

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

In the Matter of )  
)  
PUBLIC UTILITIES COMMISSION )  
)  
Instituting a Proceeding to Investigate )  
Distributed Generation in Hawaii. )  
\_\_\_\_\_ )

Docket No. 03-0371

PUBLIC UTILITIES  
COMMISSION

2004 NOV 22 P 3:16

FILED

KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS

AND

CERTIFICATE OF SERVICE

OSHIMA CHUN FONG & CHUNG LLP

Alan M. Oshima, Esq.  
Kent D. Morihara, Esq.  
Davies Pacific Center  
841 Bishop Street  
Suite 400  
Honolulu, Hawaii 96813  
Telephone: (808) 528-4200

Attorneys for KAUAI ISLAND UTILITY  
COOPERATIVE

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

In the Matter of )  
 )  
PUBLIC UTILITIES COMMISSION )  
 )  
Instituting a Proceeding to Investigate )  
Distributed Generation in Hawaii. )  
\_\_\_\_\_ )

Docket No. 03-0371

KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS

COMES NOW, KAUAI ISLAND UTILITY COOPERATIVE, by and through its  
attorneys, Oshima Chun Fong & Chung, hereby submits its Responses to the Public  
Utilities Commission's Information Requests.

DATED: Honolulu, Hawai'i, November 22, 2004.



---

ALAN M. OSHIMA  
KENT D. MORIHARA

Attorneys for KAUAI ISLAND UTILITY  
COOPERATIVE

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Statutory Authorizations**

**PUC-IR-1** Do Hawaii electric utilities have authority under existing statutes and franchises to own distributed generation either directly or through an affiliate? If yes, please identify the specific statutes and franchises which authorize such activity. If no, please describe whether existing laws should be altered to permit utility ownership (either directly or through an affiliate) and if so, what changes are needed?

**Response:** KIUC is not aware of any existing statutes or provisions in its franchise that prohibit it from owning distributed generation either directly or through an affiliate, and as such, KIUC does not believe that any existing laws should or would need to be altered to authorize such ownership.

However, if an electric utility decided to own distributed generation, KIUC believes that, although no specific changes to any statutes or its franchise are needed, its participation should be done in a manner that is not unduly or unreasonably preferential, discriminatory or anti-competitive. See Exhibit KIUC-RT-101 of KIUC's Rebuttal Testimonies (Item 2(B)(1)). To accomplish this, KIUC believes that it would be reasonable for the Commission to develop reasonable guidelines to accomplish the above, such as (1) by requiring each utility to develop and have cost of service information and apply appropriate tariffs that would result in a distributed generation customer being served at a cost that is not subsidized by non-distributed generation customers, (2) by requiring each utility to consider distributed generation in the utility's IRP cycle and implementation process, and (3) requiring each utility to consider a competitive procurement process for utility-owned distribution generation (Item 3(B)). This process should be standardized for each utility, however, taking into consideration, among other things, the ownership structure of the utility (cooperative vs. investor-owned).

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-2** Are there any changes required to existing statutes, rules, or regulations to facilitate non-utility ownership of distributed generation ("DG") facilities?

**Response:** KIUC believes that imposing the guidelines on electric utilities as mentioned in the response to PUC-IR-1 above would sufficiently facilitate non-utility ownership of DG facilities. However, KIUC is concerned that the Commission will only have the authority to impose guidelines and restrictions on the regulated electric utility and not on the non-utility owned DG facilities (i.e., DG facilities owned by entities not regulated by the Commission). As such, any guidelines placed on the electric utility should be structured in such a way that recognizes this difference and will not unduly restrict an electric utility's ability to own DG facilities. See KIUC-T-2 (Page 20, line 6 through page 23, line 16) for a discussion of the advantages that KIUC ownership of DG facilities would have over non-utility ownership.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-3**

What is the impact of Hawaii's net energy metering law, codified at Hawaii Revised Statutes ("HRS") § 269-101-111, (and recently amended this past legislative session to allow eligible systems of up to 50 kilowatts ("kW") to sell excess energy to the utility) on customer decisions to invest in DG? Should the existing 50 kW size limitation be increased to facilitate DG? Should the existing net energy metering law be expanded to include technologies other than those specified in the statute? Please identify any other changes that should be made to net metering laws, and why?

