use information contained in the Application to propose discounted tariffs to the customer unless authorized to do so by the customer or the information is provided to Electrical Corporation by the customer through other means.”

The Energy Commission's recommended rule promotes application of consistent interconnection standards across California's utility service territories and provides clear guidance to applicants regarding the standards that must be met for simplified interconnection.

Modifications to the Tariff Model

Pursuant to D.00-11-001, this advice filing replaces SCE's existing Rule 21 in its entirety with the Model Rules which reflect the Commission's recommendations with certain minor modifications as discussed below.

- Section H is modified in order to clarify certain definitions to be more easily understood.
- The phrase “Electrical Corporation” is changed to “SCE.”
- The terms Distributed Generation, Distributed Generator, DG and similar interchangeable terms for a generating facility have been consolidated into the single term “Generating Facility.”
- Various other phrases and text has been revised to make the document more readable.

Further, this advice filing revises Rule 1, Definitions to expand the existing definitions for “Applicant,” “Application,” and “Customer” to include the definition of these terms used in the Model Rule 21. In addition, SCE is establishing Form 14-731, Generating Facility Interconnection Agreement and Form 14-732, Application To Interconnect A Generating Facility.

No cost information is required for this advice filing.

EFFECTIVE DATE

In accordance with D.00-11-001, Ordering Paragraph 1, this advice filing will become effective upon filing, subject to Energy Division determining that the changes are in compliance with the Order.

NOTICE

Anyone wishing to protest this advice filing may do so by letter via U.S. Mail, facsimile, or electronically, any of which must be received no later than 20 days after the date of this advice filing. Protests should be mailed to:

IMC Program Manager
Energy Division
California Public Utilities Commission
505 Van Ness Avenue, Room 4002
San Francisco, California 94102
Facsimile: (415) 703-2200
E-mail: jjr@cpuc.ca.gov

Copies should also be mailed to the attention of the Director, Energy Division, Room 4004 (same address above).

In addition, protests and all other correspondence regarding this advice letter should also be sent by letter and transmitted via facsimile or electronically to the attention of:

Donald A. Fellows
Manager of Revenue and Tariffs
Southern California Edison Company
2244 Walnut Grove Avenue, Rm. 303
Rosemead, California 91770
Facsimile: (626) 302-4829
E-mail: fellowda@sce.com

Bruce Foster
Vice President of Regulatory Operations
Southern California Edison Company
601 Van Ness Avenue, Suite 2040
San Francisco, California 94102
Facsimile: (415) 673-1116
E-mail: fosterbc@sce.com

There are no restrictions on who may file a protest, but the protest shall set forth specifically the grounds upon which it is based and shall be submitted expeditiously.

In accordance with Section III, Paragraph G, of General Order No. 96-A, SCE is mailing copies of this advice filing to the interested parties shown on the attached service list, and R.99-10-025. Address change requests to the attached GO 96-A Service List should be directed to Emelyn Lawler at (626) 302-3985 (Emelyn.Lawler@sce.com), or John Montanye at (626) 302-2308 (John.Montanye@sce.com).

Further, in accordance with Public Utilities Code Section 491, notice to the public is hereby given by filing and keeping the advice filing open for public inspection at SCE's corporate headquarters.

Southern California Edison Company

Donald A. Fellows, Jr.

DAF:eml

Enclosures

Cal. P.U.C. Sheet No.	Title of Sheet	Cancelling Cal. P.U.C. Sheet No.
Revised 27921-E	Rule 1	Revised 22912-E
Revised 27922-E	Rule 1	Revised 22914-E
Original 27923-E	Rule 21	
Original 27924-E	Rule 21	
Original 27925-E	Rule 21	
Original 27926-E	Rule 21	
Original 27927-E	Rule 21	
Original 27928-E	Rule 21	
Original 27929-E	Rule 21	
Original 27930-E	Rule 21	
Original 27931-E	Rule 21	
Original 27932-E	Rule 21	
Original 27933-E	Rule 21	
Original 27934-E	Rule 21	
Original 27935-E	Rule 21	
Original 27936-E	Rule 21	
Original 27937-E	Rule 21	
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Original 27959-E	Rule 21	
Original 27960-E	Rule 21	
Original 27961-E	Rule 21	
Original 27962-E	Rule 21	
Original 27963-E	Rule 21	
Original 27964-E	Rule 21	
Original 27965-E	Rule 21	
Original 27966-E	Rule 21	
Original 27967-E	Rule 21	
Original 27968-E	Rule 21	
Original 27969-E	Rule 21	
Original 27970-E	Rule 21	
Original 27971-E	Rule 21	

Cal. P.U.C. Sheet No.	Title of Sheet	Cancelling Cal. P.U.C. Sheet No.
Original 27972-E	Generating Facility Interconnection Agreement, Form 14-731	
Original 27973-E	Application to Interconnect a Generating Facility, Form 14-732	
Revised 27974-E	Table of Contents	Revised 27909-E
Revised 27975-E	Table of Contents	Revised 27033-E
Revised 27976-E	Table of Contents	Revised 27341-E



Rule 1
DEFINITIONS

Sheet 1

For the purpose of these tariff schedules, the terms and expressions listed below shall have the meanings set forth opposite them:

Aggregator: Any marketer, broker, public agency, city, county, or special district, that combines the loads of multiple End-Use Customers in facilitating the sale and purchase of electric energy, transmission and other services on behalf of these customers.

Agricultural Power Service: Agricultural power service is that portion of electric energy and service used by a person in connection with the production, harvesting, and preparation for market of agricultural and horticultural products, including poultry and livestock, on land owned and/or operated by such person for the production of agricultural products, but does not apply to processing of products raised by others.

Applicant: A person or agency requesting SCE to supply or deliver electric service. Types of Applicants include, but are not limited to, the following:

- a) **Direct Access Applicant:** An Energy Service Provider applying for Direct Access on behalf of an End-Use Customer.
- b) **Bundled Service Applicant:** An Applicant applying for bundled services from SCE including all its power requirements purchased through the Power Exchange (PX) by SCE.
- c) **Interconnection Applicant:** An Applicant applying for interconnection under the provisions of SCE's Rule 21. (N)
(N)

Application: A written or electronic request to SCE for electric service as distinguished from an inquiry as to the availability or charges for such service. An Application can also be a Commission approved document submitted to SCE for the electrical interconnection of a Generator with SCE. (N)
(N)

Billing Demand: The load or demand used for computing charges under rate schedules based on the size of the customer's load or demand. It may be the connected load, the measured maximum demand, or a modification of either as provided for by applicable rate schedule.

Billing Period: The time interval between two consecutive meter readings that are taken for billing purposes.

Broker: Any entity that arranges the sale and purchase of electric energy, transmission, and other services between buyers and sellers, but does not take title to any of the power sold.

Bundled Service: Electric power, transmission, distribution, billing, metering and related services provided by SCE.

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Advice 1498-E
Decision 00-11-001
1P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____



Rule 1
DEFINITIONS

Sheet 3

(Continued)

Customer: The person in whose name service is rendered as evidenced by the signature on the application, contract, or agreement for that service, or, in the absence of a signed instrument, by the receipt and payment of bills or Summary Bills regularly issued in his name regardless of the identity of the actual user of the service. A Customer may also be a party with whom SCE is doing business with or without a billing relationship. Types of Customers include, but are not limited to the following:

- a) **Departing Load Customer:** A customer who is served by Departing Load.
- b) **Direct Access Customer:** An End-Use Customer located within SCE's service territory who purchases Direct Access services through an Energy Service Provider.
- c) **Bundled Service Customer:** A customer who takes bundled services from SCE including all its power requirements purchased through the PX by SCE.
- d) **End-Use Customer:** A customer that takes final delivery of electric power and does not resell the power.
- e) **Energy Service Provider (ESP):** An ESP utilizing Consolidated ESP Billing.
- f) **Distribution Service Customer:** A customer who receives or is entitled to receive Distribution Service through the Distribution System. (N)
(N)

Customer's Mailing Address: The address specified in a customer's application or contract, or any other address subsequently given to SCE by the customer, to which any notice or other communication is to be mailed.

Customer Service System (CSS): CSS has its focus at the customer level, not at the meter or premises level. There are five entities or levels to the design of CSS. These are:

- 1. **Site:** The premises where SCE has installed electrical equipment such as meters or transformers, etc.
- 2. **Installed Service:** Actual equipment SCE has placed at a Site.
- 3. **Service Account:** Level where service is metered or usage is determined and Tariffs apply.
- 4. **Customer Account:** The level of accounts receivable and credit activity. Also the level at which a billing statement is issued.
- 5. **Customer:** An entity or person upon which SCE keeps information or with whom SCE is doing business with or without a billing relationship. A customer can also be an account holder and receive billing statements at the Customer Account level.

Date of Presentation: The date upon which a bill or notice is mailed, or delivered by SCE, to the customer.

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Advice 1498-E
Decision 00-11-001
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____



Rule 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 1

(Continued)

A. Applicability

This Rule describes the interconnection, operating and metering requirements for Generating Facilities intended to be connected to SCE's Distribution System over which the Commission has jurisdiction. Subject to the requirements of this Rule, SCE will allow the interconnection of Generating Facilities with its Distribution System. Definitions for the capitalized terms used in this Rule and not otherwise defined are defined in Section H of this Rule. The definitions in this Rule shall only apply to this Rule and shall not apply to SCE's other tariffs. It is contemplated that the Applicant will be required to execute various enabling documents, such as but not limited to the Generating Facility Interconnection Agreement ("Agreement") (Form 14-731) and Application to Interconnect A Generating Facility ("Application") (Form 14-732). Such documents shall be on file with the Commission, and may be amended from time to time.

B. General, Rules, Rights and Obligations

1. Authorization Required to Interconnect. A Producer must comply with this Rule, and the terms of the Agreement, and receive SCE's express written permission to interconnect before connecting or operating a Generating Facility in parallel with SCE's Distribution System. SCE shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission to interconnect a Producer's Generating Facility.
2. Separate Arrangements Required for Other Services. A Producer requiring other electric services from SCE including, but not limited to, Distribution Service provided by SCE during periods of curtailment or interruption of a Generating Facility, must enter into separate arrangements with SCE for such services in accordance with SCE's Commission-approved Tariff Schedules.
3. Transmission Service Not Provided with Interconnection. Interconnection with SCE's Distribution System under this Rule does not provide a Producer any rights to utilize SCE's Distribution System for the transmission or distribution of electric power, nor does it limit those rights.
4. Compliance with Laws, Rules, and Tariff Schedules. A Producer shall ascertain and comply with applicable Commission-approved Tariff Schedules, and regulations of SCE; applicable Federal Energy Regulatory Commission (FERC) approved rules, tariffs, and regulations; and any local, state or federal law, statute or regulation which applies to the design, siting, construction, installation, operation, or any other aspect of the Producer's Generating Facility and Interconnection Facilities.

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Advice 1498-E

Decision 00-11-001

1P0

Issued by

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(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____



Rule 1
GENERATING FACILITY INTERCONNECTIONS

Sheet 2

(Continued)

B. General, Rules, Rights and Obligations (Continued)

- 5. Design Reviews and Inspections. SCE shall have the right to review the design of a Producer's Generating Facility and Interconnection Facilities and to inspect a Producer's Generating and/or Interconnection Facilities prior to the commencement of Parallel Operation with SCE's Distribution System. SCE may require a Producer to make modifications as necessary to comply with the requirements of this Rule. SCE's review and authorization for Parallel Operation shall not be construed as confirming or endorsing the Producer's design or as warranting the Generating and/or Interconnection Facilities' safety, durability or reliability. SCE shall not, by reason of such review or lack of review, be responsible for the strength, adequacy, or capacity of such equipment.
- 6. Right to Access. A Producer's Generating Facility and Interconnection Facilities shall be reasonably accessible to SCE personnel as necessary for SCE to perform its duties and exercise its rights under its Tariff Schedules and Rules filed with and approved by the Commission, and any agreement between SCE and the Producer.
- 7. Confidentiality of Information. Any information pertaining to Generating and/or Interconnection Facilities provided to SCE by a Producer shall be treated by SCE in a confidential manner. SCE shall not use information contained in the Application to propose discounted tariffs to the customer unless authorized to do so by the customer or the information is provided to SCE by the customer through other means.
- 8. Prudent Operation and Maintenance Required. A Producer shall operate and maintain its Generating Facility and Interconnection Facilities in accordance with Prudent Electrical Practices and shall maintain compliance with Commission adopted standards for the Producer's particular Generation and Interconnection Facilities. Said standards shall be those in effect at the time a Producer executes the Agreement with SCE.
- 9. Curtailment and Disconnection. SCE may limit the operation and/or disconnect or require the disconnection of a Producer's Generating Facility from SCE's Distribution System at any time, with or without notice, in the event of an Emergency or to correct Unsafe Operating Conditions. SCE may also limit the operation and/or disconnect or require the disconnection of a Producer's Generating Facility from SCE's Distribution System upon the provision of reasonable notice: 1) to allow for routine maintenance, repairs or modifications to SCE's Distribution System, 2) upon SCE's determination that a Producer's Generating Facility is not in compliance with this Rule, or 3) upon termination of the Agreement.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
2P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

Rule 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 3

(Continued)

C. Generating Facility Application and Interconnection Process

1. Generating Facility Application Process

- a. Applicant Initiates Contact with SCE. Upon request, SCE will provide information and documents (such as the Agreement and the Application), technical requirements, specifications, listing of Certified Equipment, application fee information, applicable rate schedules and metering requirements) in response to a potential Applicant's inquiry. Unless otherwise agreed upon, all such information shall normally be sent to an Applicant within three (3) business days following the initial request from the Applicant. SCE will establish an individual representative as the single point of contact for the Applicant, but may allocate responsibilities among its staff to best coordinate the Interconnection of an Applicant's Generating Facility.
- b. Applicant Completes an Application. All Applicants shall be required to complete and file an Application and supply any additional information requested by SCE. The filing must include the completed Application, which may be in paper format or filed electronically, a fee for processing the Application and performing the Initial Review to be completed by SCE pursuant to Section C.1.c. The Application and Initial Review fee shall vary with the nature of the proposed Generating Facility as follows:

<u>Type of Generating Facility</u>	<u>Initial Review Fee</u>	<u>Supplemental Review Fee</u>
Net Energy Metering (per Public Utilities Code Section 2827)	None	None
All Others	\$800	\$600

Note: Fifty percent of the fees associated with the Initial Review will be returned to the Applicant if the Agreement is rejected by SCE or the Applicant retracts the Agreement. The Applicant may propose, and SCE may negotiate specific costs for processing non-standard installations such as multi-units, multi-sites, or otherwise as conditions warrant. The costs for the Initial Review and the Supplemental Review contained in this Section, as well as the language provided in Sections C.1.c and C.1.d do not apply under such circumstances. Within ten (10) business days of receiving the Agreement, SCE shall normally acknowledge its receipt and state whether the Agreement has been completed adequately. If defects are noted, SCE and Applicant shall cooperate in a timely manner to establish a satisfactory Agreement.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
3P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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Sheet 4

GENERATING FACILITY INTERCONNECTIONS

(Continued)

C. Generating Facility Application and Interconnection Process (Continued)

1. Generating Facility Application Process (Continued)

c. SCE Performs an Initial Review and Develops Preliminary Cost Estimates and Interconnection Requirements.

