



**Hawaiian Electric
Maui Electric
Hawai'i Electric Light**

DER INTERCONNECTION SUBMITTAL PACKAGE - CUSTOMER SELF-SUPPLY

Congratulations on your decision to invest in a Distributed Generation (DER) system and helping Hawaii attain its renewable energy goal.

In order to help you submit your DER INTERCONNECTION application in a complete manner, there are two documents attached to this letter:

- 1) DER Submittal Package Checklist
- 2) DER INTERCONNECTION Application Cover Form

The DER INTERCONNECTION Application Cover Form must be completed, signed and submitted with your completed application. Failure to complete and sign the DER INTERCONNECTION Application Cover Form could cause your application to be returned and delay the review of your application.

The DER Submittal Package Checklist is for your records only and does not need to be returned with the required documents. The DER Submittal Package Checklist will help to ensure that you have completed and are returning all of the forms and documentation required to begin the review of your application in a timely manner.

Failure to complete and return any of the required documents could cause a delay in reviewing your application and in providing approval for your project.

We look forward to working with you on providing a final approval for your new distributive generation system.

Please submit your submittal package to:

Hawaiian Electric:

Distributed Energy Resources
P.O. Box 2750
Honolulu, HI 96840

Hawaii Electric Light: East

Hilo Engineering Department
54 Halekauila Street
Hilo, HI 96720

Maui Electric:

Renewable Projects
P.O. Box 398
Kahului, HI 96733-0698

Hawaii Electric Light: West

Kona Engineering Department
74-5519 Kaiwi Street
Kailua-Kona, HI 96740



DER INTERCONNECTION SUBMITTAL PACKAGE CHECKLIST - ALL PROGRAMS

- Distributed Energy Resource (DER) Interconnection Application Cover Form
- Signed Agreement (for all procurement agreements)
 - Please provide proof that you are an authorized signatory if applicable
- Project Information Exhibit for Specific Program
 - Complete all fields with necessary information or NA
- Project Specifications Exhibit for Specific Program
 - Site Plan
 - ♦ Show affected property or properties
 - ♦ Show location of Distributive Generation
 - ♦ Show location of the meter
 - ♦ Show location of the AC disconnect
 - Single line
 - ♦ Show all equipment electrical connections
 - ♦ Stamped and signed for projects $\geq 30\text{kW}$, unless dictated by County requirements.
 - ♦ Drawings should include at a minimum –
 - Meter location
 - Switch gear
 - Panels
 - Inverters
 - Disconnect
 - System Voltage
 - Energy Storage (if applicable)
 - Three Line
 - ♦ Show all equipment electrical connections
 - ♦ Wet Stamped and signed for projects $\geq 30\text{kW}$, unless dictated by County requirements.
 - ♦ For 3 Phase service – stamp not required at submittal
 - ♦ Drawings should include at a minimum –
 - Meter location
 - Switch gear
 - Panels
 - Inverters
 - Disconnect
 - System Voltage
 - Energy Storage (if applicable)

ITEM CHECKLIST FOR A COMPLETE SUBMITTAL PACKAGE - ALL PROGRAMS (cont.)

- Project Specifications Exhibit for Specific Program (cont.)
 - Equipment Spec sheets
 - ◆ Panels
 - ◆ Inverters
 - ◆ Disconnects
 - ◆ Relay and Trip Scheme
 - ◆ Energy Storage, if applicable
 - ◆ Fuses and Circuit Breakers
 - ◆ Any necessary additional information on project
 - For Energy Storage Systems
 - ◆ System Performance Data
 - ◆ Control Description
 - ◆ Operational Descriptions
- Inverter Ride through confirmation
 - Acknowledged via signature on DER Interconnection Application Cover Form
- Supplemental pre-approval
 - Acknowledged via signature on DER interconnection Application Cover Form
- Notice and Disclaimer (if applicable)
- Pictures at application submission of
 - Current meter socket
 - Main service disconnect

DER Interconnection Application Cover Form

Form must be completed legibly and with all required documents attached. Incomplete forms may not be accepted.



PROGRAM, SUBMISSION & SYSTEM TYPE

PROGRAM:	SYSTEM:	SUBMISSION:
If you are revising your APPLICATION please tell us if you are		and by _____ kW.
Are you revising your INVERTER: <input type="checkbox"/> YES <input type="checkbox"/> NO, if YES by _____ kW.		

PROPERTY OWNER INFORMATION

Property Owner:		Point of Contact:	
Address:		Phone/Cell Phone:	P1: P2:
		Email:	

CUSTOMER/ ACCOUNT HOLDER INFORMATION

Account Holder:		Point of Contact:	
Service Address:		TMK:	
Account #:		Phone/Cell Phone:	P1: P2:
Meter #:		Email:	

SYSTEM OWNER INFORMATION (IF DIFFERENT FROM CUSTOMER)

Name:		Point of Contact:	
Address:		Phone/Cell Phone:	P1: P2:
		Email:	

SYSTEM OPERATOR INFORMATION (IF DIFFERENT FROM CUSTOMER OR OWNER)

Name:		Point of Contact:	
Address:		Phone/Cell Phone:	P1: P2:
		Email:	

ELECTRICAL CONTRACTOR INFORMATION

Name:		Company:	
Hawaii License #:		Phone/Cell Phone:	P1: P2:
Address:		Email:	

PRIMARY CONTACT INFORMATION (FOR ADDITIONAL INFORMATION)

Name:		Email:	
Company:		Phone/Cell Phone:	P1: P2:

*We limit our data sharing as covered in our privacy policy, available on our website

The property owner at the service address must complete this section. Please mark boxes below and sign:

- Attached is the completed and signed, program specific agreement.
- Attached is the program specific stamped and signed electrical drawings (one-line and (three-line (≥ 30 kW or per county requirements).
- Attached are the equipment specification sheets for this system.
- I acknowledge that the existing meter socket is in sound operating condition and understand that I am responsible for any needed upgrades to meet current code requirements. Photos of meter socket & main service disconnect attached.
- I acknowledge my review of the appropriate program documentation and agree to abide by that program's specific requirements.
- I understand that for systems >10 kW proof of insurance will be required prior to final execution.
- I certify that, to the best of my knowledge, all the information provided in this submission is true and correct. I will not interconnect and operate without prior written approval from (Hawaiian Electric (Maui Electric (Hawaii Electric Light.
- INVERTER BASED GENERATION:** I acknowledge that the inverters used for this system will be compliant with all of the Hawaiian Electric Companies current requirements and understand that proof of compliance will be necessary prior to execution.

