

APPENDIX III
COMMUNITY-BASED RENEWABLE ENERGY PROGRAM
INTERCONNECTION AGREEMENT

(3 MW or less)

This Community-Based Renewable Energy Program Interconnection Agreement (3 MW or less) (“Agreement”) is made by and between [Hawaiian Electric Company, Inc., Maui Electric Company, Ltd., Hawai‘i Electric Light Company, Inc.] (“Company”), and _____ (“Subscriber Organization”), and is made, effective and binding as of _____ (“Effective Date”). Company and Subscriber Organization may be referred to individually as a “Party” and collectively as the “Parties”.

WHEREAS, Company is an operating electric public utility subject to the Hawai‘i Public Utilities Law, Hawaii Revised Statutes, Chapter 269, and the rules and regulations of the Hawai‘i Public Utilities Commission (“Commission”); and

WHEREAS, Subscriber Organization is an “approved Subscriber Organization,” as defined in the Company’s Community-Based Renewable Energy (“CBRE”) Program Phase 1 Tariff (“CBRE Tariff”), intends to construct a Generating Facility (as defined in Section 4 below), that qualifies for the Company’s CBRE program (“CBRE Program”), and desires to interconnect and operate the Generating Facility in parallel with the Company’s electric system;

NOW, THEREFORE, in consideration of the premises and the respective promises herein, the Company and the Subscriber Organization hereby agree as follows:

1. **Notice and Disclaimer Regarding Future Rate and Tariff Modifications.** This Agreement shall, at all times, be subject to modification by the Commission as said Commission may, from time to time, direct in the exercise of its jurisdiction. Without limiting the foregoing, Subscriber Organization expressly acknowledges the following:

- (a) The CBRE Tariff is subject to modification by the Hawai‘i Public Utilities Commission (“Commission”).
- (b) **Your Agreement and Generating Facility shall be subject to any future modifications ordered by the Commission. You agree to pay for any costs related to such Commission-ordered modifications.**

**BY SIGNING BELOW, YOU ACKNOWLEDGE THAT YOU HAVE READ, UNDERSTAND
AND AGREE TO THE ABOVE NOTICE AND DISCLAIMER.**

2. **Effectiveness of Agreement.** This Agreement shall not be effective until approved and executed by each Party, i.e. upon the Effective Date. Subscriber Organization shall not interconnect and operate the Generating Facility in parallel with the Company’s system prior to approval and execution of this Agreement by the Company. Until this Agreement is effective, no Party shall have any legal obligations arising hereunder, express or implied, and any actions taken by a Party in reliance on the terms of this Agreement prior to the Effective Date shall be at that Party’s own risk.

3. **Term and Termination.** This Agreement shall become effective as of the date when both the Subscriber Organization and the Company have signed this Agreement. This Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:

- (a) The Parties agree in writing to terminate the Agreement; or

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- (b) The Subscriber Organization may terminate this Agreement at any time, by written notice to the Company, prior to completion of the final acceptance testing of the Generating Facility by the Company. Once the Generating Facility is operational, then 3(c) applies. Upon receipt of a cancellation notice, the Company shall take reasonable steps to minimize additional costs to the Subscriber Organization, where reasonably possible; or
- (c) Once the Generating Facility is operational, the Subscriber Organization may terminate this Agreement after 30 days written notice to the Company; or
- (d) Company may terminate this Agreement after 30 days written notice to the Subscriber Organization if:
 - (i) The Subscriber Organization fails to interconnect and operate the Generating Facility pursuant to the terms of this Agreement; or
 - (ii) The Subscriber Organization fails to take all corrective actions specified by the Company's written notice that the Generating Facility is out of compliance with the terms of this Agreement, within the timeframe set forth in such notice;

provided, that the Company has satisfied all notice and other requirements for such termination by the Company, as provided in Section I.3.a of the CBRE Tariff.

- 4. **Generating Facility Description.** For the purposes of this Agreement, the "Generating Facility" is defined as the equipment and devices, and associated appurtenances, owned by the Subscriber Organization, which produce electric energy for use by the Subscriber Organization and are to be interconnected and operated in parallel with the Company's system. The Generating Facility is identified in Exhibit A (Description of Generating Facility) and, if the Generating Facility is larger than 1 MW, also in Exhibit E (Provisions for Generating Facilities Larger than 1 MW).
- 5. **Scope of Agreement.** The Parties understand and agree that this Agreement applies only to the operation of the Generating Facility described in Exhibit A and, if applicable, Exhibit E.
- 6. **Parallel Operation.** For Generating Facilities 1 MW or smaller. Company shall allow Subscriber Organization to interconnect and operate the Generating Facility in parallel with the Company's distribution system in accordance with the terms and conditions of this Agreement, the Standard Form Contract for Hawai'i Community Based Renewable Energy - Phase One between Subscriber Organization and Company, attached as Appendix IV to the CBRE Tariff ("SFC"), and Company Rule 14, Paragraph H (Interconnection of Distributed Generating Facilities Operating in Parallel With The Company's Electric System) ("Rule 14H") provided that the Company determines that all applicable requirements and conditions of this Agreement, the SFC, the CBRE Tariff and Rule 14H have been satisfied. For Generating Facilities larger than 1 MW, the additional provisions in Exhibit E to this Agreement shall also apply. To the extent the provisions of Exhibit E conflict with Rule 14H or other provisions in this Agreement, the provisions of Exhibit E shall apply to Generating Facilities larger than 1 MW.
- 7. **Permits and Licenses.** Subscriber Organization shall be responsible for the design, installation, operation, and maintenance of the Generating Facility and shall obtain at its expense, and maintain any required governmental authorizations and/or permits for the construction and operation of the Generating Facility.
- 8. **Installation.**
 - (a) Design, installation, operation and maintenance of the Generating Facility shall include control and protection equipment as specified by the Company, including but not limited to an automatic load-break device such as a circuit breaker or inverter and a manual disconnect that has a visible break or breaker with rack-out capability to isolate the Generating Facility from the Company's system. The

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manual disconnect device must be accessible by the Company and be capable of being locked by the Company in the open position, to establish working clearance for maintenance and repair work in accordance with the Company's safety rules and practices. The disconnect devices shall be furnished and installed by the Subscriber Organization and are to be connected between the Generating Facility and the Company's electric system. The disconnect devices shall be located in the immediate vicinity of the electric meter serving the Subscriber Organization. The manual disconnect device shall be, at a minimum, clearly labeled "Subscriber Organization System Disconnect". With permission of the Company, the disconnect devices may be located at an alternate location which is readily and safely accessible to the Company on a 24-hour basis. Such alternate location shall be clearly identified with signage placed in the immediate vicinity of the electric meter serving the Subscriber Organization.

- (b) The Subscriber Organization grants access to the Company to utilize the disconnect device, if needed. Company may enter premises where the Generating Facility is located, as permitted by law or tariff, for the following purposes: (1) to inspect Generating Facility's protective devices and read or test meter(s); and (2) to disconnect the Generating Facility and/or service to Subscriber Organization, whenever in Company's sole opinion, a hazardous condition exists and such immediate action is necessary to protect persons, Company's facilities, or property of others from damage or interference caused by the Generating Facility, or the absence or failure of properly operating protective device.
- (c) Under no circumstances shall a Subscriber Organization interconnect and operate the Generating Facility in parallel with the Company's electric system without prior written approval by the Company.
- (d) Once the Generating Facility is interconnected to the Company's system, the Company reserves the right to require the installation of, or modifications to, equipment determined by the utility to be necessary to facilitate the delivery of reliable electric service to its customers, subject to the requirement that such installation or modification be consistent with applicable interconnection standards (e.g., Rule 14H). The Company shall provide a written explanation of the need for such installation or modification. Such installation or modification shall be made by mutual agreement of the Company and the Subscriber Organization. Any disputes related to this provision shall be resolved according to the dispute resolution process set forth below.
- (e) If the Generating Facility is a facility interconnecting at the Distribution Level, the Generating Facility shall follow the applicable Rule No. 14H interconnection process at the time of interconnection. If the Generating Facility is a facility interconnecting at the Sub-Transmission and Transmission levels, the Generating Facility shall follow the interconnection process applicable to such Generating Facility at the time of interconnection.
- (f) The Generating Facility must comply with the communications and controllability requirements set forth in Section F of the CBRE Tariff.

9. **Interconnection Facilities.**

- (a) Subscriber Organization-Owned Interconnection Facilities.
 - (1) The Subscriber Organization shall furnish, install, operate and maintain, at its cost, the interconnection facilities (such as circuit breakers, relays, switches, synchronizing equipment, monitoring equipment, and control and protective devices and schemes) identified in Exhibit B (Subscriber Organization-Owned Generating Facility and Interconnection Facilities).
 - (2) The point of interconnection is shown on the single-line diagram and three-line diagram (provided by the Subscriber Organization and reviewed by the Company) which are attached to

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Exhibit B (Subscriber Organization-Owned Generating Facility and Interconnection Facilities). Pursuant to Company Rule 14H, Appendix I (Distributed Generating Facility Interconnection Standards Technical Requirements), Section 6.c (Review of Design Drawings), the Company must review and approve Subscriber Organization's single-line and three-line diagrams prior to Subscriber Organization constructing of the Generating Facility interconnection.

- (3) The Subscriber Organization agrees to test the Generating Facility, to maintain operating records, and to follow such operating procedures, as may be specified by the Company to protect the Company's system from damages resulting from the parallel operation of the Generating Facility, including such testing, records and operating procedures as more fully described in Exhibit C attached hereto for Generating Facilities 1 MW and smaller, and as also specified in Exhibit E attached hereto for Generating Facilities larger than 1 MW.
- (4) The Company may inspect the Generating Facility and Subscriber Organization's interconnection facilities.

(b) Company-Owned Interconnection Facilities.

- (1) The Company agrees to furnish, install, operate and maintain such interconnection facilities on its side of the point of interconnection with the Generating Facility as required for the parallel operation with the Generating Facility and more fully described in Exhibit C (Company-Owned Interconnection Facilities) attached hereto and made apart hereof ("Company Interconnection Facilities"). All Company Interconnection Facilities shall be the property of the Company. Where portions of the Company Interconnection Facilities are located on the Subscriber Organization's premises, the Subscriber Organization shall provide, at no expense to the Company, a suitable location for and access to all such equipment. If a 120/240 Volt power source or sources are required, the Subscriber Organization shall provide these at no expense to the Company.
- (2) The Subscriber Organization agrees to pay to the Company a non-refundable contribution for the Company's investment in the Company Interconnection Facilities described in Exhibit C (Company-Owned Interconnection Facilities), subject to the terms and conditions included in Exhibit C and to pay for other interconnection costs. The interconnection costs will not include the cost of an initial technical screening of the impact of the Generating Facility on the Company's system.
- (3) The Subscriber Organization shall provide an irrevocable standby letter of credit with no documentation requirement (i) in an amount not less than twenty-five percent (25%) of the total estimated costs for the Company Interconnection Facilities; and (ii) substantially in the form attached to this Agreement as Exhibit D (Form of Letter of Credit) from a bank or other financial institution located in the United States with a credit rating of "A-" or better. Such letter of credit shall remain in effect through the earlier of forty-five (45) days after the Commercial Operations Date, as such term is defined in the SFC, or seventy-five (75) days after the termination of this Agreement and true-up of any costs owed to Company. Subscriber Organization shall replenish the security amount to the level required under this Agreement (the "Security") within fifteen (15) business days after any draw on the Security by Company or any reduction in the value of Security below the required level for any other reason. In addition to any other remedy available to it, Company may, before or after termination of this Agreement, draw from the Security such amounts as are necessary to recover amounts Company is owed pursuant to this Agreement, the SFC and/or any other obligation of Subscriber Organization to Company under the Company's applicable electric service tariff,

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the CBRE Tariff or any other applicable law, regulation, rule ordinance or regulatory order. Any failure to draw upon the Security or other security for any amounts due Company shall not prejudice Company's rights to recover such amounts in any other manner.