- (1) Upon SCE's receipt of a satisfactorily completed Application and any additional information necessary to evaluate the Interconnection of a Generating Facility, SCE shall perform an Initial Review using the process defined in Section I. The Initial Review determines if (a) the Generating Facility qualifies for Simplified Interconnection, (b) the Generating Facility can qualify for Interconnection subject to minimal additional requirements, or (c) it will be necessary for SCE to perform an Interconnection Study to determine the Interconnection Requirements.
- (2) SCE shall complete its Initial Review, absent any extraordinary circumstances, within 10 business days if the Agreement qualifies for Simplified Interconnection. If the Initial Review determines that the proposed Generating Facility can be interconnected by means of a Simplified Interconnection, SCE will provide the Applicant with a written description of the requirements for interconnection and the Agreement pursuant to Section C.1.e.
- (3) If the Generating Facility does not qualify for Simplified Interconnection as submitted in the Application, the Initial Review will include a Supplemental Review as described in Section I. The Supplemental Review will provide either (a) Interconnection Requirements that may include requirements beyond those for Simple Interconnection, and an Agreement, or (b) a cost estimate and schedule for an Interconnection Study. The Supplemental Review shall be completed, absent any extraordinary circumstances, within 20 business days of receipt of a completed Application. Payment for the Supplemental Review shall be submitted to SCE within 10 calendar days after the results of the Supplemental Review are provided to the Applicant.

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Advice 1498-EDecision 00-11-001

4P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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Sheet 5

GENERATING FACILITY INTERCONNECTIONS

(Continued)

C. Generating Facility Application and Interconnection Process (Continued)

1. Generating Facility Application Process (Continued)

- d. When Required, Applicant and SCE Commit to Additional Interconnection Study Steps. When an Initial Review reveals that the proposed facility cannot be interconnected to SCE's system by means of a Simplified Interconnection pursuant to the Rule, Sections D and J, (Testing and Certification Criteria), and that significant SCE Interconnection Facilities or Distribution System Improvements must be installed or made to SCE's Distribution System to accommodate the interconnection of an Applicant's Generating Facility, SCE and Applicant shall enter into an agreement that provides for SCE to perform such additional studies, facility design, and engineering and to provide detailed cost estimates for fixed price or actual cost billing to the Applicant at the Applicant's expense. The interconnection study agreement shall set forth SCE's schedule for completing such work and the estimated or fixed price costs of such studies and engineering. Upon completion of an Interconnection Study, SCE shall provide the Applicant with the specific requirements, costs and schedule for interconnecting the Generating Facility to accommodate execution of agreements pursuant to Section C.1.e.
- e. Applicant and SCE Enter Into a Generation Generating Facility Interconnection Agreement and, Where Required, a Financing and Ownership Agreement for Interconnection Facilities or Distribution System Modifications. SCE shall provide the Applicant with an executable version of the Agreement, net energy metering agreement, or power purchase agreement appropriate for the Applicant's Generating Facility and desired mode of operation. Where the Initial Review or Interconnection Study performed by SCE has determined that modifications or additions are required to be made to its Distribution System, or that additional metering, monitoring, or protection devices will be necessary to accommodate an Applicant's Generating Facility, SCE may also provide the Applicant with an interconnection facilities financing and ownership agreement as necessary. These agreements shall set forth both SCE and the Applicant's responsibilities, completion schedules, and estimated or fixed price costs for the required work.
- f. Producer Installs or Constructs the Generating Facility; Where Applicable, SCE or Producer Installs Required Interconnection Facilities or Modifies SCE's Distribution System. After executing the appropriate Generating Facility Interconnection Agreement, the Producer may install or construct its Generating Facility in accordance with the provisions of this Rule and the terms of the specific agreements formed between the Producer and SCE. Where appropriate, SCE will commence construction/installation of the system modifications and/or metering and monitoring requirements which have been identified. The parties will use good faith efforts to meet schedules and fixed costs or estimated costs as appropriate.

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Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

Rule 21

Sheet 6

GENERATING FACILITY INTERCONNECTIONS

(Continued)

C. Generating Facility Application and Interconnection Process (Continued)

1. Generating Facility Application Process (Continued)

- g. Producer Arranges for and Completes Testing of Generating Facility and, Where Applicable, Producer Installed Interconnection Facilities. New Generating Facilities and associated Interconnection Facilities must be tested to ensure compliance with the safety and reliability provisions of the Commission-approved rules and regulations prior to being operated in parallel with SCE's Distribution System. Certified Equipment will be subject to the tests specified in Section J. For non-Certified Equipment, the Producer will develop a written testing plan to be submitted to SCE for its review and acceptance. Alternatively, the Producer and SCE may agree to have SCE conduct the required testing at the Producer's expense. Where applicable, the test plan shall include the installation test procedure(s) published by the manufacturer(s) of the generation or interconnection equipment. Facility testing shall be conducted at a mutually agreeable time, and depending on who conducts the tests, SCE or Producer shall be given the opportunity to witness the tests.
- h. SCE Authorizes Interconnection. The Producer's Generating Facility shall be allowed to commence parallel operation with SCE's Distribution System upon satisfactory compliance with the terms of the Generating Facility Interconnection Agreement. Compliance may include, but not be limited to, provision of any required documentation and satisfactorily completing any required inspections or tests as described herein or in the agreements formed between the Producer and SCE. A Producer shall not interconnect a Generating Facility unless it has received SCE's express written permission to do so.
- i. SCE Reconciles Costs and Payments. If the Producer selected a fixed price cost for the Interconnection Facilities or Distribution System Modifications, no reconciliation will be necessary. If the Producer selected actual cost billing, a true-up will be required. Within a reasonable time after the interconnection of a Producer's Generating Facility, SCE will reconcile its actual costs related to the Producer's facility against the generating facility application fee and any other advance payments made by the Producer. The Producer will receive either a bill for any balance due or a reimbursement for overpayment as determined by SCE's reconciliation. The Producer shall be entitled to a reasonably detailed and understandable report detailing SCE's reconciliation process.

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Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

Rule 21

Sheet 7

GENERATING FACILITY INTERCONNECTIONS

(Continued)

D. Generating Facility Design and Operating Requirements

1. General Interconnection and Protection Requirements

- a. Automatic Lockout Required. The Protective Functions shall include an automatic means to prevent the Generating Facility from re-energizing a de-energized SCE Distribution System circuit.
- b. Protective Functions Required. The Protective Functions of a Generating Facility must include an over/under voltage trip function, an over/under frequency trip function, and a means for disconnecting the Generating Facility from SCE's Distribution System whenever a protective function initiates a trip.
- c. No Unintended Islanding. The Generating Facility and associated Protective Functions shall not contribute to the formation of an Unintended Island.
- d. Drawings Required. The Producer's protection and control diagrams for the interconnection shall be approved by SCE prior to completion of the Generating Facility Interconnection unless the Producer uses a protection and control scheme previously approved by SCE for system-wide application or uses only Certified Equipment.
- e. Required Delay on Reconnection. Protective Functions shall be equipped with automatic means to prevent reconnection of the Generating Facility with SCE's Distribution System unless SCE's Distribution System service voltage and frequency is of specified settings and is stable for at least 60 seconds.
- f. Certified Equipment. Certified Equipment contains certified functions that are accepted by all California Electric Corporations. Certified Equipment may be installed on SCE's Distribution System in accordance with an interconnection control and protection scheme approved by SCE.
- g. Purpose of Protective Functions. The Protective Functions and requirements of this Rule are designed to protect SCE's Distribution System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for the Producer's Generating Facility and Interconnection Facilities connected to SCE's Distribution System. The Producer's protective equipment shall not impact the operation of other protective devices utilized on SCE's Distribution System in a manner that would affect SCE's capability of providing reliable service to its Customers.

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Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

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Rule 21
GENERATING FACILITY INTERCONNECTIONS

Sheet 8

(Continued)

D. Generating Facility Design and Operating Requirements (Continued)

1. General Interconnection and Protection Requirements (Continued)

- h. Suitable Equipment Required. Circuit breakers or other interrupting devices located at the Point of Common Coupling must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being capable of interrupting the maximum available fault current expected at their location. The Generating Facility shall be designed so that the failure of any one device shall not potentially compromise the safety and reliability of SCE's Distribution System.
- i. Visible Disconnect Required. The Producer shall furnish and install a manual disconnect device that has a visible break to isolate the Generating Facility from SCE's Distribution System. The device must be accessible to SCE personnel and be capable of being locked in the open position. Generating Facilities with Non-Islanding inverters totaling one (1) kVA or less are exempt from this provision.
- j. Momentarily Paralleling Facilities Excluded. Section D of this Rule is not intended to address the requirements for Generating Facilities that parallel momentarily (60 cycles or less) or Generating Facilities that operate independently of SCE's Distribution System.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
8P0

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John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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Sheet 9

GENERATING FACILITY INTERCONNECTIONS

(Continued)

D. Interconnection Facilities. (Continued)

2. Prevention of interference. The Producer shall not operate equipment that superimposes a voltage or current upon SCE's Distribution System that interferes with SCE operations, service to SCE customers, or SCE communication facilities. If such interference occurs, the Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by SCE. If the Producer does not take timely corrective action, or continues to operate the equipment causing interference without restriction or limit, SCE may, without liability, disconnect the Producer's equipment from SCE's Distribution System, in accordance with Section B.9 of this Rule. To eliminate undesirable interference caused by the operation of the Generating Facility, each Generating Unit in a Generating Facility shall meet the following criteria:

a. Normal voltage operating range. The voltage operating range for a Generating Unit shall be selected as a protection function that responds to abnormal Distribution System conditions and not as a voltage regulation function.

(1) Small systems (11 kVA or less). Generating Units connected to a Generating Facility with a Gross Nameplate capacity of 11 kVA or less shall be capable of operating within the limits normally experienced on SCE's Distribution System. The operating window shall be selected in a manner that minimizes nuisance tripping and range between 106 volts and 132 volts (88-110% of nominal voltage) on a 120-volt base. Generating Facilities shall cease to energize SCE lines whenever the voltage at the Point of Common Coupling deviates from the allowable voltage operating range.

(2) Large Systems (greater than 11 kVA). SCE may have specific operating voltage ranges for larger Generating Facilities, and may require adjustable operating voltage settings for these larger systems. In the absence of such requirements, the above principles of operating between 88% and 110% of the appropriate interconnection voltage should be followed.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

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(Continued)

D. Interconnection Facilities. (Continued)

2. Prevention of interference. (Continued)

a. Normal voltage operating range. (Continued)

- (3) Voltage Disturbances. System voltage assumes a nominal 120 V base. For the convenience of those wishing to translate these guidelines to voltage bases other than 120 volts, the limits will also be provided as approximate percentages. Generating Units should sense abnormal voltage and respond accordingly. The following conditions should be met, with voltages in RMS and measured at the Point of Common Coupling:

<u>Table D.1</u>	Maximum Trip Time*
<u>Voltage at Point of Common Coupling</u>	<u>(Assuming 60 Cycles per Second)</u>
Less than 60 Volts	10 Cycles
Greater than 60 volts but less than 106 volts	120 Cycles
Greater than 106 volts but less than 132 volts	Normal Operation
Greater than 132 volts but less than 165 volts	120 Cycles
	(30 Cycles for facilities greater than 11kVa)
Greater than 165 volts	6 Cycles

* "Trip time" refers to the time between the abnormal condition being applied and the Generating Facility ceasing to energize SCE's Distribution System. Certain circuits will actually remain connected to SCE's Distribution System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to ride through short-term disturbances to avoid excessive nuisance tripping. For Generating Facilities with a Gross Nameplate Rating of 11 kVA capacity or less, the above set points are to be non-user adjustable. For Generating Facilities with a Gross nameplate Rating greater than 11 kVA, different voltage set points and trip times from those in Table D.1 may be negotiated with SCE.

- b. Flicker. Any voltage flicker at the Point of Common Coupling caused by the Generating Facility should not exceed the limits defined by the "Maximum Borderline of Irritation Curve" identified in IEEE 519 (*IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems*, IEEE STD 519-1992, Institute of Electrical and Electronic Engineers, Piscataway, NJ. April 1992. This requirement is necessary to minimize the adverse voltage affects experienced by other customers on SCE's Distribution System. Induction Generating Units may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
10P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

D. Interconnection Facilities. (Continued)

2. Prevention of interference. (Continued)

- c. Frequency. SCE controls system frequency, and the Generating Facility shall operate in synchronism with SCE's Distribution System. Small Generating Facilities should have a fixed operating frequency range of 59.3-60.5 Hertz. The Generating Facility must cease to energize the system in a maximum of ten cycles should SCE remain outside of the frequency limits. The purpose of the time delay is to allow the Generating Facility to ride through short-term disturbances to avoid excessive nuisance tripping. SCE may require adjustable operating frequency settings for Generating Facilities larger than 11 kVA to assist the system during serious capacity shortages. For Generating Facilities larger than 11 kVA, low frequency settings of 59.3 Hz and 58.0 Hz may be used with the consent of SCE.
- d. Harmonics. Harmonic distortion shall be in compliance with IEEE 519. Exception: The harmonic distortion of a Generating Facility located at a Customer's site shall be evaluated using the same criteria as the loads at that site.
- e. Direct Current Injection. Generating Facilities should not inject Direct Current greater than 0.5% of rated output current into SCE's Distribution System under either normal or abnormal operating conditions.
- f. Power Factor. Each Generating Unit in a Generating Facility shall be capable of operating at some point within a range of a power factor of 0.9 (either leading or lagging). Operation outside this range is acceptable provided the reactive power of the Generating Facility is used to meet the reactive power needs of on-site loads or that reactive power is otherwise provided under tariff by SCE. The Producer shall notify SCE if it is using the Generating Facility for power factor correction.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

11P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

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(Continued)

D. Interconnection Facilities. (Continued)

3. Control, Protection and Safety Equipment Requirements

a. Basic Requirements

- (1) Protective Function Requirements. The Protective Functions of a Generating Facility must include a visual open disconnect device (except as exempted in Section D.1.h.), a fault-interrupting device, an over/under voltage trip function, and an over/under frequency trip function.
- (2) Limits Specific to Single-Phase Generating Facilities. For single-phase Generating Facilities connected to a shared single-phase secondary, the maximum capacity shall be 20 kVA. Generating Facilities applied on a center-tap neutral 240-volt service must be installed such that no more than 6 kVA of imbalance in capacity exists between the two sides of the 240-volt service. For dedicated distribution transformer services, the limit of a single-phase Generating Facility shall be the transformer nameplate rating.

b. Technology Specific Requirements

- (1) Three-Phase Synchronous Generating Facilities. For three phase Generating Facilities, the Generating Facility circuit breakers shall be three-phase devices with electronic or electromechanical control. The Producer shall be responsible for properly synchronizing its Generating Facility with SCE's Distribution System by means of either a manual or automatic synchronizing function. Automatic synchronizing is required for all synchronous Generating Units, which have a Short Circuit Contribution Ratio (SCCR) exceeding 0.05. A Generating Unit whose SCCR exceeds 0.05 shall be equipped with Protective Functions suitable for detecting loss of synchronism and rapidly disconnecting the Generating Facility from SCE's Distribution System. Unless otherwise agreed upon by the Producer and SCE, synchronous Generating Units shall automatically regulate power factor, not voltage, while operating in parallel with SCE's Distribution System. Power system stabilization is specifically not required for Generating Facilities under 10 MW Gross Nameplate Capacity. Synchronization means that at the time of connection, the frequency difference shall be less than 0.2 Hz, the voltage difference shall be less than 10%, and the phase angle difference shall be less than 10 degrees.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

12P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

D. Interconnection Facilities. (Continued)

3. Control, Protection and Safety Equipment Requirements (Continued)

b. Technology Specific Requirements (Continued)

(2) Induction Generators: Induction generator Generating Units do not require separate synchronizing equipment. Starting or rapid load fluctuations on induction generators can adversely impact SCE's Distribution System's voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferro-resonance. When these counter measures (e.g. additional capacitors) are installed on the Producer's side of the Point of Common Coupling, SCE must review these measures. Additional equipment may be required to resolve this problem as determined in an Interconnection Study.

