KIUC Files Proposal to Manage Distributed Energy Resources (DER) with the PUC

Additional Future Rate Changes Likely

Līhuʻe, Kauaʻi, HI – 08/14/2017 – KIUC today filed its comprehensive DER proposal with the Hawaiʻi Public Utilities Commission designed to maximize the benefits of distributed energy resources for interconnected KIUC members/customers and KIUC’s utility grid system. If approved, the proposal, which was filed in accordance with the PUC’s procedural requirements, would allow members/customers two options when deciding whether to install solar photovoltaic (PV) at their homes or businesses.

“Changes in policy are necessary due to the extremely high penetration of solar resources during daylight hours,” stated David Bissell, President and Chief Executive Officer of KIUC. “Daytime export is no longer feasible when there isn’t adequate load to support it. This proposal could pave the way for more export in a way that benefits all KIUC members and the grid as a whole.”

The DER proposal, which proposes to revise KIUC’s current Schedule Q rate schedule, would create two options: Customer Self-Supply and Smart Export, which would replace the Non-Export and Export options currently reflected in the Schedule Q rate schedule. The proposal would also substantially “grandfather” the current export energy status of “Legacy” Schedule Q customers, for as long as they continue to use their existing systems.

Customer Self-Supply allows a member/customer to install a solar PV or PV/battery system that meets some or all of their own energy needs. Under Customer Self-Supply, the member/customer agrees not to export any amount of energy in excess of the “Inadvertent Export” standard. In exercising this option, the member/customer will not receive utility compensation for any amount of energy export, including small amounts of energy export that may momentarily or inadvertently occur as a result of customer load and generation imbalances.

(more)
The Smart Export option allows the member/customer the opportunity to operate as a “smart exporter” of energy. In other words, the member/customer exercising this option will only be compensated by KIUC for export at times whereby exported energy has value to the utility and, as such, will be compensated according to the value of the energy at the time of export. The solar PV system must include, among other things, a battery for energy storage, and the member/customer would have several options for use of their self-generated energy: (a) export energy to the grid for and receive utility compensation during times of higher value to KIUC; (b) use energy to serve the member’s/customer’s own loads; (c) or store energy in the battery for later use.

If adopted by the PUC, the Smart Export option would provide no utility compensation for export during peak sunlight hours, when the grid is already saturated with solar, but instead would allow the member/customer to serve all or part of their own load or store the energy for later use. Different levels of compensation will be offered at other times of the day, with maximum benefit to the member who exports during evening peak usage.

Currently, roughly 3,700 KIUC members/customers have solar PV systems on their homes or businesses, comprising about 20 megawatts of total power provided to the grid.

“This proposed revised Schedule Q rate schedule will allow us to accept more distributed energy resources onto the grid at the time of day when it is most needed,” stated Bissell. He added that, while this filing addresses members’/customers’ ability to install PV systems and potentially export energy to KIUC for some level of utility compensation, it does not address the overall rate design issues of determining a fair and reasonable means of charging for electrical service as a whole. “KIUC will conduct member outreach and education focusing on fairness amongst member classes, particularly between those who choose to install distributed generation and those who do not,” he said.

(more)
According to Bissell, options under consideration for future rate design include, among other things, a potential fixed charge for grid connection (a.k.a. grid connection charge) that all members would pay, emphasizing that “a grid connection charge would not increase overall rates for most members, as usage-based charges would likely be reduced”

The PUC will now enter a deliberative process on KIUC’s comprehensive DER proposal. “We look forward to working with the commission to finalize the revised Schedule Q in a timely manner,” said Bissell.

A copy of the full comprehensive DER proposal submitted by KIUC can be found at this link: http://website.kiuc.coop/content/news-releases.

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This Lihu‘e home is one of roughly 3,700 structures on Kaua‘i that have rooftop solar installed.
BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAI'I

In the Matter of

PUBLIC UTILITIES COMMISSION

Docket No. 2014-0192

Instituting a Proceeding to Investigate
Distributed Energy Resource Policies

KAUAI ISLAND UTILITY COOPERATIVE'S
INITIAL STATEMENT OF POSITION ON DEFERRED ISSUES AND TECHNICAL
TRACK ISSUES AND IN SUPPORT OF ITS COMPREHENSIVE PROPOSAL

ATTACHMENTS A AND B

EXHIBITS 1 THROUGH 3

AND

CERTIFICATE OF SERVICE

MORIHARA LAU & FONG LLP

KENT D. MORIHARA, ESQ.
KRIS N. NAKAGAWA, ESQ.
LAUREN M. IMADA, ESQ.
YVONNE Y. IZU, ESQ.
Davies Pacific Center
841 Bishop Street
Suite 400
Honolulu, Hawaii 96813
Telephone: (808) 526-2888

Attorneys for KAUA'I ISLAND UTILITY
COOPERATIVE

(00111921-14)
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KAUAI ISLAND UTILITY COOPERATIVE’S
INITIAL STATEMENT OF POSITION ON DEFERRED ISSUES AND TECHNICAL
TRACK ISSUES AND IN SUPPORT OF ITS COMPREHENSIVE PROPOSAL

KAUAI ISLAND UTILITY COOPERATIVE (“KIUC”), by and through its attorneys, Morihara Lau & Fong LLP, hereby submits its Initial Statement of Position on Deferred Issues and Technical Track Issues and In Support of Its Comprehensive Proposal (“KIUC’s ISOP”). “KIUC’s Comprehensive Proposal” is attached hereto as Exhibits 1 through 3 and is incorporated herein by reference. As further explained in Section I of KIUC’s ISOP, KIUC’s Comprehensive Proposal addresses the Deferred Issues and the Technical Track issues, as they pertain to KIUC.

I. BRIEF PROCEDURAL BACKGROUND

On August 21, 2014, the Hawaii Public Utilities Commission (“Commission”) issued Order No. 32269, opening this docket for the purpose of instituting a proceeding to investigate the technical, economic, and policy issues associated with distributed energy resources (“DER”) as they pertain to the electric operations of Hawaiian Electric Company, Inc. (“HECO”), Maui Electric Company, Limited (“MECO”), Hawaii Electric

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Light Company, Inc. ("HELCO") (collectively, HECO, MECO and HELCO are referred to as "HECO Companies"), and KIUC.¹

On July 28, 2017, the Commission issued Decision and Order No. 34725, which, among other things, ordered the Parties to file initial statements of position on Deferred Issues² and Technical Track issues³ by August 14, 2017.⁴

The issues that comprise the Deferred Issues were addressed by the Commission in Decision and Order No. 34534, issued on May 3, 2017. With respect to KIUC, Decision and Order No. 34534 established that the Deferred Issues for KIUC are comprised of three (3) primary topics of focus for the KIUC-Specific Issues Working Group ("KSIWG").⁵ These "KIUC-Specific Topics" are:

¹ Pursuant to Order No. 32269, the HECO Companies, KIUC, and the Division of Consumer Advocacy, Department of Commerce and Consumer Affairs ("Consumer Advocate") were made parties to this proceeding. As noted in Decision and Order No 34534, the Commission has granted intervenor status to the following parties: (1) Hawaii Solar Energy Association ("HSEA"); (2) Life of the Land ("LOL"); (3) Renewable Energy Action Coalition of Hawaii, Inc. ("REACH"); (4) Hawaii Renewable Energy Alliance ("HREA"); (5) Hawaii PV Coalition ("HPVC") (6) The Alliance for Solar Choice ("TASC"); (7) Sunpower Corporation ("Sunpower"); (8) the Department of Business, Economic Development, and Tourism ("DBEDT"); (9) Blue Planet Foundation ("Blue Planet"); (10) Ron Hooson ("Mr. Hooson"); (11) the Distributed Energy Resources Council of Hawaii ("DERC"); (12) Apollo Energy Corporation ("Apollo"), (13) Puna Pono Alliance ("Puna Pono"), (14) Ulupono Initiative LLC ("Ulupono"); and (15) Energy Freedom Coalition of America ("EFCA"). HSEA, LOL, REACH, HREA, HPVC, TASC, Sunpower, DBEDT, Blue Planet, Mr. Hooson, DERC, Apollo, Puna Pono, Ulupono, and EFCA are collectively referred to herein as "Intervenors." Collectively, the HECO Companies, KIUC, the Consumer Advocate, and Intervenors are hereinafter referred to as "Parties."  

² In Decision and Order No. 34725, the term "Deferred Issues" refers to "the deferred issues discussed in D&O No. 34534." Decision and Order No. 34725, at 6.  

³ In Decision and Order No. 34725, the term "Technical Track issues" refers to "Issues Nos. 3 & 4 as stated in Order No. 34206." Decision and Order No. 34725, at 6.  

⁴ See Decision and Order No. 34725, at 6.  

⁵ In Decision and Order No. 34534, issued on May 3, 2017, in Docket No. 2014-0192 ("Decision and Order No. 34534") the Commission directed the Parties to establish four (4) working groups to address the remaining technical track (Phase 2) issues and the development of a Smart Export program. See, Decision and Order No. 34534, at 44. One working group established by the Commission specifically covers "KIUC-specific issues", which is hereinafter referred to as the KIUC-Specific Issues Working Group or KSIWG. As reflected in KIUC's status report of the KSIWG, filed on June 26, 2017, Mr. Tim Blume (KIUC's Regulatory Affairs Manager), on behalf of KIUC, chaired the KSIWG. The KSIWG
1. Develop a Smart Export program proposal or proposals.

2. Consider the alignment of DER tariffs and interconnection standards (as appropriate) among KIUC and the HECO Companies.

3. Proposed redlines to KIUC tariffs (and interconnection standards, as needed) to enable Smart Export systems.

The issues that comprise the Technical Track issues were addressed by the Commission in Order No. 34206, issued on December 9, 2016. The Technical Track issues are:

- How can the utilities’ DER integration analyses be improved to more accurately characterize grid capacity for various forms of DER and other renewable resources?
  - What measures can be taken to proactively identify and address anticipated technical barriers to safely integrating increasing amounts of DER in a cost-effective manner?
  - What measures can be taken to improve the electric utilities’ integration capacity at both the circuit and system level?


By Order No. 34534, the Commission noted that several Parties submitted proposals for “smart” or “limited” export programs to replace the HECO Companies’ existing CGS tariff, and “applauds the efforts of these Parties for their innovative thinking and willingness to embrace new market designs and solutions.” See, Decision and Order No. 34534, at 34. The Commission encouraged “the Parties to continue developing innovative solutions as they consider the Phase 2 issues” and stated that “the Parties should consider the extent to which similar program offerings should be developed for KIUC.” Id. at 35. Accordingly, the Commission instructed both the HECO Companies and KIUC to work with the other Parties to develop a Smart Export program proposal or proposals. The Smart Export proposal(s) may include one or more program designs and should build upon the time-varying export structures proposed by the Parties[.]” Id. at 37.

Id.

Order No. 34206 refers to the utilities’ DER integration analyses as “the hosting capacity studies filed in this proceeding as part of Phase 1 on December 11, 2015; and Appendix N to the HECO Companies’ April 2016 PSIP Update, filed on April 1, 2016, in Docket No. 2014-0183.” Order No. 34206, at 7-8, n.7.
• How should existing interconnection standards and procedures be modified to promote the safe and smooth integration of increasing levels of DER onto Hawaii’s electric grids?
  
  o What modifications or additions to technical requirements should be included in Hawaii’s interconnection standards for advanced inverters?

  o What revisions should be made to existing processes to improve the resolution of interconnection delays for DER systems?

