ELECTRIC SERVICE AGREEMENT

BETWEEN

UNIVERSITY OF CALIFORNIA, RIVERSIDE

AND

CITY OF RIVERSIDE, CALIFORNIA

1. PARTIES.

This Electric Service Agreement is made and entered into this _____ day of _____, 20_____ by and between THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, a California nonprofit public corporation (also known as the "University of California Riverside" or "UCR" or "Customer"), and the City of Riverside ("City"), a California charter city and municipal corporation, organized and existing under the laws of the State of California, each hereinafter sometimes referred to individually as "Party" and collectively as "Parties".

2. RECITALS.

This Agreement is made with reference to the following facts, among others:

2.1 A High Voltage Electric Service Agreement is limited to large non-residential customers that City, through its Public Utilities Department, determines can take delivery of their electricity from a substation at the 12kV level and then transmit such power through a distribution system owned and operated by Customer to Customer's own system.

2.2 Customer is a large, non-residential end-use electric customer of City, and this agreement covers the Customer Site(s) described in Exhibit A. All of the Customer's other electric accounts served by the City are covered by Otherwise Applicable Tariffs (OAT).

2.3 City owns and operates a municipal utility, engaging in the business of generating, transmitting and distributing electric energy to its retail customers and others.

3. AGREEMENT.

In consideration of the mutual covenants and promises in this Agreement, the Parties agree as follows:

4. DEFINITIONS.

Terms used herein with initial capitalization, whether in singular or plural, shall have the meaning set forth in the Electric Rules, except as defined below:

4.1 Agreement. This Electric Service Agreement between Customer and City.

4.2 Authorized Representative. The representative designated by each Party, in accordance with Section 17, to act on such Party's behalf with respect to those matters specified in this Agreement.

4.3 Customer Site(s). Customer's metered location(s) to which City shall provide Electric Service under this Agreement as listed in Exhibit A.

4.4 Effective Date. The date this Agreement becomes effective pursuant to Section 5.1.

4.5 Electric Rate(s). The rates per kilowatt-hour and other associated charges are set forth in Section 10 and Exhibit C associated with, or for the provision of, Electric Service.

4.6 Electric Rules. City's "Electric Rules and Rate Schedules", as established, adopted and modified from time to time by the City's Board of Public Utilities and the City's City Council.

4.7 Electric Service. Energy, demand, substation, distribution and transmission service necessary to deliver such Energy to Customer's Points of interconnection, and such other services which City is required to provide pursuant to this Agreement, the

Electric Rules and any programs or services mandated by a state or federal regulatory agency, or City's City Council.

4.8 Energy. Electric energy, expressed in kilowatt-hours.

4.9 Force Majeure. Any cause beyond the control of the Party affected and asserting excuse from performance, including but not restricted to flood, drought, earthquake, storm, fire, lightning, epidemic, war, riot, civil disturbance or disobedience, labor dispute, labor or material shortage, sabotage, restraint by court order or public authority, and action or inaction by, or failure to obtain the necessary authorizations or approvals from any governmental agency or authority which by exercise of due diligence such Party could not reasonably have been expected to avoid and to the extent by which exercise of due diligence it has been unable to overcome.

4.10 Historical Energy Usage. The time, amount and character of Energy usage at Customer's Site(s) for the twelve (12) month period preceding the Effective Date of this Agreement.

4.11 Maximum Demand. The monthly maximum amount of Energy usage by Customer during a Metering Interval, as measured at the Point of Interconnection.

4.12 Metering Interval. The time interval established by City over which Energy usage is measured for billing purposes hereunder.

4.13 Otherwise Applicable Tariff ("OAT"). The City rate schedule that would otherwise apply to the Customer from time to time for electrical services to the premises.

4.14 Point of Interconnection. The point where City's electric service facilities interconnect with Customer's account meters listed and as may be depicted in Exhibit A.

4.15 Public Benefit Charge. The surcharge imposed on all City utility customers as

established by City's Board of Public Utilities and adopted by City's City Council from time to time pursuant to California Public Utilities Code section 385.

4.16 Reliability Charge. A monthly flat charge set forth in Exhibit C, used to recover the actual costs to improve the reliability of City's sub-transmission and generation system, including the construction of a second point of interconnection with the state's high voltage transmission grid and peaking generation facilities located within City's limits.

5. EFFECTIVE DATE AND TERM.

5.1 Upon execution by both Parties, this Agreement shall become effective on the date specified in Exhibit A ("Effective Date").

5.2 This Agreement shall terminate on the earliest to occur of:

5.2.1 Midnight three years after the Effective Date;

5.2.2 Termination pursuant to Section 6.6; or

5.2.3 Termination pursuant to Section 14.1.

5.3 Termination of this Agreement shall not relieve either Party of its obligations incurred prior to termination.

5.4 Upon termination of this Agreement, City's obligations to provide Electric Service to Customer and the rates and rules applicable to City's provision of such Electric Service shall be pursuant to City's Electric Rules in effect as of the date of termination.

5.5 Customer specifically agrees, upon termination of this agreement, to purchase electric service from the City at the prevailing industrial rate structure coupled with any applicable economic incentives that may be available to other large, non-residential customers similarly situated with Customer, as of the date of termination.

6. ELECTRIC SERVICE AND RATES.

6.1 Electric Service Requirements. Customer agrees to purchase from City and City agrees to sell to Customer at the Electric Rates set forth herein, Customer's Electric Service requirements at Customer's Site for Service Account #12-0437.000, Meter #106170, and Meter #106157 at the University of California at Riverside ("UCR") Substation, including Electric Service necessary to deliver such Energy to Customer's Points of Interconnection, throughout the term of this Agreement. The two electric meters as identified in this section shall be aggregated for purposes of billing, except as expressly provided in this Agreement, City shall provide such Electric Service in accordance with the Electric Rules. In the event any term of this Agreement adds to, varies or contradicts the Electric Rules, the terms of this Agreement shall prevail. All other connections and accounts served by the UCR Substation shall migrate to the OAT upon execution of this Agreement.

6.2 Electric Rate Changes. Except as provided for under Section 10, Customer will transition to a new High Voltage tariff when such rate is developed and approved by Riverside Public Utilities ("RPU") Board and the City Council. This proposed new rate, determined upon the completion of a cost-of-service study, will provide a discount to UCR in recognition of the campus receiving power at high voltage and the subsequent reduced distribution costs incurred by RPU. The new high voltage rate will only pertain to facilities on the main campus served by the UCR substation.

6.3 Customer and Reliability Charges. For each metered account, Customer shall pay City a monthly Customer Charge and Reliability Charge as set forth in the Exhibit C.

6.4 Miscellaneous Fees and Taxes. All charges for Electric Service pursuant to this Agreement shall be subject to City's Public Benefit Charges, Utility Users Taxes,

any applicable state or federal energy tax, and any other governmental taxes, duties, or fees, as may be revised from time to time by the relevant regulatory authority, applicable to Electric Service provided by City, and as set forth in Sections 10.2 and 27.

6.5 Service to Others. The Electric Service provided herein is expressly reserved for Customer's sole use. Customer is prohibited from providing or reselling any portion of such service to third parties.

6.6 Covenant to Maintain Existing Load. Customer understands and agrees that its Historical Energy Usage is a material fact upon which the Electric Rate and the other terms and conditions of this Agreement are based. At City's sole discretion, City may terminate this Agreement upon sixty (60) days written notice if a Material Change, as defined in Exhibit B, in Customer's Energy usage occurs.

6.7 Shortage of Electric Supply and Interruption of Delivery. City does not guarantee delivery and shall not be liable for interruptions, shortages, or insufficiency of supply or any resultant loss or damage, including, without limitation, direct, indirect, or consequential loss, liability, claim, cost, charge, or expense. City reserves the right to suspend temporarily the delivery of Energy whenever it may be necessary for the purpose of making repairs or improvements to its system. The making of repairs or improvements will be completed as rapidly as feasible. In all cases of planned interruptions of electric service, City shall make a reasonable attempt to give advance notice to Customer and will attempt to minimize the inconvenience to Customer.

7. CUSTOMER EMERGENCY LOAD-SHEDDING.

Voluntary Load-shedding. During all other times, except as set forth above, to the extent requested by City, Customer shall use its best efforts to implement additional load-shedding

arrangements during emergency events under the following conditions:

a. City shall notify Customer's Authorized Representative of requested load-shedding requirements, and

b. Customer will make all reasonable efforts to reduce its load.

Both Parties recognize that Customer is undertaking these voluntary load-shedding efforts in support of each Party's electric system requirements, therefore neither Party will receive additional monetary compensation for this service.

8. METERING SERVICES.

8.1 Existing Accounts. City shall maintain, replace (as needed) and retain ownership of all electric meters at the existing Customer Site(s). These meter services and meters shall be provided free of charge, so long as such meters are standard meters consistent with those provided to similar City non-residential customers.

8.2 New Accounts. This Agreement applies only to the metered accounts at Customer's Site existing as of the date the Effective Date of this Agreement. All new, modified or upgraded service, meters, and accounts may be added, at the sole discretion of City's Authorized Representative, in accordance with the terms, conditions, costs, and rates, of this Agreement, by amending Exhibit A hereto.