(3) Inverter Systems: Utility-interactive inverters do not require separate synchronizing equipment. Non-utility-interactive or "stand-alone" inverters shall not be used for parallel operation with SCE's Distribution System.

c. Initial Review Process: Section I of this Rule defines the Initial Review process. The Initial Review process evaluates the specific characteristics of the Interconnection, including those specific to the location of the Generating Facility, and whether or not additional requirements are necessary.

d. Supplemental Generating Facility Requirements

(1) Unintended Islanding for Generating Facilities that Fail the Export Screen: Generating Facilities must mitigate their potential contribution to an Unintended Island. This can be accomplished by one of the following options: (1) incorporating certified Non-Islanding control functions into the Protective Functions, (2) verifying that local loads sufficiently exceed the load carrying capability of the Generating Facility, or (3) incorporating transfer trip or an equivalent function in the Protective Functions.

(2) Fault Detection: A Generating Facility with an SCCR exceeding 0.1 or that does not meet any one of the options for detecting Unintended Islands in D.3.d.1. shall be equipped with Protective Functions designed to detect Distribution System faults, both line-to-line and line-to-ground, and promptly remove the Generating Facility from SCE's Distribution System in the event of a fault. For a Generating Facility that cannot detect these faults within two seconds, transfer trip or an equivalent function may be required. Reclose-blocking of SCE's affected recloser(s) may also be required by SCE for Generating Facilities that exceed 15% of the peak load on the Line Section.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

D. Interconnection Facilities. (Continued)

3. Control, Protection and Safety Equipment Requirements (Continued)

- e. Generating Facility types and conditions not identified: In the event that Section D of this Rule does not address the interconnection requirements for a particular Generating Facility, SCE and Producer may agree upon the technical requirements to interconnect the Generating Facility.

E. Interconnection Facility Ownership and Financing

1. Scope and Ownership of Interconnection Facilities

- a. Scope: The interconnection of a Producer's Generating Facility with SCE's Distribution System is made through the use of Interconnection Facilities. Such interconnection may also require Distribution System Improvements. The nature, extent and costs of Interconnection Facilities and Distribution System Improvements shall be consistent with this Rule and determined through the Initial Review and/or Interconnection Studies described in Section C.
- b. Ownership: Subject to the limitations set forth in this Rule, Interconnection Facilities which may be installed on Producer's side of the Point of Common Coupling may be owned, operated and maintained by the Producer or SCE. Interconnection Facilities installed on SCE's side of the Point of Common Coupling and Distribution System Improvements shall be owned, operated and maintained only by SCE.

2. Responsibility of Costs of Interconnecting a Generating Facility

- a. Study and Review Costs: A Producer shall be responsible for the reasonably incurred costs of the Initial Review and any Interconnection Studies conducted pursuant to Section C.2 of this Rule solely to explore the feasibility and determine the requirements of interconnecting a Generating Facility with SCE's Distribution System.
- b. Facility Costs: A Producer shall be responsible for all costs associated with Interconnection Facilities owned by the Producer. The Producer shall also be responsible for any costs reasonably incurred by SCE in providing, operating, or maintaining Interconnection Facilities and Distribution System Improvements required solely for the interconnection of the Producer's Generating Facility with SCE's Distribution System.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

14P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

E. Interconnection Facility Ownership and Financing (Continued)

2. Responsibility of Costs of Interconnecting a Generating Facility (Continued)

(c) Separation of Costs: Should SCE combine the installation of Interconnection Facilities, or Distribution System Improvements with modifications or additions to SCE's Distribution System to serve other Customers or Producers, SCE shall not include the costs of such separate or incremental facilities in the amounts billed to the Producer for the Interconnection Facilities or Distribution System Improvements required pursuant to this Rule.

3. Installation and Financing of Interconnection Facilities Owned and Operated by SCE

(a) Agreement Required: Costs for Added Facilities shall be paid by the Producer pursuant to the provisions contained in the Generating Facility Interconnection Agreement. Where the nature and extent of the Interconnection Facilities and Distribution System Improvements warrant additional detail, the detail shall be found in separate interconnection agreements between the Producer and SCE, and SCE's applicable Tariff Schedules and Rules for Added Facilities.

(b) Attachments and Modifications to Distribution System: Except as provided for in Section E.3.c. of this Rule, Interconnection Facilities connected directly to SCE's Distribution System and Distribution System Improvements shall be provided, installed, owned and maintained by SCE as Added Facilities.

(c) Third-Party Installations: Subject to the approval of SCE, a Producer may, at its option, employ a qualified contractor to provide and install Interconnection Facilities or Distribution System Improvements to be owned and operated by SCE. Such Interconnection Facilities and Distribution System Improvements shall be installed in accordance with SCE's design and specifications. Upon final inspection and acceptance by SCE, the Producer shall transfer ownership of such Producer installed Interconnection Facilities or Distribution System Improvements to SCE and such facilities shall thereafter be owned and maintained by SCE at the Producer's expense as Added Facilities. The Producer shall pay SCE's reasonable cost of design, administration, and monitoring of the installation for such facilities to ensure compliance with SCE's requirements. The Producer shall also be responsible for all costs, including any income tax liability, associated with the transfer of Producer installed Interconnection Facilities and Distribution System Improvements to SCE.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

15P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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(Continued)

E. Interconnection Facility Ownership and Financing (Continued)

3. Installation and Financing of Interconnection Facilities Owned and Operated by SCE (Continued)

(d) Reservation of Unused Facilities: When a Producer wishes to reserve SCE-owned Interconnection Facilities or Distribution System Improvements installed and financed as Added Facilities for the Producer, but idled by a change in the operation of the Producer's Generating Facility or otherwise, Producer may elect to abandon or reserve such facilities consistent with the terms of its agreement with SCE. If Producer elects to reserve idle Interconnection Facilities or Distribution System Improvements, SCE shall be entitled to continue to charge Electrical Producer for the costs related to the ongoing operation and maintenance of the Added Facilities.

(e) Refund of Salvage Value: When a Producer elects to abandon the Added Facilities for which it has either advanced the installed costs or constructed and transferred to SCE, the Producer shall, at a minimum, receive from SCE a credit for the net salvage value of the Added Facilities.

F. Metering, Monitoring and Telemetry

1. General Requirements: All Generating Facilities shall be metered in accordance with this Section F and shall meet all applicable standards of SCE contained in SCE's applicable Tariff Schedules and published SCE manuals dealing with metering specifications. The requirements in this Section F do not apply to metering of Generating Facilities operating under SCE's Net Energy Metering tariff pursuant to California Public Utilities Code Section 2827.

2. Metering by non-SCE Parties: The ownership, installation, operation, reading, and testing of metering for Generating Facilities shall be by SCE except to the extent that the Commission has determined that all these functions, or any of them, may be performed by others as authorized by the Commission.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

F. Metering, Monitoring and Telemetry (Continued)

3. Net Generation Metering: For purposes of monitoring Generating Facility operation for determination of standby charges and applicable non-bypassable charges as defined in SCE's Tariff Schedules, and for Distribution System planning and operations, consistent with Section B.4 of this Rule, SCE shall have the right to specify the type, and require the installation of, Net Generation Metering. SCE shall require the provision of Generating Facility output data to the extent reasonably necessary to provide information for SCE to administer its Tariff Schedules or to operate and plan its system. SCE shall only require Net Generation Metering to the extent that less intrusive and/or more cost effective options for providing the necessary Generating Facility output data are not available. In exercising its discretion to require Net Generation Metering, SCE shall consider all relevant factors, including but not limited to:
- a. Data requirements in proportion to need for information;
 - b. Producer election to install equipment that adequately addresses SCE's operational requirements;
 - c. Accuracy and type of required metering consistent with purposes of collecting data;
 - d. Cost of metering relative to the need for and accuracy of the data;
 - e. The Generating Facility's size relative to the cost of the metering/monitoring;
 - f. Other means of obtaining the data (e.g. Generating Facility logs, proxy data etc.);
 - g. Requirements under any Generating Facility Interconnection Agreement with the Producer.

SCE will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring net generation equipment in each instance along with the size and location of the facility.

4. Point of Common Coupling Metering: For purposes of assessing SCE charges for retail service, the Producer's Point of Common Coupling Metering shall be a bi-directional meter so that power deliveries to and from the Producer's site can be separately recorded. Alternately, the Producer may, at its sole option and cost, require SCE to install multi-metering equipment to separately record power deliveries to SCE's Distribution System and retail purchases from SCE. Such Point of Common Coupling Metering shall be equipped or designed to prevent reverse registration.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

17P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

F. Metering, Monitoring and Telemetry (Continued)

5. Telemetering: If the nameplate rating of the Generating Facility is 1 MW or greater, Telemetering equipment at the Net Generator Metering location may be required at the Producer's expense. If the Generating Facility is interconnected to a Distribution System operating at a voltage below 10 kV, then Telemetering equipment may be required on Generating Facilities 250 kW or greater. SCE shall only require Telemetering to the extent that less intrusive and/or more cost effective options for providing the necessary data in real time are not available. SCE will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Telemetering equipment in each instance along with the size and location of the facility.
6. Sunset Provision: Sections F.3 and F.5 are interim provisions only. SCE shall file permanent metering requirements with the Commission on or by December 31, 2002. At that time, SCE shall serve its application for approval of permanent metering requirements on the service list in OIR 99-10-025.
7. Location: Where SCE-owned metering equipment is located on the Producer's premises, Producer shall provide, at no expense to SCE, a suitable location for all such metering equipment.
8. Costs of metering: The Producer will bear all costs of the metering required by this Rule, including the incremental costs of operating and maintaining the Metering.

G. Dispute Resolution Process

1. The following procedures will apply for disputes arising from this Rule. The Commission shall have initial jurisdiction to interpret, add, delete or modify any provision of this Rule or of any agreements entered into between SCE and the Producer to implement this tariff ("the implementing agreements") and to resolve disputes regarding SCE's performance of its obligations under its Tariff Schedules, the implementing agreements, and requirements related to the interconnection of the Producer's Generating or Interconnection Facilities pursuant to this Rule.
2. Any dispute arising between SCE and the Producer (individually "Party" and collectively "the Parties") regarding SCE's performance of its obligations under its Tariff Schedules, the implementing agreements, and requirements related to the interconnection of Producer's Facilities pursuant to this Rule shall be resolved according to the following procedures.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

18P0

Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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G. Dispute Resolution Process

2. (Continued)

- (a) The dispute shall be reduced to writing by the aggrieved Party in a letter (“the dispute letter”) to the other Party containing the relevant known facts pertaining to the dispute, the specific dispute and the relief sought, and express notice by the aggrieved Party that it is invoking the procedures under Section G.2. Within 45 calendar days of the date of the dispute letter, the Parties’ authorized representatives will be required to meet and confer to try to resolve the dispute.
 - (b) If the Parties do not resolve their dispute within 45 calendar days after the date of the dispute letter, the dispute shall, upon demand of either party, be submitted to resolution before the Commission in accordance with the Commission’s Rules of Practice and Procedure Applicable to Customer Complaints.
3. Pending resolution of any dispute under this Section, the Parties shall proceed diligently with the performance of their respective obligations under this Rule and the implementing agreements, unless the implementing agreements have been terminated. Disputes as to the Application and implementation of this Section shall be subject to resolution pursuant to the procedures set forth in this Section.

H. Definitions

The definitions set forth in this Section H are applicable only to this Rule and its corresponding agreements including Form 14-731, Generating Facility Interconnection Facilities Agreement, and Form 14-732, Application to Interconnect a Generating Facility.

Accredited, Nationally Recognized Testing Laboratory (NRTL): A laboratory approved to perform the certification testing requirements for Generating Facilities.

Active Anti-Islanding Scheme: A control scheme installed with the Generating Facility that senses and prevents the formation of an Unintended Island.

Applicant: An Applicant applying for interconnection, under the provisions of SCE’s Rule 21 and Form 14-732, Application to Interconnect a Generating Facility.

Application: A Commission approved document submitted to SCE for the electrical interconnection of a generator with SCE.

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GENERATING FACILITY INTERCONNECTIONS

(Continued)

H. DEFINITIONS (Continued)

Certification; Certified; Certificate: The documented results of a successful Certification Testing.

Certification Test: A test adopted by SCE that verifies conformance of certain equipment with Commission-approved performance standards in order to be classified as Certified Equipment. Certification Tests are normally performed by an NRTL such as the Underwriter's Laboratory.

Certified Equipment: Equipment used in a Generating Facility that has passed the Certification Test.

Commissioning Test: A test performed during the commissioning of all or part of a Generating Facility system to achieve one or more of the following:

- Verify specific aspects of its performance;
- Calibrate its instrumentation;
- Establish instrument or Protective Function set-points.

Customer: A Distribution Customer who receives or is entitled to receive Distribution Service through the Distribution System.

Dedicated Transformer; Dedicated Distribution Transformer: A transformer that provides Electricity Service to a single Customer. The Customer may or may not have a Generating Facility.

Distributed Generation: Electrical power generation by any means, including from stored electricity, that is interconnected to an SCE at a Point of Common Coupling under the jurisdiction of the Commission.

Distribution Service: All services required by, or provided to, a Customer pursuant to the approved Tariff Schedules and Rules of SCE.

Distribution System: All electrical wires, equipment, and other facilities owned or provided by SCE by which SCE provides Distribution Service to its Customers.

Distribution System Island: A condition on SCE's Distribution System in which one or more Generating Unit(s), over which SCE has no direct control, and a portion of SCE's Distribution System operate while isolated from the remainder of SCE's Distribution System.

Emergency: An actual or imminent condition or situation, which jeopardizes SCE's Distribution System Integrity.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
20P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____



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H. Definitions (Continued)

Field Testing: Testing performed in the field to determine whether equipment meets SCE's requirements for safe and reliable Interconnection

Generating Facility: All Generating Units that are included in a Generating Facility Interconnection Agreement.

Generating Facility Application: The standard Commission-approved form submitted to SCE for electrical interconnection of a Generating Facility with SCE.

Generating Facility Interconnection Agreement: An agreement between SCE and the Producer that gives each the certain rights and obligations to effect or end Interconnection.

Generating Unit: An individual electrical generator or generating system (including required equipment, appurtenances, protective equipment and structures) that is connected to and made a part of a Generating Facility.

Gross Nameplate Rating: The gross generating capacity of a Generating Unit or the total of the gross generating capacity of the Generating Units comprising a Generating Facility as designated by the manufacturer(s) of the Generating Unit(s).