**Response:**

KIUC believes that Hawaii's net energy metering (NEM) law has had a minimal impact on customer decisions to invest in renewable DG, at least on the island of Kauai. This belief is based primarily upon the relatively small number of NEM participants on Kauai. As of November 1, 2004, only twenty-two customers were participating in KIUC's NEM program, with a total generating capacity of 75.3 kW. This 75.3 kW, which is comprised only of photovoltaic systems, only equals about 0.1% of KIUC's peak load (which is only a fraction of the 0.5% limitation set forth by the NEM law). KIUC has not observed any increase in inquiries or submitted applications since the NEM law was amended in 2004.

KIUC believes that the intent of the NEM law was to allow an individual electric retail customer to assist the utility and the State to lessen Hawaii's dependence on imported oil. KIUC has not evaluated what, if any, changes to the NEM law should occur to further promote this intent. KIUC believes that any changes that are made should not adversely impact its members/customers as a whole.

**Sponsor:**

Mike Yamane  
Joe McCawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Definition of Distributed Generation**

**PUC-IR-4** Should the Commission define distributed generation — and if so, how should it be defined? Should the definition be flexible or specific as to size and technology? Should the definition identify “eligible” technologies — and if so, how would such a list be derived? Or should the definition be sufficiently flexible to apply to a range of DG technologies, both those currently feasible as well as those not yet developed?

**Response:** KIUC believes that the definition of distributed generation, at least as it pertains to the subject docket, should be limited to the definition set forth by the Commission in its Order No. 20582 (i.e., involving the “use of small-scale electric generating technologies installed at, or in close proximity to, the end-user’s location.”). If the definition were expanded to include large-scale electric generating technologies or technologies that are not installed in close proximity to the end-user’s location, this would raise various additional issues and concerns that do not apply in the context of the Commission’s definition. As an example, the use of large-scale generation would have a more significant impact on the electric utility’s system and revenues. In addition, large-scale generation or DG facilities that are not installed in close proximity to the end-user may imply the use of the DG to serve multiple users or the need to cross public assets and rights-of-way to provide service to the end-users.

With respect to the second part of this information request, KIUC believes that the definition of DG should not identify any specific “eligible” technologies, but instead should be sufficiently flexible to apply to a range of DG technologies, both those currently feasible as well as those not yet developed. KIUC’s position on this issue is set forth in KIUC-T-2 (Page 33, line 9 through Page 34, line 16), which states the following:

KIUC believes that it is difficult at this time to make any reasonable general determination as to what forms of distributed generation are feasible and viable for Hawaii due to various uncertainties and variables. These uncertainties and variables include, without limitation, (a) the uncertain role distributed generation will have in the electric industry in the future, (b) the fact that many forms of distributed generation are still unproven and are currently too cost prohibitive or may not yet have been generally accepted in the utility arena, (c) Hawaii’s stand-alone electric systems due to its isolated location from the mainland United States, and (d) Hawaii’s varying topography and population distribution. As a result and as mentioned above, KIUC believes that any determination of the specific forms of distributed generation that may be feasible and viable in Hawaii can only be made on a case-by-case basis looking at the specific proposed project and location.

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-4 (cont.)**

As a result, KIUC believes that the role of the Commission in the DG process at the current time should be to set forth policy objectives that could assist the electric utility in making the determination on a case-by-case basis whether a specific distributed generation project or facility is feasible. In KIUC's opinion, these policies must remain fairly general at the current time to allow for sufficient flexibility as distributed generation technologies advance and the resulting costs and efficiencies are improved and can be better determined, as well as to allow KIUC to take into consideration the interests of its members. However, at a minimum, these policies should recognize the potential risk that any extensive or non-controlled infusion of distributed generation would have on an electric utility's revenues and on its ratepayers. In connection with this, these policies should provide some guidelines to allow the electric utility to, at a minimum, recover its costs of allowing or pursuing distributed generation without unduly burdening the ratepayers that are not directly benefited by the distributed generation, while also allowing the owner of the distributed generation to share in the benefits of any savings it provides to the electric utility.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-5** Should the definition of distributed generation include DER, "distributed energy resources" and other demand side technologies or systems?

**Response:** For the purposes of the subject docket, the Commission's definition of DG set forth in its Order No. 20582 (i.e., involving the "use of small-scale electric generating technologies installed at, or in close proximity to, the end-user's location") is entirely appropriate. KIUC interprets "electric generating technologies" to be those technologies that do, in fact, generate electricity, a.k.a. supply side resources. Given this, while KIUC believes that DER and other demand side technologies and systems are typically included in the category of demand side management (DSM), a.k.a. supply-side options, KIUC would consider DER technologies that meet applicable supply-side resource operating criteria to also be classified as DG.