9. BILLING AND PAYMENT.

9.1 Procedure. Unless otherwise specified in this Agreement, all electric bills shall be rendered and payments collected in accordance with the Electric Rules.

9.2 Aggregation of Metered Accounts: For billing purposes only, City may aggregate Customer accounts listed in Exhibit A and any new accounts added pursuant to Section 8.2 into one (1) electric bill. Such aggregation will not result in any reduction in the Customer or Reliability Charges set forth in Section 6.3 herein.

9.3 Adjustments of Bills for Undercharges: City reserves the right to adjust any

Customer bill for undercharges, computed and billed in accordance with the Electric Rules in effect at the discovery of an error.

10. OTHER APPLICABLE CHARGES AND RPU PUBLIC BENEFIT PROGRAMS.

10.1 Public Benefit Charges: In accordance with the requirements of California Public Utilities Code section 385, City's Board of Public Utilities established and City's City Council adopted a Public Benefit Charge equal to 2.85% of total electricity charges, which is generally applicable to all City Public Utilities customers. Customer shall pay the Public Benefit Charge in addition to the Electric Rates, on a monthly basis so long as the Public Benefit Charge remains in effect in City. Payment of these charges qualifies Customer to participate in Public Benefit Programs to which it meets the eligible criteria.

10.2 Public Benefit Charge Programs: Public Utilities Code Section 385 provides that Public Benefit Charge funds may be used for cost-effective demand-side management programs to promote energy-efficiency and energy conservation ("Authorized Public Benefit Charge Purpose").

10.3 Solar Photovoltaic Rebate: The City's current guidelines for solar rebates are attached hereto as Exhibit D. City hereby agrees to accept an application from Customer for a customer-owned PV system, excluding leases or Power Purchase Agreements, and raise the cap on any rebate granted to Customer pursuant to that application to a maximum solar PV rebate amount of $100,000.

10.4 Solar Capacity: UCR has existing on-site solar generation systems and intends to install more on-site renewable generation systems. The export of power from UCR to the City has the potential to create impacts on the existing electric system grid. The City has analyzed UCR's historical use patterns and determined that up to 4MW of additional on-site solar energy generation can be developed by UCR under

a non-export agreement without further study or any additional engineering controls (e.g., anti-back feed relays) installed by UCR. UCR shall be subject to the applicable provisions of the City's Electric Rule 22 (Attached Exhibit D) to study any possible electric system impacts, including any costs incurred for such studies, related to any proposed generation interconnection above the 4MW threshold. The City agrees to work with UCR in good faith to accommodate additional distributed energy generation.

10.5 Carbon-free Power Resources:

a) UCR desires its electricity supply to be carbon-free by 2025. The City and UCR have identified two programs to help UCR accomplish this goal. The first program, defined in Sections 10.5b through 10.5e, allows UCR to purchase additional carbon-free power resources through the City. The second program, defined in Section 10.5f and g provides an accounting procedure that allows the City to report a UCR-specific power content label that reflects renewable energy credits (RECs) directly procured by UCR.

b) The City will make additional carbon-free power resources available to UCR at additional cost, to allow UCR to increase the carbon-free proportion of its power. The carbon-free resources provided to UCR in this Agreement apply only to the power served under Service account #12-0437.000, through Meter # 106170.

c) The City's power resource mix for FY 16/17 is projected to be 30% carbon-free. The City anticipates that sufficient carbon–free power will be available for UCR to receive up to 40% carbon-free power resources in the first year of the new contract.

d) Carbon-free power beyond the City's normal power resources mix may be available in 1-MWH blocks, assignable to UCR, at a rate of $18/MWH added to the Electric Rate specified herein, up to 40,000 MWH total. UCR must notify RPU

of their non-carbon power needs within 30 days of September 1 of each year, and RPU shall notify UCR if RPU can make available to UCR such carbon-free power at the above-stated rate.

e) The amount of carbon-free power may be adjusted for each year of the contract. Carbon-free power needs beyond 40,000 MWH will require RPU to directly procure power contracts on UCR's behalf via a separate power purchase contract. The cost for that additional carbon-free power will be settled and billed at the end of each contract year.

f) Each calendar year, beginning in 2017, City agrees to accept and retire Renewable Energy Credits (RECs) supplied from and on behalf of the University of California. The transfer and retirement of RECs will be performed using the third-party WREGIS program. These transactions, which allow UCR to properly report their share of the environmental attributes from renewable energy projects procured directly by the University of California, do not affect the actual energy supplies for the City. . The UCR-provided RECs will not be used for any other City customers, nor for any of the City's other renewable energy compliance obligations.

g) To support UCR's procedures for reporting greenhouse gas emissions, the City can prepare and publish a Customer-specific power content label for UCR each calendar year for a nominal administrative fee, plus any costs incurred by the City for independent third party verification services. The UCR power content label will be based on the combination of: 1) the RPU power sources applicable to all customers, plus 2) carbon-free power pursued by the City on behalf of UCR as described in Section 10.5b-e, and 3) RECs supplied from UC, as described in Section 10.5f.

10.6 Energy Efficiency Planning: The City will provide technical assistance to UCR through developing energy efficiency plans for the campus. These plans will

evaluate the energy efficiency of specific campus facilities to identify projects with the greatest potential for energy efficiency savings (kWh savings) as well as an analysis of project feasibility, cost, prioritization and return on investment. The City will utilize the services of third party engineering resources at RPU's cost to assist in facilitating these projects in an amount not to exceed $150,000 over the term of this Agreement.

10.7 Energy Efficiency Rebates: To encourage energy efficiency, UCR will be eligible to participate in all City energy efficiency programs, and the City will increase the availability of energy efficiency rebate funding for UCR as projects are implemented on a performance basis. During the first year of the contract, the cap on rebates to UCR will be $500,000. When UCR achieves a total of 5,000,000 kWh in annual savings, as calculated by RPU through its consultant, or as determined by the Energy Efficiency Technical Reference Manual ("TRM") (http://cmua.org/energy-efficiency-technical-referencemanual/), the program cap will be increased by $250,000 for the following contract year. If UCR does not achieve 5,000,000 kWh in annual savings during the current year, then the cap will remain at the same level for the next year of the contract. When UCR achieves a second 5,000,000 kWh in annual savings, the cap on available rebates will increase by another $250,000 in the following contract year; however, the maximum increase in the cap from year to year is limited to $250,000. Thus, the caps will be $500,000, $750,000 and $1,000,000 for the first, second and third years of the contract, respectively, provided UCR achieves 5,000,000 kWh in annual savings in each of the first two years. If UCR never achieves 5,000,000 kWh in annual savings, the cap will remain at $500,000 per year for each year of the contract. The allocated rebate funds will be on a "use it or lose it" basis each contract year, and do not carryover to subsequent contract years. These energy efficiency incentives

may be applied to all UCR facilities, including those not served by the UCR substation.

10.8 Additional Public Benefit Rebate Funds: In addition to the capped rebates described in Section 10.7, the City will provide up to $100,000 in additional public benefit rebate funds per contract year for mutually agreed upon high deemed kWh savings measures as outlined in the adopted Energy Efficiency Technical Reference Manual (TRM) http://cmua.org/energy-efficiency-technical-reference-manual/.

10.9 Marketing Support: The City will provide marketing support, cooperation and coordination to UCR through joint campaigns promoting energy efficiency, sustainability, and student engagement. This will include press releases, print media, signage, marketing campaigns, social media and community and campus events, as well as any other appropriate marketing efforts to promote joint RPU/UCR energy efficiency and sustainability successes.

10.10 Miscellaneous Charges: Customer shall pay any other applicable new fees or surcharges imposed by City on other non-residential customers in accordance with Customer's Otherwise Applicable Tariff ("OAT"), unless specifically exempted by City's Board of Public Utilities and the City Council, after the Effective Date of this Agreement, in the same manner and amounts, as set forth in the Electric Rules, and any premiums or surcharges as established by City's Board of Public Utilities and adopted by City's City Council in response to federal or state climate change laws, renewable portfolio standards, or other mandated legislation. These charges shall include but not be limited to charges to mitigate the impacts of greenhouse gas emissions or "green power" premiums.

10.11 E-billing: The City agrees to explore an e-billing pilot program with UCR in an effort to eliminate paper billing for electric and water accounts.

11. AUTHORIZED REPRESENTATIVES.

Upon the Effective Date of this Agreement, the individuals identified pursuant to Section 17 shall be the Authorized Representative who will act on its behalf in the implementation of this Agreement. Either Party may at any time change, via written notice, the designation of its Authorized Representative to the other Party.

12. THIRD PARTY RIGHTS.

12.1 Dedication of Facilities. No undertaking by one Party to the other Party under this Agreement shall constitute the dedication of the electric system or any portion thereof by the undertaking Party to the public or to the other Party, and it is understood and agreed that any such undertaking pursuant to any provision of this Agreement by a Party shall cease upon the termination of such Party's obligations under this Agreement.

12.2 Third Party Beneficiaries. This Agreement shall not be construed to create rights in or to grant remedies to any third party as a beneficiary of this Agreement or of any duty, obligation or undertaking established in this Agreement.