The technical review may require a no cost Supplemental Review: I pre-authorize I do not pre-authorize

- I hereby acknowledge and agree that: (1) the distributed generation facility shall meet the Company's Interconnection Standards stated in Appendix I: Distributed Generating Facility Interconnection Standard Technical Requirement of Rule 14H; (2) the specific characteristics or needs of each distributed generating facility may change its interconnection requirements; and, therefore, (3) the distributed generation facility may be subject to additional interconnection requirements that are necessitated by the results of the technical review process.

Property Owner's Signature: _____ Date: _____
Printed name: _____

APPENDIX I
STANDARD INTERCONNECTION AGREEMENT FOR SELF-SUPPLY SYSTEMS
(100 kW or less)

This Standard Interconnection Agreement For Self-Supply Systems (100 kW or less) (“Agreement”) is made by and between:

Hawaiian Electric Company, Inc.
_____ (“Company”),
_____ (“Customer-Generator”) and, if applicable,
_____ (“Owner/Operator”),

and is made, effective and binding as of _____ (“Effective Date”). Company and Customer-Generator may be referred to individually as a “Party” and collectively as the “Parties”.

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

WHEREAS, the Customer-Generator receives permanent service from the Company;

WHEREAS, the Customer-Generator qualifies as “Eligible Customer-Generator,” as defined in the Company’s Rule No. 22 (Customer Self-Supply);

WHEREAS, the Customer-Generator intends to construct a generating facility, as further described herein (“Generating Facility”) and desires to interconnect the Generating Facility with the Company’s electric system;

WHEREAS, the Company agrees to allow interconnection to the Company’s electric system under the terms and conditions set forth herein;

WHEREAS, the Owner/Operator, may be a person or entity other than the Customer-Generator, who owns and operates the Generating Facility.

NOW, THEREFORE, in consideration of the premises and the respective promises herein, the Company and the Customer-Generator, and if applicable, the Owner/Operator, hereby agree as follows:

1. **Scope and Purpose**. The Parties understand and agree that this Agreement applies only to the operation of Customer-Generator’s Generating Facility described in Exhibit B attached hereto. This Agreement provides for interconnection and operation of the Generating Facility in parallel with the Company’s electric system to serve only the electrical loads at the location identified in Exhibit B (“Customer Loads”). To facilitate the operation of the Generating Facility and the Company’s system, this Agreement also allows for the occasional and inadvertent export of power

HAWAIIAN ELECTRIC COMPANY, INC.

to the Company's electric system, as specifically agreed to herein, and may require export of power to provide grid support, as specified under Rule 14H or other applicable interconnection standards.

2. **Notice 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. Customer-Generator acknowledges that such modifications may positively or negatively impact any potential savings or the value of Customer-Generator's Agreement and Generating Facility.

CUSTOMER-GENERATOR SHALL ACKNOWLEDGE AND SIGN THE "NOTICE AND DISCLAIMER – POSSIBLE FUTURE RULES AND/OR RATE CHANGES AFFECTING YOUR GENERATING FACILITY" ATTACHED HERETO AS EXHIBIT A.

3. **Effectiveness of Agreement.** This Agreement shall not be effective until approved and executed by each Party, i.e. upon the Effective Date. Customer-Generator 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, except to the extent necessary to obtain governmental or utility approvals. 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.
4. **Term and Termination.** This Agreement shall continue on a month-to-month basis from the Effective Date. Customer-Generator may terminate this Agreement at any time with thirty (30) days' written notice. Company may terminate this Agreement at any time if Customer-Generator fails to comply with any term of this Agreement or if Customer-Generator fails to be an Eligible Customer-Generator.
5. **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 Customer-Generator, which produce electric energy for use by the Customer-Generator and are to be interconnected and operated in parallel with the Company's system. The Generating Facility is identified in Exhibit B (Description of Generating Facility) attached hereto.
6. **Operation of Generating Facility.**
 - (a) Company shall allow Customer-Generator 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 and Company Rule 14, Paragraph H (Interconnection of Distributed Generating Facilities Operating in Parallel With The Company's Electric System) ("Rule 14H").
 - (b) The electric power produced by the Generating Facility shall be used to serve electric loads for the electric service account that the Company uses to interconnect the Customer-

HAWAIIAN ELECTRIC COMPANY, INC.

Generator's Generating Facility. Customer-Generator shall not cause the Customer-Generator to be considered a "public utility" as such term is defined in Chapter 269 of the Hawaii Revised Statutes.

- (c) If, notwithstanding Customer-Generators efforts to regulate the electrical output of the Generating Facility, electric power flows from the Generating Facility to the Company's distribution system, Company shall attempt to receive such power. Unless acceptance of such energy from the Seller by the Company would require the Company to operate the Company system outside of good engineering and operating practices. In no event shall the delivery of electric power to Company's electric system exceed the amounts, duration, frequency of occurrence, or other limitations specified in Appendix I to Company Rule 22. If Customer-Generator does not regulate its Generating Facility in compliance with the limitations set forth in Appendix I to Company Rule 22, Company may require Customer-Generator to disconnect the Generating Facility from Company's electric system until Customer-Generator demonstrates to Company's sole satisfaction that Customer-Generator has taken adequate measures to regulate the output of the Generating Facility and control its export of power. Further, even if the Generating Facility is operating within the limitations set for in Appendix I to Company Rule 22, if at any time the Company determines 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 disconnect the Generating Facility from the Company's electric system in accordance with Paragraph 15 (Personnel and System Safety) herein.