If the letter of credit is not renewed or extended at least thirty (30) days prior to its expiration or earlier termination, Company shall have the right to draw immediately upon the full amount of the letter of credit and right (but not the obligation) to place the proceeds of such draw (the "L/C Proceeds"), at Subscriber Organization's cost, in an escrow account until and unless Subscriber Organization provides a satisfactory substitute letter of credit. If it so chooses, the Company will place the L/C Proceeds in an escrow account with a reputable escrow agent acceptable to Company ("Escrow Agent"). Thereafter, the Company shall have the right to apply the L/C Proceeds as necessary to recover amounts Company is owed. Company shall have the sole authority to draw from the account and Subscriber Organization shall have no rights to the L/C Proceeds. Upon full satisfaction of Subscriber Organization's obligations under this Contract, including recovery by Company of amounts owed to it, Company shall instruct the Escrow Agent to remit to the bank that issued the letter of credit that was the source of the L/C Proceeds the remaining balance (if any) of the L/C Proceeds. Any failure to draw upon the L/C Proceeds for any amounts due Company shall not prejudice Company's rights to recover such amounts in any other manner.

Promptly following the Commercial Operations Date, and the complete performance of all of Subscriber Organization's obligations under this Agreement and the SFC, including but not limited to the obligation to pay any and all amounts owed by Subscriber Organization to Company, Company shall release the Security (including any accumulated interest, if applicable) to Subscriber Organization.

10. **Dispute Resolution:** Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner. In the event a dispute arises under this Agreement, and if it cannot be resolved by the Parties within thirty (30) days after written notice of the dispute to the other Party, the Parties agree to submit the dispute to the Independent Observer for the CBRE Tariff. Pursuant to Section I.6. of the CBRE Tariff, material disputes unresolved after consultation with the Independent Observer may be presented to the Commission for review and the Commission may issue guidance and/or orders to resolve such disputes consistent with the CBRE Tariff.

11. **Continuity of Service.**

(a) The Company may require the Seller to temporarily curtail, interrupt or reduce deliveries of energy when necessary in order for the Company to construct, install, maintain, repair, replace, remove, investigate, test or inspect any of its equipment or any part of the Company System including, but not limited to, accommodating the installation and/or testing of non-utility owned facilities to the Company System; or if the Company determines that such curtailment, interruption or reduction is necessary because of an Emergency, Forced Outage (as such terms are defined in the SFC), operating conditions on its system; or the inability to accept deliveries of energy due to Excess Energy Conditions (as defined in the SFC); or if either the Generating Facility does not operate in compliance with good engineering and operating practices or acceptance of energy from the Seller by the Company would require the Company to operate the Company System outside of good engineering and operating practices which in this case shall include, but not be limited to, excessive system frequency fluctuations or excessive voltage deviations, and any situation that the Company System operator determines, at his or her sole discretion, could place in jeopardy system reliability.

(b) When the Company determines that curtailment of energy becomes necessary for excess energy, curtailments shall be made to the extent reasonably possible, after all other remotely curtailable energy

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resources. When Company determines that curtailment of energy becomes necessary for engineering and/or operating reasons that are directly attributable to the Generating Facility, or system conditions exist that require reduction of the Generating Facility for reliability and stability reasons, the above curtailment order will not apply.

- (c) The Generating Facility will be included in a group of solar projects designated as Phase 1 of the CBRE Program established by the Commission's Decision and Order No. 35137 in Docket No. 2015-0389 that Company will, to the extent possible, treat as a single "block" (designated for convenience of reference as "CBRE Phase 1 Curtailment Block") for purposes of implementing excess energy curtailment. When the Company is implementing excess energy curtailments, facilities included in the CBRE Phase 1 Curtailment Block shall be the last curtailed after all remotely curtailable facilities. Projects (such as photovoltaic net energy metering projects, feed-in tariff projects, etc.) that are allowed to be installed without remote curtailment controls and projects for which remote control is otherwise unavailable or inoperable will not be curtailed before the Generating Facility for excess energy.
 - (d) If the telemetry and control interface is unavailable, due to loss of communication link, remote terminal unit failure, or other event resulting in the loss of the remote control by Company, provision must be made for Subscriber Organization to be able to institute via local controls, within 30 minutes (or such other period as Company accepts in writing) of the verbal directive by the Company system operator, such raising and lowering of the curtailment limits as directed by the Company system operator. Due to timing considerations, this local instruction may not correlate to the remaining CBRE "block" controls.
 - (e) If all local and remote curtailment controls become unavailable or fail, the Generating Facility shall, without intentional delay, disconnect from the Company's system.
 - (f) If direct transfer trip is determined to be required, but is unavailable due to any reason, including loss of communication or equipment problems, provision must be made for the Subscriber Organization to trip the main circuit breaker.
 - (g) In the event that the Company initiates a curtailment event pursuant to this Agreement, Company shall not be obligated to accept any electric energy from the Generating Facility except for such electric energy that Company notifies the Subscriber Organization that it is able to take during the duration of a curtailment. The Company shall not be liable to the Subscriber Organization for any curtailments that are not a Compensable Curtailment Event (as defined in the SFC). The Subscriber Organization shall not override Company's curtailment. Company shall pay for Compensable Curtailment Events as provided in the SFC.
12. **Personnel and System Safety.** If at any time the Company determines, in its sole discretion, that the continued operation of the Generating Facility may endanger any person or property, the Company's electric system, or have an adverse effect on the safety or power quality of other customers, the Company shall have the right to curtail or disconnect the Generating Facility from the Company's electric system remotely or otherwise. The Generating Facility shall remain curtailed or disconnected until such time as the Company is satisfied that the endangering or power quality condition(s) has been corrected, and the Company shall not be obligated to accept any energy from the Generating Facility during such period. The Company shall not be liable, directly or indirectly, for permitting or continuing to allow an attachment of the Generating Facility for the acts or omissions of the Subscriber Organization that cause loss or injury, including death, to any third party.
13. **Prevention of Interference.** The Subscriber Organization shall not operate equipment that superimposes a voltage or current upon the Company's system that interferes with the Company's operations, service to the Company's customers, or the Company's communication facilities. Such interference shall include, but not be

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limited to, overcurrent, voltage imbalance, and abnormal waveforms. If such interference occurs, the Subscriber Organization must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by the Company. If the Subscriber Organization does not take timely corrective action, or continues to operate the equipment causing interference without restriction or limit, the Company may, without liability, disconnect the Subscriber Organization's equipment from the Company's system.

14. **Limitation of Liability.**

- (a) Each Party shall at all times indemnify, defend and save the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury or death of any person or damage to property, costs and expenses, reasonable attorneys' fees and court costs, arising out of or resulting from the Party's performance of its obligations under this Agreement, except to the extent that such damages, losses or claims were caused by the negligence or intentional acts of the other Party.
- (b) Each Party's liability to the other Party for failure to perform its obligations under this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any punitive, incidental, indirect, special, or consequential damages of any kind whatsoever, including for loss of business opportunity or profits, regardless of whether such damages were foreseen.
- (c) Notwithstanding any other provision in this Agreement, with respect to the Company's provision of electric service to any customer including the Subscriber Organization, the Company's liability to such customer shall be limited as set forth in the Company's tariffs and terms and conditions for electric service, and shall not be affected by the terms of this Agreement.

15. **Subscriber Organization and Generating Facility Information.** By signing this Agreement, the Subscriber Organization expressly agrees and authorizes the Company to request and obtain from Subscriber Organization and its contractors, vendors, subcontractors, installers, suppliers or agents (collectively "Subscriber Organization Agents"), at no cost to Company, information related to the Generating Facility, including but not limited to Watts, Vars, Watt Hours, current and voltage, status of the Generating Facility, inverter settings, any and all recorded event or alarm logs recorded, (collectively "Generating Facility Data") that Company reasonably determines are needed to ensure the safe and reliable operation of the Generating Facility or the Company's system. Subscriber Organization expressly agrees and irrevocably authorizes Subscriber Organization Agents to disclose such Subscriber Organization Data to Company upon request by Company.

16. **Additional Information.** The Company reserves the right to request additional information from Subscriber Organization relating to the Generating Facility, where reasonably necessary, to serve the Subscriber Organization under this Agreement or to ensure reliability, safety of operation, and power quality of the Company's system.

17. **No Material Changes to Generating Facility.** The Subscriber Organization agrees that no material changes or additions to the Generating Facility shall be made without having obtained prior written consent from the Company, which consent shall not be unreasonably withheld. In no event may the Total Rated Capacity of the Generating Facility exceed ___ kW. If the Generating Facility changes ownership, the Company may require the new Subscriber Organization to complete and execute an amended Agreement or new Agreement, as may be applicable.

18. **Certification by Licensed Electrical Contractor.** Generating and interconnection systems must comply with all applicable safety and performance standards of the National Electrical Code (NEC), Institute of Electrical and Electronic Engineers (IEEE), and accredited testing laboratories such as the Underwriters Laboratories

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(UL), and where applicable, the rules of the Commission, or other applicable governmental laws and regulations, and the Company's interconnection requirements, in effect at the time of signing this agreement. This requirement shall include, but not be limited to, the interconnection standards and procedures of the Company's Rule 14H, as well as any other requirements as may be specified in this Agreement, its exhibits, and/or in the SFC, all as authorized by the Commission. Upon request by Company, Subscriber Organization shall cause a Licensed Electrical Contractor, as agent for Subscriber Organization, to certify that once approved by the Company, the proposed Generating Facility will be installed to meet all preceding requirement(s).

19. **Good Engineering Practice.**

- (a) Each Party agrees to install, operate and maintain its respective equipment and facilities and to perform all obligations required to be performed by such Party under this Agreement in accordance with good engineering practice in the electric industry and with applicable laws, rules, orders and tariffs.
- (b) Wherever in this Agreement and the attached Exhibits the Company has the right to give specifications, determinations or approvals, such specifications, determinations and/or approvals shall be given in accordance with the Company's standard practices, policies and procedures, which may include the Company's Electric Service Installation Manual, the Company's Engineering Standard Practice Manual and the IEEE Guides and Standards for Protective Relaying Systems.