13. LIABILITY.

13.1 Indemnification. Except for any liens, claims, costs, damages, liability or loss resulting from Willful Action, as defined herein, Customer agrees to indemnify, protect, defend, and hold harmless the City, and the City's employees, officers, managers, and agents. and Council Members from and against any claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including reasonable attorney and expert fees), judgment, civil fine and penalties, liabilities or losses of any kind or nature whatsoever whether actual, threatened or alleged, which arise out of, pertain to, or relate to, or are a consequence of, or are attributable to, or are in any manner

connected with this Agreement but only in proportion to and to the extent such liens, claims, damages, liability or loss are caused by or result from the negligent acts, errors, or omissions of Customer, its employees, officers, or agents. This indemnification provision shall apply to any acts, omissions, negligence, recklessness, or willful misconduct, whether active or passive, on the part of the Customer or anyone employed or working under the Customer, provided Customer is notified promptly after discovery of such claims and is given sole and complete authority, information and assistance from the indemnified party(ies) for the defense and disposition of the claim, suit or proceeding. Customer is not liable for any settlement or compromise made without Customer's knowledge and consent.

13.2 Willful Action. "Willful Action" shall be defined as an action taken or not taken by a Party at the direction of its directors, officers, or employees where:

13.2.1 An action is knowingly or intentionally taken or not taken with conscious indifference to the consequences thereof or with intent that injury or damage would probably result therefrom; or

13.2.2 An action has been determined by final arbitration, judgment, or judicial decree to be a material default under this Agreement and occurs beyond the time specified for curing such default or, if no time to cure is specified therein, occurs or continues thereafter beyond a reasonable time to cure such default; or

13.2.3 An action is knowingly or intentionally taken or not taken with the knowledge of material default under this Agreement.

13.3 Willful Action does not include any act or failure to act which is merely involuntary, accidental, negligent, or performed (or not performed).

13.4 The provisions of this Section 13 shall be binding upon the Parties to the full extent permitted by law. The obligations set forth herein are binding on the

successors, assigns and heirs of Customer and shall survive termination of this Agreement.

14. ASSIGNMENT OF INTERESTS.

14.1 This Agreement is personal to Customer and Customer shall not assign or transfer this Agreement or assign or transfer any privilege thereunder, or interest therein, in whole or in part ("assign") without the prior written consent of City, which consent shall not be unreasonably withheld. Any attempt by Customer to make such an assignment without City's consent shall be void *ab initio*, shall confer no right on any third party, and shall entitle City to terminate this Agreement on thirty (30) days written notice to Customer.

14.2 It shall not be unreasonable for City to withhold its consent to a request for assignment which does not meet all of the following requirements:

14.2.1 The request to City must be given in writing no less than sixty (60) days prior to the proposed effective date of such assignment;

14.2.2 The written request must include documentation satisfactory to City that the proposed assignee's Electric usage for the term of this Agreement shall be substantially identical to Customer's Historical Energy Usage;

14.2.3 The written request shall include documentation satisfactory to City that the assignee's creditworthiness is as good as or better than Customer's creditworthiness as of the date of execution of this Agreement; and

14.2.4 Assignee shall execute such documentation as City shall require expressing assignee's assumption of all of Customer's obligations, duties and liabilities under this Agreement.

15. FORCE MAJEURE.

No Party shall be considered to be in breach of this Agreement to the extent that a failure

to perform its obligations under this Agreement shall be due to a Force Majeure event, as defined in Section 4.9 herein. No Party shall be relieved by operation of this section of any liability to make any payments then due or which the Party is obligated to make with respect to performance which occurred prior to the Force Majeure event. Any Party rendered unable to fulfill any of its obligations by reason of a Force Majeure event, shall give prompt notice of such fact and shall exercise due diligence to remove such inability within a reasonable period of time. Nothing contained herein shall be construed to require a Party to settle any strike or labor dispute in which it may be involved.

16. GOVERNING LAW.

This Agreement shall be interpreted, governed by, and construed under the laws of the State of California or the laws of the United States as applicable without regard to the conflicts of laws or rules thereof. Any action at law or in equity brought by either of the Parties for the purpose of enforcing a right or rights provided in this Agreement shall be tried in a court of proper jurisdiction in the County of Riverside, State of California, and the Parties hereby waive all provisions of law providing for a change of venue in such proceedings to any other county.

17. NOTICES.

17.1 Any notice and other communication required or permitted to be given under this Agreement shall be deemed given: (i) when hand delivered; or (ii) one (1) business day after pickup by Federal Express or similar overnight delivery service properly addressed as provided below; or (iii) three (3) business days after such notice or communication shall have been deposited with the United States Postal Service, postage prepaid and properly addressed as provided below; or (iv) when sent by facsimile transmission to the fax numbers provided below, with receipt of such fax confirmed telephonically, provided that on the same day such notice or communication shall also be hand delivered or sent by overnight delivery pursuant

to this Subsection:

If to Customer: Address as specified in Exhibit A

If to City: Public Utilities General Manager
City of Riverside
3750 University Avenue, 5th Floor Riverside, CA 92501
Phone: (951) 826-5197
Fax: (951) 826-2450

17.2 Either Party may change such address by providing written notice to the other Party as provided herein.

18. WAIVERS/MODIFICATIONS.

18.1 Waivers. Waivers by either Party of its rights under this Agreement, or with respect to any default or other matters with this Agreement, shall not be deemed waivers to any subsequent default or other matters in connection therewith. Any delay, short of the statutory period of limitation in asserting or enforcing any right, shall not be deemed a waiver of such right.

18.2 Modifications. No modification of this Agreement shall be valid or binding unless in writing duly signed by both Parties.

19. RELATIONSHIP OF PARTIES.

19.1 This Agreement does not create any association, partnership, joint venture or agency between the Parties or their successors in interest.

19.2 Any correspondence or other references to "partner" or other similar terms will not be deemed to alter, amend or change the relationship between the Parties unless there is a formal written agreement specifically detailing the rights, liabilities and obligations of the Parties as to a new, specifically defined legal relationship.

20. ENTIRE AGREEMENT.

This Agreement contains the final, complete, and exclusive statement of the terms of the agreement between the Parties pertaining to the subject matter of this Agreement, and supersedes all prior and contemporaneous oral and written communications of the Parties. Neither Party has been induced to enter into this Agreement by, nor is either Party is relying upon, any representation or warranty of the other Party outside those expressly set forth in this Agreement.

21. INTENT OF AGREEMENT.

Ambiguities or uncertainties in the wording of this Agreement shall not be construed for or against either Party, but shall be interpreted in a manner that most accurately reflects the original intent of the Parties, and is consistent with the nature of the Parties' rights and obligations.

22. DISPUTES.

The Parties shall endeavor to resolve all disputes regarding questions of fact, opinions or interpretation of provisions in this Agreement through their Authorized Representatives. Nothing in this Agreement precludes either Party from taking any lawful action it deems appropriate to enforce its rights.

23. EXHIBITS.

All documents referred to below and attached to this Agreement as Exhibits are incorporated into and made a part of this Agreement.

23.1 Exhibit A – Customer Information.

23.2 Exhibit B – Material Change in Usage.

23.3 Exhibit C – Rate Schedule.

23.4 Exhibit D – Commercial Solar Rebate Program Guidelines.

23.5 Exhibit E – Electric Rule 22.

24. SEVERABILITY.

If any term, covenant or condition of this Agreement or the application thereof to any person or circumstance is held invalid by any court or regulatory agency of competent jurisdiction, all other terms, covenants and conditions of this Agreement, and the application of such term, covenant or condition to other persons or circumstances, shall not be affected thereby, but shall remain valid and in full force and effect unless such court or regulatory agency holds that the invalid provisions are not separable from all other provisions of this Agreement.

25. SUCCESSORS.

This Agreement shall be binding upon and inure to the benefit of the successors, heirs, administrators, executors and assigns of the Parties.

26. HEADINGS.

Section headings in this Agreement are for the convenience of reference only and shall not govern the interpretation of any provision of this Agreement.

27. POSSESSORY INTEREST TAX.

Customer understands and agrees that this Agreement may create a possessory interest subject to property taxation and that Customer may be subject to the payment of property taxes levied on such interest. Any such imposition of a possessory interest tax shall be the liability of Customer, and Customer agrees to pay or reimburse City for any and all such taxes and assessments together with all penalties and fees if applicable during the term of this Agreement. Nothing herein shall be construed as a waiver of any defenses/arguments of the Customer that it is not subject to Possessory Interest Taxation including pursuant to Article IX, Section 9 of the California Constitution.

28. SIGNATURE CLAUSE.

The signatories hereto represent that they have been authorized to enter into this Agreement on behalf of the Party for whom they sign.

Customer

By: _____

Title: VICE CHANCELLOR
BUSINESS AND ADMINISTRATIVE SERVICES

Date: AUGUST 23, 2016

City of Riverside

By: _____

Title: City Manager

Date: _____

By: _____

Title: _____

Date: _____

Attest:

_____
City Clerk

Approved as to form:

_____ for
Susan D. Wilson
Assistant City Attorney

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08/11/2016 sw 16-1221

Exhibit A

Customer Information

Sections 2.2 and 4.3: Customer Site(s) includes Metered Accounts located at:

3800 Canyon Crest Drive, Riverside, CA 92507
(Account Nos. # 12-0437.000; Meter #s 106170 & 106157)

Section 4.14: The substation located at 3800 Canyon Crest Drive, Riverside, CA, 92507 containing the sixty-nine (69) kilovolt to twelve (12) kilovolt power transformer and related equipment all owned by City.