Host Load: Electrical power that is consumed by the Customer at the property on which the Generating Facility is located.

Initial Operation: The first time the Generating Facility is in Parallel Operation.

Initial Review: The review by SCE, following receipt of an Generating Facility Application, to determine the following: If an Generating Facility Application qualifies for Simplified Interconnection, or If an Generating Facility Application can be made to qualify for Interconnection with supplemental review determining any potential additional requirements, or If an Interconnection Study is required, the cost estimate and schedule for performing the Interconnection Study

In-rush Current: The current drawn by the Generating Facility during startup.

Interconnection; (Interconnected): The physical connection of a Generating Facility in accordance with the requirements of these rules so that Parallel Operation with SCE system can occur (has occurred).

Interconnection Facilities: The electrical wires, switches and related equipment that interconnect a Generating Facility to SCE's Distribution System.

(Continued)

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GENERATING FACILITY INTERCONNECTIONS

Sheet 22

(Continued)

H. Definitions (Continued)

Interconnection Study: A study to establish the requirements for Interconnection of a Producer.

Island; Islanding: A condition on SCE's Distribution System in which one or more Generating Facilities deliver power to Customers using a portion of SCE's Distribution System that is electrically isolated from the remainder of SCE's Distribution System.

ISO: The California Independent System Operator, responsible for the management of electrical power flow through California's electrical transmission network.

Line Section: That portion of SCE's Distribution System connected to a Customer bounded by automatic sectionalizing devices or the end of the line.

Metering: The measurement of electrical power flow in kW and/or kWh, and, if necessary, kVAR at a point, and its display to SCE, as required by this Rule.

Metering Equipment: All equipment, hardware, software including meter cabinets, conduit, etc. that is necessary for Metering.

Net Energy Metering: Metering for the mutual purchase and sale of electricity between the Producer and SCE pursuant to the net metering tariff approved by the Commission.

Net Generation Metering: The Metering of the net electrical energy output in kW and kWh from a given Generating Facility. This may also be the measurement of the difference between the total electrical energy produced by a Generating Unit and the electrical energy consumed by the auxiliary equipment necessary to operate the Generating Unit. For a Generating Unit with no Host Load and/or Section 218 Load, Metering that is located at the point of Common Coupling. For a Generating Unit with Host Load and/or Section 218 Load, Metering that is located at the Generating Unit bus after the point of auxiliary load(s) and prior to serving Host Load and/or Section 218 Load.

Net Metering: Where electricity at a point may flow in both directions, the measurement of the net, or the algebraic sum, of electrical energy in kWh, that flows through that point in a given time-interval. Net Metering typically uses two meters, or in some cases a single meter with two or more registers, to individually measure a Customer's electric deliveries to, and consumption of retail service from, SCE's Distribution System. Over a given time frame (typically a month) the difference between these two values yield either net consumption or net surplus. The meter registers are ratcheted to prevent reverse registration. If available, a single meter may be allowed spin backward to yield the same effect as a two meter (or register) arrangement.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
22P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____



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H. Definitions (Continued)

Net Nameplate Rating: The gross generating capacity of a Generating Unit or the total of the gross generating capacity of the Generating Units comprising a Generating Facility as designated by the manufacturer(s) of the Generating Unit(s) minus the consumption of electrical power of the Generating Unit(s).

Network Service: More than one electrical feeder providing Distribution Service at a Point of Common Coupling.

Non-Exporting: Designed to prevent the transfer of electrical energy from the Generating Facility to SCE.

Non-Islanding: Designed to detect and disconnect from a stable Unintended Island with matched load and generation. Reliance solely on under/over voltage and frequency trip is not considered sufficient to qualify as Non-Islanding.

Parallel Operation: The simultaneous operation of a Generating Facility with power delivered or received by SCE while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generating Facilities that are so interconnected with SCE's Distribution System for more than 60 cycles (one second).

Periodic Test: A test performed on part or all of a Generating Facility at pre-determined time or operational intervals to achieve one or more of the following: 1) Verify specific aspects of its performance, 2) Calibrate instrumentation, 3) Verify and re-establish instrument or Protective Function set-points.

Point of Common Coupling (PCC): The transfer point for electricity between the electrical conductors of SCE and the electrical conductors of the Producer.

Point of Common Coupling Metering: Metering located at the Point of Common Coupling. This is the same Metering as Net Generation Metering for Generating Facilities with no Host Load and/or Section 218 Load.

Point of Interconnection: The electrical transfer point between a Generating Facility and the electrical distribution system. This may or may not be coincident with the Point of Common Coupling.

Producer: The entity that executes an Generating Facility Interconnection Agreement with SCE. The Producer may or may not own or operate the Generating Facility, but is responsible for the rights and obligations related to the Generating Facility Interconnection Agreement.

Production Test: A test performed on each device coming off the production line to verify certain aspects of its performance.

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(To be inserted by utility)
Advice 1498-E
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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H. Definitions (Continued)

Protective Function(s): The equipment, hardware and/or software in a Generating Facility (whether discrete or integrated with other functions) whose purpose is to protect against Unsafe Operating Conditions.

Prudent Electrical Practices: Those practices, methods, and equipment, as changed from time to time, that are commonly used in prudent electrical engineering and operations to design and operate electric equipment lawfully and with safety, dependability, efficiency, and economy.

Scheduled Operation Date: The date specified in the Generating Facility Interconnection Agreement when the Generating Facility is, by the Producer's estimate, expected to begin Initial Operation.

Secondary Network: A network supplied by several primary feeders suitably interlaced through the area in order to achieve acceptable loading of the transformers under emergency conditions and to provide a system of extremely high service reliability. Secondary networks usually operate at 600 V or lower.

Section 218 Load: Electrical power that is supplied in compliance with California Public Utilities Code section 218 (PU Code 218). PU Code 218 defines an "Electric Corporation" and provides conditions under which a transaction involving a Generating Facility would not classify a Producer as an Electric Corporation. These conditions relate to "over-the-fence" sale of electricity from a Generating Facility without using SCE's Distribution System.

Short Circuit Contribution Ratio (SCCR): The ratio of the Generating Facility's short circuit contribution to SCE's short circuit contribution for a three-phase fault at the high voltage side of the distribution transformer connecting the Generating Facility to SCE's system.

Simplified Interconnection: Interconnection conforming to the minimum requirements under these rules, as determined by Section I.

Stability: The return to normalcy of an SCE Distribution System, following a disturbance. Stabilization is usually measured as a time period during which voltage and frequency are within acceptable ranges.

Starting Voltage Drop: The percentage voltage drop at a specified point resulting from In-rush Current. The SVD can also be expressed in volts on a particular base voltage, (e.g. 6 volts on a 120-volt base, yielding a 5% drop).

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____



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H. Definitions (Continued)

System Integrity: The condition under which a Distribution System is deemed safe and can reliably perform its intended functions in accordance with the safety and reliability rules of SCE.

Telemetry: The electrical or electronic transmittal of Metering data on a real-time basis to SCE.

Type Test: A test performed on a sample of a particular model of a device to verify specific aspects of its design, construction and performance.

Unintended Island: The creation of an island, usually following a loss of a portion of SCE's Distribution System, without the approval of SCE.

Unsafe Operating Conditions: Conditions that, if left uncorrected, could result in harm to personnel, damage to equipment, loss of System Integrity or operation outside pre-established parameters required by the Generating Facility Interconnection Agreement.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____



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I. Initial Review Process For Applications To Interconnect Generating Facilities

1. Introduction:

This Initial Review Process was developed to create a path for selection and rapid approval for the interconnection of those Generating Facilities that do not require an Interconnection Study.

2. Purpose:

The Initial Review determines:

- a. If Generating Facility qualifies for Simplified Interconnection;
- b. If a Generating Facility can be made to qualify for Interconnection with a Supplemental Review determining any potential additional requirements, or
- c. If an Interconnection Study is required, the cost estimates and schedule for performing the Interconnection Study.

Note: Failure to pass any screen of the Initial Review means only that further review and/or studies are required before the Generating Facility can be approved for interconnection with SCE's Distribution System. It does not mean that the Generating Facility cannot be interconnected.

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(To be inserted by utility)

Advice 1498-E
Decision 00-11-001
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000
Effective _____
Resolution _____

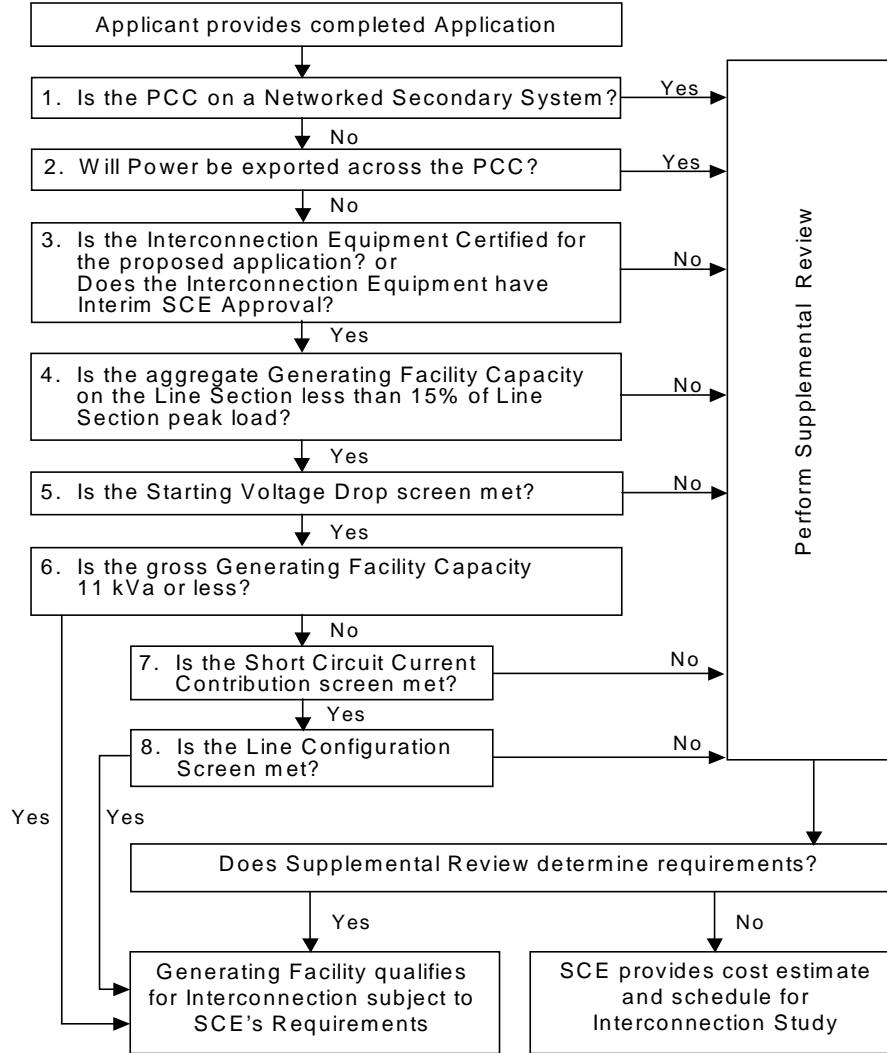
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I. Initial Review Process For Applications To Interconnect Generating Facilities

Initial Review Process Flow Chart



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(To be inserted by utility)
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
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I. Initial Review Process For Applications To Interconnect Generating Facilities

3. Initial Review Process Details

a. Is the PCC on a Networked Secondary System?

- If No, continue to next screen.
- If Yes, Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review.

Significance: Special considerations must be given to Generating Facilities proposed to be installed on networked secondary distribution systems because of the design and operational aspects of network protectors. There are no such considerations for radial distribution systems.

4. Will power be exported across the PCC?

- If No, Generating Facility must incorporate one of the following four options:

Option 1: To insure power is never exported, a reverse power Protective Function must be implemented at the PCC. Default setting shall be 0.1% (export) of transformer rating, with a maximum 2.0 second time delay.

Option 2: To insure at least a minimum import of power, an under-power Protective Function must be implemented at the PCC. Default setting shall be 5% (import) of Generating Facility Gross Nameplate Rating, with maximum 2.0 second time delay.

Option 3: To limit the incidental export of power, all of the following conditions must be met: a) The aggregate capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of the Producer's Service Equipment; b) The total aggregate Generating Facility capacity must be no more than 50% of the Producer's service transformer rating (This capacity requirement does not apply to customers taking primary service without an intervening transformer); c) The Generating Facility must be certified as Non-Islanding.

Option 4: To insure that the relative size (capacity) of the Generating Facility compared to facility load results in no export of power without the use of additional devices, the Generating Facility capacity must be no greater than 50% of the Producer's verifiable minimum load.

Continue to next screen.

- If Yes, Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review.

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(To be inserted by utility)

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

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I. Initial Review Process For Applications To Interconnect Generating Facilities

4. Will power be exported across the PCC? (Continued)

Significance:

- a. If it can be assured that the Generating Facility will not export power, SCE's Distribution System does not need to be studied for load-carrying capability or Generating Facility power flow effects on SCE voltage regulators as the Generating Facility will simply be reducing load on SCE's Distribution System.
- b. This Screen permits the use of reverse-power relaying at the PCC as positive Anti-Islanding protection.

5. Is the Interconnection Equipment Certified for the Application or does the Interconnection Equipment have Interim SCE Approval?

- If Yes, continue to next screen.
- If No, Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review.

Significance:

If the Generating Facility has been Certified or previously approved by SCE, SCE does not need to repeat its review and/or test of the Generating Facility's Protective Functions scheme. Site Commissioning Testing may still be required to insure that the system is connected properly and that the protective functions are working properly.

Certification or SCE approval indicates the following criteria have been tested and verified:

- Basic protective function requirements met.
- Harmonic distortion limits met.
- Synchronizing requirements met.
- Power Factor regulation requirements met.
- Non-Islanding requirements met.
- If used, reverse power function requirement met.
- If used, under-power function requirement met.

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(To be inserted by utility)

Advice 1498-E
Decision 00-11-001
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000
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I. Initial Review Process For Applications To Interconnect Generating Facilities

6. Is the aggregate Generating Facility Capacity on the Line Section less than 15% of Line Section Peak Load?

- If Yes, continue to next screen.
- If No, Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review to determine cumulative impact on Line Section.

Significance:

- a. Low penetration of Generating Facility installations will have a minimal impact on the operation and load restoration efforts of SCE's Distribution System.
- b. The operating requirements for a high penetration of Generating Facilities may be different since the impact on SCE's Distribution System will no longer be minimal, therefore requiring additional study or controls.

7. Is the Starting Voltage Drop screen met?

- If Yes, continue to next screen.
- If No, Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review.

Note: This screen only applies to Generating Facilities that start by motoring the Generating Unit(s).

SCE has two options in determining whether Starting Voltage Drop could be a problem. The option to be used is at SCE's discretion:

Option 1: SCE may determine that the Generating Facility's starting Inrush Current is equal to or less than the continuous ampere rating of the Producer's Service Equipment.