KIUC’s Comprehensive Proposal (attached hereto as Exhibits 1 through 3) addresses both the Deferred Issues (which, with respect to KIUC are sometimes referred to herein as the “KIUC-Specific Topics,” as set forth above) and the Technical Track issues as a comprehensive package. KIUC’s Comprehensive Proposal is summarized in Section III of KIUC’s ISOP, below.

II. BACKGROUND AND CONCERNS WITH RESPECT TO SOLAR PENETRATION AND RENEWABLE INTEGRATION ON THE ISLAND OF KAUA'I

As explained by Mr. Brad Rockwell (KIUC’s Power Supply Manager) during KIUC’s presentation at the KSIWG’s first meeting on May 18, 2017 (see Attachment A, incorporated herein by reference) and as further explained and supported in detail in KIUC’s Motion filed on May 19, 2017, in Docket No. 2015-0389 (“KIUC CBRE Motion”),9 KIUC can prudently accept only a limited amount of additional energy resources onto its system, including non-direct-to-grid resources (e.g., DER systems). Compared to the other Hawaiian islands, KIUC has a substantially higher percentage of solar penetration. This fact can be demonstrated in several ways. Exhibit C of the KIUC CBRE Motion, shows, by island, the mid-day peak solar generation as a percentage of the overall

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9 Consistent with Hawaii Administrative Rules § 6-61-76, KIUC incorporates by reference all of KIUC’s statements and filings made in Docket No. 2015-0389.
system demand at the same time. Kauai, at 71%, far exceeds all of the other islands, whose percentages ranges from 41% (Lana‘i) to 21% (Oahu). Another way of assessing solar penetration is by total nameplate MW rating of installed solar capacity divided by the number of customers, as shown in Exhibit D of the KIUC CBRE Motion. Again, Kauai is the leader. A third way of assessing solar penetration is to compare the total amount of sales served by solar energy divided by total annual sales. As shown in Exhibit E of the KIUC CBRE Motion, Kauai’s 22.5% is about double the proportion of solar energy sales of the other islands.

What Exhibits C, D, and E of the KIUC CBRE Motion show are that KIUC has roughly double the solar penetration of the other islands, and that the island of Kauai has no room to take on additional mid-day solar energy. As discussed during the KSIWG meetings, KIUC is already having to curtail its own cost-effective KRS One and KRS Two facilities, with no concomitant reduction in the cost of the resources to its members, due to high solar saturation during the mid-day period; this means that there is currently no margin to accept more mid-day energy. Calendar year 2016 was KIUC’s first full year during which the 7.2 MW Green Energy biomass facility, the 12 MW KRS One solar facility, and the 12 MW KRS Two solar facility were all operational. During 2016, KIUC’s curtailment of its KRS One and KRS Two facilities (which, compared to various other renewable energy facilities are very cost-effective) totaled approximately 742 MWh.\textsuperscript{10} This shows that operationally, KIUC simply cannot accept any more mid-day direct-to-grid energy without creating more curtailment; any program (such as new or expanded DER programs) that requires the purchase of mid-day to

\textsuperscript{10} Exhibit F of the KIUC CBRE Motion is the curtailment log for KRS One and KRS Two from October 2014 through March 2017.
direct-to-grid energy is not in the public interest with respect to KIUC and KIUC's member-customers.

The dispatchable solar energy projects that are already online or planned to come online (i.e., the 13 MW SolarCity dispatchable solar facility and the 20 MW AES Lawai dispatchable solar facility, respectively) do or will deliver energy during the daytime shoulder and evening peak periods, which will also reduce the amount of energy that KIUC needs and/or can accept during the daytime shoulder and evening peak periods, thereby reducing the amount of energy that should be made available to new or revised DER programs.

In light of the above and as further elaborated upon by KIUC's consultants (Daymark Energy Advisors) during their presentation at the July 20, 2017 KSIWG meeting (see Attachment B, incorporated herein by reference), KIUC can prudently and presently accept only a limited amount of additional energy resources onto its system, including non-direct-to-grid resources; to accept more than such limited amount would exacerbate the curtailment of cost-effective renewable energy that is already happening. Any DER program that will require KIUC to interconnect more than such limited amount of additional energy, or which will require KIUC to purchase energy that is not cost-effective, is not in the public interest and, therefore, should not be established for KIUC.

KIUC's Comprehensive Proposal was borne out of KIUC's efforts to satisfy KIUC's dual objectives of (1) developing new DER tariff options for KIUC's customers, including, per the Commission's directive, a Smart Export program, and (2) structuring such new DER tariff options in a manner that is equitable to all of KIUC's
members/customers as a whole and that will not exacerbate the above-described concerns with respect to solar penetration and renewable integration on the island of Kauai. KIUC’s Comprehensive Proposal is reasonable and in the public interest, as it strikes the appropriate balance between preserving the safety and reliability of KIUC’s electrical grid while, at the same time, utilizing appropriate (i.e., fair and equitable to KIUC’s members/customers as a whole) price signals to prudently encourage the growth of DER (smart export or otherwise) on the island of Kauai.11

III. SUMMARY OF KIUC’S COMPREHENSIVE PROPOSAL

The following sets forth a summary of KIUC’s Comprehensive Proposal and how the proposal, in the aggregate, addresses the Deferred Issues (with respect to KIUC, aka the KIUC-Specific Topics) and the Technical Track issues as a comprehensive package.

A. Deferred Issue/KIUC-Specific Topic No. 1: Develop a Smart Export program proposal or proposals

As discussed in the KSIWG meetings to date and as explained in further detail in Exhibit 1, KIUC proposes to revise its Schedule Q tariff to offer members/customers the choice of three (3) DER options: (1) Smart Export, (2) Self Supply, and (3) Legacy Q.

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11 In Order No. 34664, filed on June 28, 2017, in Docket No 2016-0328, the Commission indicated, in relevant part, the following:

The [C]ommission is mindful of the growing and complicated issues associated with integrating increasing amounts of DER in Hawaii onto the electrical grid. A balance must be struck between preserving the safety and reliability of the electrical grid, and encouraging an appropriate amount of growth of DER in Hawaii, in accordance with the State’s renewable energy goals.

Order No. 34664, at 60. In Order No. 32737, filed on March 31, 2015, in this docket (“Order No. 32737”), the Commission indicated, in relevant part, that “DER [should be allowed] to continue to grow cost-effectively in the future without adversely affecting non-participating customers.” Order No. 32737, at 33-34.
As illustrated below, KIUC’s existing Schedule Q tariff options would be modified as follows:

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<thead>
<tr>
<th>Existing Schedule Q Options</th>
<th>Proposed New Schedule Q Options</th>
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<tbody>
<tr>
<td>1. Schedule Q Export</td>
<td>1. Smart Export</td>
</tr>
<tr>
<td>2. Schedule Q Non-Export</td>
<td>2. Self Supply</td>
</tr>
<tr>
<td></td>
<td>3. Legacy Schedule Q</td>
</tr>
</tbody>
</table>

KIUC notes that these proposed Schedule Q tariff changes meet, but also go beyond, the Commission’s directive to “develop a Smart Export program proposal or proposals”. Indeed, KIUC believes that piecemeal development and implementation of DER options is not in the best interest of KIUC’s members/customers as a whole. Instead, KIUC believes that a holistic approach, which considers KIUC’s members/customers as a whole and strives to be fair and equitable to KIUC’s members/customers as a whole, is a better and reasonable approach that will produce a more durable, long-term DER solution for the island of Kauai; KIUC developed its Comprehensive Proposal based on such a holistic approach. As further set forth in Exhibit 1, attached hereto, KIUC believes that the Comprehensive Proposal (which includes the proposed Schedule Q tariff revisions) is just, reasonable, and in the best interest of all of KIUC’s members/customers as a whole, as it: (1) provides members/customers with reasonable and fair DER options that do not discriminate against and/or materially impact non-participating members/customers; (2) provides a reasonable degree of predictability and transparency regarding the framework for KIUC’s purchase or non-purchase (as the case may be) of exported energy; (3) utilizes transparent methodologies to determine the “value of solar” (i.e., to determine the time-varying
export periods and to calculate the time-varying rates for exported energy); (4) offers existing (aka, legacy) Schedule Q members/customers an option to be grandfathered into a new Legacy Schedule Q tariff option; (5) removes the requirement for Schedule Q members/customers to install a curtailment meter; and (6) minimizes risks, to KIUC’s DER members/customers and to KIUC’s members/customers as a whole, associated with changing grid conditions, changing curtailment requirements, and ever-changing fuel and renewable energy costs.

B. Deferred Issue/KIUC-Specific Topic No. 2: Consider the alignment of DER tariffs and interconnection standards (as appropriate) among KIUC and the HECO Companies

In its current form, the already streamlined process set forth in KIUC’s Tariff No. 2 is sufficiently flexible enough to enable customer choice and continued DER deployment, including technology advancements in inverter functionality. In light of this and also in an effort to provide more transparency and predictability as to KIUC’s engineering or operating requirements, particularly with respect to the proposed new Smart Export and Self Supply tariff options, KIUC is proposing, as part of its Comprehensive Proposal, technical requirements/interconnection standards to be applicable to the proposed new Smart Export and Self Supply Schedule Q tariff options. These technical requirements/interconnection standards are described in detail in Exhibit 3. Moreover, per the Commission’s directive to “consider the alignment of DER tariffs and interconnection standards (as appropriate) among KIUC and the HECO Companies,” while developing these technical interconnection requirements/standards, KIUC’s engineering and system operations team (based on their respective experiences and expertise in overseeing and operating KIUC’s grid for many years) carefully considered potential areas of alignment with the HECO Companies’ DER tariffs and
their associated technical interconnection requirements/standards (e.g., HECO Companies' Rule 14H, etc.). Ultimately, KIUC's engineering and system operations team determined that it is prudent and appropriate for KIUC to align (i.e., adopt the same or substantially similar requirements as the HECO Companies' already existing requirements or requirements that, as of the date of this filing, KIUC is aware of or have been discussed during the various working group meetings) with the HECO Companies in the following areas:

- Inadvertent export time limit of less than 30 seconds for a Self Supply system;\(^{12}\)
- Monthly inadvertent export energy threshold of not to exceed \([(\text{maximum kW export}) \times (1\text{-hour})]\) for a Self Supply system;\(^{13}\)
- Voltage ride through requirements;\(^{14}\)
- Frequency ride through requirements;\(^{15}\)
- Volt-Var requirements;\(^{16}\)
- Volt-Watt requirements;\(^{17}\) and
- Return to service reconnection time delay.\(^{18}\)

\(^{12}\) Under KIUC's Comprehensive Proposal, this requirement is applicable only to Self Supply systems that are less than or equal to 10 kW. For Self Supply systems greater than 10 kW, the inadvertent export time limit is less than 10 seconds. Refer to page 8 of Exhibit 3.

