

KIUC Curtailment – Frequently Asked Questions (FAQ’s)

Q: Why am I being curtailed?

A: KIUC frequently has more solar resources feeding into the grid than it has load during sunlight hours. When the amount of solar exceeds the demand for energy, KIUC must reduce the amount of solar energy feeding into the grid. This is called curtailment, and it potentially impacts KIUC’s Schedule Q customers who have installed an “oversized” system. Oversized systems generally produce significantly more electricity than is needed to meet the household’s average daytime energy demand. As part of their interconnection agreement, these customers were required to install a separate curtailment meter, and are therefore subject to curtailment. The below chart specifies the maximum size PV system, based on average monthly usage, in order for the system to be “right sized” and to avoid having to install a curtailment meter upon interconnection.

Right-Sizing Criteria	
Average monthly usage in kWh	Maximum PV Size
0-500	2.5 kW
500-800	2.75
800-900	3.00
900-1000	3.5
1000-1100	3.75
1100-1200	4.25
>1200	5.25

Q: What gives KIUC the right to curtail my system?

A: KIUC’s rights are consistent with its obligations, which in regards to interconnecting non-utility power generating resources, is the requirement that KIUC maintains a safe, stable, and reliable electric grid. This is important to ensure that all of KIUC’s members receive quality power service. To meet this obligation, KIUC has the right to place conditions on customer interconnections if a customer desires to interconnect with KIUC’s grid. KIUC’s curtailment policy was implemented in November 2015 and is part of each customer’s interconnection agreement if they applied for a new system, added to their existing system, or made a change to their system after that date. A curtailment meter was required only if PV size was above the calculated “right size” for their home at that point in time (see table above). A copy of the standard interconnection agreement is attached with the appropriate sections highlighted in yellow.

Q: Where specifically does it state that KIUC can curtail my system?

A: Our current interconnection agreement includes a condition requiring that the interconnecting customer grants KIUC the right to curtail a customer’s system (if it is larger than the specified “right size”) in exchange for KIUC granting the customer the right to interconnect with KIUC’s grid. The specific language in KIUC Schedule Q Modified Agreement, Exhibit 1 states, in relevant part, *“Notwithstanding anything to the contrary, the Eligible Customer-Generator’s generating facility may be temporarily disconnected from KIUC’s system during periods of high solar penetration on KIUC’s system and as deemed appropriate by KIUC to ensure overall reliability of its system.”*

The customer is required to install a curtailment device and accept the condition stated in their Schedule Q/Interconnection agreement in order to be given the approval to interconnect with KIUC's grid.

Q: How does KIUC carry out curtailment?

A: As specified in the agreement, the member who wishes to oversize his/her system must install a separate meter specifically for the purpose of curtailment of the solar generating facility. If curtailment is necessary, KIUC will use a wireless meter to send a signal that will turn off the member's rooftop system via the curtailment meter. KIUC will turn the system back on when the curtailment period is over.

Q: Why is curtailment necessary?

A: It is necessary for KIUC to curtail solar resources when the energy generated by solar exceeds the demand for electricity on the grid. One trigger would be sunny, cold weather conditions, when solar is in abundance and load is generally lower than normal. However there are any number of circumstances where there is an imbalance of available load and renewable generation levels which can vary greatly.

Q: Does KIUC have options other than Schedule Q customers when it comes to curtailment?

A: In addition to residential and commercial rooftop systems, KIUC may also choose to curtail its own utility scale solar fields, the Green Energy Team biomass plant, the solar-plus-battery storage facilities owned by Tesla and AES, or several of our fossil-fuel generation plants.

Q: How does KIUC decide which generation sources to curtail?

A: Those decisions are made on any given day depending on a number of factors, the most important of which is maintaining a reliable and safe dispatch of power to the grid. Other factors include minimizing cost to members (i.e. curtailing the most expensive source of power versus the least expensive), maintaining adequate response capabilities based on the expected duration of the curtailment event, and insuring that enough "spinning reserve" is available to cover the single largest generator on line at any given time.

Q: Does KIUC automatically curtail Schedule Q customers first?

A: KIUC does not automatically curtail any of its solar resources "first" when the need for curtailment arises. Please see the answer to the previous question for a better understanding of the factors that are considered when curtailment is necessary.

Q: What other options are available to me if I currently have a curtailment meter?

A: It is best to consult with your solar contractor on options available. Options could include splitting your system or adding a battery for energy storage.