20. **Insurance.** The following insurance provisions are only applicable to Generating Facilities with a Total Rated Capacity greater than 10 kW but not exceeding 3 MW:

- (a) The Subscriber Organization shall, at its own expense and during the term of the Agreement and any other time that the Generating Facility is interconnected with the Company's system, maintain in effect with a responsible insurance company authorized to do insurance business in Hawaii and with a rating by A.M. Best Company, Inc. of "A-VII" or better, the following insurance or its equivalent at Company's discretion that will protect the Subscriber Organization and the Company with respect to the Generating Facility, the Generating Facility's operations, and the Generating Facility's interconnection with the Company's system:
- (b) A Commercial General Liability policy covering bodily injury and property damage with a combined single limit of liability of at least the following amounts based on the Total Rated Capacity of the generator (for solar systems—Total Rated Capacity of the generator or inverter, whichever is lower, can be used with appropriate technical documentation on inverter, if not higher Total Rated Capacity will be used), for any occurrence. The limits below may be satisfied through the use of umbrella or excess liability insurance sufficient to meet these requirements:

Commercial General Liability Coverage Amount	Total Rated Capacity of the Generating Facility
\$5,000,000	Greater than 1 MW and less than or equal to 3 MW
\$2,000,000	Greater than 250 kW and less than or equal to 1 MW
\$1,000,000	Greater than 30 kW and less than or equal to 250 kW
\$500,000	Greater than 10 kW and less than or equal to 30 kW

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- (c) Solely with respect to the insurance policies required for Generating Facilities with a Total Rated Capacity greater than 30 kW, said insurance by endorsement to the policy or policies shall: name the Company, its directors, officers, agents, and employees as additional insured; include contractual liability coverage for written Agreements; include provisions stating that the insurance will respond to claims or suits by additional insureds against the Subscriber Organization or any other insured thereunder; provide that the insurance is primary with respect to the Subscriber Organization and the Company; and provide that the insurance company waives all rights of subrogation which Subscriber Organization or the insurance company may have against Company, its directors, officers, agents, and employees. Any insurance carried by Company will be excess only and not contribute with this insurance.
- (d) Said insurance by endorsement to the policy or policies shall provide written notice within 30 days to the Company should the required insurance be cancelled, limited in scope, or not renewed upon expiration. "Claims made" policies are not acceptable, unless the Subscriber Organization agrees to maintain coverage in full effect at all times during the term of this Agreement and for THREE (3) years thereafter. The adequacy of the coverage afforded by the required insurance shall be subject to review by the Company from time to time, and if it appears in such review that risk exposures require an increase in the coverages and/or limits of this insurance, the Subscriber Organization shall make such increase to that extent and any increased costs shall be borne by the Subscriber Organization. The Subscriber Organization has the responsibility to determine if higher limits are desired and purchased. The Subscriber Organization shall provide certificates of insurance to the Company prior to executing the Agreement and any parallel interconnection. Receipt of any certificate showing less coverage than required shall not operate as a waiver by the Company of the Subscriber Organization's obligation to fulfill the applicable requirements of this Section 20. The Subscriber Organization's indemnity and other obligations shall not be limited by the foregoing insurance requirements. Any deductible shall be the responsibility of the Subscriber Organization.
- (e) Alternatively, where the Subscriber Organization is a governmental entity, Subscriber Organization may elect to be self-insured for the amounts set forth above in lieu of obtaining insurance coverage to those levels from an insurance company.

21. **Miscellaneous.**

- (a) **Disconnection and Survival of Obligations.** Upon termination of this Agreement, the Generating Facility shall be disconnected from the Company's system. The termination of this Agreement shall not relieve the Parties of their respective liabilities and obligations, owed or continuing at the time of termination.
- (b) **Governing Law and Regulatory Authority.** This Agreement was executed in the State of Hawaii and must in all respects be interpreted, governed, and construed under the laws of the State of Hawaii. This Agreement is subject to, and the Parties' obligations hereunder include, operating in full compliance with all valid, applicable federal, state, and local laws or ordinances, and all applicable rules, regulations, orders of, and tariffs approved by, duly constituted regulatory authorities having jurisdiction.
- (c) **Amendment, Modifications, or Waiver.** This Agreement may not be altered or modified by either of the Parties, except by an instrument in writing executed by each of them. None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and

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remain in full force and effect. This Agreement contains the entire agreement and understanding between the Parties, their agents, and employees as to the subject matter of this Agreement. Each Party also represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement.

- (d) **Termination of Existing Agreement.** This Agreement shall supersede any existing agreement, if any, under which Subscriber Organization is currently operating the Generating Facility and any such agreement shall be deemed terminated as of the date this Agreement becomes effective.
- (e) **Notices.** Any notice required under this Agreement shall be in writing and mailed at any United States Post Office with postage prepaid and addressed to the Party, or personally delivered to the Party at the address identified on the last page of the Agreement. Changes in such designation may be made by notice similarly given. Notice sent by mail shall be deemed to have been given on the date of actual delivery or at the expiration of the fifth day after the date of mailing, whichever is earlier.
- (f) **Assignment.** This Agreement may not be assigned by either Party without the prior written consent of the other Party. Such consent shall not be unreasonably withheld. In the event of an assignment for financing, to the extent necessary, Company shall, if requested by Subscriber Organization and if its costs (including reasonable attorneys' fees of outside counsel) in responding to such request are paid by Subscriber Organization execute such Hawai'i-law-governed documents as may be reasonably requested by a lender in connection with Generating Facility debt and reasonably acceptable to Company, to acknowledge an assignment of such debt and/or pledge/mortgage.
- (g) **Binding Effect.** This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective successors, legal representatives, and permitted assigns.
- (h) **Relationship of Parties.** Nothing in this Agreement shall be deemed to constitute any Party hereto as partner, agent or representative of the other Party or to create any fiduciary relationship between the Parties.
- (i) **Limitations.** Nothing in this Agreement shall limit the Company's ability to exercise its rights or expand or diminish its liability with respect to the provision of electrical service pursuant to the Company's tariffs as filed with the Commission, or the Commission's Standards for Electric Utility Service in the State of Hawai'i, which currently are included in the Commission's General Order Number 7, as either may be amended from time to time.
- (j) **Force Majeure.** For purposes of this Agreement, "Force Majeure Event" means any event: (a) that is beyond the reasonable control of the affected Party; and (b) that the affected Party is unable to prevent or provide against by exercising reasonable diligence, including the following events or circumstances, but only to the extent they satisfy the preceding requirements: acts of war, public disorder, insurrection or rebellion; floods, hurricanes, earthquakes, lightning, storms, and other natural calamities; explosions or fires; strikes, work stoppages, or labor disputes; embargoes; and sabotage. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party will specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance. The affected Party will be entitled to suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of reasonable efforts. The affected Party will use reasonable efforts to resume its performance as soon as possible.

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- (k) **Non-Warranty.** Neither by inspection, if any, or non-rejection, nor in any other way, does the Company give any warranty, express or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Subscriber Organization or leased by the Subscriber Organization from third parties, including without limitation the Generating Facility and any structures, equipment, wires, appliances or devices appurtenant thereto.
- (l) **Confidential Information.** Except as otherwise agreed or provided herein, each Party shall hold in confidence and shall not disclose confidential information to any person (except employees, officers, representatives and agents, who agree to be bound by this section). Confidential information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires either Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose confidential information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this Agreement. In the absence of a protective order or waiver the Party shall disclose only such confidential information which, in the opinion of its counsel, the Party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded any confidential information so furnished.
- (m) **Execution of Agreement: Multiple Counterparts.** The parties agree that this Agreement, including amendments, may be executed and delivered by exchange of electronic signatures, which may be transmitted by facsimile, E-mail, or other acceptable means. A party's electronic signature shall be considered an "original" signature which is binding and effective for all purposes. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all of which shall together constitute one and the same instrument binding all Parties.

22. **Generator/Equipment Certification**

Generating Facilities that utilize inverter technology must be compliant with *Institute of Electrical and Electronics Engineers IEEE Std 1547* and *Underwriters Laboratories UL 1703* and *UL 1741* in effect at the time this Agreement is executed as well as the Company's Rule 14H and any additional requirements in Exhibit E attached hereto that apply to Generating Facilities greater than 1 MW. Generating Facilities that use a rotating machine must be compliant with applicable National Electrical Code, Underwriters Laboratories, and Institute of Electrical and Electronics Engineers standards and rules and orders of the Public Utilities Commission of the State of Hawaii in effect at the time this Agreement is executed. By signing below, the Applicant certifies that the installed generating equipment will meet the appropriate preceding requirement(s) and can supply documentation that confirms compliance, including a certification of the same from the Installing Electrical Contractor upon request by the Company.

HAWAIIAN ELECTRIC COMPANY, INC.

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

SUBSCRIBER ORGANIZATION

By:

Signature

Date

Name (Print):

Company Name
(if applicable):

Title (if applicable):

HAWAIIAN ELECTRIC COMPANY

By:

Signature

Date

Name (Print):

Title:

MAILING ADDRESS

Hawaiian Electric Company, Inc.
Distributed Energy Resources Division,
CP12-SI
P.O. Box 2750
Honolulu, HI 96840

HAWAIIAN ELECTRIC COMPANY, INC.

EXHIBIT A
DESCRIPTION OF GENERATING FACILITY

1. Subscriber Organization Information

Name (print): _____

Property Address: _____

City: _____ State: _____ Zip: _____

Meter # (if applicable): _____ TMK: _____

Phone: _____ Cell: _____ Email: _____

Mailing Address is the same as the Property Address

Mailing Address: _____

City: _____ State: _____ Zip: _____

Name of Person Authorized to Sign on behalf of Subscriber Organization: _____

Hawaii Gross Excise Tax License Number of Subscriber Organization: _____

2. Electrical Contractor

Electrical Contractor: _____ Hawai'i License #: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Cell: _____ Email: _____

Supply certification that the generating system will be installed and inspected in compliance with the local Building/Electrical code of the County of: Honolulu Maui Hawai'i

Generating System Building Permit # (to be filled out by the Company upon the Company's approval and execution of Agreement): _____

Interconnection Date (to be filled out by the Company upon the Company's approval and execution of the Agreement): _____

3. Insurance Not Applicable (less than 10 kW)

Insurance Carrier: _____

4. General Technical Information (Attached)

Single Line Diagram **Single Line Diagram** **Relay List and Tri Scheme (if applicable)**

HAWAIIAN ELECTRIC COMPANY, INC.

5. Generator Qualifications

Generator Type:

- Photovoltaic with DC Inverter Non-Photovoltaic DC Generator

What is the system's Maximum Export capability?