7. **No Purchase of Electric Power.** Company's agreement to accept electric power from the Generating Facility is solely an accommodation. This Agreement does not provide for, or otherwise obligate Company to measure, purchase, transmit, distribute, or store any electric power that may be delivered to Company's distribution system by Customer-Generator.
8. **No Delivery of Reactive Power.** Customer-Generator shall not deliver reactive power to Company's distribution system, except as provided under Rule 14H or unless the Parties have agreed otherwise in writing.
9. **Sale of Electric Power by the Company to the Customer-Generator.** This Agreement does not constitute an agreement by the Company to provide retail electric service to Customer-Generator. Such arrangement must be made separately between the Company and Customer-Generator and sales of energy delivered by the Company to the Customer-Generator shall be governed by the applicable rate schedule and the Company's rules filed with the Commission.
10. **Permits and Licenses.** Customer-Generator 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. Customer-Generator shall not commence parallel operation of the Generating Facility until Company has provided written approval. Company shall provide

HAWAIIAN ELECTRIC COMPANY, INC.

such written approval within fifteen (15) business days from Company's receipt of a copy of the final inspection or approval of the Generating Facility, which has been issued by the governmental authority having jurisdiction to inspect and approve the installation. Company's written approval shall not be unreasonably withheld. Company shall have the right to have its representatives present at the final inspection made by the governmental authority having jurisdiction to inspect and approve the installation of the Generating Facility. Customer-Generator shall be required to notify Company in accordance with the terms of Section 18 (Notices), herein, at least five (5) business days prior to such inspection.

11. **Installation.**

- (a) Design, installation, operation and maintenance of the Generating Facility shall include appropriate 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 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 Customer-Generator 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 Customer-Generator. The manual disconnect device shall be, at a minimum, clearly labeled "Customer-Generator 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 Customer-Generator.
- (b) The Customer-Generator grants access to the Company to utilize the disconnect device, if needed. The Customer-Generator shall obtain the authorization from the owner and/or occupants of the premises where the Generating Facility is located that allows the Company to access the Generating Facility for the purpose specified in this Agreement. Company may enter premises where the Generating Facility is located, as permitted by law or tariff, for the following purposes: (a) to inspect Generating Facility's protective devices and read or test meter(s); and (b) to disconnect the Generating Facility and/or service to Customer-Generator, 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 Customer-Generator interconnect and operate a generating facility in parallel with the Company's electric system without prior written approval by the Company in the form of a fully executed Agreement.

HAWAIIAN ELECTRIC COMPANY, INC.

- (d) Generating facilities that incorporate the use of an energy storage device, e.g. battery storage, which is interconnected to the Company's transmission and/or distribution facilities, shall obtain an interconnection review by the Company pursuant to this Agreement. Energy storage systems that are intended to be installed by an Eligible Customer-Generator after Company's execution of an Agreement shall constitute a material change and addition to a generating facility and shall require interconnection review pursuant to this Rule prior to installation.
- (e) Once a 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 Customer-Generator. Any disputes related to this provision shall be resolved according to the dispute resolution process described in Rule 14H.

12. **Metering**. The Company, at its expense, may install meter(s) to record the flow of electric power in each direction. The Customer-Generator shall, at its expense, provide, install and maintain all conductors, service switches, fuses, meter sockets, meter instrument transformer housing and mountings, switchboard meter test buses, meter panels and similar devices required for service connection and meter installations on the customer's premises in accordance with the Company's Rule No. 14, Section A.2.

13. **Interconnection Facilities**.

(a) **Customer-Generator-Owned Interconnection Facilities**.

- (1) The Customer-Generator 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 C (Customer-Generator-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 Customer-Generator and reviewed by the Company) which are attached to Exhibit C (Customer-Generator-Owned Generating Facility and Interconnection Facilities) (provided that the three-line diagram is not required if the Generating Facility's capacity is less than 30 kW). 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 Customer-Generator's single-line and three-line diagrams prior to Customer-Generator constructing of the Generating Facility interconnection.

HAWAIIAN ELECTRIC COMPANY, INC.

- (3) The Customer-Generator 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.
- (4) The Company may inspect the Generating Facility and Customer-Generator'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 D (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 Customer-Generator's premises, the Customer-Generator 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 Customer shall provide these at no expense to the Company.
- (2) The Customer-Generator agrees to pay to the Company: (1) a non-refundable contribution for the Company's investment in the Company Interconnection Facilities described in Exhibit D (Company-Owned Interconnection Facilities), subject to the terms and conditions included in Exhibit D 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, but will include the actual cost (or such lesser amount as the Company may specify to facilitate the processing of interconnection requests for similarly situated facilities) of additional technical study for the Generating Facility.

14. **Indemnification:**

- (a) The Customer-Generator shall indemnify, defend and hold harmless the Company and its officers, directors, agents and employees, from and against all liabilities, damages, losses, fines, penalties, claims, demands, suits, costs and expenses (including reasonable attorney's fees and expenses) to or by third persons, including the Company's employees or subcontractors, for injury or death, or for injury to property, arising out of the actions or inactions of the Customer-Generator (or those of anyone under its control or on its behalf) with respect to its obligations under this Agreement, and/or arising out of the installation, operation and maintenance of the Generating Facility and/or the Customer-Generator Interconnection Facilities, except to the extent that such injury, death or damage is

HAWAIIAN ELECTRIC COMPANY, INC.

attributable to the gross negligence or intentional act or omission of the Company or its officers, directors, agents or employees.