We encourage members who have questions about their interconnection agreement and curtailment to contact us directly. They may also work with their solar contractor for any options that would minimize the impact of curtailment.



SECTION 1. GENERAL

This Schedule Q Modified Agreement is made on _____, and entered into by and between _____ (Eligible Customer-Generator) and Kauai Island Utility Cooperative (KIUC). During the term of this Agreement, the Eligible Customer-Generator may own (or lease from a third party) and operate (or contract to operate with a third party) a Qualifying Facility with a design capacity of no more than as is stated in KIUC's Schedule Q Modified tariff. This Agreement is applicable only to Eligible Customer-Generators who satisfy all requirements of the definition of a Qualifying Facility as set forth in Hawaii Administrative Rules Chapter 74 of Title 6, Subchapter 2, and only to the generating facility described and installed at the location listed below.

SECTION 2. CUSTOMER INFORMATION

Eligible Customer-Generator

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Facility Location (if different from above): _____

Daytime phone: _____ Evening phone: _____

KIUC service account No.: _____

Owner or Operator of Generating Facility (if different from Eligible Customer-Generator above)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Daytime phone: _____ Evening phone: _____



SECTION 3. FACILITY INFORMATION

Solar: Rated generator capacity in kW _____
Generator/Inverter Make & Model _____

Wind: Rated generator capacity in kW _____
Generator/Inverter Make & Model _____

Biomass: Rated generator capacity in kW _____
Generator/Inverter Make & Model _____

Hydro: Rated generator capacity in kW _____
Generator/Inverter Make & Model _____

Hybrid: Rated generator capacity in kW _____
Generator/Inverter Make & Model _____

Cogeneration: Rated generator capacity in kW _____
Generator Make & Model _____

Other (state type): _____ Rated generator capacity in kW _____
Generator Make & Model _____

Total rated capacity in kW _____ (The total capacity of the generating facility shall be the least rated capacity (i.e., limiting) of the system component and shall not exceed the design capacity as stated in KIUC's Schedule Q Modified Tariff).

Kauai County Building Permit No. _____

(Attach Certificate of Completion or Notice of Electrical Inspection)

Single line diagram attached (check one): Yes No

Protective Relay settings (check one): Yes No

Site Control Documentation (check one): Yes No

Liability Insurance (check one): Yes No

SECTION 4. CERTIFICATION BY ELECTRICIAN AND CUSTOMER-GENERATOR

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 and requirements of the Hawaii Public Utilities Commission, other applicable governmental laws and regulations, and all requirements as specified in KIUC's applicable tariffs.



Eligible Customer-Generator certifies that the Eligible Customer-Generator has provided all information and completed all applications and agreements required under KIUC's Interconnection Tariff, and that all the information provided therein is true and correct. Eligible Customer-Generator further certifies and agrees that Eligible Customer-Generator is subject to, and will at all times comply with, the requirements set forth therein, in addition to the requirements set forth in this Agreement.

The following certifies that the installed generating system meets all of the preceding standards and requirements.

Signed (Licensed Electrical Contractor): _____

Date: _____ Hawaii License #C: _____

Name (printed): _____

Mail address: _____

City: _____ State: _____ Zip Code: _____

Daytime Phone: _____ Installation date: _____

SECTION 5. INSTALLATION

The Eligible Customer-Generator's facility shall include power conditioning equipment and a manual load-break disconnect device lockable in the open position and accessible by KIUC, as a means of electrically isolating the Eligible Customer-Generator's system from KIUC's system, and to establish working clearance for maintenance and repair work in accordance with KIUC's safety rules and practices. This load-break disconnect device shall be furnished and installed by the Eligible Customer-Generator and is to be connected between the generating system and KIUC's electric system. The disconnect device shall be located within 10 feet of the electric meter serving the customer. The disconnect device shall be clearly labeled "QF". Upon reasonable notice to the Eligible Customer-Generator, KIUC shall have the right to inspect the installed system.

Load-break disconnect will not be required if the Eligible Customer-Generator allows KIUC to "pull" the electric meter to carry out system maintenance. Initials required: _____

SECTION 6. METERING

KIUC will supply, own, and maintain all necessary meters and associated equipment utilized for billing and/or measuring the delivery of power. Applicable metering charges, including a monthly meter charge will be as stated in the Schedule Q Modified tariff. The Eligible Customer-Generator shall supply, at no expense to KIUC, a suitable location for meters and associated equipment.