\(^{13}\) Under KIUC's Comprehensive Proposal, this requirement is applicable only to Self Supply systems that are less than or equal to 10 kW. For Self Supply Systems greater than 10 kW, the monthly inadvertent export energy threshold is \([(\text{maximum kW export}) \times (0.33\text{-hours})]\). Refer to page 9 of Exhibit 3.

\(^{14}\) Refer to page 11 of Exhibit 3.

\(^{15}\) Refer to page 12 of Exhibit 3.

\(^{16}\) Refer to page 5 of Exhibit 3.

\(^{17}\) Refer to page 4 of Exhibit 3.

\(^{18}\) Refer to page 6 of Exhibit 3.
KIUC’s proposed technical interconnection requirements/standards for each of the above-listed areas are set forth in Exhibit 3.

Notwithstanding the above, KIUC believes it is imperative that the DER programs and the associated tariffs and/or technical interconnection requirements/standards for the various Hawaii electric utilities not be developed with a one-size-fits-all approach. Because of KIUC’s unique circumstances and differences as compared to the other Hawaii electric utilities (e.g., KIUC’s cooperative ownership structure, KIUC’s current situation in integrating solar (as summarized in Section I of this ISOP), KIUC’s unique ability to pursue and obtain low-cost renewables, and KIUC’s significantly smaller system size, limited resources, smaller customer base, and resulting lower revenue as compared to each of the other Hawaii electric utilities), special considerations need to be factored into designing DER programs and associated tariffs and/or technical interconnection requirements/standards that are appropriate for KIUC and all of KIUC’s members/customers.

C. Deferred Issue/KIUC-Specific Topic No. 3: Proposed redlines to KIUC tariffs (and interconnection standards, as needed) to enable Smart Export systems

Consistent with the discussion above and as shown in Exhibit 2, KIUC is proposing redlines to Schedule Q of KIUC Tariff No. 1 in order to enable efficient implementation of KIUC’s proposed new Schedule Q DER tariff options (i.e., Smart Export, Self Supply, and Legacy Q). In order for the transition from the existing Schedule Q tariff to the proposed new Schedule Q tariff (i.e., KIUC’s Comprehensive Proposal) to be as transparent and smooth as possible, KIUC proposes that KIUC’s Comprehensive Proposal be implemented 60-days after the issuance of any
Commission order approving of KIUC’s Comprehensive Proposal.\textsuperscript{19} KIUC would use the 60-day period between the approval of KIUC’s Comprehensive Proposal and the implementation of KIUC’s Comprehensive Proposal to: (i) conduct member outreach to educate KIUC’s members/customers about the new Schedule Q tariff options, and (ii) hold contractor workshops to educate the solar industry contractors on Kauai about the new Schedule Q tariff options and the corresponding technical interconnection requirements/standards.

D. Technical Track Issues

As explained below, KIUC’s Comprehensive Proposal also addresses the Technical Track issues, as they pertain to KIUC.

1. How can the utilities’ DER integration analyses\textsuperscript{20} be improved to more accurately characterize grid capacity for various forms of DER and other renewable resources?

KIUC notes that Order No. 34206 refers to the utilities’ DER integration analyses as “the hosting capacity studies filed in this proceeding as part of Phase 1 on December 11, 2015; and Appendix N to the HECO Companies’ April 2016 PSIP Update, filed on April 1, 2016, in Docket No. 2014-0183.” Order No. 34206, at 7-8, n.7. Because this Technical Track issue concerns studies and filings regarding the HECO Companies, this Technical Track issue is not applicable to KIUC. Accordingly, KIUC takes no position on this issue; provided that any modifications or revisions applicable to the HECO Companies’ tariffs and/or associated interconnection requirements/standards will not be applied to KIUC in any way.

\textsuperscript{19} If the Commission issues an order approving of KIUC’s Comprehensive Proposal, KIUC will thereafter file the revised Schedule Q tariff sheets with the applicable issued and effective dates.

\textsuperscript{20} See supra n.8.
2. How should existing interconnection standards and procedures be modified to promote the safe and smooth integration of increasing levels of DER onto Hawaii's electric grids?

Refer to Exhibit 3, attached hereto, for KIUC’s position and proposed modifications to its technical interconnection requirements/standards, which KIUC is proposing as part of KIUC’s Comprehensive Proposal. KIUC believes that implementation of KIUC’s Comprehensive Proposal will promote the safe and smooth integration of increasing levels of DER onto Kauai’s electric grid. KIUC’s Comprehensive Proposal includes KIUC’s proposed modifications or additions to KIUC’s technical interconnection requirements/standards for advanced inverters. Additionally, KIUC believes that if implemented as part of KIUC’s Comprehensive Proposal, the technical interconnection requirements/standards specified in Exhibit 3 will result in a more transparent and streamlined, and therefore, hopefully even more expeditious interconnection process for DER systems on Kauai.

IV. SUMMARY/RECOMMENDED NEXT STEPS

In light of the above and Exhibits 1 through 3, KIUC respectfully requests that the Commission approve, in its entirety, KIUC’s Comprehensive Proposal (which is summarized herein and explained in further detail in Exhibits 1 through 3).

As currently contemplated by the Commission, the upcoming procedural steps to address the Deferred Issues and the Technical Track issues include, among other potential procedural steps, further discovery, final position statements, and a hearing “if deemed necessary by the Commission.” Order No. 34725, at 9-10. With respect to a hearing on the Deferred Issues and the Technical Track issues, KIUC notes that this proceeding has evolved from what was, at the outset, an investigative proceeding, to
what is now potentially a proceeding in which KIUC’s rights, duties, or privileges will be
determined, and as such, KIUC has a due process right to a contested case hearing.\(^{21}\)

Thus, if the Commission’s findings, conclusions, or decisions in this docket adversely
impact KIUC’s rights to protect its overall memberships’ interests and/or impose upon
KIUC a duty to implement or offer another DER tariff or program that may not be in
KIUC’s and/or its members’ interest (e.g., the Commission, \textit{sua sponte}, requires KIUC
to implement or offer a DER tariff or program other than KIUC’s Comprehensive
Proposal in its entirety),\(^{22}\) then KIUC contends that it is entitled to an opportunity for a
full and fair evidentiary hearing regarding such findings, conclusions, or decisions.

\(^{21}\) HRS § 91-9(a) provides that, “in any contested case, all parties shall be afforded an
opportunity for hearing after reasonable notice.” A contested case is an agency hearing that (1)
is required by law, and (2) determines the rights, duties, or privileges of the applicant. Regarding the first
requirement, in order for an agency hearing to be required by law, it may be required by (1) agency rule,
(2) statute, or (3) constitutional due process. ("In order for an agency hearing to be ‘required by law,’ it
may be required by (1) agency rule, (2) statute, or (3) constitutional due process.” \textit{Kaniakapupu v. Land
Use Commn.}, 111 Hawai’i 124, 132, 139 P.3d 712, 720 (2006). Thus, a hearing “required by law”
includes those required by due process. \textit{Agujar v. Hawaii Housing Authority}, 55 Haw. 478, 522 P.2d
1265 (1974).)

\(^{22}\) KIUC acknowledges that as part of Phase 1 of this proceeding, KIUC opposed TASC’s request
for an evidentiary hearing on the basis that (among other bases) this proceeding is not a contested case.
\textit{See KIUC’s Response to TASC’s Motion to Initiate Formal Evidentiary Hearings}, filed on July 20, 2015, in
this docket. Consistent with KIUC’s position stated in such filing, KIUC asserts that, in general, a generic
investigative proceeding initiated by the Commission does not constitute a contested case. However, if
the Commission compels or requires a utility to adopt new rates, rules, and/or practices, or to modify any
of the utility’s existing rates, rules, and/or practices, in a manner that was not proposed by the utility itself,
a contested case hearing is triggered under HRS § 269-16(b) and HRS §§ 91-9 and 91-14. HRS
§ 269-16(b) states, in relevant part:

\begin{quote}
The commission, upon notice to the public utility, may:

\begin{center}
***
\end{center}

(1) \textit{After a hearing}, by order:

\begin{itemize}
\item[(A)] Regulate, fix, and change all such rates, fares, charges, classifications,
schedules, rules, and practices so that the same shall be just and reasonable.
\end{itemize}

\end{quote}

HRS § 269-16(b) (emphasis added). As such, KIUC believes that if the Commission, \textit{sua sponte},
compels or requires KIUC to implement or offer a DER tariff or program other than KIUC’s
Comprehensive Proposal in its entirety, a hearing is required by law.
On that basis, KIUC reserves its right to pursue any and all of its legal remedies with respect to this proceeding, including, without limitation, KIUC’s due process right to an evidentiary hearing on the Deferred Issues, the Technical Track issues, and KIUC’s Comprehensive Proposal (which addresses the Deferred Issues and the Technical Track issues) as they pertain to KIUC.


Kent D. Morihara
Kris N. Nakagawa
Lauren M. Imada
Yvonne Y. Izu

Morihara Lau & Fong LLP
Attorneys for KAUAI ISLAND UTILITY COOPERATIVE
DER Phase II
KIUC-Specific Issues
Working Group

May 18, 2017
Tim Blume

KIUC Regulatory Manager
Agenda

• Introductions
• KIUC presentation
• Interactive sharing of information- some questions from KIUC to the parties
• Develop list of issues to be resolved
• Discuss and determine which, if any, issues may be easy to resolve
Cooperative Electric Utility
What Makes KIUC Unique in Hawaii?

• Member-owned, democratically elected board-governed
• Member-driven strategic vision with ambitious commitments to renewable energy
• Investments in renewables driven by the need to provide benefits to all members
• Made possible by lower cost capital and reduced profit motivation
• KIUC achievements in the area of renewable energy and grid modernization have been nationally-recognized and well documented:
  – Successfully installed smart meters for 90+% of its customers.
  – Successfully converted entire island’s public street lighting to LED technology.
  – Approximately 3,800 interconnected self-generating customers
  – Successful renewable energy projects including IPP and KIUC-owned solar PV facilities.
Brad Rockwell

KIUC Power Supply Manager
KIUC System Statistics

- Completely islanded, vertically integrated
- 171 miles 69 kV rated transmission
- 1,311 miles 12.47 distribution
- 35-72 MW daily demand profile
- 78 MW all-time peak (2007)
- 117 MW oil-fired generation capacity
- 67 MW solar interconnected (22 MW DG)
- 9 MW hydro
- 7 MW biomass
- 23 MW Battery Energy Storage
KIUC’s grid has limits

• Whether 100% RPS (annual basis) or 100% RE penetration (instantaneous basis), any grid has defined upper limits to energy supply
• Small, islanded grids are especially limited, and KIUC is reaching its limits faster than other grids in the State
Percent of Annual Energy Sales Provided by Solar - 2016 Full Year

Kauai: 22.5%
Maui: 11.5%
Hawaii: 11.1%
Oahū: 9.0%
80% solar penetration; 97% renewable
Utility-scale RE offers fast, cheap, and reliable progress toward RPS goals

• Kauai has a significant amount of land available for large renewable projects
• These projects provide 100% export to the grid at significant economies of scale
• These projects use utility-grade equipment to provide necessary grid support while actively being controlled & monitored
KIUC’s 2016 Year-End RPS: 42%

- Solar leads all RE at 22.5%
  - 10% was DER solar (began 2001)
  - 12.5% was utility-scale solar (began 2011)
- Biomass next at 11%
  - Most expensive but very consistent
- Hydro remains at 8%
  - Cheapest and also very consistent
Stabilizing and Reducing Kauai Rates