- (b) The Owner/Operator shall indemnify, defend and hold harmless the Company and its officers, directors, agents and employees, from and against all liabilities, damages, losses, fines, penalties, claims, demands, suits, costs and expenses (including reasonable attorney's fees and expenses) to or by third persons, including the Company's employees or subcontractors, for injury or death, or for injury to property, arising out of the actions or inactions of the Owner/Operator (or those of anyone under its control or on its behalf) with respect to its obligations under this Agreement, and/or arising out of the installation, operation and maintenance of the Generating Facility and/or the Interconnection Facilities, except to the extent that such injury, death or damage is attributable to the gross negligence or intentional act or omission of the Company or its officers, directors, agents or employees.
- (c) The Company shall indemnify, defend and hold harmless the Customer-Generator, and its officers, directors, agents and employees, from and against all liabilities, damages, losses, fines, penalties, claims, demands, suits, costs and expenses (including reasonable attorney's fees and expenses) to or by third persons, including the Customer-Generator's employees or subcontractors, for injury or death, or for injury to property, arising out of the actions or inactions of the Company (or those of anyone under its control or on its behalf) with respect to its obligations under this Agreement, and/or arising out of the installation, operation and maintenance of the Company Interconnection Facilities, except to the extent that such injury, death or damage is attributable to the gross negligence or intentional act or omission of the Customer-Generator or its officers, directors, agents or employees.

Provided, however, where the Customer-Generator is an agency of the United States, the following Section shall be applicable in place of Paragraphs 14(a) and (b):

“The United States understands that it may be held liable for loss, damages expense and liability to third persons and injury to or death of persons or injury to property caused by the United States in its engineering design, construction ownership or operations of, or the making of replacements, additions betterment to, or by failure of, any of such party's works or facilities used in connection with this Agreement to the extent allowed by the Federal Tort Claims Act 28 U.S.C. § 2671 et seq. and the Agreement Disputes Act of 1978, 41 U.S.C. §§ 601-613.

Company shall be responsible for damages or injury caused by Company, Company's agents, officers, and employees in the course of their employment to the extent permitted by law.”

Provided, however, where the Customer-Generator is an agency of the State of Hawaii (the “State”), the following Section shall be applicable in place of Paragraphs 14(a) and (b):

HAWAIIAN ELECTRIC COMPANY, INC.

“The State shall be responsible for damages or injury caused by the State’s agents, officers, and employees in the course of their employment to the extent that the State’s liability for such damage or injury has been determined by a court or otherwise agreed to by the State. The State shall pay for such damage and injury to the extent permitted by law. The State shall use reasonable good faith efforts to pursue any approvals from the Legislature and the Governor that may be required to obtain the funding necessary to enable the State to perform its obligations or cover its liabilities hereunder. The State shall not request Company to indemnify the State for, or hold the State harmless from, any claims for such damages or injury.

Company shall be responsible for damages or injury caused by Company, Company's agents, officers, and employees in the course of their employment to the extent that Company's liability for such damage or injury has been determined by a court or otherwise agreed to by Company, and Company shall pay for such damage and injury to the extent permitted by law. Company shall not request the State to indemnify Company for, or hold Company harmless from, any claims for such damages or injury.”

(d) Nothing in this Agreement shall create any duty to, any standard of care with reference to, or any liability to any person not a party to it.

15. **Personnel and System Safety**. If at any time the Company determines 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 disconnect the Generating Facility from the Company’s electric system remotely or otherwise. The Generating Facility shall remain 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 Customer-Generator that cause loss or injury, including death, to any third party.
16. **Prevention of Interference**. The Customer-Generator 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 limited to, overcurrent, voltage imbalance, and abnormal waveforms. If such interference occurs, the Customer-Generator 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 Customer-Generator 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 Customer-Generator’s equipment from the Company’s system.
17. **Limitation of Liability**. 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

HAWAIIAN ELECTRIC COMPANY, INC.

maintained by the Customer-Generator or leased by the Customer-Generator from third parties, including without limitation the Generating Facility and any structures, equipment, wires, appliances or devices appurtenant thereto.

18. **Customer-Generator and Generating Facility Information.** By signing this Agreement, the Customer-Generator expressly agrees and authorizes the Company to: (1) request and obtain from Customer-Generator and its contractors, vendors, subcontractors, installers, suppliers or agents (collectively "Customer-Generator 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; or (2) make such modifications to the Customer-Generator's system, at no cost to the Company, that Company determines, in its reasonable discretion, are needed to ensure the safe and reliable operation of the Generating Facility or the Company's system. Customer-Generator expressly agrees and irrevocably authorizes Customer-Generator Agents to disclose such Customer-Generator Data to Company and to make such modifications to the Customer-Generator's Generating Facility upon request by Company.
19. **Additional Information.** The Company reserves the right to request additional information from Customer-Generator relating to the Generating Facility, where reasonably necessary, to serve the Customer-Generator under this Agreement or to ensure reliability, safety of operation, and power quality of the Company's system and Customer-Generator agrees to provide such information to Company upon request.
20. **No Material Changes to Generating Facility.** The Customer-Generator 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 100 kW. If a Generating Facility changes ownership, the Company may require the new Customer-Generator and/or Owner/Operator to complete and execute an amended Agreement or new Agreement, as may be applicable.
21. **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 below. Changes in such designation may be made by notice similarly given. All written notices shall be directed as follows:

To Customer-Generator and Owner/Operator (if applicable): The Mailing Address listed in Exhibit B (Description of Generating Facility) attached hereto.