Section 5.1: Effective Date of this Agreement shall be 9/1/2016.

Section 17.1: Notices to Customer shall be sent to:

Ron Coley, Vice Chancellor
1223 University Ave. Suite 200 Riverside, CA 92507 Phone:
(951) 827-3268
Fax: (951) 787-5222

Exhibit B

Material Change in Usage

A Material Change in Customer Historical Energy Usage shall be deemed to have occurred when the Customer's Energy use during the previous twelve (12) consecutive month period is determined to have decreased below 6 MW of load as measured by monthly demand.

Exhibit C

Rate Schedule

Customer will take electric service under Schedule TOU, "Large General and Industrial Service", as amended from time to time. If the City approves and adopts an Electric Rate for High Voltage Electric Service", Customer will be transitioned to that rate when that rate becomes effective and Customer will cease to take service under Schedule TOU.

Customer will pay the applicable Customer Charge and Reliability Charge, as set forth in the electric schedule currently in effect under this Agreement.

Exhibit D

Commercial Solar Rebate Program Guidelines

General Program Guidelines (Commercial)

Photovoltaic Program Requirements & Guidelines:

Before installing a PV system at your business, we encourage you to carefully review these system requirements and guidelines. Understanding these requirements and guidelines will help you avoid running into problems when setting up your PV system and applying for a rebate from RPU.

If you have any questions about these requirements and guidelines, or would like more information about any aspect of RPU's Business Photovoltaic (PV) Rebate Program, please call Gerald Buydos, Solar Program Administrator at 951-826-5475 or e-mail us.

Program Guidelines:

• Customer must fulfill all program guidelines to be eligible for incentives. Systems will need to be inspected by the City of Riverside's Building & Safety Department and RPU's Customer Engineering Division before a rebate can be issued.
• If it is determined through inspection that the customer is not in compliance with the requirements of the program, RPU may recover the total rebate amount paid to customer.
• For rebates under $500, a credit will be applied to the bill. For rebates over $500, a check will be mailed to customer address of record. Customer account must be in good standing in order for a rebate check to be processed in lieu of a bill credit. If customer account is past due, only a credit for the rebate amount will be processed and applied to the account.
• RPU reserves the right to determine program eligibility.
• RPU does not endorse or recommend specific products or dealers nor does it guarantee material or workmanship; acceptance of such is the customer's responsibility.
• A copy of the dated sales receipt, invoice or contract must be provided, and is subject to verification. These documents must show project address, the names of both the contractor and PV equipment manufacturer, PV and inverter model numbers, system size, and a complete list of all labor and equipment costs, along with any other costs associated with the customer's PV system.

Customer must own, operate and maintain the solar system for a minimum period of 10 years from date of installation at the service address. If the solar energy system is removed prior to end of the ten year period, either:

- The solar energy system may be installed at another site within RPU's service territory in accordance with RPU guidelines within six months. The relocated system installed at the alternate site would not be eligible for an additional PV rebate.
- If not placed on another qualifying location, a prorated amount of the original incentive rebate must be repaid to RPU and the customer would be unable to participate in the Photovoltaic

Rebate Program for any additional installations under the program, including any active reservations that have not yet been paid.

- A building permit and site inspection is required for all relocated equipment. Failure to re-install the solar energy system in accordance with RPU guidelines within six months will result in the repayment of the PV incentive rebate to RPU on a prorated basis from date system was removed or disconnected.

• Project costs include the photovoltaic cells, modules, mounting or tracking structures, wiring, inverters, and utility-required interconnection and metering equipment.
• Only CEC-certified PV modules and inverters qualify for this program and are subject to approval by RPU. The approved list can be found on the CEC's website, and can be made available by RPU staff.
• Qualifying systems must reduce electrical load at the meter site.
• Systems cannot be sized over 100% of the maximum historical customer usage from the past 12 months at time of building permit application.
• Confirmed reservations are valid for 120 days, in which time customers must obtain a building permit from the Building & Safety Department. Once the building permit is issued, customers have 12 months to construct their PV systems. Failure to comply with these timelines will result in the rebate being relinquished. Reservations cannot be transferred between projects.
• This rebate program does not cover PV system enlargements that are made after the reservation has been issued.
• Applicant must submit two (2) completed and signed Net Energy Metering Interconnection Agreements and a completed and signed Surplus Energy Compensation Election Form to RPU prior to final connection to the grid and before any incentive can be paid.
• All existing commercial customers are required to have a Commercial Energy Profile of their existing business conducted before PV incentives are paid. To show proof of the audit, complete the online profile, print the free downloadable report and submit it to RPU.
• Production meters are required for all solar installations.
• Applicant must comply with all Planning, Building & Safety, and Electric Plan Check procedures.
• Per Riverside Public Utility Rule 13, each solar customer must provide and maintain unobstructed access to the electric meters, along with pet-free access for RPU employees to obtain monthly meter readings.
• Contractors must have one of the following licenses:
• Electrical C10
• Engineering A
• Solar Specialty C46
• Financed systems must have a signed contract and proof of payments. Leased systems are not eligible to participate in rebate program.
• Incentive will be paid to the electric customer of record only. An exception will be made if the tenant or renter provides proof of purchase.
• Customers participating in this program may be asked to complete a telephone or mail-in survey to be used as a benchmark for energy savings attributed to the program.
• This program is available to RPU electric customers. If applicant is a tenant or renter, the property

owner must sign the application.

- Application must be submitted within 90 days of the purchase date.
- Reservation numbers will not be given for incomplete applications.
- Incentive funds are issued on a first-come, first-served basis.
- Our Business Photovoltaic Rebate Program is designed to be in compliance with California Senate Bill 1 (Million Solar Roofs Initiative).
- RPU reserves the right to modify or discontinue this program without prior notice.

Exhibit E

Electric Rule 22

ELECTRIC RULE 22

DISTRIBUTED GENERATION FACILITIES INTERCONNECTION

A. APPLICABILITY

Applicability. This Rule describes the Interconnection, operating and metering requirements for Generating Facilities to be connected to the Riverside Public Utilities (RPU) Distribution System. Subject to the requirements of this Rule, RPU will allow the Interconnection of Generating Facilities with its Distribution System.

Definitions: Capitalized terms used in this Rule, and not otherwise defined, shall have the meaning ascribed to such terms in Section H. The definitions in this Rule shall only apply to this Rule and may not apply to RPU's other rate schedules.

B. GENERAL RULES, RIGHTS AND OBLIGATIONS

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

5. **Design Reviews and Inspections.** RPU 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 Interconnection Facilities prior to the commencement of Parallel Operation with RPU's Distribution System. RPU may require a Producer to make modifications as necessary to comply with the requirements of this Rule. RPU's review and authorization for Parallel Operation shall not be construed as confirming or endorsing the Producer's design or as warranting the Generating or Interconnection Facilities' safety, durability or reliability. RPU 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 RPU personnel as necessary for RPU to perform its duties and exercise its rights under its rate schedules and rules, and any Interconnection Agreement between RPU and the Producer.
7. **Confidentiality of Information.** Any information pertaining to Generating or Interconnection Facilities provided to RPU by a Producer shall be treated by RPU in a confidential manner. RPU shall not use information contained in the Application to propose discounted rates to the Customer unless authorized to do so by the Customer or the information is provided to RPU 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 this Rule.
9. **Curtailment or Disconnection.** RPU may limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from RPU's Distribution System at any time, with or without notice, in the event of an Emergency, or to correct Unsafe Operating Conditions. However, RPU must provide written notice as soon as possible following such disconnect. RPU may also limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from RPU's Distribution System upon the provision of reasonable written notice: 1) to allow for routine maintenance, repairs or modifications to RPU's Distribution System; 2) upon RPU's determination that a Producer's Generating Facility is not in compliance with this Rule; or, 3) upon termination of the Interconnection Agreement. Upon the Producer's written request RPU shall provide a written explanation of the reason for such curtailment or disconnection.

C. APPLICATION AND INTERCONNECTION PROCESS

1. Application Process

a. **Applicant Initiates Contact with RPU.** Upon request, RPU will provide information and documents (such as sample agreements, the Application, technical information, 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 receipt of the initial request from the Applicant. RPU will establish an individual representative as the single point of contact for an Applicant, but may allocate responsibilities among its staff to best coordinate the Interconnection of an Applicant's Generating Facility.

b. **Applicant Completes and Files an Application.** All Applicants shall be required to complete and file an Application and supply any relevant additional information requested by RPU. The filing must include the completed Application and a fee for processing the application and performing the Initial Review to be completed by RPU pursuant to Section C.1.c. The application fee shall vary with the type of the proposed Generating Facility as follows:

Type of Service	Initial Review	Supplemental Review
Net Energy Metering *(per Public Utilities Code Section 2827)*		
- Residential	$225	None
- Commercial		
Flat & Demand	$360	None
TOU	$865	None
All others	$800	$600 (additional)

Fifty percent of the fees associated with the Initial Review will be returned to the Applicant if the Application is rejected by RPU or the Applicant retracts the Application.