2010 Power Supply

- Hydro 8%
- Oil 92%

0% of mix fixed cost
$69 million oil
$4 million renewable

2017 Power Supply

- Hydro 8%
- Biomass 11%
- Solar 26%
- Oil 55%

+3% kWh sales growth
-7% power supply cost

44% of mix fixed cost
$39 million oil
$29 million renewable
Displace as much fuel as possible with little or no RE curtailment

• Fast-start, flexible generators complement intermittent RE sources
• KIUC has reduced minimum operating loads to prevent curtailment as much as possible
• Next step is to operate the grid without any fossil-fueled units for short periods during sunny days
No smoking: Toward 100% renewable

- Routinely achieving 90% renewable during mid-day
- All but 1 generator shut down on clear days for up to 6 hours

Next up: periods of 100% renewable during mid-day
No ability to take solar without significant storage

- SolarCity / Tesla 13 MW / 52 MWh
- AES 20 MW / 100 MWh
- Additional projects in the works
Extremely Flat Generation Cost Profile

- Aggressive shift away from oil generation and PPAs that were indexed to oil prices
- Flexible generation fleet with mostly flat heat rate curves
- Solar + storage projects that are shaving the evening peak
KIUC Average Hourly Generation Cost ($/MWh) - Apr 14, 2017

The bar chart shows the average hourly generation cost for KIUC on April 14, 2017. The costs range from $50 to $300 per MWh, with costs being relatively constant throughout the day.
2016 Service Reliability

Oahu
Maui
Hawaii
Kauai
John Cox

KIUC Engineering Manager
TreraK: 5-11-17 to 5-15-17

Anahola Substation
2017/May 200000000

Freq - Hz
60.3 Hz
59.7 Hz

PV - MW
10 MW
3 MW (charging)

BESS - MW
3 MW (discharging)
Frequency 2: 60.3 Hz

PV - MW:
- 3 MW (charging)
- 3 MW (discharging)

BESS - MW:
- 3 MW (discharging)
20 17-02-25-1 BMlDKLfc : - KPS Trip 2-25-17
Freq - Hz ««
52.00
50.60-
50.40
59.2 Hz - Loadshed Initiates
FregBSE 1
55.20
55.00
58.80
58.6 Hz - Loadshed Completed
5B.60 •
58.40
3COM, KPS Trip at 18.5MW
--
20 OM
KPSTerW iVUPS Tie 3-c
15 OM
10 OM
5 OM
-0220®
0.0-
1jOMi
0.0-
-1 OM
85x121
355 1,3552:WW3l3W31S -20M
-3.0M
In
BESS Responding with 4.6MW
-5.0M'
~748 O73o1T
732.0 734 0 736 .0 333 0 740 0 742.0 744.0 746 0Secants
ATTACHMENT A
Page 30 of 34
Trip to Lockout, 4-22-17

Freq - Hz

60.2 Hz

59.7 Hz

2 MW (charging)

BESS - MW

2 MW (discharging)
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| Blk Total   | 5.01     | 2.85         | 2.43      |

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| Blk Total   | 4.68     | 1.25         | 1.84      |

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| Blk Total   | 4.00     | 2.70         | 2.35      |

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<td>0.65</td>
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<tr>
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<td>58.4</td>
<td>0.04</td>
<td>1.01</td>
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<td>1.17</td>
<td>1.08</td>
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| Blk Total   | 4.09     | 1.81         | 1.73      |

| accumulated total | 22.78    | 11.00        | 10.32     |
Mahalo
ATTACHMENT B
Notes on Smart Export Analysis

Discussion at 7/21 KIUC Issues Subcommittee Meeting
Defining the Non-Export Window

• Consider risk of non-curtailable generation exceeding load at certain times
• KRS 1 & 2 curtailment = economic/efficiency problem
• KRS 1 & 2 fully curtailed, load > gen = operational problem
• Non-export window focused on risk of operational problems
Recent History of Curtailment

Estimated Curtailment of KRS 1 & 2 (MWh)

- Jul-16
- Aug-16
- Sep-16
- Oct-16
- Nov-16
- Dec-16
- Jan-17
- Feb-17
Curtailment by Hour – MW curtailed
Curtailment by Hour – as % of possible output
## Schedule Q History

<table>
<thead>
<tr>
<th>Month</th>
<th>Customers Count</th>
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<tbody>
<tr>
<td>Jul-16</td>
<td>2,800</td>
</tr>
<tr>
<td>Aug-16</td>
<td>3,000</td>
</tr>
<tr>
<td>Sep-16</td>
<td>3,100</td>
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<tr>
<td>Oct-16</td>
<td>3,200</td>
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<td>Nov-16</td>
<td>3,300</td>
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<td>Dec-16</td>
<td>2,800</td>
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<td>Jan-17</td>
<td>2,900</td>
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<tr>
<td>Feb-17</td>
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<tr>
<td>Mar-17</td>
<td>3,100</td>
</tr>
<tr>
<td>Apr-17</td>
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<tr>
<td>May-17</td>
<td>3,300</td>
</tr>
<tr>
<td>Jun-17</td>
<td>2,800</td>
</tr>
</tbody>
</table>

![Graph showing the Schedule Q Customers Count from Jul-16 to Jun-17](image-url)
Schedule Q History
Smart Export Rate Design Framework

• Four defined time periods
  • Non-Export
  • Solar Irradiance Shoulder
  • System Peak
  • Other Hours

• Initially some periods may not have differentiated rates
  • Build framework and customer recognition for future when rate differentiation may become appropriate
Smart Export Rate Design Framework

<table>
<thead>
<tr>
<th>HE</th>
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<th>Smart Export Period</th>
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<td>Other Hours</td>
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<tr>
<td>1</td>
<td></td>
<td>Daytime Shoulder</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Non-Export</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Daytime Shoulder</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>System Peak</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>Other Hours</td>
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<table>
<thead>
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<th>Smart Export Period</th>
<th>Rate Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Export</td>
<td>Zero</td>
</tr>
<tr>
<td>Daytime Shoulder</td>
<td>Base Rate minus curtailment adj.</td>
</tr>
<tr>
<td>System Peak</td>
<td>Base Rate</td>
</tr>
<tr>
<td>Other Hours</td>
<td>Base Rate</td>
</tr>
</tbody>
</table>
Smart Export Rate Design Framework

Base Rate

• Based on the next long-term, cost-effective resource addition that KIUC would add to its system (either by building the resource addition itself or by procuring such resource addition through a power purchase agreement)

• Assume PV + BESS initially
Smart Export Rate Design Framework

Daytime Shoulder Curtailment Adjuster (CA)

\[ CA = \text{expected curtailing} \times \text{base rate} / \text{expected exports} \]

- **Expected curtailing** is forecast curtailing of utility solar during Daytime Shoulder period hours only
- **Base rate** is the Smart Export base rate described earlier
- **Expected exports** is forecast customer exports (NEM Pilot, NEM, Q, Smart Export) during Daytime Shoulder period hours only.
### Non-Export Window and Rates

- **Some considerations in setting non-export window**

<table>
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<th><strong>Wider Window</strong></th>
<th><strong>Narrower Window</strong></th>
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</thead>
<tbody>
<tr>
<td>Requires greater BESS to PV ratio to effectively store mid-day energy</td>
<td>Greater risk of curtailment just outside window reaching operationally-sensitive levels</td>
</tr>
<tr>
<td>Will reduce curtailment adjustment in Daytime Shoulder</td>
<td>Curtailment adjuster likely higher in daytime shoulder</td>
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EXHIBIT 1
Overview

As of current and under KIUC Tariff No. 1, all of KIUC’s interconnected customers are served under Schedule Q, 1 Rule No. 17 Net Energy Metering (“NEM”), 2 Schedule NEM Pilot, 3 or individually-negotiated and Commission-approved Purchase Power Agreements (“PPA”). Due to the limiting nature of Rule No. 17 NEM 4 and Schedule NEM Pilot 5, the vast majority of customers with distributed generation or DER systems designed for 100kW or less capacity are served under Schedule Q. Important to note is the fact that both the Rule No. 17 NEM and NEM Pilot DER programs have been fully subscribed as of December 2009 and July 2013, respectively, and therefore are no longer offered. As such, only Schedule Q is currently available to those systems with a design capacity of 100kW or less. 6

Schedule Q, in its current form, allows for a single rate, adjusted monthly for fuel cost changes, to be paid for customer exported energy regardless of the time or day of delivery. Also, Schedule Q does not recognize periods of limited or no export, thus requiring the utility to purchase energy at a time when load and generation constraints may necessitate curtailment to protect KIUC’s system. The large majority of Schedule Q customers were allowed to connect without curtailment meters and therefore cannot be physically curtailed. 7 Times have changed and the increase in grid-connected renewable energy has led to a utility grid environment whereby exported DER energy provides different values to

---

1 Schedule “Q” Modified (“Schedule Q”) is reflected on Eighth Revised Sheets 95-97 and Ninth Revised Sheets 98-99 of KIUC Tariff No. 1.

2 Rule No. 17 NEM is reflected on Third Revised Sheets 55a, First Revised Sheet 55b, First Revised Sheet 55c, First Revised Sheet 55d, Original Sheet 55e, Original Sheet 55f, Original Sheet 55g, First Revised Sheet 55h, Original Sheet 55i, Original Sheet 55j, and Original Sheet 55k of KIUC Tariff No. 1.

3 Schedule “NEM Pilot” is reflected on Original Sheets 126-138 of KIUC Tariff No. 1.

4 Rule No. 17 NEM requires, among other things, that KIUC offer NEM until the total NEM capacity reaches 1% of KIUC’s system peak and for systems not to exceed 50kW in design capacity.

5 NEM Pilot sizing criteria is based on a “right-sized” formula that limits the design capacity size that is eligible for participation under the NEM Pilot.

6 As of June 30, 2017, all of KIUC’s non-PPA interconnected DER customers are served under Rule No. 17 NEM/NEM Pilot (approximately 300 customers) and Schedule Q (approximately 3,457 customers).

7 During the early adoption of customer-sited generation, the impact of customer-sited DER interconnections to KIUC’s grid was not significant enough to substantiate a requirement for curtailment meters. In light of this, KIUC currently has a mix of DER customers and systems (1) with and without curtailment meters; and (2) with varying system sizes (including right-sized and not right-sized systems).
the grid at different times. Primarily driven by recent changes and/or advancements to both solar PV generation and battery technologies, these conditions have created a need to view DER exported energy differently and to find ways to recognize and compensate for DER exported energy on a basis that reasonably and fairly aligns payment for such energy with its value at the time it is delivered to the grid.

On the customer’s side of the KIUC revenue meter, new smart inverter and battery technology presents the customer with opportunities to configure the customer generation system in a manner that could be beneficial to both the customer and KIUC. To this end, a customer would have the flexibility to direct PV energy to: (a) the grid during times of higher value to KIUC; (b) the customer’s own loads; (c) the customer’s battery for later use, allowing the customer to strategically serve its own load or export energy to KIUC; or (d) some combination of these functions.