Option 2: SCE may determine the impedances of the service distribution transformer (if present) and the secondary conductors to Producer's Service Equipment and perform a voltage drop calculation. Alternatively, SCE may use tables or nomographs to determine the voltage drop. Voltage drops caused by starting a Generating Unit as a motor must be less than 2.5% for primary interconnections and 5% for secondary interconnections.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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I. Initial Review Process For Applications To Interconnect Generating Facilities

7. Is the Starting Voltage Drop screen met? (Continued)

Significance:

- a. This screen addresses potential voltage fluctuation problems for Generating Units that start by motoring.
- b. When starting, Generating Facilities should have minimal impact on the service voltage to other SCE Customers.
- c. Passing this screen does not relieve the Producer from ensuring that its Generating Facility complies with the flicker requirements of Rule 21, Section 4.

8. Is the Gross Nameplate Capacity of the Generating Facility 11 kVA or less?

- If Yes, Generating Facility qualifies for Simplified Interconnection. Skip remaining screens.
- If No, continue to next screen.

Significance:

The Generating Facility will have a minimal impact on fault current levels and any potential line overvoltages from loss of system neutral grounding.

9. Is Short Circuit Current Contribution screen met?

- If Yes, continue to next screen.
- If No, Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review.

The Short Circuit Current Contribution Screen consists of two criteria; both of which must be met when applicable:

a. When measured at primary side (high side) of a Dedicated Distribution Transformer serving a Generating Facility, the sum of the Short Circuit Contribution Ratios (SCCR) of all generating facilities connected to the particular Distribution System circuit that serves the Generating Facility must be less than or equal to 0.1.

b. When measured at the secondary side (low side) of a shared distribution transformer, the short circuit contribution of the proposed Generating Facility must be less than or equal to 2.5% of the interrupting rating of the Producer's Service Equipment.

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(To be inserted by utility)

Advice 1498-E

Decision 00-11-001

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Issued by

John R. Fielder

Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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I. Initial Review Process For Applications To Interconnect Generating Facilities

9. Is Short Circuit Current Contribution screen met? (Continued)

Significance:

If the Generating Facility passes this screen it can be expected that it will have no significant impact on SCE's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes

10. Is the Line Configuration screen met?

- If Yes, Generating Facility qualifies for Simplified Interconnection. Skip remaining screens.
- If No, then Generating Facility does not qualify for Simplified Interconnection. Perform supplemental review.

Line Configuration Screen: Identify primary distribution line configuration that will serve the proposed Generating Facility. Based on the type of interconnection to be used for the Generating Facility, determine from table if the proposed Generating Facility passes the screen.

<u>Primary Distribution Line Type</u>	<u>Type of Interconnection to be made to Primary Distribution Line</u>	<u>Results/Criteria</u>
Three-phase, three wire	Any type	Pass Screen
Three-phase, four wire or line-to-neutral	Single-phase	Pass Screen
Three-phase, four wire (For any line that has such a section OR mixed 3 wire & 4 wire)	All Others	To pass, aggregate Generating Facility Capacity must be less or equal to 10% of Line Section Peak Load

than

Significance:

If the primary distribution circuit serving the Generating Facility is of a "three-wire" type, or if the Generating Facility's interconnection transformer is single-phase and connected in a line-to-neutral configuration, then there is no concern about overvoltages to SCE's, or other Customer's equipment caused by loss of system neutral grounding during the operating time of Anti-Islanding protection.

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(To be inserted by utility)
Advice 1498-E
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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J. Generating Unit Testing And Certification Criteria

1. Introduction

This Appendix describes the test procedures and requirements for equipment used for the Interconnection of Generating Facilities to SCE's Distribution System. Included are Type Testing, Production Testing, Commissioning Testing, and Periodic Testing. The procedures listed rely heavily on those described in appropriate Underwriters Laboratory (UL), Institute of Electrical and Electronic Engineers (IEEE), and International Electrotechnical Commission (IEC) documents—most notably UL 1741 and IEEE 929, as well as the testing described in *May 1999 New York Standardized Interconnection Requirements*. These procedures and requirements were developed prior to the completion of IEEE P1547 *Standard for Distributed Resources Interconnected with Electric Power Systems*, and should be revisited once that standard is published.

The tests described here, together with the technical requirements in Section D of this Rule, are intended to provide assurance that the Generating Facility's equipment will not adversely affect SCE's Distribution System and that a Generating Facility will cease providing power to SCE's Distribution System under abnormal conditions. The tests were developed assuming a low level of Generating Facility penetration or number of connections to SCE's Distribution System. At high levels of Generating Facility penetration, additional requirements and corresponding test procedures may need to be defined.

This test specification also provides a means of "certifying" equipment. Once a Generating Unit or device has been Certified per this Certification process, it may be considered to be suitable for use as part of a Generating Facility interconnected with SCE's Distribution System. Subject to the exceptions described in this Appendix, SCE will not require a Producer to repeat the design review or test the Protective Functions of equipment that has been Certified. It should be noted the Certification process is intended to facilitate Generating Facility interconnections. Certification is not a prerequisite to interconnect a Generating Facility. The use of non-certified equipment may be acceptable to SCE subject to testing and approval by SCE as discussed below.

2. Certification Criteria

Equipment tested and approved (e.g. "Listed") by an accredited, nationally recognized testing laboratory ("NRTL") as having met both the Type Testing and Production Testing requirements described in this document is considered to be "Certified Equipment" for purposes of Interconnection with SCE's Distribution System. Certification may apply to either a pre-packaged system or an assembly of components that address the necessary functions. Type Testing may be done in the manufactures' factory or test laboratory, or in the field. At the discretion of the testing laboratory, field-certification may apply only to the particular installation tested. In such cases, some or all of the tests may need to be repeated at other installations.

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(To be inserted by utility)

Advice 1498-E
Decision 00-11-001
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Issued by

John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000
Effective _____
Resolution _____

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J. Generating Unit Testing And Certification Criteria

2. Certification Criteria (Continued)

For non-certified equipment, some or all of the tests described in this document may be required by SCE for each Generating Facility installation. The manufacturer or another laboratory acceptable to SCE may perform these tests. Test results for non-certified equipment must be submitted to SCE as part of the application process for SCE's review and approval under the supplemental review. Approval by SCE for equipment used in a particular application does not guarantee SCE's approval for use in other applications or by other California Electric Corporations.

When equipment is Certified by a NRTL, the NRTL shall provide to the manufacturer, at a minimum, a certificate with the following information for each device:

a. Administrative:

- (1) The effective date of certification or applicable serial number (range or first in series), and/or other proof that certification is current
- (2) Equipment model number(s) of the Certified equipment
- (3) The software version utilized in the equipment, if applicable
- (4) Test procedures specified (including date or revision number)
- (5) Laboratory accreditation (by whom and to what standard)

b. Technical (As appropriate):

- (1) Device ratings (kW, kVA, Volts, Amps, etc.)
- (2) Maximum available fault current in Amps
- (3) In-rush Current in Amps
- (4) Trip points, if factory set (trip value and timing)
- (5) Trip point and timing ranges for adjustable settings
- (6) Nominal power factor or range if adjustable
- (7) If the device/system is certified for non-export and the method used (reverse power or under power)
- (8) If the device/system is Certified as Non-Islanding
- (9) It is the responsibility of the equipment manufacturer to ensure that certification information is made publicly available by the manufacturer, the testing laboratory, or by a third party.

It is the responsibility of the equipment manufacturer to ensure that certification information is made publicly available by the manufacturer, the testing laboratory, or by a third party.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

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J. Generating Unit Testing And Certification Criteria

3. Type Testing

a. Inverters

Static power inverters shall meet all of the Type Tests and requirements appropriate for a utility interactive inverter as specified in UL 1741 *Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems*, and listed in Table 1 below. These requirements may be applied to inverters used with electric energy sources other than photovoltaic ("PV") systems. The specific section number from the May 1999 version of UL1741 is provided for each test and requirement. Section titles were added for clarity. These section numbers are subject to change by UL. A revised version of 1741 is expected to be published around November, 2000. The utility interconnection-related procedures and requirements of that version will need to be reviewed to determine if they should be adopted into these testing and certification rules.

The requirements described below cover only issues related to Interconnection and are not intended to address device safety or other issues outside the needs of the relationship between SCE and a Producer operating a Generating Facility.

Table 1, UL1741 (May 1999 Version)
Type Tests and Requirements Appropriate for Utility Interactive Inverter Systems

<u>Section Number</u>	<u>Section Title</u>
39.1	Utility Disconnect Switch
39.2	Field Adjustable Trip-points
39.3	Field Adjustable Trip-points
39.4	Field Adjustable Trip-points
39.5	Field Adjustable Trip-points, Marking
40.1	DC Isolation
41.2	Simulated PV Array (Input Source) requirements
44	Dielectric Voltage Withstand Test
45.2.2	Power Factor
45.4	Harmonic Distortion
45.5	DC Injection
46.2	Utility Voltage and Frequency Variation Test

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
35P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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J. Generating Unit Testing And Certification Criteria

3. Type Testing (Continued)

a. Inverters (Continued)

Table 1, UL1741 (May 1999 Version) Continued
Type Tests and Requirements Appropriate for Utility Interactive Inverter Systems

<u>Section Number</u>	<u>Section Title</u>
46.2.3	Reset Delay
46.4	Loss of Control circuit
47.3	Short Circuit Test
47.7	Load Transfer Test

A description of key aspects of these procedures is provided in the testing procedures section of this Appendix.

Separate test procedures are provided to certify Non-Islanding functions (Section J.3.d.) and non-export functions (Section J.3.e.), to determine the In-rush Current tolerance of the Distribution System (Section J.3.f.), to subject the device to voltage surge conditions (Section J.3.g.), and to verify the inverter's ability to synchronize with the Distribution System (Section J.3.h.).

b. Synchronous Generators

Until a standardized test procedure, written specifically for synchronous generators, is identified, SCE or an NRTL shall determine which of the tests described in this Appendix are appropriate and necessary to certify the performance of the control and protection system functions of the synchronous machine, and how to perform them. The following tests listed in Table 2 and defined in UL 1741, shall be performed as applicable to a synchronous generator.

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(To be inserted by utility)

Advice 1498-E
Decision 00-11-001
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Issued by

John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000
Effective _____
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J. Generating Unit Testing And Certification Criteria

3. Type Testing (Continued)

b. Synchronous Generators

Table 2, UL1741 (May 1999 Version)
Type Tests and Requirements Appropriate for Synchronous Generators

<u>Section Number</u>	<u>Section Title</u>
39.1	Utility Disconnect Switch
39.2	Field Adjustable Trip-points
39.3	Field Adjustable Trip-points
39.4	Field Adjustable Trip-points
39.5	Field Adjustable Trip-points, Marking
44	Dielectric Voltage Withstand Test
45.2.2	Power Factor
45.4	Harmonic Distortion
46.2	Utility Voltage and Frequency Variation Test
46.2.3	Reset Delay
46.4	Loss of Control circuit
47.3	Short Circuit Test

A description of key aspects of these procedures is provided in the testing procedures section of this Appendix.

Separate test procedures are provided to certify Non-Islanding functions (Section J.3.d.) and non-export functions (Section J.3.e.), to determine the In-rush Current tolerance of the Distribution System (Section J.3.f.), to subject the device to voltage surge conditions (Section J.3.g.), and to verify the inverter's ability to synchronize with the Distribution System (Section J.3.h.).

c. Induction Generators

Until a standardized test procedure, written specifically for induction generators is identified, SCE or an NRTL shall determine which of the tests described in this Appendix are appropriate and necessary to certify the performance of the control and protection system functions of the induction generator, and how to perform them. The following tests listed in Table 3 and defined in UL 1741, shall be performed as applicable to a induction generator.

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(To be inserted by utility)

 Advice 1498-E

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Issued by

John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)

 Date Filed Nov 17, 2000

Effective _____

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J. Generating Unit Testing And Certification Criteria

3. Type Testing (Continued)

c. Induction Generators

Table 3, UL1741 (May 1999 Version)
Type Tests and Requirements Appropriate for Induction Generators

<u>Section Number</u>	<u>Section Title</u>
39.1	Utility Disconnect Switch
39.2	Field Adjustable Trip-points
39.3	Field Adjustable Trip-points
39.4	Field Adjustable Trip-points
39.5	Field Adjustable Trip-points, Marking
44	Dielectric Voltage Withstand Test
45.2.2	Power Factor
45.4	Harmonic Distortion
46.2	Utility Voltage and Frequency Variation Test
46.2.3	Reset Delay
46.4	Loss of Control circuit
47.3	Short Circuit Test
47.7	Load Transfer Test

A description of key aspects of these procedures is provided in the testing procedures section of this Appendix.

Separate test procedures are provided to certify Non-Islanding functions (Section J.3.d.) and non-export functions (Section J.3.e.), to determine the In-rush Current tolerance of the Distribution System (Section J.3.f.), to subject the device to voltage surge conditions (Section J.3.g.).

d. Anti-Islanding Test

In addition to the above Type Tests, devices that pass the Anti-Islanding test procedure described in this document will be considered Non-Islanding for the purposes of SCE's interconnection requirements.

e. Non-Export Test

In addition to the above Type Tests, devices that pass the Non-Export test procedure described in Section J.7.a. will be considered Non-Exporting for the purposes of SCE's interconnection requirements.

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(To be inserted by utility)
Advice 1498-E
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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J. Generating Unit Testing And Certification Criteria

3. Type Testing (Continued)

f. In-rush Current Test

Generation equipment that utilizes SCE power to motor up to speed will be tested using the procedure defined in Section J.7.b. to determine the maximum current drawn during this startup process. The resulting In-rush Current is used to estimate the starting voltage drop.

g. Surge Withstand Capability Test

Interconnection equipment shall be tested for surge withstand capability (SWC), both oscillatory and fast transient, in accordance with the test procedure defined in IEEE/ANSI C62.45 using the peak values defined in IEEE/ANSI C62.41 Tables 1 and 2 for location category B3. An acceptable result occurs even if the device is damaged by the surge, but is unable to operate or energize SCE's Distribution System. If the device remains operable after being subject to the surge conditions, previous type tests related to SCE's protection and power quality will need to be repeated to ensure the unit will still pass those tests following the surge test.

h. Synchronization Test

This test verifies that the unit synchronizes within the specified voltage/frequency/phase angle requirements. It is applied to synchronous generators and inverters capable of operating as voltage-source while connected to the SCE. This test is not necessary for induction generators or current-source inverters. The test will start with only one of the three parameters: 1) voltage difference between Generating Facility and SCE's Distribution System, 2) frequency difference, or 3) phase angle outside of the synchronization specification. Initiate the synchronization routine and verify that the Generating Facility is brought within specification prior to synchronization. Repeat the test five times for each of the three parameters. For manual synchronization with synch check or manual control with auto synchronization, the test must verify that paralleling does not occur until the parameters are brought within specifications.

4. Production Testing

As a minimum, the Utility Voltage and Frequency Variation Test procedure described in UL1741 under Manufacturing and Production Tests, Section 68 shall be performed as part of routine production (100 percent) on all equipment used to interconnect Generating Facilities to SCE's Distribution System. This testing may be performed in the factory or as part of a Commissioning Test (Section J.5.a.).