As noted by the Commission in Order No. 20582, "The focus of this investigative docket is, however, on distributed generation. The objective is to develop policies and a framework for distributed generation projects deployed in Hawaii. Other DER technologies may be addressed in this docket to the extent that they raise the same interconnection and policy issues that the distributed generation technologies raise."

**Sponsor:** N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-6** Should the Commission draw a distinction between "small scale" DG and other DG resources and if so, why? How should "small scale" DG be defined? What benefits can small scale DG offer (e.g. firm power, increased reliability, reduce transmission constraints) and what impacts does it have on the system?

**Response:** For the reasons discussed in KIUC's response to PUC-IR-4 above, the Commission should draw a distinction between "small scale" DG and other DG resources. With respect to the term "small scale," KIUC would define the term "small scale" as being relative to utility system loads and the loads of the utility's large customers as well as the location on the utility's grid. For KIUC's purposes, it believes that the upper size limit of a generating facility to be considered as DG in the context of the subject docket is somewhere between 1-2 MW for the island of Kauai. See Item 1(A)(1) of Exhibit KIUC-RT-101 of KIUC's Rebuttal Testimonies.

The positive impacts that small scale DG can offer to KIUC's system are set forth in Item 4(A) of Exhibit KIUC-RT-101 of KIUC's Rebuttal Testimonies.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Additional Information on "Viable and Feasible DG" for Hawaii**

**PUC-IR-7** Please comment on HECO's listed criteria (see e.g. Seki Testimony at 20) for determining whether a DG technology is "viable and feasible" for Hawaii. Should other factors be considered as well?

**Response:** HECO's listed criteria provides a good foundation for determining whether a DG technology is a "viable and feasible" test for DG deployment in Hawaii. One other factor that should be considered, however, is "dispatchability." As noted in KIUC's Direct Testimony (KIUC-T-2, page 24, lines 7 through 10), "Dispatchable units controlled by KIUC can be used when and as often as needed to handle peak demand periods and any system emergencies. This could also help defer any T&D system upgrade costs if the DG unit is strategically located on the grid." In addition, although generally included in HECO's criteria, Items 2 and 5, other specific factors noted in the referenced KIUC Direct Testimony that should be considered in determining whether a DG technology is "viable and feasible" are a reliable and constant supply source and fully-commercialized technology.

**Sponsor:** N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-8** Have the "multiple benefits" of DG cited in Life of the Land's testimony (Wooley at 2) ever been quantified for Hawaii as they have in the other states mentioned in the testimony and if so, where can this information be found?

**Response:** Not to KIUC's knowledge.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-9**

Please identify any additional information provided in response to any party's Information Requests or filed in other dockets that provides further documentation or evidence of:

- a. whether there are transmission, distribution generation constraints which could be served by DG;

**Response:**

KIUC acknowledges, as reflected in its Direct Testimonies, that DG can sometimes lower transmission and distribution (T&D) costs, or at least allow the deferral of upgrades to existing T&D investment. This is a prime motivator for many cooperatives and other utilities to encourage the use of DG. To achieve these savings, however, the DG must be located at a constrained substation or along a feeder where it can be used to support the grid. As a result, the availability of these benefits is highly variable and site specific. In the short run, DG deployment may result in only minimal cost savings at best due to a small reduction in transmission line losses from providing generation at the customer location rather than having to transmit bulk energy over long distances. In the long run, DG may result in a tangible benefit if the utility will not be required to build or can delay the building of its next large increment of power plant or T&D facilities as a result of the DG. See KIUC-T-2 (Page 25, line 20 through page 26, line 8).

Specifically, with regards to KIUC:

- Generation: KIUC has built sufficient generation capability to offer reliable power supply to its members and customers, and is not projecting a need for new generating capacity to meet load until 2012. As a result of this situation, no new generating capacity is currently needed on Kauai. See KIUC-T-2 (Page 2, lines 5 through 8).
- Transmission and Distribution: Generally speaking, most of KIUC's feeders are lightly loaded, which is largely due to the infrastructure build out that occurred after Hurricane Iniki in 1992. See KIUC's response to COK-KIUC(T-2)-IR-1.

- b. the extent to which load growth is driving the need for distribution system enhancements;

**Response:**

System wide, KIUC anticipates an average annual growth rate of 1.7%. See KIUC's response to COK-KIUC(T-2)-IR-2.