Technical System Size: _____ kW Maximum Export: _____ kW

6. Interconnecting Equipment Technical Data

Generator Disconnect Information:

Manufacturer: _____ Catalog #: _____

Type: _____ Rated Amps: _____ Rated Volts: _____

- Fused *or* Non-Fused | Single Phase *or* Three Phase | Uses multiple disconnects

Mounting Location: _____

Will an interposing transformer be used between the generator and the point of interconnection?

- No Yes

7. Generator Facility Technical Information

System Information:

Micro Inverter	Central/String Inverter	Energy Storage (Inverter)	Inverter Manufacturer	Model	Qty.	Peak AC Output Rating (kW)*	Quantity x Peak AC Output Rating (kW)
<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1					
<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2					
<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3					
<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4					
<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5					

Total Inverter Capacity (kW):

Micro Inverter	Central/String Inverter	Module Manufacturer	Model	Qty.	STC Rating (kW)*	Quantity x STC Rating (kW)
<input type="checkbox"/> 1	<input type="checkbox"/> 1					
<input type="checkbox"/> 2	<input type="checkbox"/> 2					

<input type="checkbox"/> 3	<input type="checkbox"/> 3					
<input type="checkbox"/> 4	<input type="checkbox"/> 4					
<input type="checkbox"/> 5	<input type="checkbox"/> 5					
Total Module Capacity (kW):						
Total Capacity of Inverter #:		1:	2:	3:	4:	5:
Total Program Size (kW):						
Total System Capacity is the combined sums of the lesser of the AC or DC capacities per inverter.						

*All equipment ratings must match those listed on their manufacturer's specification sheets.

8. Reserved Not Applicable

9. Interconnecting Equipment Technical Data Not Applicable

Transformer Data Not Applicable

A copy of transformer Nameplate and Manufacturer's Test Report may be substituted

Transformer Primary (Volts): _____ Transformer Secondary (Volts): _____
 Delta Wye Wye Grounded Delta Wye Wye Grounded

Size: _____ KVA Transformer Impedance: _____ % on _____ KVA Base

Transformer Fuse Data Not Applicable

Attach fuse manufacturer's Minimum Melt & Total Clearing Time-Current Curves

At Primary Voltage At Secondary Voltage

Manufacturer: _____ Type: _____ Size: _____ Speed: _____

Transformer Protection (if not fuse) Not Applicable

Please describe: _____ Not Applicable

Generator Main Circuit Breaker Not Applicable

A copy of circuit breaker's Nameplate and Specification Sheet may be substituted

Manufacturer: _____ Type: _____

Continuous Load Rating (Amps): _____ Interrupting Rating (Amps): _____ Trip Speed (Cycles): _____

Feeder Circuit Breaker Not Applicable

Attach copy of any proposed Time-Overcurrent Coordination Curves

Manufacturer	Type	Style/Catalog No.	Proposed Setting

Current Transformer Data Not Applicable

Attach copy of Manufacturer's Excitation & Ratio Correction Curves

Manufacturer	Type	Accuracy Class	Proposed Ration Connection
			/5
			/5
			/5
			/5
			/5

HAWAIIAN ELECTRIC COMPANY, INC.

Order No. 35560; Filed June 29, 2018, Docket No. 2015-0389

Transmittal Letter dated July 10, 2018.

EXHIBIT B

**SUBSCRIBER ORGANIZATION-OWNED GENERATING
FACILITY AND INTERCONNECTION FACILITIES**

1. Generating Facility

- a. Compliance with laws and standards.
- (i) The Generating Facility, Generating Facility design, and Generating Facility drawings shall meet all applicable national, state, and local laws, rules, regulations, orders, construction and safety codes, and shall satisfy the terms of the Interconnection Agreement, the SFC, and the Company's Distributed Generating Facility Interconnection Standards, Technical Requirements ("Interconnection Standards"), as set forth in Rule 14, Paragraph H.1 of the Company's tariff.
 - (ii) This Agreement incorporates by reference the standards and requirements of Company Rule 14H; however, in the event of any conflict between this Agreement and Company Rule 14H, the provisions of this Agreement shall control.
- b. Avoidance of adverse system conditions. The Generating Facility shall be designed, installed, operated and maintained so as to prevent or protect against adverse conditions on the Company's system that can cause electric service degradation, equipment damage, or harm to persons, such as:
- (i) Unintended islanding.
 - (ii) Inadvertent and unwanted re-energization of a Company dead line or bus.
 - (iii) Interconnection while out of synchronization.
 - (iv) Overcurrent.
 - (v) Voltage imbalance.
 - (vi) Ground faults.
 - (vii) Generated alternating current frequency outside of permitted safe limits.
 - (viii) Voltage outside permitted limits.
 - (ix) Poor power factor or reactive power outside permitted limits.
 - (x) Abnormal waveforms.
- c. Specification of protection, synchronizing and control requirements. The Subscriber Organization shall provide the design drawings, operating manuals, manufacturer's brochures/instruction manual and technical specifications, manufacturer's test reports, bill of material, protection and synchronizing relays and settings, and protection, synchronizing, and control schemes for the Generating Facility to the Company for its review, and the Company shall have the right to specify the protection and synchronizing relays and settings, and protection, synchronizing and control schemes that affect the reliability and safety of operation and power quality of the Company's system with which the Generating Facility is interconnected ("Facility Protection Devices/Schemes").
- d. Maximum Export. The net instantaneous MW output from the Generating Facility may not exceed the Maximum Export capability, as set forth in Section 5 of this Agreement. The Company may take appropriate action to limit such net instantaneous MW output, pursuant to Company's Rule 14H, this Agreement and/or the SFC.

HAWAIIAN ELECTRIC COMPANY, INC.

e. Generating Facility protection and maintenance.

- (i) The Subscriber Organization is solely responsible for securing and providing adequate protection for the Generating Facility. The Subscriber Organization shall also perform vegetation management and other routine maintenance in accordance with manufacturer recommendations and intervals for purposes of maintaining the Generating Facility in good working order. Subscriber Organization shall comply with all commercially reasonable requests of Company to update security and/or maintenance if required to prevent security breaches.
- (ii) By the first day of each calendar quarter following the Commercial Operations Date, Subscriber Organization shall provide the Company in writing a projection of maintenance outages for the next calendar quarter. If, during the term of this Agreement, the Generating Facility or any of the individual components of the Generating Facility should be damaged or destroyed, or taken out of service for unscheduled maintenance, the Subscriber Organization shall provide the Company as soon as reasonably practicable following or in anticipation of such event, and promptly repair or replace the damaged or destroyed equipment at the Subscriber Organization's sole expense. If the time period for repair or replacement is reasonably anticipated to exceed one hundred eighty (180) days, the Company shall have the right to request to terminate this Agreement by written notice.

f. Information Security Requirements.

- (i) Safety and Security Procedures. The Subscriber Organization shall maintain and enforce safety and security procedures to safeguard: all data provided by Company to Subscriber Organization pursuant to this Agreement or in any way connected with the CBRE Program and the administration of the CBRE Program including but not limited to Subscriber names, Subscriber account numbers and information on such accounts, Subscriber addresses, Subscriber rate schedules and Subscriber CBRE bill credit information ("Company CBRE Data"); and all information regarding Company's customers, customer lists, any of the data and testing results produced under this Agreement and any information identified by Company as confidential ("Company Customer Data" and together with Company CBRE Data, collectively referred to as "Company Confidential Information"); all generation and telemetry data provided by the Subscriber Organization to the Company ("SO Data"); in Subscriber Organization's possession, including Company Confidential Information that Subscriber Organization provides to any contractors, consultants, and other third parties retained by Subscriber Organization to assist Subscriber Organization to perform under this Agreement in the course of Subscriber Organization's performance pursuant to this Agreement. Subscriber Organization warrants that it shall (A) use the National Institute of Standards and Technology ("NIST") industry best practices for physical and systems security measures to prevent destruction, loss, alteration or unauthorized access to, use of, or tampering with, the Generating Facility, Subscriber Organization software, and Company Confidential Information, including to protect the confidentiality and integrity of any of Company Confidential Information, operation of Company's systems, and to prevent viruses and similar destructive code from being placed in any software or data provided to Company, on Subscriber Organization's or Company's website, or in Subscriber Organization's or Company's programming; and (B) use NIST industry best practices physical security and precautionary measures to prevent unauthorized access or damage to the Generating Facility, including to protect

HAWAIIAN ELECTRIC COMPANY, INC.

the confidentiality and integrity of any of Company's Confidential Information as well as the operation of Company's systems. Subscriber Organization shall, at a minimum, protect Company's Confidential Information and provide the standard of care required by NIST cybersecurity requirements, and the same measures it uses to protect its own confidential information.

- (ii) Exception to Certain NIST Requirements. Company, at its sole and absolute discretion, may waive the requirements concerning NIST industry best practices as set forth in subsection (i)(A) and (B) above provided that Subscriber Organization implements alternate measures that Company deems acceptable and not inconsistent with Company's standards with respect to (A) physical and systems security measures to prevent destruction, loss, alteration or unauthorized access to, use of, or tampering with, the Generating Facility, software and Company's Confidential Information, including to protect the confidentiality and integrity of any of Company's Confidential Information, operation of Company's systems, and to prevent viruses and similar destructive code from being placed in any software provided to Company, on Subscriber Organization's or Company's website, or in Subscriber Organization's or Company's programming; and (B) physical security and precautionary measures to prevent unauthorized access or damage to the Generating Facility, including to protect the confidentiality and integrity of any of Company's Confidential Information as well as the operation of Company's systems.
- (iii) Security Breach. In the event that Subscriber Organization discovers or is notified of a breach, potential breach of security, or security incident at the Generating Facility or of Subscriber Organization's systems (a "Security Breach"), Subscriber Organization shall immediately (i) notify Company of such Security Breach, whether or not such breach has compromised any of Company Confidential information, (ii) investigate and remediate the effects of the Security Breach, (iii) cooperate with Company with respect to any such Security Breach and provide necessary information on the Security Breach as requested by Company; and (iv) comply with all applicable privacy and data protection laws, including any notification obligations. Any remediation of any Security Breach will be at Subscriber Organization's sole expense.
- (iv) "Subscriber" means a retail customer of the Company who owns a subscription of Subscriber Organization's CBRE project interconnected with the Company.

g. Subscriber Organization Interconnection Facilities.