(Continued)

(To be inserted by utility)
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Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

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J. Generating Unit Testing And Certification Criteria

5. Commissioning Testing

Commissioning Testing, where required, will be performed on-site to verify protective settings and functionality. Upon initial Parallel Operation of a Generating Facility, or any time interface hardware or software is changed that may affect the functions listed below, a Commissioning Test must be performed. An individual qualified in testing protective equipment (professional engineer, factory-certified technician, or licensed electrician with experience in testing protective equipment) must perform Commissioning Testing in accordance with the manufacturer's recommended test procedure to prove the settings and requirements of this document. SCE has the right to witness Commissioning Tests as described below, or to require written certification by the installer describing which tests were performed and their results. Functions to be tested during commissioning, particularly with respect to non-certified equipment, may consist of the following:

- a. Over and under-voltage
- b. Over and under-frequency
- c. Anti-Islanding function (if applicable)
- d. Non-Export function (if applicable)
- e. Inability to energize dead line
- f. Time delay on restart after utility source is stable
- g. Utility system fault detection (if used)
- h. Synchronizing controls (if applicable)
- i. Other interconnection protective functions that may be required as part of the Generating Facility Interconnection Agreement

Other checks and tests that may need to be performed include:

- a. Verifying final protective settings
- b. Trip test
- c. In-service test

(Continued)

(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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(Continued)

J. Generating Unit Testing And Certification Criteria

5. Commissioning Testing (Continued)

a. Certified Equipment

Generating Facilities qualifying for Simplified Interconnection incorporate Certified Equipment that have, at a minimum, passed the Type Test and Production Tests described in this document and are judged to have little or no potential impact on SCE's Distribution System. For such Generating Facilities, it is necessary to perform only the following tests:

- (1) Protection settings that have been changed after factory testing will require field verification. Tests will be performed using injected secondary quantities, applied waveforms, a test connection using a generator to simulate abnormal utility voltage or frequency, or varying the set points to show that the device trips at the measured (actual) utility voltage or frequency.
- (2) The Non-Islanding function will be checked by operating a load break disconnect switch to verify the interconnection equipment ceases to energize the line and does not re-energize for the required time delay after the switch is closed.
- (3) The Non-Export function will be checked using secondary injection techniques. This function may also be tested by adjusting the Generating Facility output and local loads to verify that the applicable non-export criteria (i.e., reverse power or under power) are met.

The supplemental review or an Interconnection Study may impose additional components or additional testing.

b. Non-Certified Equipment

Non-certified equipment shall be subjected to the appropriate tests described in Type Testing (Section J.3.) as well as those described in Certified Equipment Commissioning Test (Section J.5.a.). With SCE's approval, these tests may be performed in the factory, in the field as part of commissioning, or a combination of both. SCE, at its discretion, may also approve a reduced set of tests for a particular application or, for example, if it determines it has sufficient experience with the equipment.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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J. GENERATING UNIT TESTING AND CERTIFICATION CRITERIA

5. Commissioning Testing (Continued)

c. Verification of Settings

Verifying final protective settings If the testing is part of the commissioning process, then, at the completion of such testing, the Producer shall confirm all devices are set to SCE-approved settings . This step shall be documented in the Commissioning Test Certification.

d. Trip Tests

Interconnection protective devices (e.g. reverse power relays) that have not previously been tested as part of the interconnection system with their associated interrupting devices (e.g. contactor or circuit breaker) shall be trip tested during commissioning. The trip test shall be adequate to prove that the associated interrupting devices open when the protective devices operate. Interlocking circuits between protective devices or between interrupting devices shall be similarly tested unless they are part of a system that has been tested and approved during manufacture.

e. In-service tests

Interconnection protective devices that have not previously been tested as part of the interconnection system with their associated instrument transformers or that are wired in the field shall be given an in-service test during commissioning. This test will verify proper wiring, polarity, CT/PT ratios, and proper operation of the measuring circuits. The in-service test shall be made with the power system energized and carrying a known level of current. A measurement shall be made of the magnitude and phase angle of each ac voltage and current connected to the protective device and the results compared to expected values. For protective devices with built-in metering functions that report current and voltage magnitudes and phase angles, or magnitudes of current, voltage, and real and reactive power, the metered values may be used for in-service testing. Otherwise, portable ammeters, voltmeters, and phase-angle meters shall be used.

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

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J. Generating Unit Testing And Certification Criteria

6. Periodic Testing

Periodic Testing of Interconnection-related Protective Functions shall be performed as specified by the manufacturer, or at least every four years. All periodic tests prescribed by the manufacturer shall be performed. The EP shall maintain periodic test reports or a log for inspection by SCE. Periodic Testing conforming to SCE test intervals for the particular line section may be specified by SCE under special circumstances, such as high fire hazard areas. A system that depends upon a battery for trip power shall be checked and logged once per month for proper voltage. Once every four years, the battery must be either replaced or a discharge test performed.

7. Supplemental Testing Procedures

This section describes the additional Type Tests necessary to qualify a device as Certified for use on SCE and other California Electric Corporation's Distribution Systems. These Type Tests are not contained in Underwriters Laboratories UL 1741 Standard *Inverters, Converters and Controllers for Use in Independent Power Systems*, or other referenced standards, but are considered necessary for Certification by SCE and the other Electrical Corporations.

a. Non-Export Test Procedures

The non-export test is intended to verify the operation of relays, controllers and inverters designed to limit the export of power and certify the equipment as meeting the requirements of Step 2, Options 1 and 2, of the Initial Review Process. Tests are provided for discrete relay packages and for controllers and inverters that include the intended function.

(1) Reverse Power Relay Test

This version of the Non-Export test procedure is intended for stand-alone reverse power and under power relay packages provided to meet the requirements of Options 1 and 2 of the Non-Export Screen. It should be understood that in the reverse power application, the relay will provide a trip output with power in the export (toward the SCE Distribution System) direction.

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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J. Generating Unit Testing And Certification Criteria

7. Supplemental Testing Procedures (Continued)

a. Non-Export Test Procedures (Continued)

(1) Reverse Power Relay Test (Continued)

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the appropriate secondary pickup current for the desired export power flow of 0.5 secondary watts (the agreed-upon minimum pickup setting, assumes 5 Amp and 120V CT/PT secondary). Apply nominal voltage with minimum current setting at zero (0) degrees in the trip direction. Increase the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2 percent of the expected power. For relays with adjustable settings, repeat this test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay does not operate (measured watts will be zero or negative).

Step 2: Leading Power Factor Test

Apply rated voltage with a minimum pickup current setting (calculated value for system application) and apply a leading power factor load current in the non-trip direction (current lagging voltage by 135 degrees). Increase the current to relay rated current and verify that the relay does not operate. For relay's with adjustable settings, this test should be repeated at the minimum, midpoint, and maximum settings.

Step 3 Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Increase the current level to pickup (about 10 times higher than at 0 degrees) and verify that the relay operates. Repeat for phase angles of 90, 180 and 270 degrees and verify that the relay does not operate.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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J. Generating Unit Testing And Certification Criteria

7. Supplemental Testing Procedures (Continued)

a. Non-Export Test Procedures (Continued)

(1) Reverse Power Relay Test (Continued)

Step 4 Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and current at 180 degrees from tripping direction, to simulate normal load conditions (for 3-phase relays, use I_a at 180, I_b at 60 and I_c at 300 degrees). Remove Phase-1 voltage and observe that the relay does not operate. Repeat for phase-2 and 3.

Step 5 Load Current Test

Using the pickup settings determined in Step 1, apply rated voltage and current at 180 degrees from the tripping direction, to simulate normal load conditions (use I_a at 180, I_b at 300 and I_c at 60 degrees). Observe that the relay does not operate.

Step 6: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to simulate an unbalanced fault in the non-trip direction (use V_a at 0 degrees, V_b and V_c at 180 degrees, I_a at 180 degrees, I_b at 0 degrees, and I_c at 180 degrees). Observe that the relay, especially single phase, does not mis-operate.

Step 7: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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J. Generating Unit Testing And Certification Criteria

7. Supplemental Testing Procedures (Continued)

a. Non-Export Test Procedures (Continued)

(1) Reverse Power Relay Test (Continued)

Step 8: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 9: Surge withstand

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand test described in J.3.g.

(2) Under Power Relay Test

In the underpower application, the relay will provide a trip output when import power (toward the Producer's Generating Facility) drops below the specified power level.

Note: For an underpower relay, pickup is defined as the highest power level at which the relay indicates that the power is less than the set setting.

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the appropriate secondary pickup current for the desired power flow pickup level of 5% of peak load (the agreed-upon minimum pickup setting). Apply rated voltage and current setting at 0 degrees in the direction of normal load current.

Decrease the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2 percent of the expected power. For relays with adjustable settings, repeat the test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay operates (measured watts will be zero or negative).

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(To be inserted by utility)

Advice 1498-E

Decision 00-11-001

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Issued by

John R. Fielder

Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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(Continued)

J. GENERATING UNIT TESTING AND CERTIFICATION CRITERIA

7. Supplemental Testing Procedures (Continued)

a. Non-Export Test Procedures (Continued)

(2) Under Power Relay Test (Continued)

Step 2: Leading Power Factor Test

Using the pickup current setting determined in step 1, apply rated voltage and rated leading power factor load current in the normal load direction (current leading voltage by 45 degrees). Decrease the current to 145% of the pickup level determined in Step 1 and verify that the relay does not operate. For relays with adjustable settings, repeat the test at the minimum, midpoint, and maximum settings.

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Decrease the current level to pickup (about 10% of the value at 0 degrees) and verify that the relay operates. Repeat for angles 90, 180 and 270 degrees and verify that the relay operates for any current less than rated current.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and 25% of rated current in the normal load direction, to simulate light load conditions. Remove Phase-1 voltage and observe that the relay does not operate, repeat for phase-2 and 3.

Step 5: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to simulate an unbalanced fault in the normal load direction (use V_a at 0 degrees, V_b and V_c at 180 degrees, I_a at 0 degrees, I_b at 180 degrees, and I_c at 0 degrees). Observe that the relay, especially single phase, operates properly.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

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J. Generating Unit Testing And Certification Criteria

7. Supplemental Testing Procedures (Continued)

a. Non-Export Test Procedures (Continued)

(2) Under Power Relay Test (Continued)

Step 6: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

Step 7: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 8: Surge withstand

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand test described in Section J.3.g.

(3) Functional Tests for Inverters and Controllers

Inverters and controllers designed to provide reverse or under power functions shall be tested to certify the intended operation of this function. Two methods are provided: Method 1: If the controller utilizes external current/voltage measurement to determine the reverse or underpower condition, then the controller shall be functionally tested by application of appropriate secondary currents and potentials as described in the Reverse Power Relay Test, Section J.7.a.(1) of this Rule.

Method 2: If external secondary current or potential signals are not used, then unit-specific tests must be conducted to verify that power cannot be exported across the PCC for a period exceeding two seconds. These tests may be factory tests, if the measurement and control points are part of a single unit, or may be provided for in the field.

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(To be inserted by utility)

Advice 1498-EDecision 00-11-001

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Issued by

John R. FielderSenior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____



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J. Generating Unit Testing And Certification Criteria

7. Supplemental Testing Procedures (Continued)

b. In-rush Current Tests

This test will determine the maximum In-rush Current drawn by the unit.

(1) Locked-Rotor Method

Use the test procedure defined in NEMA MG-1 (manufacturer's data is acceptable if available).

(2) Start-up Method

Install and setup the Generating Facility equipment as specified by the manufacturer. Using a calibrated oscilloscope or data acquisition equipment with appropriate speed and accuracy, measure the current draw at the Point of Interconnection as the Generating Facility starts up and parallels with SCE's Distribution System. Startup shall follow the normal, manufacturer-specified procedure. Sufficient time and current resolution and accuracy shall be used to capture the maximum current draw within five percent. In-rush Current is defined as the maximum current draw from SCE during the startup process, using a 10-cycle moving average. During the test, the utility source, real or simulated, must be capable of maintaining voltage within +/- five percent of rated at the connection to the unit under test. Repeat this test five times. Report the highest 10-cycle current as the In-rush Current. A graphical representation of the time-current characteristic along with the certified In-rush Current must be included in the test report and made available to SCE.

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(To be inserted by utility)
Advice 1498-E
Decision 00-11-001
49P0

Issued by
John R. Fielder
Senior Vice President

(To be inserted by Cal. PUC)
Date Filed Nov 17, 2000
Effective _____
Resolution _____

**GENERATING FACILITY INTERCONNECTION AGREEMENT
SOUTHERN CALIFORNIA EDISON
PRODUCER NAME**

This Generating Facility Interconnection Agreement ("Agreement") is entered into by and between (Producer's Name) ("Producer"), and Southern California Edison Company ("SCE"), a California Corporation. Producer and SCE are sometimes also referred to in this Agreement jointly as "Parties" or individually as "Party." In consideration of the mutual promises and obligations stated in this Agreement and its attachments, the Parties agree as follows:

1. SCOPE AND PURPOSE

This Agreement provides for Producer to interconnect and operate a Generating Facility in parallel with SCE's Distribution System to serve the electrical loads connected to the electric service account that SCE uses to interconnect Producer's Generating Facility (or, where permitted under Section 218 of the California Public Utilities Commission Code ("PU Code"), the electric loads of an on-site or neighboring party lawfully connected to Producer's Generating Facility through Producer's circuits).

2. SUMMARY AND DESCRIPTION OF PRODUCER'S GENERATING FACILITY

2.1 A description of the Generating Facility, including a summary of its significant components and a single-line diagram showing the general arrangement of how Producer's Generating Facility and loads are interconnected with SCE's Distribution System, are attached to and made a part of this Agreement. (Supplied by Producer as Appendix A).

2.2 Generating Facility identification number: _____ (Assigned by SCE)

2.3 Producer's electric service account number: _____ (Assigned by SCE)

2.4 Name and address used by SCE to locate the electric service account used to interconnect the Generating Facility with SCE's Distribution System:

2.5 The Gross Nameplate Rating of the Generating Facility is: _____ kW.

2.6 The Net Nameplate Rating of the Generating Facility is _____ kW.

2.7 The expected annual energy production of the Generating Facility is _____ kWh.

2.8 For the purpose of securing the Competition Transition Charge exemption available under Section 372 of the California Public Utilities Code ("PUC"), Producer hereby declares that the Generating Facility does / does not meet the requirements for "Cogeneration" as such term is used in Section 218.5 of the PU Code.

2.9 The Generating Facility's expected date of Initial Operation is _____. The expected date of Initial Operation shall be within two years of the date of this Agreement.

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3. DOCUMENTS INCLUDED; DEFINED TERMS

3.1 When this Agreement is completed, it may include the following exhibits which are specifically incorporated herein and made a part of this Agreement.

Appendix A- Description of Generating Facility and Single-Line Diagram
(Supplied by Producer)

Appendix B- Copies of Rules 2 and 21 and other selected rules and tariffs of SCE
(Supplied by SCE)

Appendix C- A Copy of an interconnection facility financing and ownership
agreement, if applicable, (Supplied by SCE)

3.2 When initially capitalized, whether in the singular or in the plural, the terms used herein shall have the meanings assigned to them either in this Agreement or in SCE's Rule 21, Section H.

4. TERM AND TERMINATION

4.1 This Agreement shall become effective as of the last date entered in Section 16, below. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:

(a) The Parties agree in writing to terminate the Agreement.

(b) Unless otherwise agreed in writing by the Parties, at 12:01 A.M. on the day following the date the electric service account through which Producer's Generating Facility is interconnected to SCE's Distribution System is closed or terminated.

(c) At 12:01 A.M. on the 61st day after Producer or SCE provides written Notice pursuant to Section 9 below to the other Party of Producer's or SCE's intent to terminate this Agreement.