In light of the above, KIUC, in accordance with the Commission’s guidance and directives set forth in Decision and Order No. 34534, filed on May 3, 2017, in Docket No. 2014-0192, is proposing modifications to KIUC’s existing Schedule “Q” tariff structure. The modifications will: (a) recognize advancements in various technologies (e.g., smart inverters, battery energy storage systems (aka, BESS), etc.); (b) recognize the time-varying value of solar; and (c) provide appropriate choices for allowing customer generation systems with design capacities of 100kW or less to interconnect. Similar to the currently existing Schedule Q options, eight options would be provided under the modified Schedule Q tariff:

1. **Self Supply**: Operate as a customer self-supply system that allows the customer to use the total output of its system to meet its own load. Under this scenario, the customer agrees not to export any amount of energy in excess of the Inadvertent Export standard (as set forth in further detail in the Interconnection Standards and Requirements section below). The customer cannot receive utility compensation for any amount of export, including any Inadvertent Export.

2. **Smart Export**: Operate as a “smart exporter” of energy, meaning that the customer will only be compensated for export at times whereby exported energy has value to the utility and, as such, will be compensated according to the value of the energy at the time of export. Under this scenario, the customer and utility also acknowledge and agree that there could be times whereby customer energy export would not have any value, thus forming the basis for a Non-Export period(s).

3. **Legacy Schedule Q**: Applicable only to Legacy Schedule Q Customer, as described in more detail below.

**General Objectives**

In developing these new DER options under KIUC’s existing Schedule “Q” tariff, KIUC strove to develop a solution that would meet the following objectives:

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8 KIUC’s current Schedule Q tariff gives the customer two options for subscribing to Schedule Q: Option 1 – whereby the customer does not sell any energy to KIUC, and elects to purchase its net load requirement from KIUC; and Option 2 – whereby the customer elects to sell energy in excess of its total load to KIUC and to purchase its net load requirement from KIUC.
1) Provide customers with reasonable and fair choices that do not discriminate against and/or materially impact the other non-participating customers/members. These “choices” would not necessarily include selecting a form of payment from a range of payment rate offerings, but rather give the customers the ability to configure their own generation system to meet their specific needs. Customer choices should align with and be driven by the advancements in technologies and utility options that encourage system design flexibility.

2) Provide the customer some degree of predictability and transparency with regards to purchase/non-purchase of exported energy, notwithstanding that KIUC does not believe it is KIUC’s responsibility to provide interconnected customers with any degree of certainty or assurances with regards to cost recovery, financeability, or return on investment expectations relating to an individual customer’s decision to invest in their own customer generation.

3) Develop a smart export time period/rate offering and transparent rate calculations for time-varying cost-based (i.e., based on the “value of solar”) rates for exported energy.

4) Address the current Schedule Q rate methodology (for existing Schedule Q customers, referred to in this proposal as “Legacy Schedule Q Customers,” who will have the option to be grandfathered) in conjunction with introducing a “value of solar” concept to setting export energy payment rates.

5) KIUC’s engineering and system operations team would like to see the requirement for installing curtailment meters relaxed or altogether removed for exporting systems under a certain size;

6) Replacing existing right sizing criteria (currently applicable to all customer-sited DER photovoltaic (“PV”) systems) with a PV-to-Battery ratio (aka, energy ratio) criteria (to be applicable only to Smart Export customers);

7) To the degree attainable, KIUC endeavors to remove the need for KIUC to be able to perform physical curtailment of customer-sited DER by replacing the requirement for curtailment meters with financially-based export and non-export periods.

8) Transparent methodology for determining time and duration of non-export periods.

9) Remove risk to both interconnected DER customers and to KIUC that are associated with changing grid conditions, curtailment requirements, solar value, and costs.

In order for these new Schedule Q DER options (i.e., Smart Export and Self Supply) to be effective and function properly, it is KIUC’s position that its existing Schedule Q tariff needs to be revised to simultaneously (1) incorporate such new Smart Export and Self Supply DER options, (2) close the existing Schedule Q tariff options to further enrollment, and (3) revise the methodology utilized to set rates for KIUC’s existing Schedule Q tariff, as further discussed below. To do otherwise would allow the proposed new Smart Export and Self Supply DER options to compete with the existing Schedule Q tariff options and could result in DER customers choosing to subscribe to the existing Schedule Q tariff options over the new Smart Export and Self Supply tariff options. This would result in the new Smart Export and Self

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9 Examples of customer’s specific needs include differing strategies for managing their loads and generation on their side of the KIUC revenue meter, timing export to take advantage of varying time period rates, and self-supply during defined “non-export” periods or as a mode of operation.
Supply Schedule Q DER tariff options not achieving the very objectives for which such options were conceived: to take advantage of technological advancements and compensate customer generators for their respective exported energy at rates based on the value of the exported energy for use by the utility’s other ratepayers/customers. KIUC recognizes that ceasing to offer its existing Schedule Q program in its current form will be challenging, but believes that doing so is crucial to meeting the stated objectives. Among those challenges are the following:

(1) As noted above, the vast majority of customers currently interconnected with KIUC are currently served under KIUC’s existing Schedule Q tariff (sometimes referred to in this proposal as KIUC’s “Legacy Schedule Q Program”). These Legacy Schedule Q Customers may have become used to the now obsolete and non-compliant payment methodology and operational modes.\(^{10}\)

(2) Very few, if any, of these Legacy Schedule Q Customers have a Smart Inverter. Smart Inverters are key to controlling inverter output to prevent export during Non-Export periods and/or to meet KIUC’s Inadvertent Export requirement. This said, KIUC acknowledges that it is possible to add, to a Legacy Schedule Q system, the controls necessary to control time of export, albeit such modification could be costly.

(3) Some Legacy Schedule Q Customers do not have a KIUC standard meter, which is a smart meter capable of recording export by time stamp. This would preclude a customer from taking advantage of any rate mechanism that requires capturing energy by time stamp, including exported energy and net energy usage purchase rates.

(4) Leaving the Legacy Schedule Q Program intact in its current form perpetuates one of the very problems KIUC seeks to solve with its proposed new Smart Export and Self Supply Schedule Q tariff options: that there is no way for KIUC to physically effectuate curtailment on this group of customers without requiring after-the-fact addition of a curtailment meter.

(5) Allowing Legacy Schedule Q Customers to remain on the Legacy Schedule Q Program, without any changes, does not provide any incentive for upgrading to a newer Smart Inverter and, in fact, provides protections against curtailment which would not be fair to those enrolled in the new Smart Export tariff option, given that all customers served under the new Smart Export tariff option would essentially feel the effects of curtailment by virtue of the Non-Export period and the Curtailment Adjustment during the Daytime Shoulder period, as discussed in further detail below.

\(^{10}\) In 2008, the Commission opened Docket No. 2008-0069 to, among other things, establish a methodology that removes or significantly reduces any linkage between the price of fossil fuels and the rate for the nonfossil fuel generated electricity. In other words, the subject docket was opened to determine the appropriate methodology or methodologies for calculated Schedule Q payment rates, given the applicable law, including Hawaii Revised Statutes § 269-27.2, as amended. Because it was recognized that the legacy Schedule Q program was not fully in compliance with HRS § 269-27.2, as amended, KIUC and the Consumer Advocate (together, “Parties”) submitted a Stipulated Settlement on KIUC’s Schedule Q Methodology (“Parties’ Stipulation”) filed on December 13, 2013, which was further updated on September 21, 2015 in response to PUC-IR-1 in Docket No. 2008-0069. Refer to the Parties’ Stipulation and the September 21, 2015 Response to PUC-IR-1, both of which are hereby incorporated herein by reference.
The need to protect the Legacy Schedule Q Customers from unreasonable financial harm, but not at the expense of providing an unfair advantage over the Smart Export subscribers by receiving a rate for export purchase that is higher than the weighted effect of the Smart Export purchase rates.

Developing export purchase rates for the non-standard KIUC revenue meter customers that are fair and consistent with the value of solar concept, but not punitive, is a delicate process.

To address these challenges, KIUC considered a number of options, as noted below:

(1) **Option 1**: Develop only a Smart Export tariff proposal (i.e., no other revised DER tariffs proposed), which would meet the Commission’s requirements as noted in Decision and Order No. 34354. While this may be the easiest option, it would not meet most of the objectives discussed above.

(2) **Option 2**: Develop a Smart Export tariff proposal with a companion Self Supply tariff proposal, without making any changes to the Legacy Schedule Q Program, and allowing new DER customers to choose between these three options (i.e., Smart Export, Self Supply, and Legacy Schedule Q Program). However, this leaves KIUC without the ability to enforce a non-export period or to subject Legacy Schedule Q Customers to curtailment. As such, this option would treat Legacy Schedule Q Customers differently and potentially more favorably when compared to other DER customers enrolled in the new DER tariff options. To further exacerbate this issue, the large majority of Legacy Schedule Q Customers have never been subjected to curtailment and perhaps, under certain solar saturation conditions, should have had they been required to install a curtailment meter to allow for that curtailment. To that end, these Legacy Schedule Q Customers have actually been rewarded by the fact that KIUC has been curtailting KIUC’s own utility-scale systems (e.g., KRS 1, KRS 2) on their behalf without charging the cost-causers (those Legacy Schedule Q Customers that are not subject to curtailment). In effect and contrary to KIUC’s members’ interests, all of KIUC’s members have been paying Legacy Schedule Q Customers for unneeded energy being exported to the grid, while continuing to pay for the cost of KIUC’s utility-scale PV systems. While it would seem natural that KIUC would have addressed this issue prior, until now, the value of addressing the issue was overshadowed by the effort it would have taken to retroactively: (1) put in place curtailment meters for all customers that currently do not have one, or (2) invoke some type of financial curtailment value netted against the Schedule Q payment rate. Lastly, offering Smart Export and Self Supply tariff options and the Legacy Schedule Q Program could result in customer confusion and onerous KIUC administrative efforts associated with having three different options and having to fairly administer curtailment through some sort of financial curtailment mechanism for the Legacy Schedule Q Customers.

(3) **Option 3**: Develop a Smart Export tariff with a companion Self Supply tariff and preserve the Legacy Schedule Q Program without changes to its rate methodology, but do not allow new enrollment in the Legacy Schedule Q Program as of a certain date. Under this option, Legacy Schedule Q Customers could be grandfathered and all new DER interconnections after a certain date would be required to choose between the Smart Export tariff option and the Self Supply tariff option. As with Option 1, this leaves approximately 3,500 Legacy Schedule Q Customers.
Q Customers without the ability to be physically or financially curtailed without requiring the installation of curtailment meters and/or adjustments to the Legacy Schedule Q Program payment rate to effectuate some form of financial curtailment. Again, this treats Legacy Schedule Q Customers differently and potentially more favorably when compared to customers enrolled in the Smart Export or Self Supply tariff options.