To Company:

Name: Hawaiian Electric Company, Inc.
Address: Distributed Energy Resources; P.O. Box 2750; Honolulu, HI 96840
Facsimile: _____
Email: _____

HAWAIIAN ELECTRIC COMPANY, INC.

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.

22. **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 (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 provisions of the Company's Rule 14H, as authorized by the Commission. Licensed Electrical Contractor, as agent for Customer-Generator, certifies in Exhibit B (Description of Generating Facility) that once approved by the Company, the proposed Generating Facility will be installed to meet all preceding requirement(s).
23. **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: (a) acts of war, public disorder, insurrection or rebellion; floods, hurricanes, earthquakes, lighting, 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 part 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.
24. **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.

HAWAIIAN ELECTRIC COMPANY, INC.

25. **Insurance.** The following insurance provisions are only applicable to Generating Facilities with a Total Rated Capacity greater than 10 kW but not exceeding 100 kW:

The Customer-Generator 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, the following insurance or its equivalent at Company's discretion that will protect the Customer-Generator 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:

A commercial general liability policy, covering bodily injury and property damage combined single limit 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.

Commercial General Liability Coverage Amount	Total Rated Capacity of the Generating Facility
\$1,000,000	Greater than 30 kW and less than or equal to 100 kW
\$500,000	Greater than 10 kW and less than or equal to 30 kW

The Customer-Generator has responsibility to determine if higher limits are desired and purchased. Said insurance shall name the Company, its directors, officers, agents, and employees as additional insureds, shall include contractual liability coverage for written Agreements and agreements including this Agreement, and shall include provisions stating that the insurance will respond to claims or suits by additional insureds against the Customer-Generator or any other insured thereunder. Customer-Generator shall immediately provide written notice 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 Customer-Generator 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 Customer-Generator shall make such increase to that extent and any increased costs shall be borne by the Customer-Generator. The insurance required hereunder shall provide that it is primary with respect to the Customer-Generator and the Company. The Customer-Generator shall provide evidence of such insurance, including insurer's acknowledgement that coverage applies with respect to this Agreement, by providing certificates of insurance to the Company within 30 days of any change. Initially, certificates of insurance must be provided to the Company prior to executing the Agreement and any parallel interconnection. The Customer-Generator's indemnity and other obligations shall not be limited by the foregoing insurance requirements. Any deductible shall be the responsibility of the Customer-Generator.

HAWAIIAN ELECTRIC COMPANY, INC.

Alternatively, where the Customer-Generator is a governmental entity, Customer Generator 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.

26. **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 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 Customer-Generator is currently operating the Generating Facility and any such agreement shall be deemed terminated as of the date this Agreement becomes effective.
- (e) **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.
- (f) **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.
- (g) **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.

HAWAIIAN ELECTRIC COMPANY, INC.

- (h) **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 Hawaii, which currently are included in the Commission's General Order Number 7, as either may be amended from time to time.
- (i) **Multiple Counterparts.** This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

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.

CUSTOMER-GENERATOR

By: _____
Signature
Title: _____
Name: _____
Print Date

**OWNER/OPERATOR OF GENERATING FACILITY
(IF OTHER THAN CUSTOMER-GENERATOR)**

By: _____
Signature
Title: _____
Name: _____
Print Date

HAWAIIAN ELECTRIC COMPANY, INC.

By: _____
Signature
Title: _____
Name: _____
Print Date

HAWAIIAN ELECTRIC COMPANY, INC.

EXHIBIT A

NOTICE AND DISCLAIMER

**POSSIBLE FUTURE RULES AND/OR RATE CHANGES
AFFECTING YOUR GENERATING SYSTEM**

- The Customer Self-Supply Tariff is subject to modification by the Hawaii Public Utilities Commission (“Commission”).
- Your Agreement and Generating Facility shall be subject to any future modifications by the Commission. Such modifications may positively or negatively impact any potential savings or the value of your Agreement and Generating Facility. 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. Further, by signing this disclaimer, you confirm your understanding that any potential savings in your electricity bill that were calculated by you or presented to you to support your decision to buy or lease a Generating Facility may change.

Customer-Generator (signature)

Date

Owner/Operator (if applicable) (signature)

Date

HAWAIIAN ELECTRIC COMPANY, INC.

EXHIBIT B

DESCRIPTION OF GENERATING FACILITY

(To Be Filled Out By Customer-Generator)

1. **Customer-Generator Information**

Name (print): _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Service Address: _____
(If different from Mailing Address)

City: _____ State: _____ Zip Code: _____

Phone: (____) _____ Cell: (____) _____ Email: _____

Electric Service Account or Meter #: _____

2. **Owner/Operator (if different from Customer-Generator)**

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Phone: (____) _____ Cell: (____) _____ Email: _____

3. **Generator Qualifications** (Check all that apply)

- Solar
- Wind Turbine
- Biomass
- Hydroelectric
- Hybrid (describe): _____

Generating Facility Location and Tax Map Key: _____

Maximum Site Load without Generation: _____ kW

Minimum Site Load without Generation: _____ kW

Maximum Generating Capability: _____ kW

Maximum Export: _____ kW

4. **Generator Technical Information**

HAWAIIAN ELECTRIC COMPANY, INC.