The Applicant may propose and RPU may negotiate specific costs for processing non-standard applications 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 these circumstances.

Within ten (10) business days of receiving an Application, RPU shall normally acknowledge its receipt and state whether the Application has been completed adequately. If deficiencies are noted, RPU and Applicant shall cooperate in a timely manner to establish a satisfactory Application.

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

(1) Upon receipt of a satisfactorily completed Application and any additional information necessary to evaluate the Interconnection of a Generating Facility, RPU 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 additional requirements, or (c) it will be necessary for RPU to perform an Interconnection Study to determine the Interconnection requirements.

(2) The RPU shall complete its Initial Review, absent any extraordinary circumstances, within 10 business days, upon determination that the Application is complete, if the Generating Facility qualifies for Simplified Interconnection. If the Initial Review determines that the proposed facility can be Interconnected by means of a Simplified Interconnection, RPU will provide the Applicant with a written description of the requirements for Interconnection and a draft Interconnection Agreement pursuant to Section C.1.e.

(3) If the Generating Facility does not qualify for Simplified Interconnection as proposed, RPU will notify the Applicant and perform a Supplemental Review as described in Section I. The Supplemental Review will provide either (a) Interconnection Requirements beyond those for Simplified Interconnection, and a draft Interconnection 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 upon determination that the Application is complete. Payment for the Supplemental

Review shall be submitted to RPU within 10 calendar days after the results of the Supplemental Review are provided to the Applicant.

d. **When Required, Applicant and RPU Commit to Additional Interconnection Study Steps.** When an Initial Review reveals that the proposed facility cannot be Interconnected to RPU's Distribution System by means of a Simplified Interconnection, or that significant RPU Interconnection Facilities or Distribution System improvements must be installed or made to RPU's Distribution System to accommodate the Interconnection of an Applicant's Generating Facility, RPU and Applicant shall enter into an agreement that provides for RPU to perform 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 RPU's schedule for completing such work and the estimated or fixed price costs of such studies and engineering. Upon completion of an Interconnection Study, RPU 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 RPU Enter Into a Generation Interconnection Agreement and, Where Required, a Financing and Ownership Agreement for Interconnection Facilities or Electric System Modifications.** The RPU shall provide the Applicant with an executable version of the Generating Facility Interconnection 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 RPU has determined that modifications or additions are required to be made to its electric system, or that additional metering, monitoring, or protection devices will be necessary to accommodate an Applicant's Generating Facility, RPU may also provide the Applicant with other Interconnection Facilities financing and ownership agreements. These agreements shall set forth the Applicant's responsibilities, completion schedules, and estimated or fixed price costs for the required work.

f. **Where Applicable, RPU or Producer Installs Required Interconnection Facilities or Modifies RPU's Distribution System.** After executing the applicable agreements, RPU or Producer will commence construction/installation of the modifications or metering and monitoring requirements identified in the agreements. The parties will use good faith efforts to meet the schedules and cost estimates.

g. **Producer Arranges for and Completes Commissioning Testing of Generating Facility and, Where Applicable, Producer Installed Interconnection Facilities.** The Producer is responsible for testing new Generating Facilities and associated Interconnection Facilities, according to Section J.5 to ensure compliance with the safety and reliability provisions of this Rule, and RPU rules and regulations prior to being operated in parallel with RPU's Distribution System.

h. **RPU Authorizes Parallel Operation or Momentary Parallel Operation.** The Producer's Generating Facility shall be allowed to operate in Parallel Operation or Momentary Parallel Operation, as applicable, with RPU's Distribution System upon satisfactory compliance with the terms of all applicable agreements and express written permission. 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 RPU.

i. **RPU Reconciles Costs and Payments.** If the Producer selected a fixed price billing 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. RPU will reconcile its actual costs related to the Producer's facility against any advance payments made by the Producer for Interconnection Facilities or Distribution System modifications. The Producer will receive either a bill for any balance due or a reimbursement for overpayment as determined by RPU's reconciliation. The Producer shall be entitled to a reasonably detailed and understandable report detailing RPU's reconciliation process.

D. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS

1. General Interconnection and Protection Requirements

a. **Protective Functions Required.** The Protective Functions for Generating Facilities operating in parallel with RPU's Distribution System shall include:

(1) Over and under voltage trip functions and over and under frequency trip functions;

(2) A means for disconnecting the Generating Facility from RPU's Distribution System when a Protective Function initiates a trip;

(3) An automatic means to prevent the Generating Facility from energizing a de-energized Distribution System circuit and to prevent the Generating Facility from reconnecting with the Distribution System unless the Distribution System service voltage and frequency is of specified settings and is stable for at least 60 seconds;

(4) A means to prevent the Generating Facility from contributing to the formation of an Unintended Island.

b. **Momentary Paralleling Generating Facilities.** With RPU's approval, the transfer switch or system used to transfer the Producer's loads from RPU's Distribution System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation.

c. **Purpose of Protective Functions.** The Protective Functions and requirements of this Rule are designed to protect RPU's Distribution System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. The Producer's protective equipment shall not impact the operation of other protective devices utilized on the Distribution System in a manner that would affect RPU's capability of providing reliable service to its Customers.

d. **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. Producer's Generating Facility and Interconnection Facilities shall be designed so that the failure of any one device shall not potentially compromise the safety and reliability of RPU's Distribution System.

e. **Visible Disconnect Required.** The Producer shall furnish and install a manual disconnect device that has a Visible Disconnect to isolate the Generating Facility from RPU's Distribution System. The device must be accessible to RPU personnel and be capable of being locked in the open position. Generating Facilities with Non-islanding inverters totaling 1 kVA or less are exempt from this requirement.

f. **Single-Phase Generators.** For single-phase Generators connected to a shared single-phase secondary system, the maximum Net Nameplate Rating of the Generating Facilities shall be 20 kVA.

Generators applied on a center-tapped 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 maximum Net Nameplate Rating of a single-phase Generating Facility shall be the transformer nameplate rating.

g. **Drawings Required.** RPU, prior to Parallel Operation or Momentary Parallel Operation of the Generating Facility, shall approve the Producer's protection and control diagrams of the Generating Facility. Generating Facilities equipped with a protection and control scheme previously approved by RPU for system-wide application or with Certified Equipment only may satisfy this requirement by reference to previously approved drawings and diagrams.

h. **Generating Facility Conditions Not Identified.** In the event this Rule does not address the Interconnection requirements for a particular Generating Facility, RPU and Producer may agree upon other requirements.

2. Prevention of Interference.

The Producer shall not operate equipment that superimposes upon RPU's Distribution System a voltage or current that interferes with RPU operations, service to RPU Customers, or RPU 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 RPU. If the Producer does not take timely corrective action, or continues to operate the equipment causing interference without restriction or limit, RPU may, without liability, disconnect the Producer's equipment from the Distribution System, in accordance with Section B.9 of this Rule.

To eliminate undesirable interference caused by operation of the Generating Facility, each Generating Facility shall meet the following criteria:

a. **Normal Voltage Operating Range.** The voltage operating range limits for Generating Facilities shall be selected as a protection function that responds to abnormal Distribution System conditions and not as a voltage regulation function.

(1) **Generating Facilities (11 kVA or less).** Generating Facilities with a Gross Nameplate Rating 11 kVA or less shall be capable of operating within the limits normally experienced on the Distribution System. The operating range shall be selected in a manner that minimizes nuisance tripping between 106 volts and 132 volts (88-110% of Nominal Voltage) on a 120-volt base.

Generating Facilities shall cease to energize RPU circuits whenever the voltage at the Point of Common Coupling deviates from the allowable voltage operating range.

(2) **Generating Facilities (Greater than 11 kVA).** RPU may have specific operating voltage ranges for Generating Facilities with Gross Nameplate Ratings greater than 11 kVA and may require adjustable operating voltage settings. In the absence of such requirements, the Generating Facility shall operate at a range between 88% and 110% of the applicable Interconnection voltage.

(3) **Voltage Disturbances.** System voltage assumes a nominal 120 V base. The Generator should sense abnormal voltage and respond accordingly. The following conditions should be met, with voltages in root mean square and measured at the Point of Common Coupling, as described in Table D-1.

Table D-1: Voltage Trip Setting

Voltage at Point of Common Coupling (Assuming 120V base)	Maximum Trip Setting (Assuming 60 cycles per Second)
Less than 60 Volts	10 Cycles
Greater than or equal to 60 Volts but less than 106 Volts	120 Cycles
Greater than or equal to 106 volts but less than or equal to 132 Volts	Normal Operation
Greater than 132 volts But less than or equal to 165 Volts	120 cycles (30 cycles for facilities greater than 11 kVA)
Greater than 165 Volts	6 cycles

***"Maximum Trip time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize the Distribution System. Protective Function sensing devices and circuits may remain connected to the Distribution System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the time delay is to allow Generating Facility to "ride through" short- term disturbances to avoid nuisance tripping. For Generating Facilities with a Gross Nameplate Rating of 11 kVA or less, the 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 RPU.**

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 effects experienced by other Customers on RPU's Distribution System. Induction Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded.

c. **Frequency.** RPU controls system frequency, and the Generating Facility shall operate in synchronism with the Distribution System. Generating Facilities with a Gross Nameplate Rating of 11 kVA or less shall have a fixed operating frequency range of 59.3-60.5 Hz. The Generating Facility must cease to energize RPU's Distribution System in a maximum of ten cycles should Distribution System 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 nuisance tripping. RPU may require adjustable operating frequency settings for Generating Facilities with a Gross Nameplate Rating greater than 11 kVA.