- (i) The Subscriber Organization shall furnish, install, operate and maintain interconnection facilities (such as circuit breakers, relays, switches, synchronizing equipment, monitoring equipment, and control and protective devices and schemes) designated by or acceptable to the Company as suitable for parallel operation of the Generating Facility with the Company's system ("Subscriber Organization Interconnection Facilities"). Such facilities shall be accessible at all times to authorized Company personnel.
- (ii) The Subscriber Organization shall comply with the Company's Interconnection Standards.
- (iii) 1) Single-line diagram of the Generating Facility, 2) relay list, trip scheme and settings of the Generating Facility, 3) Generating Facility Equipment List, and 4) three-line diagram, which identify the circuit breakers, relays, switches, synchronizing

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equipment, monitoring equipment, and control and protective devices and schemes, shall, after having obtained prior written consent from the Company, be attached to Exhibit A and made a part hereof at the time the Agreement is signed. The single-line diagram shall include pertinent information regarding operation, protection, synchronizing, control, monitoring, and alarm requirements. The single-line diagram and three-line diagram shall expressly identify the point of interconnection of the Generating Facility to the Company's system. The relay list, trip scheme and settings shall include all protection, synchronizing and auxiliary relays that are required to operate the Generating Facility in a safe and reliable manner. The three-line diagram shall show potential transformer and current transformer ratios, and details of the Generating Facility's configuration, including relays, meters, and test switches.

- (iv) Subscriber Organization shall provide final as-built drawings of the Subscriber Organization Interconnection Facilities within thirty (30) days of the successful completion of the initial verification test. Within thirty (30) days of Company's receipt of the proposed as-built drawings, Company shall provide Subscriber Organization with either (A) its comments on the proposed as-built drawings or (B) notice of acceptance of the proposed as-built drawings as final as-built drawings. If Company provides comments on the proposed as-built drawings, Subscriber Organization shall incorporate such comments into a final set of as-built drawings and provide such final as-built drawings to Company within twenty (20) days of Subscriber Organization's receipt of Company's comments.
- h. Approval of Design Drawings. The single-line diagram, relay list, trip scheme and settings of the Generating Facility, and three-line diagram shall be approved by a Professional Electrical Engineer registered in the State of Hawaii prior to being submitted to the Company. Such approval shall be indicated by the engineer's professional seal on all drawings and documents.
- i. [Reserved]
- j. Schedule. The Company and the Subscriber Organization have agreed upon on a schedule for the progression of the Generating Facility's construction (e.g., construction start date, Commercial Operations Date, etc.) and each Party has a copy of such schedule and agrees to use commercially reasonable efforts to adhere to such schedule.

2. Verification Testing.

- a. Upon initial parallel operation of the Generating Facility, or any time either (i) interface hardware or software is changed, or (ii) the Company observes that the Subscriber Organization is not in compliance with the operational and performance requirements specified in the Company's Rule 14H, this Agreement and/or the SFC, a verification test shall be performed. Such verification test shall include testing of the telemetry and control interface which allows the Company to remotely measure, monitor, evaluate and verify technical compliance. Generating Facility performance, and power quality and, if necessary, control the Generating Facility. A licensed professional engineer or otherwise qualified individual shall perform verification testing in accordance with the manufacturer's published test procedure. Qualified individuals include professional engineers, factory trained and certified technicians, and licensed electricians with experience in testing protective equipment. The Company reserves the right to witness verification testing or require written certification that the testing was performed.
- b. Verification testing shall also be performed every four years. The Company reserves the right to perform, at its expense, additional verification testing. All verification tests prescribed by the

HAWAIIAN ELECTRIC COMPANY, INC.

manufacturer shall be performed. If wires must be removed to perform certain tests, each wire and each terminal shall be clearly and permanently marked. The Subscriber Organization shall maintain verification test reports for inspection by the Company.

- c. Inverters shall be verified once per year as follows: once per year the Subscriber Organization shall operate the Subscriber Organization system disconnect switch and verify the Generating Facility automatically shuts down and does not reconnect with the Company's system until the Company's system continuous normal voltage and frequency have been maintained for a minimum of 5 minutes. The Subscriber Organization shall maintain a log of these operations for inspection by the Company.
- d. Any system that depends upon a battery for trip power shall be checked once per month for proper voltage. Once every four (4) years the battery shall either be replaced or have a discharge test performed. The Subscriber Organization shall maintain a log of these operations for inspection by the Company.
- e. Tests and battery replacements as specified in this section 2 of Exhibit B shall be at the Subscriber Organization's expense.
- f. Facilities larger than 1 MW shall also be subject to an acceptance test and a control system acceptance test prior to initial parallel operation. The procedures for such tests will be provided to Subscriber Organization by the Company prior to executing this Agreement.

3. Inspection of the Generating Facility.

- a. The Company may, in its discretion and upon reasonable notice not to be less than 24 hours (unless otherwise agreed to by the Company and the Subscriber Organization), observe the construction of the Generating Facility (including but not limited to relay settings and trip schemes) and the equipment to be installed therein.
- b. Facilities 1 MW or Smaller: Within fourteen days after receiving a written request from the Subscriber Organization to begin producing electric energy in parallel with the Company's system, the Company may inspect the Generating Facility (including but not limited to relay settings and trip schemes) and observe the performance of the verification testing. The Company may accept or reject the request to begin producing electric energy based upon the inspection or verification test results.

Facilities 1MW or Larger: The Company and Subscriber Organization will work together to schedule the acceptance test and control system acceptance test. The Subscriber Organization shall provide notice forty-five (45) days in advance of its readiness to begin the acceptance test. The Company may accept or reject the request to begin producing electric energy based upon the results of the acceptance test and control system acceptance test.

- c. With regards to facilities 1 MW and smaller only, if the Company does not perform an inspection of the Generating Facility (including but not limited to relay settings and trip schemes) and observe the performance of verification testing within the fourteen-day period, the Subscriber Organization may begin to produce energy after certifying to the Company that the Generating Facility has been tested in accordance with the verification testing requirements and has successfully completed such tests. After receiving the certification, the Company may conduct an inspection of the Generating Facility (including but not limited to relay settings and trip schemes) and make reasonable inquiries of the Subscriber Organization, but only for purposes of determining whether the verification tests were properly performed. The

HAWAIIAN ELECTRIC COMPANY, INC.

Subscriber Organization shall not be required to perform the verification tests a second time, unless irregularities appear in the verification test report or there are other objective indications that the tests were not properly performed in the first instance.

- d. The Company may, in its discretion and upon reasonable notice not to be less than 24 hours (unless an apparent safety or emergency situation exists which requires immediate inspection to resolve a known or suspected problem), inspect the Generating Facility (including but not limited to relay settings and trip schemes) and its operations (including but not limited to the operation of control, synchronizing, and protection schemes) after the Generating Facility commences operations.

4. Operating Records and Procedures.

- a. The Company may require periodic reviews of the maintenance records, and available operating procedures and policies of the Generating Facility.
- b. The Subscriber Organization must separate the Generating Facility from the Company's system whenever requested to do so by the Company's System Operator pursuant to this Agreement. It is understood and agreed that at times it may not be possible for the Company to accept electric energy due to temporary operating conditions on the Company's system, and these periods shall be specified by the Company's System Operator. Notice shall be given in advance when these are scheduled operating conditions.
- c. Logs shall be kept by the Subscriber Organization for information on unit availability including reasons for planned and forced outages; circuit breaker trip operations, relay operations, including target initiation and other unusual events. The Company shall have the right to review these logs, especially in analyzing system disturbance. Subscriber Organization shall maintain such records for a period of not less than six (6) years.

5. Changes to the Generating Facility, Operating Records, and Operating Procedures.

- a. The Subscriber Organization agrees that no material changes or additions to the Generating Facility as reflected in the single-line diagram, relay list, trip scheme and settings of the Generating Facility, Generating Facility Equipment List, and three-line diagram shall be made without having obtained prior written consent from the Company, which consent shall not be unreasonably withheld.
- b. As a result of the observations and inspections of the Generating Facility (including but not limited to relay list, trip scheme and settings) and the performance of the verification tests, if any changes in or additions to the Generating Facility, operating records, and operating procedures and policies are required by the Company, the Company shall specify such changes or additions to the Subscriber Organization in writing, and the Subscriber Organization shall, as soon as practicable, but in no event later than thirty (30) days after receipt of such changes or additions, respond in writing, either noting agreement and action to be taken or reasons for disagreement. If the Subscriber Organization disagrees with the Company, it shall note alternatives it will take to accomplish the same intent, or provide the Company with a reasonable explanation as to why no action is required by good engineering practice.

HAWAIIAN ELECTRIC COMPANY, INC.

6. Generating Facility Equipment List.

The Generating Facility shall include the following equipment:

[Specific items to be attached as necessary. The Generating Facility Equipment List, together with the single-line diagram, relay list and trip scheme, and three-line diagram, should be attached to this Exhibit B.]

EXHIBIT C

COMPANY-OWNED INTERCONNECTION FACILITIES

(To be filled out by Company)

1. Description of Company Interconnection Facilities

The Company will purchase, construct, own, operate and maintain all interconnection facilities required to interconnect the Company's system with the Generating Facility at _____ volts, up to the point of interconnection.

The Company Interconnection Facilities, for which the Subscriber Organization agrees to pay, include:

[Need to specify the interconnection facilities. If no interconnection facilities, state "None".]

2. Subscriber Organization Payment to Company for Company Interconnection Facilities, Review of Generating Facility, and Review of Verification Testing

The Subscriber Organization shall pay to the Company the total estimated interconnection cost to be incurred by the Company (Total Estimated Interconnection Cost), which is comprised of (i) the estimated cost of the Company Interconnection Facilities, (ii) the estimated engineering costs associated with a) developing the Company Interconnection Facilities and b) reviewing and specifying those portions of the Generating Facility which allow interconnected operation, and iii) witnessing and reviewing the verification testing, which shall include testing of the telemetry and control interface which allows the Company to remotely measure, monitor, evaluate and verify technical compliance, Generating Facility performance, and power quality and, if necessary, control the Generating Facility. The following summarizes the Total Estimated Interconnection Cost:

Description	Estimated Cost (\$) [If no cost, state "None".]
Total Estimated Interconnection Cost (\$):	

The Total Estimated Interconnection Cost, which, except as otherwise provided herein, is non-refundable, shall be paid by the Subscriber Organization fourteen (14) days after receipt of an invoice from the Company, which shall be provided not less than thirty (30) days prior to start of procurement of the Company Interconnection Facilities.

Within thirty (30) days of receipt of an invoice, which shall be provided within fourteen (14) days of the final accounting, which shall take place within sixty (60) days of completion of construction of the Company Interconnection Facilities, the Subscriber Organization shall remit to the Company the difference between the Total Estimated Interconnection Cost paid to date and the total actual interconnection cost (Total Actual Interconnection Cost). The latter is comprised of (i) the total costs of the Company Interconnection Facilities, and (ii) the total engineering costs associated with a) developing the Company Interconnection Facilities and b) reviewing and specifying those portions of the Generating Facility which allow interconnected operations as such are described in Exhibit A, and iii) reviewing the verification testing. If in fact the Total Actual Interconnection Cost is less than the payments received by the Company as the Total Estimated Interconnection Cost, the Company shall repay the difference to the Subscriber Organization within thirty (30) days of the final accounting.

HAWAIIAN ELECTRIC COMPANY, INC.