Type of Generator:

- Synchronous
- Induction
- DC Generator or Photovoltaic with Inverter

Photovoltaic System Information:

Module Manufacturer	Model	Quantity	STC Rating (kW)

Total Module Capacity: _____ kW

Inverter Manufacturer	Model	Quantity	A/C Output Rating (kW)

Total Inverter Capacity: _____ kW

Total System Capacity (lower of Total Module Capacity and Total Inverter Capacity): _____ kW

DC Generator (e.g. Wind) System Information:

DC Generator Manufacturer: _____ Model Name: _____ Model #: _____

*** A copy of Generator Nameplate and Manufacturer's Specifications Sheet may be substituted.**

Total Capacity Rating: _____ kW (For solar kW_{DC})

Fault Current Contribution of Generator: _____ Amps

Inverter Manufacturer: _____ Model Name: _____ Model #: _____

*** A copy of Generator Nameplate and Manufacturer's Specifications Sheet may be substituted.**

Total Capacity Rating: _____ kW

Energy Storage System Information:

Energy Storage System Information: (Customer to provide data sheets)

Manufacturer: _____ Model: _____

Size kW: _____ Max Capacity kWh: _____

Rated kW discharge: _____ Rated kW Charge: _____

Description of Storage System Operations:

(Describe mode(s) of operation) - Example: How much export or non-export, load shifting, smoothing, peak shaving, etc.)

HAWAIIAN ELECTRIC COMPANY, INC.

Will the distribution grid be used to charge the storage device?

- Yes If yes, charging periods: _____

 No

Will power be exported to the grid??

- Yes If yes, maximum export to the grid: _____
 No

5. **Technical Information for Synchronous and Induction Generators** [Not applicable for DC Generators or Solar with Inverter]

Number of starts per day: _____ Maximum Starting kVA: _____ Generator Operating Power Factor: _____

Generator Grounding Method:

- Effectively Grounded
 Resonant Grounded
 Low-Inductance Grounded
 Low-Resistance Grounded
 High Resistance Grounded
 Ungrounded

Generator Characteristic Data:

* Not needed if Generator Nameplate and Manufacturer's Specification Sheet are provided.

Direct Axis Synchronous Reactance, X_d : _____ P.U.

Direct Axis Transient Reactance, X'_d : _____ P.U.

Direct Axis Subtransient Reactance, X''_d : _____ P.U.

Inertia Constant, H: _____ P.U.

Excitation Response Ratio: _____

Direct Axis Open-Circuit Transient Time Constant, X_d : _____ Seconds

Direct Axis Open-Circuit Subtransient Time Constant, T''_{do} : _____ Seconds

6. **Interconnecting Equipment Technical Data**

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

- Yes
 No

Transformer Data (if applicable):

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

Size: _____ KVA

Transformer Primary: _____ Volts

- Delta
 Wye
 Wye Grounded

HAWAIIAN ELECTRIC COMPANY, INC.

SHEET NO. 44A-18
Effective October 21, 2015

Transformer Secondary: _____ Volts

- Delta
- Wye
- Wye Grounded

Transformer Impedance: _____ % on _____ KVA Base

Transformer Fuse Data (if applicable):

* Attach copy of fuse manufacturer's Minimum Melt & Total Clearing Time-Current Curves.

- At Primary Voltage; or
- At Secondary Voltage

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

Transformer Protection (if not fuse):

Please describe: _____

Generator Circuit Breaker (if 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

Circuit Breaker Protective Relays (if applicable):

* Enclose copy of any proposed Time-Overcurrent Coordination Curves.

Manufacturer	Type	Style/Catalog No.	Proposed Setting

Current Transformer Data (if applicable):

* Enclose copy of Manufacturer's Excitation & Ratio Correction Curves)

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

Generator Disconnect Switch:

A generator disconnect device (isolation device) must be installed with features as described in the "Distributed Generating Facility Interconnection Standards, Technical Requirements" as set forth in Rule 14 (Paragraph H.1) of the Company's tariff, and which is readily and safely accessible to Company.

Manufacturer: _____ Type: _____ Catalog No.: _____

HAWAIIAN ELECTRIC COMPANY, INC.

Rated Volts: _____ Rated Amps: _____

Phase:

- Single Phase
- Three Phase

Mounting Location: _____

7. **General Technical Information**

Enclose copy of the following documents:

- Single Line Diagram:** Showing configuration and interconnection of all equipment, current and potential circuits and protection and control schemes.
- Relay list and trip scheme:** Showing all protection, synchronizing and auxiliary relays that are required to operate the Generating Facility in a safe and reliable manner.
- Three-line diagram** (if the Generating Facility's capacity is greater than or equal to 30 kW): Showing potential transformer and current transformer ratios, and details of the Generating Facility's configuration, including relays, meters, and test switches.

8. **Installation Details**

Installing Electrical Contractor: _____

License Holder: _____

Hawaii License #: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Phone: (____) _____ Cell: (____) _____ Email: _____

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

Supply certification that the generating system will be installed and inspected in compliance with the local Building/Electrical code of the County of _____.

* Under no circumstances shall a Customer-Generator interconnect and operate a generating facility in parallel with the Company's electric system without prior written approval by the Company in the form of a fully executed Agreement. Generating facilities that incorporate the use of an energy storage device, e.g. battery storage, regardless of whether such energy storage device is intended to operate in parallel with the Company's transmission and/or distribution facilities, shall obtain an interconnection review by the Company pursuant to this Agreement. Energy storage systems that are intended to be installed by an Eligible Customer-Generator after Company's execution of an Agreement shall constitute a material change and addition to a generating facility and shall require interconnection review pursuant to this Rule prior to installation.

Generating System Building Permit # (Certificate of Completion or Notice of Electrical Inspection?): (to be filled out by the Company upon the Company's approval and execution of Agreement): _____.

9. **Generator/Equipment Certification**

HAWAIIAN ELECTRIC COMPANY, INC.