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 for 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 RPU's Distribution System.

f. **Power Factor.** Each Generator in a Generating Facility shall be capable of operating at some point within a power factor range of 0.9 leading and 0.9 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 RPU. The Producer shall notify RPU if it is using the Generating Facility for power factor correction.

3. Control, protection and safety equipment requirements

a. **Technology Specific Requirements**

(1) **Three-phase Synchronous Generators.** For three-phase Generators, the circuit breakers shall be three-phase devices with electronic or electromechanical control. The Producer shall be responsible for properly synchronizing its Generating Facility with the Distribution System by means of either a manual or automatic synchronizing function. Automatic synchronizing is required for all synchronous Generators, which have a Short Circuit Contribution Ratio (SCCR) exceeding 0.05. A Generating Facility whose SCCR exceeds 0.05 shall be equipped with Protective Functions suitable for detecting loss of synchronism and rapidly disconnecting the Generating Facility from the Distribution System. Unless otherwise agreed to between the Producer and RPU, synchronous Generators shall automatically regulate power factor, not voltage, while operating in parallel with the Distribution System. Power system Stabilization functions are specifically not required for Generating Facilities under 10 MW Net Nameplate Rating. 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.

(2) **Induction Generators.** Induction Generators do not require a synchronizing function. Starting or rapid load fluctuations on induction Generators can adversely impact the Distribution System's voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferroresonance. When these counter measures (e.g. additional capacitors) are installed on the Producer's side of the Point of Common Coupling, RPU must review these measures. Additional equipment may be required as determined in a Supplemental Review or 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 the Distribution System.

b. Supplemental Generating Facility Requirements

(1) **Unintended Islanding For Generating Facilities that Fail the Export Screen (Section I.3.b.)** 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, or (2) verifying that local loads sufficiently exceed the Net Nameplate Rating of the Generating Facility, or (3) incorporating a Transfer Trip or an equivalent Protective Function.

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

E. INTERCONNECTION FACILITY OWNERSHIP AND FINANCING

1. **Scope and Ownership of Interconnection Facilities**

a. **Scope.** The Interconnection of a Producer's Generating Facility with RPU's Distribution System is made through the use of Interconnection Facilities. Such Interconnection may also require Distribution System improvements. The type, extent and costs of Interconnection Facilities and Distribution System improvements shall be consistent with this Rule and determined through the Initial Review and Interconnection Study described in Section C.

b. **Ownership.** Interconnection Facilities installed on Producer's side of the Point of Common Coupling may be owned, operated and maintained by the Producer or RPU. Interconnection Facilities installed on RPU's side of the Point of Common Coupling and Distribution System improvements shall be owned operated and maintained by RPU.

2. Responsibility for Costs of Interconnecting a Generating Facility

   a. **Study and Review Costs.** A Producer shall be responsible for the reasonably incurred costs of the reviews and studies conducted pursuant to Section C.1 of this Rule.

   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 RPU in providing, operating, or maintaining Interconnection Facilities and Distribution System improvements required solely for the Interconnection of the Producer's Generating Facility with RPU's Distribution System.

   c. **Separation of Costs.** Should RPU combine the installation of Interconnection Facilities, or Distribution System improvements with modifications or additions to RPU's Distribution System to serve other Customers or Producers, RPU 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 Distribution System Improvements

   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 type and extent of the Interconnection Facilities and Distribution System improvements warrant additional detail, the detail shall be found in a separate agreement between the Producer and RPU, and RPU's applicable rate 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 RPU's Distribution System and Distribution System Improvements shall be provided, installed, owned and maintained by RPU as Added Facilities.

   c. **Reservation of Unused Facilities.** When a Producer wishes to reserve RPU-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

RPU. If Producer elects to reserve idle Interconnection Facilities or Distribution System improvements, RPU shall be entitled to continue to charge Producer for the costs related to the ongoing operation and maintenance of the Added Facilities.

d. **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 RPU, the Producer shall, at a minimum, receive from RPU 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 and shall meet all applicable standards of RPU's applicable rate schedules, rules, and published RPU manuals dealing with metering specifications. The requirements in this Section do not apply to metering of Generating Facilities operating under RPU's net metering tariff pursuant to California Public Utilities Code Section 2827.
2. **Metering by Third Parties.** The ownership, installation, operation, reading, and testing of metering for Generating Facilities shall be by RPU.
3. **Net Generation Metering.** For purposes of monitoring Generating Facility operation for determination of standby charges and applicable non-bypassable charges as defined in RPU's rate schedules, and for Distribution System planning and operations, consistent with Section B.4 of these Rules, RPU shall have the right to specify the type, and require the installation of, Net Generation Metering. RPU shall require the provision of Generator output data to the extent reasonably necessary to provide information for the Utility to administer its tariffs or to operate and plan its system. RPU shall only require Net Generating Metering to the extent that less intrusive and/or more cost effective options for providing the necessary Generator output data are not available. In exercising its discretion to require Net Generation Metering, RPU shall consider all relevant factors, including but not limited to:

   a. Data requirements in proportion to need for information;
   b. Customer election to install equipment that adequately addresses RPU'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 project size relative to the cost of the metering/monitoring;
   f. Other means of obtaining the data (e.g. Generator logs, proxy data, etc.);

g. Requirements under any Power Purchase Agreement with the Customer.

4. **Point of Common Coupling Metering.** For purposes of assessing RPU charges for retail service, the electricity Producer's Point of Common Coupling Metering shall be a bi-directional meter so that power deliveries to and from the electricity Producer's site can be separately recorded. Alternately, the electricity Producer may, at its sole option and cost, require RPU to install multi-metering equipment to separately record power deliveries to the Distribution System and retail purchases from RPU. Such Point of Common Coupling Metering shall be designed to prevent reverse registration.
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 electricity Producer's (and Customer'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. RPU shall only require Telemetering to the extent that less intrusive and more cost effective options for providing the necessary data in real time are not available.
6. **Location.** Where RPU-owned metering equipment is located on the electricity Producer's (or Customer's) Premises, electricity Producer (and Customer) shall provide, at no expense to the RPU, a suitable location for all such metering equipment.
7. **Costs of metering.** The electricity Producer (and Customer) 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

Any disputes arising from this Rule shall be submitted in writing by the Producer or Customer to the Board of Public Utilities for resolution. Their decision shall be final.

H. DEFINITIONS

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

Added Facilities: Facilities provided by the Utility which are in addition to, or in substitution for, the standard facilities which the Utility would normally install.

Applicant: The entity submitting an Application for Interconnection pursuant to this Rule.

Application: A standard RPU form submitted to RPU requesting Interconnection of a Generating Facility.

Certification Test: A test pursuant to this Rule that verifies conformance of certain equipment with RPU-approved performance standards in order to be classified as Certified Equipment. Certification Tests are performed by NRTLs.

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

Certified Equipment: Equipment that has passed all required Certification Tests.

Commissioning Test: A test performed during the commissioning of all or part o f a Generating Facility 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: The entity that 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.

Distribution Service: All services required by, or provided to, a Customer pursuant to the approved rate schedules and rules of RPU.

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

Emergency: An actual or imminent condition or situation, which jeopardizes the Distribution System Integrity.

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

Generating Facility: All Generators that are included in an Interconnection agreement.

Generator: An individual electrical power plant (including required equipment, appurtenances, protective equipment and structures) that is capable of Distributed Generation. A Generator is part of a Generating Facility.

Gross Nameplate Rating: The total gross generating capacity of a Generator or Generating Facility as designated by the manufacturer of the Generator.

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

Initial Review: The review by RPU, following receipt of an Application, to determine the following:

a) the Generating Facility qualifies for Simplified Interconnection; or

b) the Generating Facility can be made to qualify for Interconnection with Supplemental Review determining any potential additional requirements; or
c) if neither a nor b, provides the cost estimate and schedule for performing an Interconnection Study.

In-rush Current: The current determined by the In-rush Current test.

Interconnection; (Interconnected): The physical connection of a Generating Facility in accordance with the requirements of this Rule so that Parallel Operation with the Distribution System can occur (has occurred).

Interconnection Agreement: An agreement between RPU and the Producer that gives certain rights and obligations to effect or end Interconnection.

Interconnection Facilities: The electrical wires, switches and related equipment that interconnect a Generating Facility to the Distribution System. Interconnection Facilities are part of their related Generating Facilities.

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

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

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

Momentary Parallel Operation: The Interconnection of a Generating Facility to the Distribution System for one second (60 cycles) or less.

Nationally Recognized Testing Laboratory (NRTL): A laboratory accredited to perform the Certification Testing requirements under this Rule.