If the Agreement is terminated prior to the Subscriber Organization's payment for the Total Actual Interconnection Cost (or the portion of this cost which has been incurred) or prior to the Company's repayment of the over collected amount of the Total Estimated Interconnection Cost (or the portion of this cost which has been paid), such payments shall be made by the Subscriber Organization or Company, as appropriate. If payment is due to the Company, the Subscriber Organization shall pay within thirty (30) days of receipt of an invoice, which shall be provided within fourteen (14) days of the final accounting, which shall take place within sixty (60) days of the date the Agreement is terminated. If payment is due to the Subscriber Organization, the Company shall pay within thirty (30) days of the final accounting.

All Company Interconnection Facilities shall be the property of the Company.

3. Operation, Maintenance and Testing Costs

The Company will bill the Subscriber Organization monthly and the Subscriber Organization will, within 30 days after the billing date, reimburse the Company for any costs incurred in operating, maintaining or testing the Company Interconnection Facilities. The Company's costs will be determined on the basis of outside service costs, direct labor costs, material costs, transportation costs, applicable overheads at time incurred and applicable taxes. Applicable overheads will include such costs as vacation, payroll taxes, non-productive wages, supervision, tools expense, employee benefits, engineering administration, corporate administration, and materials handling. Applicable taxes will include the Public Service Company Tax, and Public Utility Fee.

EXHIBIT D
FORM OF LETTER OF CREDIT

[Bank Letterhead]

[Date]

Beneficiary: [Hawaiian Electric Company, HELCO or MECO, as appropriate]
[Address]

[Bank's Name]
[Bank's Address]

Re: **[Irrevocable Standby Letter of Credit Number]**

Ladies and Gentlemen:

We hereby establish, in your favor, our irrevocable standby Letter of Credit Number _____ (this "Letter of Credit") for the account of **[Applicant's Name]** and **[Applicant's Address]** in the initial amount of \$ _____ **[dollar value]** and authorize you, Hawaiian Electric Company **[HELCO or MECO, as appropriate]** ("Beneficiary"), to draw at sight on **[Bank's Name]**.

Subject to the terms and conditions hereof, this Letter of Credit secures **[Project Entity Name]**'s certain obligations to Beneficiary under the Community-Based Renewable Energy Program Interconnection Agreement dated as of _____ between **[Project Entity Name]** and Beneficiary.

This Letter of Credit is issued with respect to the following obligations: _____.

This Letter of Credit may be drawn upon under the terms and conditions set forth herein.

Partial draws of this Letter of Credit are permitted. This Letter of Credit is not transferable. Drafts on us at sight shall be accompanied by a Beneficiary's signed statement signed by a representative of Beneficiary substantially as follows:

The undersigned hereby certifies that (i) I am duly authorized to execute this document on behalf of Hawaiian Electric Company **[HELCO or MECO, as appropriate]**, and [(ii) the amount of the draft accompanying this certification is due and owing to Hawaiian Electric Company **[or HELCO or MECO, as appropriate]** under the terms of the Interconnection Agreement dated as of _____, between _____, and Hawaiian Electric Company **[or HELCO or MECO, as appropriate]**] [(ii) the amount of the draft accompanying this certification is due and owing to Hawaiian Electric Company **[or HELCO or MECO, as appropriate]** under the terms of the Standard Form Contract dated as of _____, between _____, and Hawaiian Electric Company **[or HELCO or MECO, as appropriate]**] [(ii) the Letter of Credit will expire in less than thirty (30) days, it has not been replaced or extended and collateral is still required under Section of the Interconnection Agreement*].

* For draw relating to lapse of Letter of Credit while credit support is still required pursuant to the Power Purchase Agreement.

HAWAIIAN ELECTRIC COMPANY, INC.

Order No. 35560; Filed June 29, 2018, Docket No. 2015-0389
Transmittal Letter dated July 10, 2018.

Such drafts must bear the clause "Drawn under **[Bank's Name and Letter of Credit Number _____ and date of Letter of Credit.]**"

All demands for payment shall be made by presentation of originals or copies of documents, or by facsimile transmission of documents to **[Bank Fax Number]** or other such number as specified from time to time by the bank. If presentation is made by facsimile transmission, you may contact us at **[Bank Phone Number]** to confirm our receipt of the transmission. Your failure to seek such a telephone confirmation does not affect our obligation to honor such a presentation. If presented by facsimile, original documents are not required.

This letter of credit shall expire one year from the date hereof. Notwithstanding the foregoing, however, this letter of credit shall be automatically extended (without amendment of any other term and without the need for any action on the part of the undersigned or Beneficiary) for one year from the initial expiration date and each future expiration date unless we notify you in writing at least thirty (30) days prior to any such expiration date that this letter of credit will not be so extended. Any such notice shall be delivered by registered or certified mail, or by FedEx, both to **[revise for HELCO or MECO, as appropriate]**:

Manager, DER Operations
Hawaiian Electric Company, Inc.
220 South King Street, Suite 1201
Honolulu, Hawai'i 96813

and to

SVP & Chief Financial Officer
Hawaiian Electric Company, Inc.
900 Richards Street, 4th Floor
Honolulu, Hawai'i 96813

We hereby agree with drawers that drafts and documents as specified above will be duly honored upon presentation to **[Bank's Name]** and **[Bank's Address]** if presented on or before the then-current expiration date hereof.

Payment of any amount under this Letter of Credit by **[Bank]** shall be made as the Beneficiary shall instruct on the next Business Day after the date the **[Bank]** receives all documentation required hereunder, in immediately available funds on such date. As used in this Letter of Credit, the term "Business Day" shall mean any day other than a Saturday or Sunday or any other day on which banks in the State of Hawai'i are authorized or required by law to be closed.

Unless otherwise expressly stated herein, this irrevocable standby letter of credit is issued subject to the rules of the International Standby Practices, International Chamber of Commerce publication no. 590 ("ISP98").

[Bank's Name]:

By: _____
[Authorized Signature]

HAWAIIAN ELECTRIC COMPANY, INC.

Order No. 35560; Filed June 29, 2018, Docket No. 2015-0389
Transmittal Letter dated July 10, 2018.

EXHIBIT E

PROVISIONS FOR GENERATING FACILITIES LARGER THAN 1 MW

[WILL BE REVISED BASED ON RESULTS OF TECHNICAL REVIEW.]

This Exhibit E applies to Generating Facilities larger than 1 MW. To the extent that this Exhibit E conflicts with provisions of the Interconnection Agreement or any of its other exhibits, the SFC, or Rule 14H, the provisions of this Exhibit E shall apply.

1. **Changes to Generating Facility.** Subscriber Organization may propose revisions to Exhibit A of this Agreement for Company's approval prior to commencement of construction, provided, however, that (i) no such revision to Exhibit A shall change the type of Generating Facility or conversion equipment deployed at the Generating Facility from a solar energy conversion facility using photovoltaic equipment; (ii) Subscriber Organization shall be in compliance with all other terms and conditions of this Agreement, the SFC, and CBRE Tariff; and (iii) such revision(s) shall not change the characteristics of the Generating Facility equipment or the specifications used in the Interconnection Requirements Study ("IRS") or other technical review process. Any revision to Exhibit A complying with items (i) through (iii) above shall be subject to Company's prior approval, which approval shall not be unreasonably withheld. If Subscriber Organization's proposed revision(s) to Exhibit A otherwise satisfies items (i) and (ii) above but not item (iii) such that Company, in its reasonable discretion, determines that a re-study or revision to all or any part of the IRS or other technical review is required to accommodate Subscriber Organization's proposed revision(s), Company may, in its sole and absolute discretion, conditionally approve such revision(s) subject to a satisfactory re-study or revision to the IRS or other technical review and Subscriber Organization's payment and continued obligation to be liable and responsible for all costs and expenses of re-studying or revising such portions of the IRS or other technical review and for modifying and paying for all costs and expenses of modification to the Generating Facility, the Company Interconnection Facilities based on the results of the re-studies or revisions to the IRS or other technical review. Any changes made to Exhibit A or the Agreement as a result of this Section 1 of Exhibit E shall be reflected in a written amendment to the Agreement.

Subscriber Organization understands and acknowledges that Company's review and approval of Subscriber Organization's proposed revisions to Exhibit A and any necessary re-studies or revisions to the IRS or other technical review shall be subject to Company's then-existing time and personnel constraints. Company agrees to use commercially reasonable efforts, under such time and personnel constraints, to complete any necessary reviews, approvals and/or re-studies or revisions to the IRS or other technical review process.

Any delay in completing, or failure by Subscriber Organization to meet Commercial Operations as a result of any revision by Subscriber Organization (whether requiring a re-study or revision to the IRS or not) shall be borne entirely by Subscriber Organization and Company shall not be responsible or liable for any delay or failure to meet Commercial Operations by Subscriber Organization.

2. **Operator of Generating Facility.** If Subscriber Organization is not the operator of the Generating Facility, Subscriber Organization shall provide a copy of the agreement between Subscriber Organization and the operator which requires the operator to operate the Generating Facility and which establishes the scope of operations by the operator and the respective rights of Subscriber Organization and the operator with respect to the sale of electric energy from the Generating Facility

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no later than the Commercial Operations Date. In addition, Subscriber Organization shall provide a certified copy of a certificate warranting that the operator is a corporation, partnership or limited liability company in good standing with the Hawai'i Department of Commerce and Consumer Affairs no later than the Commercial Operations Date.

3. **The Generating Facility.**

(a) The Generating Facility shall comply with the following **[includes excerpts of language that may be requested by Company]**:

- A. Subscriber Organization shall install a ____ kV disconnect switch and all other items for its switching station (relaying, control power transformers, high voltage circuit breaker). Bus connection shall be made to a manually and automatically (via protective relays) operated high-voltage circuit breaker. The high-voltage circuit breaker shall be fitted with bushing style current transformers for metering and relaying. Downstream of the high-voltage circuit breaker, a structure shall be provided for metering transformers. From the high-voltage circuit breaker, another bus connection shall be made to another pole mounted disconnect switch, with surge protection.
- B. Subscriber Organization shall provide within the Subscriber Organization interconnection facilities a separate, fenced area with separate access for Company. Subscriber Organization shall provide all conduits, structures and accessories necessary for Company to install the Revenue Metering Package. Subscriber Organization shall also provide within such area, space for Company to install its communications, supervisory control and data acquisition ("SCADA") remote terminal unit ("RTU") and certain relaying if necessary for the interconnection. Subscriber Organization shall also provide AC and DC source lines as specified later by Company. Subscriber Organization shall provide a telephone line for Company-owned meters. Subscriber Organization shall work with Company to determine an acceptable location and size of the fenced-in area. Subscriber Organization shall provide an acceptable demarcation cabinet on its side of the fence where Subscriber Organization and Company wiring will connect/interface.
- C. Subscriber Organization shall ensure that the Subscriber Organization interconnection facilities have a lockable cabinet for switching station relaying equipment. Subscriber Organization shall select and install relaying equipment acceptable to Company. At a minimum the relaying equipment will provide over and under frequency (81) negative phase sequence (46), under voltage (27), over voltage (59), ground over voltage (59G), over current functions (50/51) and direct transfer trip. Subscriber Organization shall install protective relays that operate a lockout relay, which in turn will trip the main circuit breaker.
- D. Subscriber Organization shall configure the relay protection system to provide overpower protection to enable the Generating Facility to comply with the Maximum Export capability in Section 5 of Exhibit A to this Agreement.