SECTION 7. ACCESS

KIUC shall have the right of ingress to and egress from the Eligible Customer-Generator's property and/or the location of the generating facility at all reasonable hours for any purposes reasonably connected with this Agreement, the furnishing of electric energy and the exercise of any and all rights secured to KIUC by law or tariff. If this right is impaired by any locked gates, doors or other facilities, the Eligible Customer-Generator shall furnish, at the customer-generator's expense, a company locket or padlock or lockbox combination.

SECTION 8. NOTICE OF CHANGES

Eligible Customer-Generator shall provide KIUC with at least 30-day advance written notice of any proposed changes made or relating to its generating facility (e.g., a change in ownership or a change in capacity, mode of operation or design). Any changes may be subject to any requirements that may then be imposed by KIUC, and may require re-certification and the execution of new or additional agreements that may then be utilized by KIUC. If there is a change in ownership of the generating facility or the property upon which the generating facility is located, KIUC may require re-certification by the new owner, and Eligible Customer-Generator agrees to sign, and cause the new owner to sign, any and all documents required by KIUC in connection with the change in ownership to among other things, require the new owner to assume all of Eligible Customer-Generator's duties and obligations under this Agreement and any other applicable agreements.

SECTION 9. INDEMNIFICATION

Each party as indemnitor shall hold harmless and indemnify the other party and the directors, officers, authorized agents, and employees of such other party against and from any and all loss and liability for injuries to persons including employees and authorized agents of either party, and damages, including property of either party, resulting from or arising out of the engineering, design, construction, maintenance, or operation of, or the making of replacements, additions, or betterments to the indemnitor's facilities which are required for the interconnection and parallel operation of the Eligible Customer-Generator facility with KIUC's electric system and the generation of energy by the Eligible Customer-Generator. Neither party shall be indemnified for liability or loss resulting from its sole negligence or willful misconduct. 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.

SECTION 10. PERSONNEL AND SYSTEM SAFETY AND OPERATIONS

If at any time KIUC determines that the continued operation of the Eligible Customer-Generator facility may endanger any person or property, have an adverse effect on KIUC's electric system or operations, or have an adverse effect on the safety or power quality of other customers, KIUC shall have the right to disconnect the Eligible Customer-Generator's generating facility from KIUC's electric system, derate the generating facility, and/or impose additional requirements upon the Eligible Customer-Generator to remove or alleviate such endangerment and/or adverse effect. In the event of disconnection or deration, the Eligible Customer-Generator's generating facility shall remain disconnected or derated until such time



as KIUC is satisfied that the condition(s) creating the endangerment or adverse effect(s) have been corrected. KIUC shall not be obligated to accept any energy from the Eligible Customer-Generator during any period of disconnection, and shall only accept the reduced allowed capacity during any period of deration. KIUC shall not be liable directly or indirectly for permitting or continuing to allow the interconnection of the generating facility or for the acts or omissions of the Eligible Customer-Generator that cause loss or injury, including death, to any third party.

SECTION 11. ADDITIONAL INFORMATION

KIUC reserves the right to require additional information, where necessary, to serve the Eligible Customer-Generator under Qualifying Facility service.

SECTION 12. ADDITIONAL REQUIREMENTS

See Exhibit 1 for operating requirements imposed upon the Eligible Customer-Generator's generating facility. In addition, KIUC shall have the right to install or require the installation of additional equipment and facilities within the Eligible Customer-Generator's property and/or the location of the generating facility that are deemed prudent and/or necessary by KIUC for the interconnection, control and delivery of power to and from the generating facility.

SECTION 13. TERM

This Agreement shall become effective upon execution by the Eligible Customer-Generator and KIUC, and shall continue in effect on a month-to-month basis. The Eligible Customer-Generator may terminate this Agreement at any time. KIUC may terminate this Agreement at any time if the Eligible Customer-Generator fails to comply with the terms of this Agreement, Interconnection Agreement, other applicable tariff requirements or meet the definition of a Qualifying Facility as set forth in Hawaii Administrative Rules Chapter 74 of Title 6, Chapter 2. Upon termination, Eligible Customer-Generator shall have no further right to interconnect the generating facility to KIUC's system.

SECTION 14. SCHEDULE Q MODIFIED

The undersigned selects the following option under Schedule Q Modified Tariff.