4.2 Producer may elect to terminate this Agreement pursuant to the terms of Section 4.1(c) for any reason. SCE may elect to terminate this Agreement pursuant to the terms of Section 4.1(c) for one or more of the following reasons:

(a) A change in applicable rules, tariffs, and regulations, as approved or directed by the Commission, or a change in any local, state or federal law, statute or regulation, either of which materially alters or otherwise affects SCE's ability or obligation to perform SCE's duties under this Agreement;
or,

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PRODUCER NAME**

- (b) Producer fails to take all corrective actions specified in SCE's Notice that Producer's Generating Facility is out of compliance with the terms of this Agreement within the time frame set forth in such Notice; or,
- (c) Producer fails to interconnect and operate the Generating Facility per the terms of this Agreement prior to 120 days after the date set forth in Section 2.9, above, as the Generating Facility's expected date of Initial Operation; or,
- (d) Producer abandons the Generating Facility. SCE shall deem the Generating Facility to be abandoned if SCE determines, in its sole opinion, the Generating Facility is non-operational and Producer does not provide a substantive response to SCE's Notice of its intent to terminate this Agreement as a result of Producer's apparent abandonment of the Generating Facility affirming Producer's intent and ability to continue to operate the Generating Facility.

4.3 Notwithstanding any other provisions of this Agreement, SCE shall have the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application to terminate this Agreement.

4.4 Any agreements attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

5. GENERATING FACILITY, OPERATION AND CERTIFICATION REQUIREMENTS

5.1 The electric power produced by Producer's Generating Facility shall be used solely to serve electrical loads connected to the electric service account that SCE uses to interconnect Producer's Generating Facility (or, where permitted under Section 218 of the PUC, the electric loads of an on-site or neighboring party lawfully connected to Producer's Generating Facility through Producer's circuits). Producer shall attempt in good faith to regulate the electric power output of Producer's Generating Facility so as to prevent the flow of electric energy from the Generating Facility to SCE's electric system. Unless otherwise agreed upon in writing by the Parties, this Agreement does not provide for, nor otherwise require SCE to receive, purchase, transmit, distribute, or store the electrical power produced by Producer's Generating Facility.

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5.2 If Producer declares that its Generating Facility meets the requirements for “Cogeneration” as such term is used in Section 218.5 of the PUC (or any successor definition of “Cogeneration”) (“Cogeneration Requirements”), Producer warrants that, beginning on the date of Initial Operation and continuing throughout the term of this Agreement, its Generating Facility shall continue to meet such Cogeneration Requirements. If Producer becomes aware that its Generating Facility has ceased to meet the Cogeneration Requirements, Producer shall promptly provide SCE with Notice of such change pursuant to Section 9.1 below. If at any time during the term of this Agreement SCE determines in its sole discretion that Producer’s Generating Facility may no longer meet the Cogeneration Requirements, SCE may require Producer to provide evidence that its Generating Facility continues to meet the Cogeneration Requirements within 15 business days of SCE’s request for such evidence. Additionally, SCE may periodically (typically, once per year) inspect Producer’s Generating Facility and/or require documentation from Producer to monitor the Generating Facility’s compliance with Section 218.5 of the PUC. If SCE determines in its sole judgment that Producer either failed to provide evidence in a timely manner or that it provided insufficient evidence that its Generating Facility continues to meet the Cogeneration Requirements, then the Cogeneration status of the Generating Facility shall be deemed ineffective until such time as Producer again demonstrates to SCE’s reasonable satisfaction that the Generating Facility meets the requirements for a Cogeneration facility (the “Status Change”).

5.2.1 SCE shall revise its records and the administration of this Agreement to reflect the Status Change and provide Notice to Producer of the Status Change pursuant to Section 9.1 below. This Notice shall specify the effective date of the Status Change. This date shall be the first day of the calendar year for which SCE determines in its sole discretion that the Generating Facility first ceased to meet the Cogeneration Requirements. SCE’s Notice shall include an invoice for Competition Transition Charges (“CTCs”) that were not previously billed during the period between the effective date of the Status Change and the date of the Notice in reliance upon Producer’s representations that the Generating Facility complied with the Cogeneration Requirements and therefore was eligible for the exemption from CTCs available under Section 372 of the PUC.

5.2.2 Any amounts to be paid or refunded by Producer, as may be invoiced by SCE pursuant to the terms of this Section 5.2, shall be paid to SCE within 30 days of Producer’s receipt of such invoice.

6. INTERCONNECTION FACILITIES

6.1 Producer and/or SCE, as appropriate, shall provide Interconnection Facilities that adequately protect SCE’s Distribution System, personnel, and other persons from damage or injury, which may be caused by the operation of Producer’s Generating Facility.

6.2 Producer shall be solely responsible for the costs, design, purchase, construction, operation, and maintenance of the Interconnection Facilities that Producer owns.

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- 6.3 If the provisions of SCE's Rule 21, or any other tariff or rule approved by the Commission, requires SCE to own and operate a portion of the Interconnection Facilities, Producer and SCE shall promptly execute an *Interconnection Facilities Financing and Operation Agreement* that establishes and allocates responsibility for the design, installation, operation, maintenance, and ownership of the Interconnection Facilities. This *Interconnection Facilities Financing and Operation Agreement* shall be attached to and made a part of this Agreement as Appendix C.

7. LIMITATION OF LIABILITY

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages of any kind whatsoever.

8. INSURANCE

- 8.1 In connection with Producer's performance of its duties and obligations under this Agreement, Producer shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

- (a) Two million dollars (\$2,000,000) for each occurrence if the Gross Nameplate Rating of Producer's Generating Facility is greater than one hundred (100) kW;
- (b) One million dollars (\$1,000,000) for each occurrence if the Gross Nameplate Rating of Producer's Generating Facility is greater than twenty (20) kW and less than or equal to one hundred (100) kW; and
- (c) Five hundred thousand dollars (\$500,000) for each occurrence if the Gross Nameplate Rating of Producer's Generating Facility is twenty (20) kW or less.
- (d) Two hundred thousand dollars (\$200,000) for each occurrence if the Gross Nameplate Rating of Producer's Generating Facility is ten (10) kW or less and Producer's Generating Facility is connected to an account receiving residential service from SCE.

Such general liability insurance shall include coverage for "Premises-Operations, Owners and Contractors Protective, Products/Completed Operations Hazard, Explosion, Collapse, Underground, Contractual Liability, and Broad Form Property Damage including Completed Operations."

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SOUTHERN CALIFORNIA EDISON
PRODUCER NAME**

- 8.2 The general liability insurance required in Section 8.1 shall, by endorsement to the policy or policies, (a) include SCE as an additional insured; (b) contain a severability of interest clause or cross-liability clause; (c) provide that SCE shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to SCE prior to cancellation, termination, alteration, or material change of such insurance.
- 8.3 If Producer's Generating Facility is connected to an account receiving residential service from SCE and the requirement of Section 8.2(a) prevents Producer from obtaining the insurance required in Section 8.1, then upon Producer's written Notice to SCE in accordance with Section 9.1, the requirements of Section 8.2(a) shall be waived.
- 8.4 Evidence of the insurance required in Section 8.2 shall state that coverage provided is primary and is not in excess to or contributing with any insurance or self-insurance maintained by SCE.
- 8.5 Producer agrees to furnish the required certificates and endorsements to SCE prior to Initial Operation. SCE shall have the right to inspect or obtain a copy of the original policy or policies of insurance.
- 8.6 If Producer is self-insured with an established record of self-insurance, Producer may comply with the following in lieu of Sections 8.1 through 8.4:
- (a) Producer shall provide to SCE, at least thirty (30) calendar days prior to the date of Initial Operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required under Section 8.1.
 - (b) If Producer ceases to self-insure to the level required hereunder, or if Producer is unable to provide continuing evidence of Producer's ability to self-insure, Producer agrees to immediately obtain the coverage required under Section 8.1.
- 8.7 All insurance certificates, statements of self insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the following:

Southern California Edison Company
Attention: Director, QF Resources
2244 Walnut Grove Ave.
P.O. Box 800
Rosemead, CA 91770

**GENERATING FACILITY INTERCONNECTION AGREEMENT
SOUTHERN CALIFORNIA EDISON
PRODUCER NAME**

9. NOTICES

9.1 Any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person or sent by first class mail, postage prepaid, to the person specified below:

If to SCE: Southern California Edison Company
Attention: Director, QF Resources
2244 Walnut Grove Avenue
P.O. Box 800
Rosemead, CA 91770
Phone: (626) 302-1212
FAX: (626) 302-9622

If to Producer : Producer Name
Address: _____
City: _____
Phone: () _____
FAX: () _____

9.2 A Party may change its address for Notices at any time by providing the other Party Notice of the change in accordance with Section 9.1.

9.3 The Parties may also designate operating representatives to conduct the daily communications, which may be necessary or convenient for the administration of this Agreement. Such designations, including names, addresses, and phone numbers may be communicated or revised by one Party's Notice to the other.

10. REVIEW OF RECORDS AND DATA

SCE shall have the right to review and obtain copies of Producer's operations and maintenance records, logs, or other information such as, unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Producer's Generating Facility or its interconnection with SCE's Distribution System.

11. ASSIGNMENT

Producer shall not voluntarily assign its rights nor delegate its duties under this Agreement without SCE's written consent. Any assignment or delegation Producer makes without SCE's written consent shall not be valid. SCE shall not unreasonably withhold its consent to Producer's assignment of this Agreement.

**GENERATING FACILITY INTERCONNECTION AGREEMENT
SOUTHERN CALIFORNIA EDISON
PRODUCER NAME**

12. NON-WAIVER

None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

13. GOVERNING LAW, JURISDICTION OF COMMISSION, INCLUSION OF SCE's TARIFF SCHEDULES

13.1 This Agreement shall be interpreted, governed, and construed under the laws of the State of California as if executed and to be performed wholly within the State of California without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.

13.2 This Agreement shall, at all times, be subject to such changes or modifications by the Commission as it may from time to time direct in the exercise of its jurisdiction.

13.3 The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the Tariff Schedules and Rules applicable to the electric service provided by SCE, which Tariff Schedules and Rules are hereby incorporated into this Agreement by this reference.

13.4 Notwithstanding any other provisions of this Agreement, SCE shall have the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application for change in rates, charges, classification, service, tariff or rule or any agreement relating thereto.

14. AMENDMENT AND MODIFICATION

This Agreement can only be amended or modified by a written agreement signed by both Parties.

15. ENTIRE AGREEMENT

This Agreement, including any incorporated Tariff Schedules and rules, contains the entire agreement and understanding between the Parties, their agents, and employees as to the subject matter of this Agreement. Each party also represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the incorporated tariff schedules and rules.

**GENERATING FACILITY INTERCONNECTION AGREEMENT
SOUTHERN CALIFORNIA EDISON
PRODUCER NAME**

16. SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

PRODUCER'S NAME

By: _____
Name: _____
Title: _____
Date: _____

SOUTHERN CALIFORNIA
EDISON COMPANY

By: _____
Name: _____
Title: _____
Date: _____

APPENDIX A
DESCRIPTION OF GENERATING FACILITY
AND SINGLE-LINE DIAGRAM,
(Provided by Producer)

APPENDIX B
RULES: "2" and "21"
(and any other Tariffs pertinent to the situation)
(Provided by SCE)

(Note: SCE's tariffs are included for reference only and shall at all times be subject to such changes or modifications by the Commission as the Commission may, from time to time, direct in the exercise of its jurisdiction.)

APPENDIX C
(If Applicable)
INTERCONNECTION FACILITIES
FINANCING AND OWNERSHIP
AGREEMENT
(Provided by SCE)



Southern California Edison
Rosemead, California

Original
Cancelling

Cal. PUC Sheet No. 27972-E
Cal. PUC Sheet No.

Sheet 1

(Continued)
GENERATING FACILITY INTERCONNECTION AGREEMENT

Form 14-731

(To be inserted by utility)

Advice 1498-E

Decision 00-11-001

1P0

Issued by

John R. Fielder

Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____

APPLICABILITY

This application is for the interconnection of an electrical Generating Facility that connects directly to the electrical system of a person or business that receives electric service from Southern California Edison (SCE). This application may be used for two types of Generating Facilities:

1. Generating Facilities that normally serve all or part of the SCE customer's own electrical requirements, but do not export or sell energy to SCE's Distribution System; and
2. "Small (<100 kW) Qualifying Facilities" that are entitled to sell power to SCE.

If you desire to interconnect a Generating Facility for other purposes, such as Net Energy Metering pursuant to California Public Utilities Code Section 2827, or to schedule energy with the California Independent System Operator (CAISO), other applications forms are available and must be used.

Upon request, SCE will provide additional information and documents such as application forms, sample agreements, technical requirements and specifications, a listing of equipment previously certified for interconnection with its Distribution System, application fee information, applicable rate schedules and metering requirements.

A FORMAL INTERCONNECTION AGREEMENT AND WRITTEN AUTHORIZATION IS REQUIRED BEFORE YOU INTERCONNECT A GENERATING FACILITY WITH SCE'S DISTRIBUTION SYSTEM

This application is solely a request for a *Generating Facility Interconnection Agreement (Form 14-731)*. It does not authorize you to interconnect a Generating Facility with SCE's Distribution System. You and SCE must first form a Generating Facility Interconnection Agreement and comply with its terms. You may be required to install metering or protection devices not supplied with your generating equipment prior to receiving SCE's permission to interconnect your generator with its Distribution System. You **must not** operate a Generating Facility in parallel with SCE's Distribution System until you receive SCE's written permission to do so. **Unauthorized interconnections are dangerous, and may result in injury to you or other persons and/or may cause damage to your equipment or SCE's Distribution System for which you will be responsible.**

SUMMARY OF APPLICATION AND INTERCONNECTION PROCESS

1. All parties applying to interconnect a Generating Facility with SCE's Distribution System are required to complete and return this Application and supply any additional information that SCE may request to determine the requirements for interconnection. **A separate application form must be submitted for each location.** (SCE considers each metering point receiving separate electric service as an individual location.) SCE may contact you to clarify or amend your application. Incomplete or inadequate applications may be returned.