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- E. Subscriber Organization's equipment also shall provide at a minimum:
[DRAFTING NOTE: ADDITIONAL ITEMS AND DETAILS MAY BE ADDED PRIOR TO EXECUTION OF AGREEMENT UPON COMPLETION OF TECHNICAL REVIEW.]
- (i) Interface with Company's RTU to provide telemetry of electrical quantities as identified by the Company;
 - (ii) Interface with Company's RTU to provide status of devices, as identified by the Company;
 - (iii) Interface with Company's RTU to provide control to incrementally raise and lower the voltage target at the point of regulation operating in automatic voltage regulation control. If Company's RTU is unavailable, due to loss of communication link, RTU failure, or other event resulting in loss of the remote control by Company, provision must be made for Subscriber Organization to be able to institute via local controls, within 30 minutes (or such other period as Company accepts in writing) of the verbal directive by the Company system operator, such change in voltage regulation target as directed by the Company system operator; and
- (b) Interface with Company's RTU to provide active power control to incrementally limit net real power export from the Generating Facility and to incrementally remove the limit of the net real power export of the Generating Facility. The incremental size will be determined as part of the technical review taking into account the size of the Generating Facility and the dynamic system frequency bias.
- (c) Maintenance Plan. Subscriber Organization shall maintain Subscriber Organization interconnection facilities in accordance with the following maintenance plan:

Transmission line: _____

___ kV Facility switching station:

Relay protection equipment: _____

Other equipment as identified: _____

Subscriber Organization shall furnish to Company a copy of records documenting such maintenance, within thirty (30) Days of completion of such maintenance work.

(d) Communications and Control Interface.

- A. The acceptable method(s) of implementing the Generating Facility's telemetry and control interface ("Communications and Control Interface") requirements will be specified by the Company. The Generating Facility will require a supervisory control interface to the Company SCADA/EMS system.

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- B. Company shall review and provide prior written approval of the design for the Communications and Control Interface to ensure compatibility with Company's systems. If Subscriber Organization materially changes the approved design, such changes will also require Company's review and prior written approval.
- C. The Subscriber Organization shall provide and maintain in good working order all equipment, necessary to interface the Facility with the Company System. The Communications and Control Interface shall provide for remote monitoring and control of the real-power output of the Facility by Company at all times. If the Communications and Control Interface is unavailable, disabled, or otherwise not performing the required capabilities the Facility shall not export electric energy to Company, unless Company, in its sole discretion, agrees to accept electric energy and Subscriber Organization and Company agree on an alternate means of curtailment. Notwithstanding the foregoing, if Subscriber Organization fails to provide such remote control features (whether temporary or throughout the term of this Agreement) and fails to discontinue exporting electric energy to Company as required by this Section 3.c.E., then, notwithstanding any other provision of this Agreement, Company shall have the right to curtail the entire Generating Facility during those periods that such control features are not provided. Curtailment pursuant to this Section 3.c.E shall not be considered a Compensable Curtailment Event.
- If local and remote active power controls become unavailable or fail, the Generating Facility shall immediately disconnect from the Company's system.
 - Communications may also be required for protection, such a direct transfer trip.
 - If a required protection scheme is unavailable for any reason, including due to loss of communication link or other event resulting in the loss of the remote control by the Company, provision must be made for the Subscriber Organization to trip the main circuit breaker.
- D. The Communications and Control Interface shall include both a set point for excess energy curtailments and a set point for non-excess energy curtailments. When the Generating Facility is not being curtailed, the curtailment set points will be set to the Maximum Export capacity as set forth in Section 5 of Exhibit A to this Agreement. At all times, excess energy curtailment set point shall not exceed the non-excess energy curtailment set point. When the non-excess energy curtailment set point is set to zero, the Facility inverters must shut down. In the event of a shutdown, Section 5(a) and Section 5(k) of this Exhibit E shall not be required to be met.
- E. Subscriber Organization shall not override Company's active power controls without first obtaining specific approval to do so from the Company system operator.

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- F. The requirements of the Communications and Control Interface may be modified as mutually agreed upon in writing by the Parties.

(e) Control System Acceptance Test Procedures.

- A. Conditions Precedent. The Generating Facility will be required to complete a control system acceptance test (“CSAT”). The “CSAT” is a test performed on the centralized control system and curtailment control interface of the Generating Facility in accordance with the procedures set forth in this Exhibit E. The following conditions precedent must be satisfied prior to the conduct of the CSAT:
- Successful Completion of the acceptance test. The Acceptance Test is a test conducted by Subscriber Organization and witnessed by Company, within thirty (30) days of completion of all interconnection facilities and in accordance with the criteria and procedures determined by Company and Subscriber Organization as set forth in Schedule II to this Exhibit E.
 - The Generating Facility has been successfully energized.
 - All of the Generating Facility's generators have been fully commissioned.
 - The control system computer has been programmed for normal operations.
 - All equipment that is relied upon for normal operations (including ancillary devices such as capacitors/inductors, energy storage device, statcom, etc.) shall have been commissioned and be operating within normal parameters.
- B. Generating Facility Generators. Unless all of the Generating Facility's generators are available for the duration of the CSAT, the CSAT will have to be re-run from the beginning unless Subscriber Organization demonstrates to the satisfaction of the Company that the test results attained with less than all of the Generating Facility's generators are consistent with the results that would have been attained if all of the Generating Facility's generators had been available for the duration of the test.
- C. Procedures. The CSAT will be conducted on business days during normal working hours on a mutually agreed upon schedule. No CSAT will be scheduled during the final 21 days of a calendar year. No later than thirty (30) days prior to conducting the CSAT, Company and Subscriber Organization shall agree on a written protocol setting out the detailed procedure and criteria for passing the CSAT. Schedule III to this Exhibit E provides general criteria to be included in the written protocol for the CSAT. Within fifteen (15) business days of completion of the CSAT, Company shall notify Subscriber Organization in writing whether the CSAT(s) has been passed and, if so, the date upon which such CSAT(s) was passed. If any changes have been made to the technical specifications of the Generating Facility or the design of the Generating Facility in accordance with Section 1 of this Exhibit E, such changes shall be reflected in an amendment to this Agreement, and the written protocol for the CSAT shall be based on the Generating Facility as modified. Such amendment shall be executed prior to conducting the CSAT and Company shall have no obligation for any delay in performing the CSAT due to the need to complete and execute such amendment.

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4. Operating Procedures.

- (a) Reclosing. Under no circumstances shall Subscriber Organization, when separated from the Company system for any reason, reclose into the Company system without first obtaining specific approval to do so from the Company system operator.
- (b) If direct transfer trip is determined to be required for the Generating Facility but is unavailable due to any reason, including loss of communication or equipment problems, provision must be made for the Subscriber Organization to trip the main circuit breaker.
- (c) Allowed Operations. The Generating Facility shall be allowed to export energy to the Company system only when the [] circuit is in normal operating configuration served by breaker [] at [] Substation. **[TO BE DETERMINED BY COMPANY BASED ON THE RESULTS AND REQUIREMENTS OF THE TECHNICAL REVIEW]**

5. Performance Standards.

- (a) Reactive Power Control. Subscriber Organization shall control its reactive power by automatic voltage regulation control. Subscriber Organization shall automatically regulate voltage at a point, the point of regulation, between the Subscriber Organization's generator terminal and the point of interconnection to be specified by Company, to within 0.5% of a voltage specified by the Company System operator to the extent allowed by the Generating Facility reactive power capabilities as defined in Section 5(b) of this Exhibit E. **[FOR FACILITIES CONNECTED TO THE DISTRIBUTION SYSTEM, THESE REQUIREMENTS MAY BE CHANGED BY COMPANY UPON COMPLETION OF THE TECHNICAL REVIEW.]**
- (b) Reactive Amount.
 - A. Subscriber Organization shall install sufficient equipment so that each _____ kVA inverter online at the Generating Facility will have the ability to deliver or receive, at its terminal, reactive power as illustrated in the **[generator capability]** curve[s] attached to this Agreement as Exhibit E-2 (Generator Capability Curve(s)). **[NOTE: THE TECHNICAL REVIEW WILL DETERMINE IF ANY ADDITIONAL REACTIVE POWER RESOURCES WILL BE REQUIRED.]**
 - B. The Generating Facility shall contain equipment able to continuously and actively control the output of reactive power under automatic voltage regulation control reacting to system voltage fluctuations. The automatic voltage regulation response speed at the point of regulation shall be such that at least 90% of the initial voltage correction needed to reach the voltage control target will be achieved within 1 second following a step change.
 - C. If the Generating Facility does not operate in accordance with Section 5(b)A of this Exhibit E, Company may disconnect all or a part of the Generating Facility from Company system until Subscriber Organization corrects its operation (such as by installing capacitors at Subscriber Organization's expense).

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(c) Ramp Rates.

A. Subscriber Organization shall ensure that the ramp rate of the Generating Facility is less than the following limits for all conditions including start up, normal operations, curtailing and uncurtailing, Subscriber Organization adjusting the Generating Facility's net real power export, changes in the solar resource, and shut down for the following periods as calculated in accordance with Schedule I to this Exhibit E.

- Maximum Ramp Rate Upward of [_____] MW/minute for all periods. **[TO BE DETERMINED FOLLOWING Technical Review.]**
- Maximum Ramp Rate Downward of 2 MW/minute for all periods other than periods for which such maximum is not operationally possible because of rapid loss of **solar** resource.

B. The Generating Facility is allowed to exceed the maximum ramp rate limits in this Section 5(c) when Generating Facility output is changed by the frequency response control described in Section 5(k) (Frequency Response) of this Exhibit E.

(d) Undervoltage Ride-Through.

The Generating Facility, as a whole, if interconnected at the sub-transmission or transmission levels, will meet the following undervoltage ride-through requirements during low voltage affecting one or more of the three voltage phases ("V" is the voltage of any three voltage phases at the Point of Interconnection). **[THESE VALUES MAY BE CHANGED BY COMPANY UPON COMPLETION OF THE TECHNICAL REVIEW.]**:

$0.88 \text{ pu} \leq V \leq 1.00 \text{ pu}$	The Generating Facility remains connected to the Company system.
$0.70 \text{ pu} \leq V < 0.88 \text{ pu}$	The Generating Facility may initiate disconnection from the Company system if the voltage remains in this range for more than 20 seconds.
$0.50 \text{ pu} \leq V < 0.70 \text{ pu}$	The Generating Facility may initiate disconnection from the Company system if the voltage remains in this range for more than 10 seconds.
$0.00 \text{ pu} \leq V < 0.50 \text{ pu}$	The Generating Facility may initiate disconnection from the Company system if voltage remains in this range for more than 600 milliseconds.