SHEET NO. 44A-20
Effective October 21, 2015

Generating systems 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. Generating systems 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.**

Customer-Generator: _____
Signature Date

Electrical Contractor: _____
Signature Date

10. **Insurance (if applicable)**

Insurance Carrier: _____

EXHIBIT C

**CUSTOMER-GENERATOR-OWNED GENERATING FACILITY
AND INTERCONNECTION FACILITIES**

[To be filled out by Customer-Generator if Generating Facility greater than 10 kW]

1. Generating Facility

- a. Compliance with laws and standards. 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 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.
- 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:
- Unintended islanding.
 - Inadvertent and unwanted re-energization of a Company dead line or bus.
 - Interconnection while out of synchronization.
 - Overcurrent.
 - Voltage imbalance.
 - Ground faults.
 - Generated alternating current frequency outside of permitted safe limits.
 - Voltage outside permitted limits.
 - Poor power factor or reactive power outside permitted limits.
 - Abnormal waveforms.
- c. Specification of protection, synchronizing and control requirements. The Customer-Generator 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. Generating Facility protection. The Customer-Generator is solely responsible for providing adequate protection for the Generating Facility.

HAWAIIAN ELECTRIC COMPANY, INC.

- e. Customer-Generator Interconnection Facilities.
- (i) The Customer-Generator 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 ("Customer-Generator Interconnection Facilities"). Such facilities shall be accessible at all times to authorized Company personnel.
 - (ii) The Customer-Generator shall comply with the Company's Interconnection Standards. If a conflict exists between the Interconnection Standards and this Agreement, this Agreement shall control.
 - (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 (if the Generating Facility's capacity is greater than or equal to 30 kW), which identify the circuit breakers, relays, switches, synchronizing equipment, monitoring equipment, and control and protective devices and schemes, shall, after having obtained prior written consent from the Company, be attached to Exhibit B 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.
- f. Approval of Design Drawings. If the Generating Facility's capacity is greater than or equal to 30 kW, 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.

2. Verification Testing.

- a. Upon initial parallel operation of the Generating Facility, or any time interface hardware or software is changed, a verification test shall be performed. 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.

HAWAIIAN ELECTRIC COMPANY, INC.

- 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 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 Customer-Generator shall maintain verification test reports for inspection by the Company.
- c. Inverters shall be verified once per year as follows: once per year the Customer-Generator shall operate the customer generator 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 Customer-Generator 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 Customer-Generator 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 Customer-Generator's expense.

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 Customer-Generator), 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. Within fourteen days after receiving a written request from the Customer-Generator 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.
- c. 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 Customer-Generator 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 Customer-Generator, but only for purposes of determining whether the verification tests were properly performed. The Customer-Generator shall not

HAWAIIAN ELECTRIC COMPANY, INC.

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 Customer-Generator 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 Customer-Generator 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.

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

- a. The Customer-Generator 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 (if the Generating Facility's capacity is greater than or equal to 30 kW), 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 Customer-Generator in writing, and the Customer-Generator 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

HAWAIIAN ELECTRIC COMPANY, INC.

action to be taken or reasons for disagreement. If the Customer-Generator 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.

[Additional terms and provisions to be added as necessary. Note: This parenthetical phrase should be deleted when the agreement is finalized.]

6. Generating Facility Equipment List.

The Generating Facility shall include the following equipment:

[Specific items to be added as necessary. The Generating Facility Equipment List, together with the single-line diagram, relay list and trip scheme, and three-line diagram (if the Generating Facility's capacity is greater than or equal to 30 kW), should be attached to this Exhibit C. Note: This parenthetical phrase should be deleted when the agreement is finalized.]

EXHIBIT D

COMPANY-OWNED INTERCONNECTION FACILITIES

(To be filled out by Company if Generating Facility is greater than 10 kW)

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 Customer-Generator agrees to pay, include:

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

2. Customer-Generator Payment to Company for Company Interconnection Facilities, Review of Generating Facility, and Review of Verification Testing

The Customer-Generator 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. The following summarizes the Total Estimated Interconnection Cost:

Description	Estimated Cost (\$)
-------------	---------------------

[Need to specify the estimated interconnection 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 Customer-Generator 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 with 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 Customer-Generator 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)

HAWAIIAN ELECTRIC COMPANY, INC.

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 B, 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 Customer-Generator within thirty (30) days of the final accounting.

If the Agreement is terminated prior to the Customer-Generator'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 overcollected amount of the Total Estimated Interconnection Cost (or the portion of this cost which has been paid), such payments shall be made by the Customer-Generator or Company, as appropriate. If payment is due to the Company, the Customer-Generator 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 Customer-Generator, 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 Customer-Generator monthly and the Customer-Generator 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.

APPENDIX II

TECHNICAL SPECIFICATIONS FOR CUSTOMER SELF-SUPPLY SYSTEMS

The following technical specifications are intended to provide guidelines to facilitate the interconnection and parallel operation of Self-Supply Systems with the utility's Distribution System. These technical specifications have been established to maintain safety, reliability, and power quality standards for all utility customers and personnel. Unless otherwise defined herein, capitalized terms shall have the definitions set forth in Rule 14, Paragraph H.

Technical Specifications –

- **Maximum System Size.** The Generating Facility shall have a capacity of not more than one hundred kilowatts (100 kW).
- **Host Load Only.** The Generating Facility shall be sized and designed such that all of the Generating Facility's output is consumed by the Eligible Customer-Generator's load ("Host Load").
- **Non-Export Requirements.** The Generating Facility shall be designed to minimize the transfer of electrical energy from the Generating Facility to the utility. Under no circumstances, except during emergency conditions where advanced inverter functions, including functions that result in energy export, may be provided pursuant to Rule 14H and this Agreement, shall the Generating Facility export electrical energy across the Point of Interconnection for a duration exceeding 60 seconds with reverse power flow, i.e. Inadvertent Export. In order to qualify as a Self-Supply System under the Company's Customer Self-Supply tariff, the Generating Facility must utilize one or more of the following options:

Option 1 ("Reverse Power Protection"): To ensure power is never exported across the Point of Interconnection, a reverse power relay may be provided. The default setting for this protective function shall be 0.1% (export) of the service transformer's rating, with a maximum 2.0 second time delay.