(4) Option 4: Develop a Smart Export tariff with a companion tariff Self Supply tariff and seek a repeal of the Legacy Schedule Q Program, requiring that all customers who desire to enroll in a DER tariff enroll under either a new Smart Export or Self Supply tariff. The challenge with this approach is that creating new Smart Export and Self Supply tariffs within KIUC’s Tariff No. 1 would be relatively burdensome and time consuming (as compared to effectuating the new tariff options via modifications to the Schedule Q tariff), and may result in customer confusion. In addition, the Legacy Schedule Q Customers with legacy (i.e., non-smart) inverters would likely not be capable of honoring the Non-Export period and/or the Inadvertent Export requirement without significant modifications to their respective control systems. Also, the Legacy Schedule Q Customers that opted to have a non-standard KIUC revenue meter (i.e., non-smart meter) cannot be compensated for exported energy based on time varying periods and rates. This group of customers would necessarily have to accept a single rate for all exported energy, regardless of the period of export. That rate, in fairness to all others, would need to be based on some methodology that takes into consideration some assumed amount of non-export period energy that does not have any value to KIUC. KIUC believes that this would be a complicated and confusing process for these Legacy Schedule Q Customers.

(5) Option 5 (KIUC’s chosen option, which formed the basis for KIUC’s Comprehensive Proposal): Revise the existing Schedule Q tariff to include two proposed new Schedule Q DER options (i.e., Smart Export and Self Supply, which would essentially replace the “Export” and “No Export” options currently provided under the existing Schedule Q tariff). See Exhibit 2 for proposed redlines to KIUC’s Schedule Q Tariff reflecting these two proposed new Schedule Q options. Additionally, the payment rate for Legacy Schedule Q Customers would be a flat rate for all exported energy, determined according to the methodology set forth in the Parties’ Stipulation in Docket No. 2008-0069.

Option 5 provides the benefit of simply revising KIUC’s Schedule Q tariff as a way to incorporate the new DER program offerings (i.e., Smart Export and Self Supply) without rescinding the Schedule Q tariff in its entirety. This Option 5 preserves the applicability of standard rates for purchase from QFs with a design capacity of 100kW or less and therefore is in compliance with The Public Utility Regulatory Policies Act (aka, PURPA) and HAR § 6-74-22.

From a technical perspective, KIUC realizes that there may be challenges in addressing size limitations, right size requirements, or a set-aside limit on aggregate capacity. KIUC acknowledges that in order for the proposed new Smart export and Self Supply Schedule Q tariff options to be compliant with HAR Chapter 74, which, among other things, requires that utilities offer a standard rate for purchase from qualifying facilities with a design capacity of 100kW or less, the setting of any size limits or operational requirements would need to be accomplished through KIUC’s Tariff No. 2 (i.e., interconnection standards and requirements) review and approval process, not within the Schedule Q tariff. In other
words, KIUC believes it is critical to separate the financial transactions (i.e., Smart Export, Self Supply, and financial arrangement for Legacy Schedule Q Customers, all proposed to be reflected in KIUC Tariff No. 1) from the technical interconnection requirements (e.g., interconnection standards and requirements to enable Smart Export and Self Supply systems).

After careful review of the above five options, KIUC’s proposes to design and implement its new Smart Export and Self Supply tariff options based on Option 5. The following sections capture the essential elements of KIUC’s Comprehensive Proposal (financial transaction and technical requirements) addressing the Decision and Order No. 34534 Issues (which incorporates the Option 5 approach discussed above).

**Option 5: Schedule Q Tariff Revisions to Incorporate New Smart Export and Self-Supply Tariff Options and Treatment of Legacy Schedule Q Customers**

Under this Option 5 and as discussed above, KIUC’s Schedule Q tariff would be revised to include three options:

1. Smart Export Option
2. Self Supply Option
3. Legacy Schedule Q Option

**Smart Export Option**

**Objectives:**

1. Align value of energy with payments for same across defined varying time periods.
2. Integrate measurable and verifiable grid services value into payments.
3. Reduce or remove the need to require a curtailment meter for customer-sited DER systems under 100kW.

**Key Provisions:**

1. No capacity limits below the 100kW HAR § 6-74-22(b) requirements. Any limits would be set by the technical interconnection review and interconnection standards. In this manner, the Smart Export option is durable, meaning it will not have to be modified if technology or grid conditions necessitate changes in the near future. If there is a need to set technical capacity limits for the Smart Export option, it would be accomplished through the technical and interconnection requirements process.

2. Applicability: Customers with a PV/BESS system and a smart meter who want the right to export energy and receive compensation for that exported energy.
3. Time varied periods and rates are the basis for export energy compensation under the Smart Export option. KIUC proposes periodic review of the varying time periods and the rates. This is to ensure that alignment between the value and payments remains consistent with the program objectives over time. It also mitigates risks for KIUC and interconnected DER customers by refreshing the periods and rates on a routine basis. KIUC proposes that the periods and rates may be refreshed: (1) annually, by a review of production costing, marginal PV generation costs, dispatch, and curtailment requirements; and/or (2) upon the occurrence of a “Triggering Event.” For illustrative purposes only, the following are examples of the types of events that KIUC may consider to be a “Triggering Event”, depending upon the specific circumstances at the time the event occurs and the degree of impact such event would have on the reasonableness of the time varying export periods and corresponding rates: the commissioning of a utility scale renewable energy project (e.g., when AES Lawai Solar comes online in 2018); changes to air permit limits, that have a significant impact on dispatch during the solar irradiance period; the addition of a pumped storage project that results in greater value to energy exported during certain export periods; etc.. The methodologies for establishing the time periods and rates are described further below.

4. Separate the technical requirements from financial transactions by addressing technical standards/requirements as part of the interconnection process. A provision in the Smart Export tariff will state that the customer must have entered into the appropriate (for the payment rate structure the customer has elected) interconnection agreement with KIUC and has agreed to abide by the conditions/requirements placed therein.

5. Payment terms: monthly credits applied to electric service billing. Annually, customer may elect to take any unused credits in the form of a check from KIUC or roll over credits for use in the following year. This is consistent with how Schedule Q credits are applied currently.

6. Forfeiture of credits: unnecessary, as interconnection agreement will specify energy ratio criteria, which will inherently limit the amount of credit that the customer can receive.

**Methodology for Defining Time-Varying Export Periods:**

1. The Smart Export tariff will have four defined time periods for the purposes of setting rates. Exact time definitions of periods and payment rates offered for exports during each period may be revisited on an annual basis or upon the occurrence of a Triggering Event, as noted above. Some periods may not have differentiated rates initially. Establishing four periods initially builds customer recognition and understanding of a framework to accommodate robust and targeted time differentiated pricing if future system conditions require it.

2. **Non-Export Period**: A period of a few hours at mid-day when the system is least benefitted by additional customer exports to the grid, and the risk is greatest that such exports may cause operational problems associated with non-curtailable generation exceeding load. KIUC currently balances load during periods of excess daytime generation by curtailing output from KRS 1 Anahola and KRS 2 Koloa solar facilities. Analysis of recent data\(^ {11} \) showed that approximately 95% of periods when curtailment of KRS 1 and KRS 2 exceeded 12 MW (out of 24 MW nameplate) occurred between 12:00 noon and 2:00 pm (Hours Ending, or “HE” 13 – 14). When

\(^ {11} \) July 2016 through February 2017 one-minute data from KRS 1 and KRS 2.
measured as a percentage of potential curtailment, the critical window widens. Approximately 84% of periods when curtailment reached 50% of full predicted output occurred between 11:00 am and 3:00 pm (HE 12 – 15). Balancing the risk of operational challenges associated with excess curtailment against the interests of DER customers to minimize the period with zero payment rate, KIUC proposes an initial Non-Export period of three (3) hours duration between 12:00 noon and 3:00 pm (HE 13 – 15).

3. **Daytime Shoulder Period**: Curtailment of KRS 1 and KRS 2 is manageable from an operations perspective, but it nonetheless represents cost inefficiencies for KIUC customers. KIUC members own and are therefore responsible for the cost to own and operate KRS 1 and KRS 2. These costs are independent of production at the facility and these costs are not reduced when output is curtailed. Any additional exports to KIUC’s system that forces curtailment of KRS 1 or KRS 2 has no value to KIUC customers. The daytime shoulder period is intended to capture hours of the day when excess solar generation, though not a threat to the operator’s ability to physically balance load and non-curtailable generation, may nevertheless lead to such a reduction in value of customer exported energy. In the 9 months from June 2016 through February 2017, KIUC curtailed its own solar facilities by at least 1 MW for periods in all hours between 8:00 am and 6:00 pm (HE 9 – 18). More than 99% of these significant curtailment periods occurred in the slightly narrower window from 9:00 am to 4:00 pm (HE 10 – 16). KIUC proposes that the Daytime Shoulder Period be defined as all hours between HE 10 and 16 other than those already defined in the Non-Export Period. The Daytime Shoulder Period would be initially defined as 9:00 am to 12:00 noon and 3:00 pm to 4:00 pm.

4. **System Peak Period**: In all twelve months from July 2016 through June 2017 KIUC’s monthly system peak occurred between the hours of 6:00 pm and 9:00 pm (HE 19 – 21). The highest system peak during those twelve months occurred at HE 20. KIUC proposes that the System Peak Period be defined as all hours between HE 19 – 21 because it is highly likely that such a period will capture the time each day when load is highest.

5. **Other Hours Period**: All hours not defined as part of one of the above three periods would be included in the Other Hours Period. KIUC’s proposes that the Other Hours Period include HE 1 through 9, HE 17 through 18, and HE 22 through 24.

**Methodology for Calculating Time-Varying Export Payment Rates:**

1. Energy exports under the Smart Export option will be compensated at a specific rate according to the time period when the energy is put on the grid as measured by the customer’s standard meter.

2. The export payment rate during the Non-Export Period will be zero. KIUC proposes using this rate as a price signal to customers to manage their own systems to avoid or minimize exports during this time rather than prohibiting exports during this period or requiring the installment of a curtailment meter.

3. Payment rates during the other periods will be tied to a “base rate” that will be routinely refreshed (annually and/or upon the occurrence of a Triggering Event, as discussed above). The base rate will be based on the next long-term, cost-effective resource addition that KIUC would add to its system (either by building the resource addition itself or by procuring such resource addition through a power purchase agreement). Currently the next resource addition that KIUC
plans to add to its system (the AES-Lawai facility) is a solar energy plus battery energy storage system (PV + BESS). KIUC proposes using the all-in PPA rate of $0.1108/kWh (i.e., the rate for the AES-Lawai facility that was approved by the Commission pursuant to Decision and Order No. 34723, issued on July 28, 2017, in Docket No. 2017-0018) as the base rate in the Smart Export option. Energy from a PV + BESS resource is dispatchable in any period of the day, and can be stored rather than dispatched during daytime periods when there is excess generation.

4. The export payment rate during the Daytime Shoulder Period will be equal to the base rate minus a Curtailment Adjustment. As discussed above, energy exports that result in curtailment of KIUC’s existing KRS-1 or KRS-2 solar PPA resources provide no energy value to KIUC customers. The Curtailment Adjustment adjusts the base rate to account for exports received during this period that result in curtailment. On an annual basis, KIUC will forecast expected curtailment (in MWh) during the Daytime Shoulder Period only, as well as expected exports from all NEM, NEM Pilot, Schedule Q and Smart Export customers. The forecasts will be made in the same production cost modeling used in determining the annual fuel and purchased power budgets. The Curtailment Adjustment will be calculated as: expected curtailment times the base rate, divided by expected customer exports from NEM, NEM Pilot, Schedule Q and Smart Export.