Subscriber Organization shall have sufficient capacity to fulfill the above mentioned requirements to ride-through the following sequences or combinations thereof:

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- Normally cleared 138 kV transmission faults cleared after 5 cycles with one reclose attempt, cleared in 5 cycles, 30 cycles after the initial fault was cleared. The voltage at the point of interconnection will recover above the 0.80 p.u. level for the 30 cycles between the initial clearing time and the reclosing time.
- Normally cleared 46kV subtransmission faults cleared in 7 cycles with one reclose attempt, cleared in 7 cycles, 23 cycles after the initial fault was cleared. The voltage at the point of interconnection will recover above the 0.80 p.u. level for the 23 cycles between the initial clearing time and the reclosing time.

(e) Over Voltage Ride-Through. See Rule 14H.

(f) Fault Ride Through.

For fault-related voltage dips at the point of interconnection that stay within the limits of the under voltage ride-through requirements in Section 5(d) of this Exhibit E, upon clearing of the fault, Subscriber Organization shall within 1 second of restoration, provide at least 90% of the real power output at the point of interconnection immediately before the fault without regard to the ramp rate of Section 5(c) of this Exhibit E to the extent allowed by the availability of the solar resource. The fault ride through requirement does not apply if the Generating Facility is operating at less than five percent (5%) of the Generating Facility's nameplate capacity.

(g) Underfrequency ride-through. See Rule 14H.

(h) Overfrequency ride-through. See Rule 14H.

(i) Voltage Flicker.

Any voltage flicker on the Company system caused by the Generating Facility shall not exceed the limits stated in IEEE Standard 1453-2011, or latest version "Recommended Practice – Adoption of IEC 61000-4-15:2010, Electromagnetic compatibility (EMC) – Testing and measurement techniques – Flickermeter – Functional and design specifications".

(j) Harmonics. See Rule 14H.

(k) Frequency Response.

The Generating Facility shall provide a primary frequency response with a frequency droop characteristic reacting to system frequency fluctuations at the point of interconnection in both the overfrequency and underfrequency directions except to the extent such response is not operationally possible because of the level of available solar resource.

- A. The Generating Facility frequency response control shall adjust, without intentional delay and without regard to the ramp rate limits in Section 5(c) of this Exhibit E, the Generating Facility's net real power export when system frequency is not 60 Hz based on frequency deadband and frequency droop settings specified by the Company.

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- B. The Generating Facility frequency response control shall be allowed to increase the net real power export above the excess energy curtailment set point set under Section 3(c)D of this Exhibit E or further decrease the net real power export from the excess energy curtailment set point in its operations.
- C. The frequency deadband shall be settable in the range from +/-0.01 Hz to +/- 0.10 Hz and the frequency droop shall be settable in the range of 0.1% to 10%.
- D. The Generating Facility frequency response control shall be in continuous operation when the Generating Facility is exporting energy to the Company unless directed otherwise by the Company.

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***[SCHEDULE I WILL BE REVISED TO REFLECT
THE RESULTS OF TECHNICAL REVIEW]***

**SCHEDULE I TO EXHIBIT E
METHODS AND FORMULAS FOR MEASURING PERFORMANCE STANDARDS**

1. Performance Standards as defined below shall be used, in part, to govern actions by Company to curtail the net real power export of the Generating Facility for purposes of maintaining power quality on Company system. Specific standards are defined for:
 - Ramp Rate (RR)
2. Formulas for measuring the performance standards are presented below, and assume that the power fluctuations will be monitored on the Company's SCADA and EMS systems. These formulas are based on the periodicity at which analog data is retrieved from the RTU. This periodicity is called the "scan rate." Company presently uses a two-second analog scan rate. The formulas below are based on the two-second scans. The two-second scan rate, characteristics of transducers and RTU reporting, and SCADA method of calculation, were considered and included in the proposed values for the performance standards.

3. Ramp Rate Calculation:

$$RR = MW_s - MW_{s-30}$$

Where:

RR = Ramp Rate, may be calculated once every scan

MW_{s-30} = The instantaneous MW analog value 30 scans (60 seconds) prior the present scan

MW_s = The instantaneous MW analog value for the present scan

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Order No. 35560; Filed June 29, 2018, Docket No. 2015-0389
Transmittal Letter dated July 10, 2018.

SCHEDULE II
ACCEPTANCE TEST GENERAL CRITERIA

**[THIS ATTACHMENT WILL NEED TO BE MODIFIED
BASED ON THE TYPE AND DESIGN OF THE FACILITY]**

Generating Facilities larger than 1 MW shall be required to complete an acceptance test. Upon final completion of Company review of the Generating Facility's drawings, final test criteria and procedures shall be agreed upon by Company and Subscriber Organization no later than thirty (30) days prior to conducting the acceptance test in accordance with the Agreement. The acceptance test may include the following:

1. Interconnection:
 - (a) Based on manufacturer's specification, test the local operation of the Generating Facility's ____ kV breakers, which connect the Generating Facility to the Company system – must open and close locally using the local controls. Test and ensure that the status shown on the energy management system (EMS) is the same as the actual physical status in the field.
 - (b) Remotely test the operation of the Generating Facility's ____ kV breakers which connect the Generating Facility to the Company system – must open and close remotely from Company's EMS. Test and ensure that the status shown on the EMS is the same as the actual physical status in the field.
 - (c) Relay test engineers to connect equipment and simulate certain inputs to test and ensure that the protection schemes such as any under/over frequency and under/over voltage protection or the direct transfer trip operate as designed. (For example, a fault condition may be simulated to confirm that the breaker opens to sufficiently clear the fault. Additional scenarios may be tested and would be outlined in the final test criteria and procedures.) Subscriber Organization to also test the synchronizing mechanisms to which the Generating Facility would be synchronizing and closing into the Company system to ensure correct operation. Other relaying also to be tested as specified in the protection review of the IRS and on the single line diagram for the Generating Facility.
 - (d) All ____ kV breaker disconnects and other high voltage switches will be inspected to ensure they are properly aligned and operated manually or automatically (if designed).
 - (e) Switching station inspections – The switching station may be inspected to test and ensure that the equipment that Subscriber Organization has installed is installed and operating correctly based upon agreed-to design. Wiring may be field verified on a sample basis against the wiring diagrams to ensure that the installed equipment is wired properly. The grounding mat at the switching station may be tested to make sure there is adequate grounding of equipment.
 - (f) Communication testing – communication system testing to occur to ensure correct operation. Detailed scope of testing will be agreed by Company and Subscriber Organization to reflect installed systems and communication paths to tie the Generating Facility to the Company's communications system.

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- (g) Various contingency scenarios to be tested to ensure adequate operation, including testing contingencies such as loss of communications, and fault simulations to ensure that the Generating Facility's _____ kV breakers open as they are designed to open. (Back up relay testing)
2. Witness of Generating Facility protection scheme testing:
- (a) Company may have a representative on-site when Subscriber Organization performs any testing dealing with Subscriber Organization's protection schemes such as any under/over voltage or under/over frequency protection schemes to ensure they meet the performance requirements of this Agreement and the IRS.
3. Telephone Communication:
- (a) Test to confirm Company has a direct line to the Generating Facility control room at all times and that it is programmed correctly.
 - (b) Test to confirm that the Generating Facility operators can sufficiently reach Company system operator.

If agreed in writing, some requirements, may be postponed to the CSAT.

SCHEDULE III
CONTROL SYSTEM ACCEPTANCE TEST CRITERIA

Final test criteria and procedures shall be agreed upon by Company and Subscriber Organization no later than thirty (30) days prior to conducting the CSAT in accordance with good engineering and operating practices and with the terms of this Agreement. The RTU/EMS points list is necessary for the effective operation of the Company system and will be tested during the Control System Acceptance Test.

The CSAT is comprised of two parts, a set of onsite (at Generating Facility) specific tests and a monitoring performance test. These tests may include the following:

On-site Tests:

1. Telemetry and control test to verify the status and analog telemetry, and if the remote controls between the Company and the Generating Facility are working properly end-to-end.
2. Curtailment test to verify if the Generating Facility's curtailment controls and the Communications and Control Interface with the Company are working properly. The Test is generally conducted by setting different curtailment set points and observing the proper curtailment at the appropriate ramp rate of the Generating Facility's real power output.
3. Control test for voltage regulation to verify the Generating Facility can properly perform automatic voltage regulation as defined in this Agreement. Test is generally conducted by making small adjustments of the voltage setpoint and verifying by observation that the Generating Facility regulates the voltage at the point of regulation to the setpoint by delivering/receiving reactive power to/from the Company system to maintain the applicable setpoint according to the reactive power control and the reactive amount requirements of Sections 5(a) and Section 5(b) of Exhibit E.
4. Frequency regulation control test to verify the Generating Facility provides a frequency droop response as defined in this Agreement. Test is generally conducted by making adjustments of the frequency reference setting and verifying by observation that the Generating Facility responds per droop and deadband settings.
5. Loss-of-communication Test to verify the Generating Facility will properly shutdown upon the failure of the direct-transfer-trip communication system. Test is generally conducted by simulating a communications failure and observing the proper shutdown of the Generating Facility.

Monitoring Test:

- a) The monitoring test requires the Generating Facility to operate as it would in normal operations.
- b) To ensure useful and valid test data is collected, the monitoring test shall end when one of the following criteria is met:
 - A. The Generating Facility's power production is greater than 85% of its Maximum Capability capacity, for at least four (4) hours in any continuous 24-hour CSAT period.
 - B. The recorded renewable energy resource at the Generating Facility is above **600 W/m²** for at least eight (8) hours in any continuous 48-hour CSAT period.
 - C. 14 continuous days from the start of the CSAT.
- c) At the end of the test, an evaluation period is selected based on the criteria that triggered the end of the test.

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- d) The performance of the Generating Facility during the period of a successfully completed monitoring test is evaluated for, e.g., voltage regulation, frequency response, curtailment limits and ramp rate performance, to verify the performance meets the requirements of this Agreement. The Generating Facility is considered to have complied with a requirement if the Generating Facility was compliant with the requirement at least 99.0% of the time during the evaluation period and the Generating Facility does not grossly violate the requirement when the Generating Facility was in violation. The Parties understand and agree that these compliance conditions are limited only to determining whether the Generating Facility successfully completes the CSAT monitoring test and are not for use in determining compliance during Commercial Operations (as defined in the SFC), shall not be considered a waiver of any of the performance standards of Subscriber Organization, all of which are hereby reserved, and shall not alleviate Subscriber Organization from any of its obligations under the Agreement and/or the SFC.