- Schedule Q Modified Option 1: Not selling excess electricity to KIUC
- Schedule Q Modified Option 2: Selling excess electricity to KIUC

The undersigned hereby agrees and acknowledges that, consistent with KIUC's Schedule Q Modified Tariff, any energy credit or payment from KIUC for any electrical energy delivered to KIUC by the Eligible Customer-Generator's generating facility shall be credited or paid to the account-holder of the electric account associated with the KIUC meter interconnected to the generating facility, regardless of whether such account-holder is the undersigned, and without relieving or in any way limiting the undersigned's obligations and liabilities hereunder and under the associated Interconnection Agreement.



SECTION 15. CUSTOMER-GENERATOR SIGNATURE

I agree to be bound by the terms and conditions of this Agreement and KIUC's Schedule Q Modified tariff, and I understand that all aspects of billing for electric service will conform where applicable to KIUC's tariff rules and rate schedules, the Hawaii Public Utilities Commission's orders and rules, and the provisions of all applicable Hawaii laws, as may be changed (amended, replaced or superseded) from time to time. Because such rules, rates, rate schedules, orders and laws may be changed from time to time, I understand and acknowledge that: (1) the Schedule Q energy credit/payment rate for the electrical energy delivered to KIUC by the Eligible Customer-Generator's generating facility is not guaranteed to remain or remain at any constant or certain rate, and that such rate and payment obligations are subject to change in accordance with KIUC's Schedule Q Modified Tariff, as may be amended or superseded from time to time; and (2) such changes in rules, rates, schedules, orders and laws may positively or negatively affect any potential savings or the value of the generating facility. I also understand and acknowledge that. I also certify that, to the best of my knowledge, all the information provided in this Agreement is true and correct. I also understand that I am required to pay the applicable application fee.

Eligible Customer-Generator: _____ Date: _____

SECTION 16. KAUAI ISLAND UTILITY COOPERATIVE SIGNATURE

I hereby acknowledge receipt and completeness of the Agreement.

KIUC Representative: _____

Title: _____ Date: _____



Exhibit 1

Additional Operating Requirements for
Eligible Customer-Generator's Generating Facility

1. Eligible Customer-Generator's standard operating procedures shall be subject to KIUC's review and approval.
2. No protective relay or control characteristics of the generating facility shall be altered, modified or otherwise changed without prior KIUC approval.
3. Testing of operational criteria before and after parallel operation will be done in accordance with "Good Utility Practice," as that term is defined in KIUC's Interconnection Tariff.
4. Notwithstanding anything to the contrary, the Eligible Customer-Generator's generating facility may be temporarily disconnected from KIUC's system during periods of high solar penetration on KIUC's system and as deemed appropriate by KIUC to ensure overall reliability of its system.
5. Eligible Customer-Generator shall be responsible for all costs associated with the installation of a dedicated curtailment meter socket and the installation of a secondary KIUC AMI meter to remotely disconnect/connect/control the exportation of energy from the Eligible Customer-Generator's generating facility to KIUC's system.
6. **[For Three Phase Service Only]** Eligible Customer-Generator is additionally responsible for all costs associated with the installation of a dedicated curtailment meter socket and/or disconnect device on the load side of the secondary KIUC AMI meter that is able to receive a 120V signal in order to remotely disconnect/connect/control the exportation of energy from the Eligible Customer-Generator's generating facility to KIUC's system.
7. Inverter under frequency set points must be adjustable down to 57.0 Hz, 3 seconds and over frequency set points must be adjustable up to 62.5 Hz, 3 seconds.
8. Inverter overvoltage fast settings must be adjustable to 1.2 pu, 0.16 sec. and the overvoltage slow settings must be adjustable to 1.19 pu, 1.00sec.
9. Inverter undervoltage fast settings must be adjustable to 0.5pu, 0.16 sec. and the undervoltage slow settings must be adjustable to 0.51pu, 2.0 sec.
10. Eligible Customer-Generator must be willing and able to adjust the inverter trip settings given by KIUC to preserve grid stability. These inverter requirements will have to be reviewed and approved with KIUC's Engineering Department during the commissioning phase before interconnection to the KIUC system is allowed.
11. No inverter settings shall be altered, modified or otherwise changed without prior KIUC approval.
12. Eligible Customer-Generator must be willing and able to generate a report of inverter activities based on request by KIUC within 30 days of request.
13. The Eligible Customer-Generator's generating facility shall not exceed IEEE 519 Standard Practices and Requirements for Harmonic Control in Electric Power Systems.

SIGNATURE: _____