Net Energy Metering: Metering for the receipt and delivery of electricity between the Producer and RPU pursuant Section 2827 of the Public Utilities Code. Over a given time frame (typically a month) the difference between these two values yields either net consumption or surplus. The meter registers are ratcheted to prevent reverse registration. If available, a single meter may be allowed to spin backward to yield the same effect as a directional, two meter (or register) arrangement.

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

Net Nameplate Rating: The Gross Nameplate Rating minus the consumption of electrical power of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

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

Non-Export; Non-Exporting: Designed to prevent the transfer of electrical energy from the Producer to RPU.

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 Generator with power delivered or received by RPU while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generators that are Interconnected with the Distribution System for more than one second (60 cycles).

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:

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

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 or no Section 218 Load.

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

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

Power Purchase Agreement (PPA): An arrangement for the sale of electricity by the Producer to RPU.

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

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

Protective Function(s): The equipment, hardware 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 Interconnection Agreement when the Generating Facility is, by the Producer's estimate, expected to begin operation pursuant to this Rule.

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. Public Utilities Code 218 defines an "Electric Corporation" and provides conditions under which a Generator transaction would not classify a generating entity as an Electric Corporation. These conditions relate to "over-the-fence" sale of electricity from a Generator without using the Distribution System.

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

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

Single Line Diagram; Single Line Drawing: A schematic drawing, showing the major electrical switchgear, protection devices, wires, Generators, transformers and other devices, providing sufficient detail to communicate to a qualified engineer the essential design and safety of the system being considered.

Stabilization; Stability: The return to normalcy of the RPU 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 Starting Voltage Drop can also be expressed in percentage on a particular base voltage, (e.g. 6 volts on a 120-volt base, yielding a 5% drop).

Supplemental Review: A process wherein RPU further reviews an Application that fails one or more of the Initial Review Process screens. The Supplemental Review may result in one of the following: a) Simplified Interconnection; b) approval of Interconnection with additional requirements; or c) cost and schedule for an Interconnection Study.

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 RPU.

Telemetering: The electrical or electronic transmittal of metering data in real-time to RPU.

Transfer Trip: A Protective Function that trips a Generating Facility remotely by means of an automated communications link controlled by RPU.

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 the Distribution System, without the approval of RPU.

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 Interconnection Agreement.

Visible Disconnect: An electrical switching device that can separate the Generating Facility from the Distribution System and is designed to allow visible verification that separation has been accomplished. This requirement can be met by opening the enclosure to observe the contact separation.

I. Initial Review Process for Applications to Interconnect a Generating Facility

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. The Initial Review process includes a screening to determine if a Supplemental Review is required.

2. **Purpose.** The Initial Review determines:

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

NOTE: Failure to pass any screen of the Initial Review means only that further review or studies are required before the Generating Facility can be approved for Interconnection with the RPU Distribution System. It does not mean that the Generating Facility cannot be Interconnected.

Initial Review Process Flow Chart

Perform Supplemental Review

3. Initial Review Process Details

a. Screen 1: Is the PCC on a Networked Secondary System?

- If No, continue to next screen
- If Yes, the Generating Facility does not qualify for Simplified Interconnection. Perform Supplemental Review.

Significance:
Special considerations must be given to the 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.

b. Screen 2: Will power be exported across the PCC?

- If Yes, the Generating Facility does not qualify for Simplified Interconnection. Perform Supplemental Review.
- If No, the Generating Facility must incorporate one of the following four options:

Option 1:
To ensure 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 ensure at least minimum import of power an under-power Protective Function must be implemented at the PCC.
Default setting shall be 5% (import) of the 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:
The aggregate capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of the Customer's service equipment;

The total aggregate Generating Facility capacity must be no more than 50% of the service transformer rating. (This capacity requirement does not apply to Customers taking primary service without an intervening transformer);
The Generating Facility must be Certified as Non-Islanding.

Option 4:
To ensure 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 Customer's verifiable minimum load over the last 12 months.

Significance:
(1) If it can be assured that the Generating Facility will not export power, RPU's Distribution System does not need to be studied for load-carrying capability or Generating Facility power flow effects on RPU voltage regulators as the Generating Facility will simply be reducing Customer's load on RPU's Distribution System.
(2) Permits use of reverse-power relaying at the PCC as positive anti-Islanding protection.

c. Screen 3: Is the Interconnection Equipment Certified for the Application or does the Interconnection Equipment have Interim RPU Approval?

- If No, the Generating Facility does not qualify for Simplified Interconnection. Perform Supplemental Review.
- If Yes, continue to next screen.

Significance:
If the Generating Facility has been Certified or previously approved by RPU, RPU 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 ensure that the system is connected properly and that the Protective Functions are working properly.

Certification indicates the following criteria have been tested and verified:
- Basic Protective Function requirements.
- Harmonic distortion limits.
- Synchronizing requirements.
- Power factor regulation requirements.
- Non-Islanding requirements
- If used, reverse power function requirement.
- If used, under-power function requirement.

d. Screen 4: 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:
Low penetration of Generating Facility installations will have a minimal impact on Distribution System and load operation and power restoration.
The operating requirements for a high penetration of Generating Facilities may be different since the impact on RPU's Distribution System operation will no longer be minimal, therefore requiring additional study or controls.

e. Screen 5: Is the Starting Voltage Drop Within Acceptable Limits?

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

NOTICE: This screen only applies to Generating Facilities that start by motoring the Generator.

RPU has two options in determining whether Starting Voltage Drop could be a problem; which option to use is at RPU's discretion.

Option 1:
RPU may determine that the Generating Facility's starting In-rush Current is equal to or less than the continuous ampere rating of the Customer's service equipment.

Option 2:
RPU may determine the impedances of the service distribution transformer (if present) and secondary conductors to Customer's service equipment and perform a voltage drop calculation. Alternatively, RPU 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 Interconnection and 5% for secondary Interconnection.

Significance:
(1) This screen addresses potential voltage fluctuation problems for Generators that start by motoring.
(2) When starting, a Generating Facility should have minimal impact on the service voltage or other RPU Customers.
(3) Passing this screen does not relieve the Producer from ensuring that its Generating Facility complies with the flicker requirements of this Rule, Section D.

f. Screen 6: Is the Gross Nameplate Rating of the Generating Facility 11 kVA or less?

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

Significance:
The Generating Facility has minimal impact on fault current levels and any potential line overvoltages from loss of system neutral grounding.

g. Screen 7: Is Short Circuit Current Contribution Within Acceptable Limits?

- If No, the Generating Facility does not qualify for Simplified Interconnection. Perform Supplemental Review.
- If Yes, continue to next screen.

Short Circuit Current Contribution Screen:
The short circuit current contribution screen consists of two criteria; both of which must be met when applicable:

(1) At primary side (high side) of the Dedicated Distribution Transformer, the sum of the SCCR of all Generating Facilities on the Distribution System circuit may not exceed 0.1.
(2) At secondary (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.

Significance:
No significant Generating Facility impact on:
(1) Distribution System's short circuit duty
(2) Distribution System fault detection sensitivity
(3) Distribution System relay coordination
(4) Distribution System fuse-saving schemes

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

h. Screen 8 : Is the Line Configuration Acceptable for Simplified Interconnection?

- If No, then the Generating Facility does not qualify for Simplified Interconnection. Perform Supplemental Review.
- If Yes, the Generating Facility qualifies for Simplified Interconnection.

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 the following table if the proposed Generating Facility passes the screen.

Primary Distribution Line Type	Type of Interconnection to Primary Distribution Line	Result/Criteria
Three-phase, three wire	Any	Pass screen
Three-phase, four wire	Single-phase, line-to-neutral	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 than or equal to 10% of Line Section Peak Load.

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 RPU's or other Customer's equipment caused by loss of system neutral grounding during the operating time of anti-Islanding protection.

J. Testing and Certification Criteria

1. Introduction

This Section describes the test procedures and requirements for equipment used for the Interconnection of a Generating Facility to RPU's Distribution System. Included are Type Testing, Production Testing, Commissioning Testing, and Periodic Testing. The procedures listed rely heavily on those described in applicable 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 the New York State Public Service Commission's Interconnection Requirements.[1] 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.

1 "New York State Standardized Interconnection Requirements, Application Process, Contract & Application Forms For New Distributed Generators, 300 Kilovolt - Amperes or Less, Connected In Parallel with Radial Distribution Lines", November 9, 2000.

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 RPU's Distribution System and that a Generating Facility will cease providing power to RPU's Distribution System under abnormal conditions. The tests were developed assuming a low level of Generating Facility penetration. At high levels of Generating Facility penetration, other 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 RPU's Distribution System. Subject to the exceptions described in this Section, RPU 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 subject to testing and approval by RPU as discussed below.

2. Certification Criteria

Equipment tested and approved (e.g. listed) by a NRTL as having met both the Type Testing and Production Testing requirements is considered to be Certified Equipment for purposes of Interconnection with RPU'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 factory/test lab 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.

The use of Certified Equipment is not a requirement for Interconnection. However, the use of Certified Equipment will simplify the Interconnection approval process by reducing commissioning and additional test requirements. For non-Certified Equipment, some or all of the tests described in this document may be required by RPU for each Generating Facility. The manufacturer or a laboratory acceptable to RPU may perform these tests. Test results for non-Certified Equipment must be submitted to RPU as part of the Application process for RPU's review and approval under the Supplemental Review. Approval by RPU for equipment used in a particular Application does not guarantee RPU approval for use in other Applications or by other California electric utilities.