Option 2 ("Minimum Power Protection"): To ensure at least a minimum amount of power is imported across the Point of Interconnection at all times (and, therefore, that power is not exported, other than for the short time periods noted), an under-power protective function may be provided. The default setting for this Minimum Power Protection shall be 5% (import) of Generating Facility's total gross rating, with a maximum 2.0 second time delay.

Option 3 (Certified Non-Islanding Protection): To ensure the incidental export of power is limited to acceptable levels, this option requires that all of the following conditions be met: a) the total gross capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of producer's dedicated service equipment; b) the total gross

HAWAIIAN ELECTRIC COMPANY, INC.

capacity of the Generating Facility must be no more than 50% of producer's dedicated service transformer capacity rating (this capacity requirement does not apply to Eligible Customer-Generator taking primary service without an intervening transformer); and c) the Generating Facility must be Certified as Non-Islanding.

The ampere rating of the Eligible Customer-Generator's service equipment to be used in this evaluation will be that rating for which the Eligible Customer-Generator's utility service was originally sized or for which an upgrade has been approved. It is not the intent of this provision to allow increased export simply by increasing the size of the Eligible Customer-Generator's service panel, without separate approval for the resize.

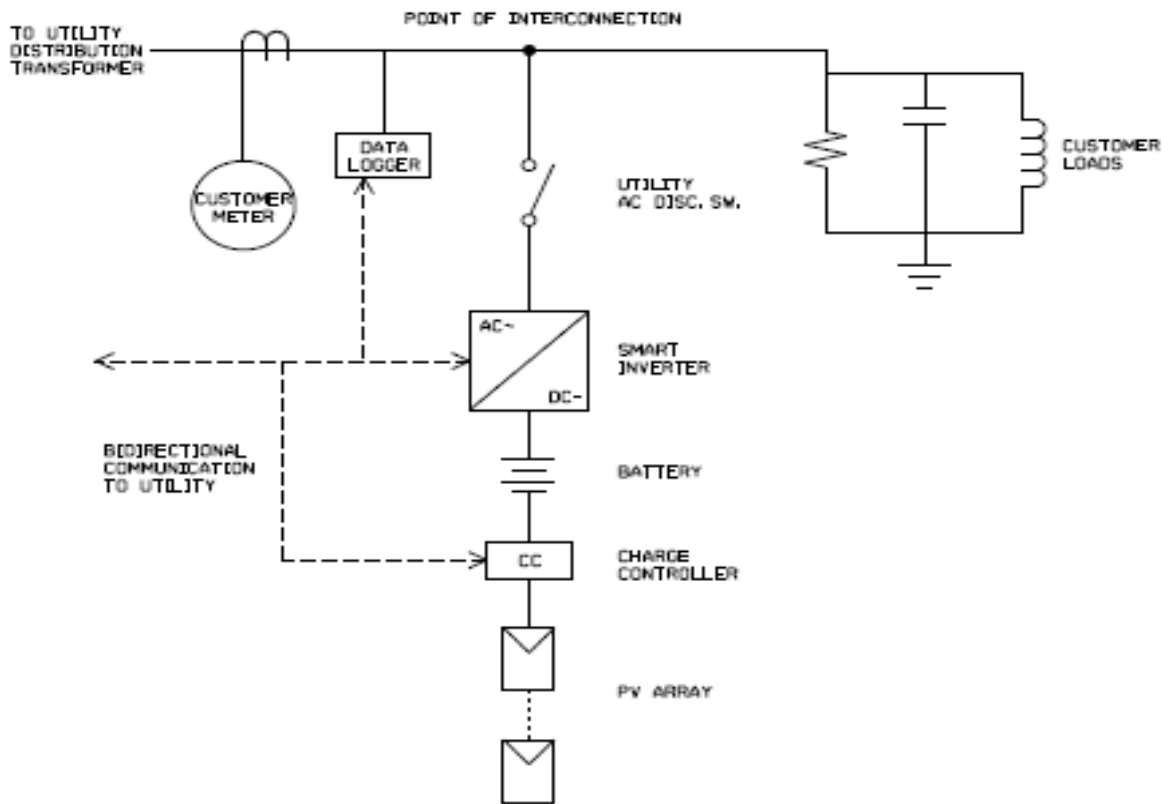
Option 4 (Relative Generating Facility Rating): This option, when used, requires the net rating of the Generating Facility to be small enough in comparison to its host facility's minimum load such that the use of additional protective functions is not required to ensure that power will not be exported to the Company's Distribution System. This option requires the Generating Facility capacity to be no greater than 50% of the Eligible Customer-Generator's verifiable minimum Host Load over the past 12 months. This option only applies to Eligible Customer-Generators with load profile metering with at least 12 months of historical data.

Option 5 (Advanced Inverter Functionality): Inadvertent export is the unscheduled and uncompensated export of real power from a Generating Facility for a duration exceeding 0.1 seconds but less than 60 seconds. This option, which is only available to Generating Facilities smaller than 100 kW, utilizes an inverter to prevent export lasting longer than 60 seconds, i.e., export lasting longer than inadvertent export. This option requires the use of an internal transfer relay or energy management software within an inverter device that will prevent reverse power flow lasting longer than 60 seconds. To ensure limited impact to the Distribution and Transmission System, the expected frequency of inadvertent export occurrences should be less than two occurrences per 24-hour period.

- **Advanced Inverter Requirements to Provide Grid Support.** The Generating Facility shall comply with the advanced inverter requirements set forth in Rule 14, Paragraph H, Appendix III (Advanced Inverter Generating Facility Design And Operating Requirements).

HAWAIIAN ELECTRIC COMPANY, INC.

- **Sample Single Line Diagram**



HAWAIIAN ELECTRIC COMPANY, INC.