5. The export payment rate during the System Peak Period will be equal to the base rate plus a Peak Adder. KIUC is in the process of adding several large PV + BESS resources that will combine to provide 152 MWh of daily cycle dispatchable storage that KIUC can dispatch to effectively flatten KIUC’s generation requirements from other resources and virtually eliminate system peaks. As a result, at this time, customer exports received during the System Peak Period are not expected to have additional value relative to other non-daytime hours and therefore, the Peak Adder is currently valued at $0.00. Should future system conditions change, KIUC would adjust the Peak Adder value as appropriate.

6. The export payment rate during the Other Hours Period will be equal to the base rate.

**Self Supply Option**

**Objectives:**

1. Provide an option to replace the current Schedule Q No Export option.

2. Allow customers to meet some or all of their own electric energy requirements.

3. Separate the technical requirements from financial transactions by addressing technical standards/requirements in the interconnection process. Provision will state that the customer must have an active interconnection agreement with KIUC and has agreed to abide by the conditions/requirements placed therein.

4. May be best option for customers that install batteries such that customer can manage generation and loads to optimize investment in PV/Battery Storage System.
Key Provisions:

1. Applicability: Customers with a PV system or a PV/BESS system, and a smart meter, that desire a mode of operation that allows them to meet some or all of their own electric energy requirements without exports to the grid (other than inadvertent).

Legacy Schedule Q Option

Objectives:

1. Set a single rate applicable to all exported energy from Legacy Schedule Q Customers with the understanding that the majority of Legacy Schedule Q Customers do not have advanced inverters capable of limiting export to certain designated periods.

2. Builds in curtailment of a financial nature to avoid the need for curtailment meters.

3. Will not provide the same level of compensation as the Smart Export option, so that there remains an incentive to upgrade to a smart inverter.

4. Any changes in size, technology, configurations, including the addition of panels, batteries, upsizing of inverters, addition of inverter or other, will result in ineligibility for Legacy Schedule Q Option; in which case the customer will have the option to enroll in the Smart Export option or the Self Supply option.

Key Provisions:

1. Applicable only to Legacy Schedule Q Customers.

2. Monthly payment for all exported kWh will be a flat rate for all exported energy, determined according to the stipulated methodology set forth in the Parties’ Stipulation in the Schedule Q docket (aka, Docket No. 2008-0069) (currently, that rate would be $0.1008/kwh, as noted in the September 21, 2015 Response to PUC-IR-1, filed in Docket No. 2008-0069).

Methodology for Calculating Single Rate:

1. Refer to the following filings from Docket No. 2008-0069, which filings are hereby incorporated herein by reference:
   a. Stipulated Settlement on KIUC’s Schedule Q Methodology Between Kauai Island Utility Cooperative and The Division of Consumer Advocacy, filed on December 13, 2013, in Docket No. 2008-0069; and
**Interconnection Standards and Requirements**

In its efforts to strike a reasonable and prudent balance between preserving the safety and reliability of KIUC’s grid, while at the same time, encouraging the deployment of new DER options such as its new Smart Export and Self Supply Schedule Q tariff options, KIUC developed technical/interconnection requirements and standards that correspond to the proposed new Smart Export and Self Supply tariff options. The specific technical requirements that correspond with the Smart Export option and the Self Supply option are set forth in detail in Exhibit 3.
EXHIBIT 2
Availability of Service:

This schedule is available to customers with cogeneration and/or small power production facilities which qualify under the Commission's Rules, Chapter 74 of Title 6, Chapter 2, and which have a design capacity of 100 kW or less. Such Qualifying Facilities (QF) shall be designed to operate properly in parallel with the Company's system and in accordance with KIUC Tariff No. 2 (Distributed Generation Interconnection Policies and Procedures). A customer under and/or subject to this schedule (Schedule “Q” customer) must have a signed Interconnection Agreement with the Company prior to operation of its facilities in parallel with the Company’s grid.

A Schedule “Q” customer has the following options under this schedule, which shall be expressed in a Schedule Q Agreement between the customer and the Company and which will affect the determination of the energy and applicable monthly metering charges:

Option 1 - **Self Supply**: The customer does not sell any energy to the Company, and purchases from the Company its net load requirements, as determined by appropriate meter(s) a Standard Meter (which is a prerequisite to be eligible for this Option 1) located at one delivery point.

Option 2 - **Smart Export**: The customer sells to the Company (per the below section entitled “Smart Export Credits or Payments”) the energy produced by the QF in excess of the customer's total load, and purchases from the Company its net load requirements, as determined by appropriate a Standard mMeter(s) (which is a prerequisite to be eligible for this Option 2) located at one delivery point.

Legacy Q Option - **Legacy Q**: Effective as of [**insert effective date**], all customers who are, as of that same date, existing Schedule “Q” customers, will be enrolled in this Legacy Q option. If any such customer desires to subsequently enroll in the Self Supply option or Smart Export option, such customer may do so by satisfying all of the tariff requirements applicable to the chosen option, including entering into a new Schedule Q Agreement and a new Interconnection Agreement with the Company. By enrolling in the Self Supply option or Smart Export option, the customer permanently relinquishes its right to enroll in this Legacy Q option. Further, any modifications to a Legacy Q system may require the customer whose Legacy Q system was modified to permanently relinquish...
such customer’s right to enroll in the Legacy Q option; in such case,
the customer may enroll in the Self Supply option or Smart Export
option by satisfying all of the tariff requirements applicable to the
chosen option, including entering into a new Schedule Q Agreement
and a new Interconnection Agreement with the Company. Under
this Legacy Q option, the customer sells to the Company (per the
below section entitled “Legacy Q Credits or Payments”) the energy
produced by the QF in excess of the customer’s total load, and
purchases from the Company its net load requirements, as
determined by appropriate meter(s) located at one delivery point.

MEASUREMENT OF ENERGY AND DETERMINATION OF CAPACITY

Energy and capacity supplied by the Company to the Schedule “Q” customer and/or produced by
the QF shall be determined by appropriate meter(s) located at one delivery point. Such meter(s)
shall be capable of determining energy and billing demand, where and as applicable, from the
Company to the customer to supply the customer’s net or total load as required under the rate
schedule appropriate for such deliveries. The excess or total energy produced by the QF shall be
determined by means of meter(s) other than those used to determine the net or total energy
requirements of the customer’s load.

MONTHLY CHARGES FOR DELIVERY FROM THE COMPANY TO THE CUSTOMER

Charges for energy and demand, where and as applicable, for the Company to serve the
Schedule “Q” customer’s net or total load shall be determined according to the rate schedule
appropriate or applicable for the customer.

CHARGES FOR SPECIAL FACILITIES

There shall be additional charges to cover the cost of any special metering, safety equipment and
other local facilities installed by the Company due to the QF, as follows:
SCHEDULE “Q” MODIFIED (Continued)

Purchases From Qualifying Facilities - 100KW Or Less

Metering Charge

In the event a Schedule “Q” customer is not subject to and/or charged a customer charge by the Company, that customer shall be charged, in addition to any other amounts or charges due or owing, a metering charge under this schedule as follows:

**Option 1** - Where the customer does not sell electricity to the Company, a detent shall be used on the energy meter to prevent reverse rotation. The cost of such meter alteration shall be paid by the customer as part of the Local Facilities Charge described below.

**Option 2** - Where the type of power exported by the customer to the Company is single phase (unless customer requests polyphase interconnection): $24.74 per month.

Where the type of power exported by the customer to the Company is polyphase and/or the customer requests a polyphase interconnection regardless of the type of power actually exported: $37.13 per month.

Notwithstanding the above, where a Schedule “Q” customer is also subject to and/or charged a customer charge by the Company, that customer shall not be subject to the above metering charge.
Local Facilities Charge

Additional charges to cover "Interconnection Costs" incurred by the Company shall be determined by the Company on a case-by-case basis and collected from the customer. "Interconnection Costs" for purposes of this schedule mean the reasonable costs of connection, switching, metering, transmission, distribution, safety provisions and administrative costs incurred by the Company directly related to the installation and maintenance of the physical facilities necessary to permit interconnected operations with a QF, to the extent such costs are in excess of the costs which the Company would have incurred if it had not engaged in interconnected operations. Except as otherwise specifically set forth above, the cost of metering facilities shall be covered by the Metering Charge discussed above and shall not be included in the Local Facilities Charge. The customer shall make a one-time payment for the Local Facilities Charges at the time of installation of the required additional facilities.

**SMART EXPORT MONTHLY CREDITS OR PAYMENTS FOR EXCESS OR TOTAL ELECTRICAL ENERGY PRODUCED BY QF:** The Company shall give an energy credit or payment (Smart Export Rate) to the Schedule “Q” customer enrolled in the Smart Export option for any electrical energy delivered to the Company by that Schedule “Q” customer. The Smart Export payment rate for the energy credit or payment is posted on the Company’s website at http://website.kiuc.coop/content/rate-information (under Rate Data Sheets). As of [**insert effective date**], the Smart Export Rate is as described in the table below. The Smart Export Rate is to be determined and applied in accordance with the terms of Decision and Order No. in Docket No. 2014-0192.

<table>
<thead>
<tr>
<th>Smart Export Period</th>
<th>Applicable Hours</th>
<th>Applicable Rate ($/MWh)</th>
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<tbody>
<tr>
<td>Non-Export</td>
<td>Noon to 3 pm</td>
<td>$0.00</td>
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<td>Daytime Shoulder</td>
<td>9 am to Noon; 3 pm to 4 pm</td>
<td>Base Rate minus Curtailment Adjustment</td>
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<td>System Peak</td>
<td>6 pm to 9 pm</td>
<td>Base Rate plus Peak Adder*</td>
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<tr>
<td>Other Hours</td>
<td>4 pm to 6 pm; 9 pm to 9 am</td>
<td>Base Rate</td>
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</tbody>
</table>

* As of [**insert effective date**], the Peak Adder is valued at $0.00

**LEGACY Q CREDITS OR PAYMENTS:** The Company shall give Energy Credit. Aan energy credit or payment from the Company to the Schedule “Q” customer (Legacy Q Rate) shall be given to the Schedule “Q” customer enrolled in the Legacy Q option for any electrical energy delivered to the Company by that Schedule “Q” customer.QF. The Legacy Schedule “Q” Modified payment RRate for the energy credit or payment is posted on the Company’s website at http://website.kiuc.coop/content/rate-information (under Rate Data Sheets) and shown in the applicable Fuel and Purchased Power Rate Adjustment report filed with the Commission.

As of [**insert effective date**], the Legacy Q Rate is $100.80 per MWh. The Legacy Q Rate is to be determined and applied in accordance with the terms of Decision and Order No. in Docket No. 2014-0192.
This energy credit or payment shall be determined by establishing a base Schedule “Q” Modified payment rate for the applicable calendar year as further described below, and then making an adjustment for each applicable billing period as further described in Sheet 99 of this tariff.

The base Schedule “Q” Modified payment rate (also known as annual rate) for each calendar year shall be based on the cost of fuel for Company generation and the budget heat rate as shown in the applicable December filing of the Fuel and Purchased Power Rate Adjustment report filed with the Commission (under Derivation of Schedule “Q” Modified Avoided Energy Cost Payment Rates).