2. All applicants must pay an \$800 fee to SCE for processing the application and performing the *Initial Review* as Described in Section I. of SCE's Rule 21. The fee payment must be in the form of a check or money order payable to "Southern California Edison Company" and be submitted with this application form. The Initial Review will result in one of two possible outcomes. If the Generating Facility passes each of the screens included in the Initial Review, SCE will provide its requirements for interconnection and an executable interconnection agreement to the applicant. This process normally takes about 10 business days. Alternatively, if after performing its Initial Review, SCE determines additional studies or engineering will be required to evaluate and authorize the interconnection of an applicant's Generating Facility, it will notify the applicant and request the payment of a supplemental \$600 fee. SCE will perform the additional work and provide the applicant with SCE's requirements and additional costs (if any) for interconnecting the applicant's proposed Generating Facility at the location indicated in the application. This process normally takes about 10 additional business days following the receipt of the supplemental fee. Payment for this Supplemental Review shall be submitted to SCE within 10 calendar days after an applicant's receipt of SCE's invoice for the Supplemental Review.
 3. If SCE's Initial Review reveals that interconnection of an applicant's proposed Generating Facility will require substantial amounts of additional engineering, or the installation of significant or interconnection facilities modifications to SCE's Distribution System, SCE will first offer an agreement that sets forth the nature and scope of such studies, facility design, and engineering work to be performed and will provide cost estimates for fixed price or actual cost billing options to the applicant. This agreement to perform an Interconnection Study will also include SCE's estimated schedule for completing such work.
4. Where SCE's Initial Review or Interconnection Study determines that modifications or additions are required to be made to its Distribution System, or that additional metering, monitoring, or protection devices will be necessary to accommodate an applicant's Generating Facility, SCE may also provide the applicant with an interconnection facilities financing and ownership agreement as necessary. This agreement will set forth both SCE's and the Applicant's responsibilities, estimated work completion schedules, and estimated or fixed price costs for the required work.
5. If an Applicant withdraws its Application prior to the interconnection of its Generating Facility, SCE will refund \$400 to the Applicant.
6. Once the Generation Facility Interconnection Agreement and any required supplemental agreements are formed between the applicant and SCE, the applicant will be considered to be a "Producer". A Producer may install or construct its Generating Facility in accordance with the provisions of SCE's Rules and Tariff Schedules and the terms of the specific Generating Facility Interconnection Agreement formed between SCE and the Producer. Where applicable, SCE will commence construction/installation of the interconnection facilities system modifications and/or metering and monitoring requirements previously identified in any other interconnection facilities financing and ownership agreements.
7. Generating Facilities and associated Interconnection Facilities must be tested to ensure compliance with the safety and reliability provisions of SCE's Rules and Tariff Schedules prior to being operated in parallel with SCE's Distribution System. SCE may waive or reduce its testing requirements if the generating equipment has been previously certified for use on SCE's Distribution System. For non-certified equipment, SCE will require the Producer to submit a written testing plan for its review and acceptance. Alternatively, the Producer and SCE may arrange to have SCE conduct the required testing at the Producer's expense. Where applicable, the test plan shall include the installation test procedure(s) published by the manufacturer(s) of the generation or interconnection equipment. Generation Facility testing shall be conducted at a mutually agreeable time, and depending on who conducts the tests, SCE or the Producer will be given the opportunity to witness the tests.

8. Upon SCE's acceptance of the technical and operating adequacy of the Generating Facility and receipt of the documentation required pursuant to the insurance provisions of the Generating Facility Interconnection Agreement, SCE will provide the Producer with a letter giving SCE's express written permission for the Producer to interconnect and operate its Generating Facility in parallel with SCE's Distribution System.

APPLICATION INSTRUCTIONS

All Applicants must complete Part 1 of the following application form. If the Generating Facility you are proposing to install has not been previously "*Certified*" or approved for interconnection with SCE's Distribution System, you must also complete Part 2. If you are unsure about the certification status of your proposed generating equipment, please contact the manufacturer of the equipment. Based on the nature of the Generating Facility you intend to install, SCE may also request you to supply additional technical information regarding your generating equipment or the transformers used to interconnect it with SCE's Distribution System. When you submit your application and fee, **please also submit a "Single-line Diagram" of the system you plan to installed** showing the general arrangement and relationship of the various components including any customer owned transformers.

PART 1 To be filled out by all Applicants

Note: This Application must be filled out in accordance with Rule 21 Sections C., I., and J. of SCE's Tariffs. "Generating Facility Interconnection Requirements", including the Rule's Appendices A and B

Host Facility Information (Where will the Generating Facility be installed?)

<input type="text"/>		<input type="text"/>	
Name Shown on SCE Service Account	SCE Service Account and/or Meter Number (See current bill.)		

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Street Address	City	State	Zip Code

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mailing Address (if different from above)	City	State	Zip Code

Applicant Information (Who should be contacted - If different from above)

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Contact Person	Phone	Fax	Email Address

<input type="text"/>
Company Name

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Street Address	City	State	Zip Code

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mailing Address (if different from above)	City	State	Zip Code

Contractor / Installer Information (If different from above.)

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Contact Person	Phone	Fax	Email Address

<input type="text"/>
Company Name

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Street Address	City	State	Zip Code

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mailing Address (if different from above)	City	State	Zip Code

Generating Facility Installation Information

1. How many generating units do you intend to install at the location specified in this application?

No. of Generators

Multiple generating units connected and controlled through a single interface with SCE are considered to be all part of a single Generating Facility.

Examples: photovoltaic panels connected through a single inverter or multiple micro-turbines connected through a single interface and controlled as one generating set are considered to be a single Generating Facility. If you plan to use more than one type of generating unit, please provide the information for each type and specify how many of each type you plan to use.

2. Has any of the generation equipment you are installing been "Certified" for use in California? (See Section J. of Rule 21 for Certification requirements)

Yes No

If you answered "yes" to question 2, please attach your generation equipment certificate for each Certified generating unit. If every generating unit you are installing is certified, skip to question 3. If you are uncertain about the Certification status of your generation unit, please contact the manufacturer of your generating unit.

- 2.1 Has any of the generation equipment you are installing been previously approved by SCE for interconnection with SCE's Distribution System?

Yes No

If you answered "yes" to question 2.1, please attach a copy of SCE's approval letter for each generating unit that has received approval for interconnection with SCE's Distribution System.

- 2.2 Has any of the generation equipment you are installing either not Certified or previously approved for interconnection with SCE's Distribution System.?

Yes No

If you answered "yes" to question 2.2, please complete Part 2 of this application for each non-certified or non-SCE approved generation unit. You will need to fill out a separate Part 2 form for each non-certified, non-approved Generating unit.

3. Do you plan to sell electric energy produced by your Generating Facility to SCE?

Yes No

*If you answered "yes" to question 3, please continue to question 3.1.
If you answered "no" to question 3, please skip to question 3.2.*

- 3.1 Is the Generating Facility you are installing a "Qualifying Facility" (QF) with a total installed nameplate capacity of 100 kW or less?

Yes No

(The requirements for a Qualifying Facility are set forth in Part 292 of the Federal Energy Regulatory Commission's (FERC) regulations which relate to the Public Utilities Regulatory Policies Act of 1978. SCE can provide a copy of this document to you if necessary.)

If you answered "no" to question 3.1, STOP! You cannot apply for interconnection with this form. Please contact SCE at the number listed below for additional information.

- 3.1.1 If you are entitled to sell surplus energy to SCE from your Qualifying Facility, how many kWh do you expect to sell each year?

kWh

3.2 *If you answered yes to Question 3, please skip question 3.2. It does not apply.*
If your Generating Facility will operate in a non-exporting mode (you will use all of the electrical energy produced by your Generating Facility at your location), which if the following four options will you use to ensure that you do not export energy to SCE?

3.2.1 Option 1: Provide reverse power protection

Yes

3.2.2 Option 2: Provide under power protection
(*Similar to reverse power protection but measures incoming energy*)

Yes

3.2.3 Option 3: Limit the incidental export of power*

Yes

**If you select this Option 3, your installation must meet all of the following conditions:*

a. *The aggregate nameplate capacity of the Generating Facility must be less than or equal to 25% of the nominal ampere rating of the service entrance equipment serving your facility.*

b. *The total aggregate nameplate capacity of the Generating Facility must be less than or equal to the rating of the SCE transformer serving your facility.*

Note: This restriction does not apply to customers taking primary service.

c. *Your Generating Facility must be certified as Non-Islanding*

3.2.4 Option 4: The nameplate rating of the Generating Facility will not exceed 50% of the host facility's minimum electrical load.

Yes

3.2.5 If Option 4 is selected, what is the minimum load of the host facility?

Min. Load kWh

4. Operational Information

4.1 What mode of operation do you plan for your Generating Facility?
Check all that apply.

As available
(*Wind, solar and hydro systems only*)

Yes

Peak shaving
(*Operated during peak energy price periods only*)

Yes

Demand management
(*Operated in connection with a demand management system*)

Yes

Prime power
(*Base loaded – operated continuously*)

Yes

Combined Heat and Power
(*Cogeneration – operated to serve thermal demands*)

Yes

Load Following

Yes

Other: Describe

Yes

4.2 What is the estimated annual kilo-watt hour production of your Generating Facility?

Annual kWh

5. Do any of your generating units start by using grid power (motoring)? Yes No

If you answered "no" to question 5, please skip to question 6.

If you answered "yes" to question 5, please answer the following questions.

5.1 What is the In-rush Current of each unit that starts by "motoring?"
Note: If you don't know, please contact your generator manufacturer.

Inrush Amps

5.2 What is the continuous ampere rating of your service entrance equipment?
Note: If you don't know, please contact your electrical contractor/installer.

Amps

6. Is the Gross Nameplate Rating of your Generating Facility 11kVA or less? Yes No
If the answer to question 6 is "yes", please skip to question 8.

7.(a) What is the short circuit contribution of the proposed Generating Facility at the generator's terminals?

If your Generating Facility is not Certified or if this information is not listed in the Certificate, you must also answer Question 6 of Part 2,

Amps

7.(b) What is the short circuit contribution of the proposed Generating Facility at the Point of Common Coupling with SCE's Distribution System?

This value should be based on your answer to 7.a, adjusted for site/facility impedance to the Point of Common Coupling with SCE's Distribution System.

Amps

7.1 Is your proposed Generating Facility system connected to SCE's Distribution System through a transformer shared by other Customers? Yes No

Note: If you are uncertain about the answer to Question 7.1 SCE will assist you.

If the answer to question 7.1 is "yes", please answer question 7.2.

If the answer to question 7.1 is "no", please continue to question 8.

7.2 What are the interrupting ratings of the other Customers' electric service panels?

Amps

8. Will you install a dedicated transformer in connection with the installation of your proposed Generating Facility? Yes No

If the answer to question 8. is "yes", please answer question 8.1.

If the answer to question 8. is "no", please continue to question 9.

- 8.1 If you are adding a dedicated transformer, please provide the following information:
- kVA Rating*
- 8.1(a)
Primary Volts
- 8.1(b)
Secondary Volts
- 8.1(c)
Impedance
9. What is the estimated date of initial operation for your Generating Facility?
Date of Operation
10. The following attachments must accompany Part 1 of the application when you submit it.
- 10.1 Single-line Drawing *(A sample Single-line Diagram is included with this application for your reference.)*
Included
- 10.2
- 10.3 Site plan drawing showing the location and arrangement of the major equipment (facility layout).
Included
11. Please check this box if you wish the SCE to bypass its Initial Review and to provide you with a cost-estimate for the Interconnection Study:
Provide Cost Estimate

When you have completed this application, you may print and mail it to:

Tom Dossey or Gerry Torribio
 2244 Walnut Grove Avenue
 P.O. Box 800
 Suite 490
 Rosemead, CA 91770
 Phone: 626-302-8242 (Tom) or 626-302-9669 (Gerry)
 Fax: 626-302-9622
 E-Mail: thomas.dossey@sce.com or gerome.torribio@sce.com

All Applications must be accompanied by the Application Fee. (See instructions on page 1)

PART 2 To be filled out for all non-certified generating units or components

Generating Unit Information

Please fill out a separate Part 2 form for each non-certified non-preapproved generating unit .

1. Is the generating unit a Pre-packaged prime mover/generator/inverter/controller system? Yes No

If your answer to Question 1 is "no", please skip to question 2.

If your answer to Question 1 is "yes", please answer the following questions:

1.1 Who is the manufacturer of the generating unit?

Manufacturer Name

1.2 What is the model number?

Model

2. What is the Gross Nameplate Rating in kVA?

Gross kVA

2.1 What is the Net Nameplate Rating in kVA?
Note: Net kVA is net of auxiliary loads.

Net kVA

3. Prime Mover Information
What is the prime mover technology? *(Please check all appropriate boxes.)*

IC Engine

Microturbine

PV

Fuel Cell

Hydro

Wind

Comb. Turbine

Steam Turbine

Other

(Please describe)

3.1 Who is the prime mover manufacturer?

Manufacturer Name

3.2 What is the prime mover model number?

Model Number

4. Generator/Inverter Information

What is the generator/inverter technology? *Please check all appropriate boxes.*

- Inverter
- Induction
- Synchronous
- Single phase
- Three phase

4.1. Who is the generator/inverter manufacturer?

Manufacturer Name

4.2. What is the generator/inverter model number?

Model Number

5. What is the power factor range of the generator/inverter?

<input type="text"/>	<input type="text"/>
----------------------	----------------------

Min. *Max.*

5.1. Is the power factor range adjustable?

<input type="checkbox"/>	<input type="checkbox"/>
Yes	No

Note: When operating in parallel with SCE's Distribution System, generating units are required to operate in power factor regulation mode (not in voltage regulation mode).

6. What is the short circuit current capability of the generating unit and associated devices?

6.1. What is the short circuit current capability of the Generating Facility at the Generating Facility's terminals?

<input type="text"/>	<input type="text"/>
----------------------	----------------------

Amps *Nominal Voltage*

6.2. *If your Generating Facility consists of just one generating unit, please skip to question 6.3.*

6.2.1. If your Generating Facility will consist of more than one generating unit, what is the maximum number of units that will operate simultaneously?

Number of Units

6.3. During a distribution system fault, what is your short circuit contribution, in amps?

Amps

Note: To answer this question, you will need to gather the following from the Generating unit's manufacturer:

- 1) *The fault duration curve and fault current interrupt time of the interrupting device; or*
- 2) *"Synchronous" machines only, the greater of*
 - a) *The fault current interrupt time of the interrupting device; including the Direct axis synchronous reactance (Xd), Direct axis transient reactance (X'd), and Direct axis subtransient reactance (X''d); or*
 - b) *The inertia constant of prime mover or Generator, including the*

Direct axis synchronous reactance (X_d), Direct axis transient reactance (X'_d), and the Direct axis subtransient reactance (X''_d).

7. *You must include the following the following documents with your submission of this Part 2 of your application:*
- 7.1 Complete and accurate protection diagrams including single-line meter relay and logic diagrams.
Included
- 7.2 A description of the proposed protection schemes and description of operations.
Included
- 7.3 Maintenance plans for the interconnection protective devices and interconnection interrupting devices.
Included
- 7.4 Any other documentation and certifications that may assist in SCE in approving your generating unit for interconnection with SCE's Distribution System.
Included

When you have completed this application, you may print and mail it to:

Tom Dossey or Gerry Torribio
2244 Walnut Grove Avenue
P.O. Box 800
Suite 490
Rosemead, CA 91770
Phone: 626-302-8242 (Tom) or 626-302-9669 (Gerry)
Fax: 626-302-9622
E-Mail: thomas.dossey@sce.com or gerome.torribio@sce.com

All Applications must be accompanied by the Application Fee. (See instructions on page 1)



Southern California Edison
Rosemead, California

Original
Cancelling

Cal. PUC Sheet No. 27973-E
Cal. PUC Sheet No.

Sheet 1

(Continued)
APPLICATION TO INTERCONNECT A
GENERATING FACILITY

Form 14-732

(To be inserted by utility)

Advice 1498-E

Decision 00-11-001

1P0

Issued by

John R. Fielder

Senior Vice President

(To be inserted by Cal. PUC)

Date Filed Nov 17, 2000

Effective _____

Resolution _____



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(To be inserted by utility)
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Issued by
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Senior Vice President

(To be inserted by Cal. PUC)
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(To be inserted by utility)
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Issued by
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Senior Vice President

(To be inserted by Cal. PUC)
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