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) Effective date of Certification or applicable serial number (range or first in series), other proof that Certification is current
(2) Equipment model number (s)
(3) Software version, 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 rating (kW, kVA, V, A, etc.)
(2) Maximum available fault current, A
(3) In-rush Current, A
(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 Non-Islanding

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. A sample Certification information form is provided in Appendix 1.

3. Type Testing

Type Testing provides a basis for determining that equipment is designed appropriately and meets the specifications for being designated as Certified Equipment under this Rule. The requirements described in this section cover only issues related to Interconnection and are not intended to address device safety or other issues outside the needs of the relationship between RPU and the Producer operating a Generating Facility.

The following table defines the test requirements by technology. Test References that are preceded by "UL 1741" refer to the section numbers of the document that describe the test requirements.[2] While UL 1741 was written specifically for photovoltaic inverters, the requirements are readily adapted to inverter-based Generating Facilities, synchronous machines, induction machines, as well as single/multi-function controllers and protection relays. Until a standardized test procedure is specified, RPU or NRTL shall adapt the procedures referenced in the following table as appropriate and necessary for a machine's performance and its control and protection system functions.

Type Tests and Requirements for Interconnection Equipment Certification

Type Test	Reference[1]	Inverter	Synchronous Machine	Induction Machine
Utility Interaction	UL 1741 – 39	X	X	X
DC Isolation	UL 1741 – 40.1	X	---	---
Simulated PV Array (Input)Requirements	UL 1741 – 41.2	X	---	---
Dielectric Voltage Withstand	UL 1741 – 44	X	X	X
Power Factor	UL 1741 – 45.2.2	X	X	X
Harmonic Distortion	UL 1741 – 45.4	X	X	X
DC Injection	UL 1741 – 45.5	X	---	---
Utility Voltage and Frequency Variation	UL 1741 – 46.2	X	X	X
Reset Delay	UL 1741 – 46.2.3	X	X	X
Loss of Control Circuit	UL 1741 – 46.4	X	X	X
Short Circuit	UL 1741 – 47.3	X	X	X
Load Transfer	UL 1741 – 47.7	X	X	X
Surge Withstand	J.3.a	X	X	X
Anti-Islanding	J.3.b	(2)	(2)	(2)
Non-Export	J.3.c	(3)	(3)	(3)
In-rush Current	J.3.d	(4)	(4)	(4)
Synchronization	J.3.e	(5)	X	---

Notes: X = Required; - = Not required

Table Notes:

(1) Reference refers to section number in either UL 1741 or this Rule. References within UL1741 to "photovoltaics" or "inverter" may have to be interrupted by the testing laboratory to appropriately apply the tests to other technologies.
(2) Required only if Non-Islanding designation is desired.
(3) Required only if Non-Export designation is desired.
(4) Required for devices that use RPU power to motor to speed.
(5) Required for all synchronous machines as well as inverters that operate as voltage sources when connected to RPU.

2 UL 1741, *Inverters, Converters and Charge Controllers for use in Independent Power Systems,* Revised January 2001

a. Anti-Islanding Test

Devices that are tested to and pass the anti-Islanding test procedure described in UL 1741 Section 46.3 will be considered Non-Islanding for the purposes of these Interconnection requirements. This test is required only for devices for which a Certified Non-Islanding designation is desired.

b. Non-Export Test

Devices that pass the Non-Export test procedure described in Section J.7.a. will be considered Non-Exporting for the purposes of these Interconnection requirements. This test is required only for devices for which a Certified Non-Export designation is desired.

c. In-Rush Current Test

Devices 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.

d. 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 RPU's Distribution System. If the device remains operable after being subject to the surge conditions, previous Type Tests related to RPU protection and power quality will need to be repeated to ensure the unit will still pass those tests following the surge test.

e. 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-sources while connected to RPU. This test is not necessary for induction Generators or current- source inverters.

The test will start with only one of the three parameters --voltage difference between Generating Facility and RPU Distribution System, frequency difference, or 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 RPU's Distribution System. This testing may be performed in the factory or as part of a Commissioning Test (Section J.5).

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 manufacture's recommended test procedure to prove the settings and requirements of this Rule.

The RPU 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 (if applicable)
d. Non-Export (if applicable)
e. Inability to energize dead line
f. Time delay 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 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

a. Certified Equipment

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

1. Protection settings that have been changed after factory testing will require field verification. Tests will be performed using injected secondary voltages and currents, 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. Non-Islanding function, if included, will be checked by opening 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. Non-Export function, if included, 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 (Section J.5.a.). With RPU approval, these tests may be performed in the factory, in the field as part of commissioning, or a combination of both. RPU, 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.

c. Verification of 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 RPU-approved settings. This step shall be documented in the Commissioning Test Certification.

d. Trip Test

Interconnection protective devices (e.g. reverse power relay) 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 Test

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 indicate 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.

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 Producer shall maintain Periodic Test reports or a log for inspection by RPU. Periodic Testing conforming to RPU test intervals for the particular Line Section may be specified by RPU 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. Detailed Type Test Procedures and Requirements

This section describes the additional Type Test procedures necessary to qualify a device as Certified, for use on the RPU Distribution System. 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.

a. Non-Export Test Procedure

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 Screen 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 in Section I.3.b. It should be understood that in the reverse power application, the relay will provide a trip output with power in the export (toward RPU system) direction.

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 0 degrees in the trip direction. Increase the current to pick up 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 relays 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 angles 90, 180, and 270 degrees and verify that the relay does NOT operate.

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 and 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 misoperate.

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.

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 Section J.3.d.

(2) Under Power Relay Test

In the underpower application, the relay will provide a trip output when import power (toward the Producer) 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).

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 stimulate light load conditions. Remove Phase-A voltage and observe that the relay does not operate, repeat for phase-B and C.

Step 5: Unbalanced Fault Test
Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to stimulate 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.

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.d.

(3) Functional Test 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.

b. In-Rush Current Test

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 RPU'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 RPU's Distribution System 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 RPU.

Appendix 1

Utility Interconnection Equipment Certification Form

Utility Interconnection Equipment Certification

The information on this form is provided to indicate the compliance of the generation equipment listed below with the utility interconnection certification requirements defined in this Rule.

Certifying Laboratory *The information on this form is provided by the following Nationally Recognized Testing Laboratory:*

Laboratory:_____

Contact Name:_____Phone:_____E-mail:_____

Address:_____

City:_____State:_____Zip:_____

Accredited by:_____Date:_____

Accredited to (test standards)[1]:_____

Equipment Specification *The information on this form applies to the following equipment:*

Equipment Manufacturer: _____

Address:_____

City:_____State:_____Zip:_____

Model Number(s):_____

Software Version(s):_____

Effective [2]:_____

Device Description [3]:_____

Test results [4]

Mark the box next to each requirement that has been met and each test that has been performed and successfully passed. Provide an explanation of any exceptions or omissions on a separate sheet. List additional test documents used on separate sheet.

UL 1741: (Section number listed)

⏮-39	⏮-40.1	⏮-41.2	⏮-44	⏮-45.2.2	⏮-45.4	⏮-45.5
⏮-46.2	⏮-46.2.3	⏮-46.4	⏮-47.3	⏮-47.7	*Optional*	⏮-46.3

⏮ - IEEE/ANSI C62.45/C62.41 (location Category B3)

California Rule 21: ⏮-J.3.b. Non-Export ⏮-J.3.c. In-rush Current ⏮-J.3.e. Synchronization

Device Rating[5]: _____
Maximum available fault current, A _____
In-rush current[6], A _____
Trip settings[7]:

		Setting 1	Setting 2	Setting 3	Setting 4	Setting 5	Factory Settings [8]
Fast Over Voltage	Setting						
	Measured						
Fast Over Voltage	Setting						
	Measured						
Fast Over Voltage	Setting						
	Measured						
Fast Over Voltage	Setting						
	Measured						
Fast Over Voltage	Setting						
	Measured						
Fast Over Voltage							

Nominal Power Factor (Range, if adjustable)

Non Islanding: Yes___No____Maximum trip time: _____ Non Export: Yes_____No____Method: _____

Other [8]:

NOTES

1 Accreditation must apply to test standards listed herein.

2 Note here the date of certification, applicable serial number (range or first in series), or other information that indicates which units the certification applies to.

3 List appropriate functions, capabilities, applications, limitations, etc. Use additional sheets as necessary.

4 List all test documents (i.e. UL 1741, IEEE C62.45) and specific procedures (i.e. UL 1741 Sec 39.1 – 39.5, etc.) used to evaluate device's suitability for utility interconnection.

5 kW, kVA, V, A, etc. as appropriate

6 For devices that use grid power to motor to speed

7 Trip value (Voltage in volts or frequency in Hz) and timing (in cycles). Devices with adjustable settings shall provide test results over the range of settings. For each test setting provide the setting values in the upper box and measured results in the lower box. List device ranges, if adjustable.

8 Provide any additional information that may be useful in evaluating these results such as test configurations, device settings used to meet requirements, etc. Use additional sheets if necessary.