Issued: August 20, 2012

Effective: September 20, 2012

By: Timothy Blume, Regulatory Affairs Manager
    David Bissell, President & Chief Executive Officer

Decision and Order No. 8332, and Tariff Order (December 31, 2008; and March 5, 2009), and Decision and Order No. 8332.
BILL CREDITS AND RENDERING OF CREDITS/PAYMENTS: Any billing credits not used to offset amounts owed to the Company will be carried over to the following month’s bill(s) and will continue to be available to offset monies owed to the Company; provided, however, that for any unused or carried-over credits that remain unused at the end of a calendar year, the customer will have until January 31 of the following year to submit to the Company a written notice that customer desires to either (1) continue to carry over the unused credits to the following calendar year, or (2) request for payment for any of these unused credits at the applicable rate (i.e., either Smart Export Rate or Legacy Q Rate, as applicable). If no such notice is provided within the specified time period, then the Company shall have the discretion of either (1) carrying over such credits to the next calendar year, or (2) paying the customer for the amount of such credits at the applicable rate (i.e., either Smart Export Rate or Legacy Q Rate, as applicable).

Adjustments - On the first day of each month, an Adjustment shall be made to the base Schedule “Q” Modified payment rate described in Sheet 98 above to reflect the Company-generated composite fuel price on file with the Commission and shall be effective for that same billing month.

The Adjustment shall be the sum of the time-weighted on-peak adjustment (14 hours of 24 hours) and off-peak adjustment (10 hours of 24 hours). On-peak and off-peak adjustments shall be determined by the amount of the Company-generated composite fuel price increase or decrease (in terms of cents per million BTU) from the base rate described in Sheet 98 above (in terms of cents per million BTU) multiplied by an on-peak heat rate and an off-peak rate (in BTU per net Kilowatthour). The on-peak heat rate and off-peak heat rate for a given calendar year can be found in the December filing from the prior year of the Company’s Fuel and Purchased Power Rate Adjustment report filed with the Commission (under Derivation of Schedule “Q” Modified Avoided Energy Cost Payment Rates).

The above is consistent with the terms of the Company’s operations and may be revised to reflect any revisions or changes in operations, subject to approval by the Commission.
<table>
<thead>
<tr>
<th>Issued:</th>
<th>August 20, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>By:</td>
<td>Timothy Blume, Regulatory Affairs Manager, David Bissell, President &amp; Chief Executive Officer</td>
</tr>
<tr>
<td>Effective:</td>
<td>September 20, 2012</td>
</tr>
</tbody>
</table>

Decision and Order No. 8332; and Tariff Order (December 31, 2008 and March 5, 2009), Decision and Order No.
EXHIBIT 3
## Technical Proposal

<table>
<thead>
<tr>
<th>System Max kW Export Determination</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Only</td>
<td>N/A</td>
<td>PV Inverter</td>
</tr>
<tr>
<td>DC Coupled PV/BESS</td>
<td>Hybrid Inverter</td>
<td>Hybrid Inverter</td>
</tr>
<tr>
<td>AC Coupled PV/BESS</td>
<td>*Greater of PV or BESS Inverter</td>
<td>Greater of PV or BESS Inverter</td>
</tr>
</tbody>
</table>

*If PV output is greater than load, BESS kW discharge is limited in that the System Max kW Export Determination is not violated.*
<table>
<thead>
<tr>
<th>Energy Ratio Criteria</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Only</td>
<td>Not allowed</td>
<td>Not required</td>
</tr>
<tr>
<td>PV/BESS Max kW export ≤ 10kW</td>
<td>Ratio (PV energy @ 20% cf / Bess energy) &lt; 2</td>
<td>Not required</td>
</tr>
<tr>
<td>PV/BESS Max kW export &gt; 10kW</td>
<td>Ratio (PV energy @ 20% cf / Bess energy) &lt; 1.5</td>
<td>Not required</td>
</tr>
</tbody>
</table>
## Technical Proposal (continued)

<table>
<thead>
<tr>
<th>DER Technical Requirement</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-phase (or phase balancing)</td>
<td>System Max kW Export &gt; or = 20 kW</td>
<td>System Max kW Export &gt; or =20 kW</td>
</tr>
</tbody>
</table>
## Technical Proposal (continued)

<table>
<thead>
<tr>
<th>DER Technical Requirement</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volt/Watt Function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priority 1</td>
<td>-Mode: Pre-disturbance</td>
<td>Not required</td>
</tr>
<tr>
<td></td>
<td>-OV DB edge: 1.06pu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Droop: 4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Response Time: 10 sec</td>
<td></td>
</tr>
</tbody>
</table>
## Technical Proposal (continued)

<table>
<thead>
<tr>
<th>DER Technical Requirement</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
</table>
| Volt/Var Reactive PP Function - Priority 2 | -Voltage DB: 0.97-1.03 pu  
- Volt Operating min: 0.93 pu  
- Volt Operating max: 1.06 pu  
- OV Droop: 3%  
- UV Droop: 4%  
- Response Time 10 seconds | Not required |
<table>
<thead>
<tr>
<th>Return to Service Reconnection Time Delay</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max kW Export &lt; or = 10kW</td>
<td>Not required</td>
<td>Not required</td>
</tr>
<tr>
<td>Max kW Export &gt; 10kW</td>
<td>300-600 seconds settable</td>
<td>Not required</td>
</tr>
</tbody>
</table>
Technical Proposal (continued)

<table>
<thead>
<tr>
<th>Power Factor Capability</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max kW Export &lt; or = 10kW</td>
<td>0.95 lead/lag</td>
<td>Not required</td>
</tr>
<tr>
<td>Max kW Export &gt; 10kW</td>
<td>0.90 lead/lag</td>
<td>Not required</td>
</tr>
</tbody>
</table>
Technical Proposal (continued)

<table>
<thead>
<tr>
<th>Inadvertent Export Time Limit</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max kW Export $&lt; \text{ or } = 10$ kW</td>
<td>n/a</td>
<td>$&lt; 30$ seconds</td>
</tr>
<tr>
<td>Max kW Export $&gt; 10$ kW</td>
<td>n/a</td>
<td>$&lt; 10$ seconds</td>
</tr>
</tbody>
</table>
Technical Proposal (continued)

<table>
<thead>
<tr>
<th>Inadvertent Export Energy Threshold</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max kW Export &lt; or = 10kW</td>
<td>n/a</td>
<td>Monthly not to exceed energy: max kW export * 1-hour</td>
</tr>
<tr>
<td>Max kW Export &gt; 10kW</td>
<td>n/a</td>
<td>Monthly not to exceed energy: max kW export * 0.33-hour</td>
</tr>
</tbody>
</table>
Technical Proposal (continued)

<table>
<thead>
<tr>
<th>DER Technical Requirement</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIUC AMI Curtailment Meter</td>
<td>Not required</td>
<td>Not Required</td>
</tr>
</tbody>
</table>
## Technical Proposal (continued)

<table>
<thead>
<tr>
<th>DER Technical Requirement</th>
<th>Smart Export Tariff</th>
<th>Self Supply Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage Ride Through Table</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Region</td>
<td>Voltage at Point of Interconnection (percent of Nominal Voltage)</td>
<td>Ride Through Until (s)</td>
</tr>
<tr>
<td>Over-Voltage 2</td>
<td>V &gt; 120%</td>
<td>N/A</td>
</tr>
<tr>
<td>Over-Voltage 1</td>
<td>120% ≥ V &gt; 110%</td>
<td>0.92</td>
</tr>
<tr>
<td>Continuous Operation</td>
<td>110% ≥ V &gt; 100%</td>
<td>indefinite</td>
</tr>
<tr>
<td>Continuous Operation</td>
<td>100% &gt; V ≥ 88%</td>
<td>indefinite</td>
</tr>
<tr>
<td>Under-Voltage 1</td>
<td>88% &gt; V ≥ 70%</td>
<td>20</td>
</tr>
<tr>
<td>Under-Voltage 2</td>
<td>70% &gt; V ≥ 50%</td>
<td>10-20</td>
</tr>
<tr>
<td>Under-Voltage 3</td>
<td>50% &gt; V</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### Frequency Ride Through Table

<table>
<thead>
<tr>
<th>Operating Region</th>
<th>Frequency at Point of Interconnection</th>
<th>Ride Through Until (s)</th>
<th>Operating Mode</th>
<th>Default Maximum Trip Time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-Frequency 2</td>
<td>f &gt; 65.0</td>
<td>N/A</td>
<td>Permissive Operation</td>
<td>0.16</td>
</tr>
<tr>
<td>Over-Frequency 1</td>
<td>65.0 ≥ f &gt; 63.0</td>
<td>20</td>
<td>Mandatory Operation</td>
<td>21</td>
</tr>
<tr>
<td>Continuous Operation</td>
<td>63.0 ≥ f &gt; 60.0</td>
<td>indefinite</td>
<td>Continuous Operation</td>
<td>N/A</td>
</tr>
<tr>
<td>Continuous Operation</td>
<td>60.0 &gt; f ≥ 57.0</td>
<td>indefinite</td>
<td>Continuous Operation</td>
<td>N/A</td>
</tr>
<tr>
<td>Under-Frequency 1</td>
<td>57.0 &gt; f ≥ 55.0</td>
<td>20</td>
<td>Mandatory Operation</td>
<td>21</td>
</tr>
<tr>
<td>Under-Frequency 2</td>
<td>55.0 &gt; f</td>
<td>N/A</td>
<td>Permissive Operation</td>
<td>0.16</td>
</tr>
</tbody>
</table>
CERTIFICATE OF SERVICE

I (we) hereby certify that copies of the foregoing document were duly served on

the following parties, by having said copies delivered as set forth below:

DEAN NISHINA
EXECUTIVE DIRECTOR
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS
DIVISION OF CONSUMER ADVOCACY
335 Merchant Street
Room 326
Honolulu, HI 96813

DEAN K. MATSUURA
MANAGER, REGULATORY AFFAIRS
HAWAIIAN ELECTRIC COMPANY, INC.
P. O. Box 2750
Honolulu, HI 96840-0001

ISAAC H. MORIWAKE
KYLIE WAGER
EARTHJUSTICE
850 Richards Street, Suite 400
Honolulu, HI 96813-4501

HENRY Q CURTIS
ASST. VICE PRESIDENT
PUNA PONO ALLIANCE
P. O. Box 37313
Honolulu, HI 96837

HENRY Q CURTIS
VICE PRESIDENT FOR CONSUMER AFFAIRS
LIFE OF THE LAND
P. O. Box 37158
Honolulu, HI 96837

ERIK KVAM
PRESIDENT
RENEWABLE ENERGY ACTION COALITION OF HAWAII, INC.
4188-4 Keanu Street
Honolulu, HI 96816

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Mr. Press Secretary,

I, John Doe, hereby declare that on this day, I, John Doe, was present at the meeting of the Board of Directors for the Kauai Island Utility Cooperative, which convened at 9:00 a.m. on July 20, 2017, at the headquarters of the Kauai Island Utility Cooperative, located at 1100 Alakea Street, Suite 3100, Honolulu, HI 96813.

I, John Doe, do hereby certify that the meeting was properly called and held, and that the minutes were read and approved. I further certify that all directors were present at the meeting.

John Doe, Director
Kauai Island Utility Cooperative
1100 Alakea Street, Suite 3100
Honolulu, HI 96813

{001111921-14}