As part of its normal planning process, KIUC identifies capital improvement projects needed to meet anticipated load growth. Some of these projects may be planned to relieve current or projected system operating constraints. KIUC's five-year Capital Improvements Program is filed each year with the Commission pursuant to General Order No. 7.

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-9 (cont.)**

See KIUC's response to CA-SOP-IR-35.

- c. where DG should be located to be most effective (and documentation for this conclusion); and

**Response:** As set forth in its Direct Testimonies, KIUC believes that the benefits of a DG system can be evaluated only on a case-by-case basis. To date, KIUC has not performed any such analysis to determine which, if any, locations on KIUC's electrical system would or could benefit from a DG system.

- d. the availability or feasibility of alternative technologies.

**Response:** No general determination of what DG technologies are feasible and viable for either Hawaii or Kauai can be made at the current time except on a case-by-case basis. See KIUC-T-2 (Page 3, lines 6 through 8).

To the extent that your testimony or prior responses do not already provide sufficient detail on these issues, please supplement your testimony with information on the above points.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-10** Please identify with specificity the type and size of DG that can be currently deployed in Hawaii to maximize the benefits and minimize costs.

**Response:** As a general statement, KIUC believes that no general determination of what DG technologies or sizes are feasible and viable for Hawaii, Kauai or even nationwide, to maximize benefits and minimize costs, can be made at the current time except on a case-by-case basis. However, on a case-by-case basis, any of the common DG technologies could be implemented on Kauai depending on specific site and operational characteristics, fuel availability and environmental impacts. Generally, however, to maximize benefits and minimize costs, regardless of the type and size of the DG, technology options with the following characteristics would be best for KIUC and its members and customers:

- A. Dispatchable,
- B. Reliable and constant supply source (the intermittent nature of renewables is a concern), and
- C. Fully-commercialized technology with responsive after-sale service support.

KIUC also notes that special treatment of renewables may be warranted due to their lower emission levels and CHP (combined heat and power) may also be attractive due to its higher efficiency.

See KIUC-T-2 (Page 5, line 5 through page 7, line 5, and Page 9, line 9 through Page 24, line 22) for a further discussion.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-11** Identify with specificity existing environmental requirements which would impact the installation of DG and how this would occur? Are there any other regulatory requirements — e.g., Building Codes or zoning laws that would impact installation of DG and if so, identify these with specificity.

**Response:** See KIUC-T-2 (Page 30, line 17 through Page 32, line 7), which states the following:

When siting DG at a customer location, a number of different building codes and other governmental requirements must be complied with at a local level, many of which are enforced for safety and health reasons. DOE's Office of Energy Efficiency and Renewable Energy maintains a web site with links to over a dozen resources about codes and standards related to DG.<sup>1</sup> These codes and permits have a large impact on DG siting costs because they impose unique siting requirements for each DG project. In other words, having to meet varying building codes may prevent a DG developer from quickly repeating a permit process learned during a previous project.

The costs of applying for and complying with zoning permits, building permits (including electrical, plumbing, HVAC, and other specialized building permits) can be minimal compared to that of insuring that the DG unit meets air emission standards. Indeed, most developers are somewhat familiar with these traditional processes and costs, since they occur on most construction projects including the types of buildings or pads where DG is normally sited. However, air emission standards and permits are a special aspect of installing DG.

Air permitting procedures for DG sites have evolved over recent years. As more DG units are installed and operated, state and local officials are increasingly implementing new regulations and procedures specifically designed to address the needs and requirements of DG units. For example, some states have recently enacted revised Best Available Control Technology standards for DG generators. Emission limits constrain the deployment of some types of DG technologies in some regions, possibly limiting the choice of DG technology available to a utility or end-user.

In addition, the National Fire Protection Association (NFPA) has been a worldwide leader in providing fire, electrical, and life safety to the public since 1896. The NFPA publishes the National Electrical Code (NEC) (NFPA-70), which covers electrical equipment wiring and safety on the customer's side of the point of

---

<sup>1</sup> [http://www.eere.energy.gov/de/deployment/dep\\_road\\_resources.shtml](http://www.eere.energy.gov/de/deployment/dep_road_resources.shtml).

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-11 (cont.)**

common coupling. DG owners/operators must comply with the requirements of the NEC for all electrical installations, typically subject to inspection and approval by the county electrical inspector.

Customers choosing to install their own generating equipment must become familiar and comply with all siting and permitting requirements. The technical expertise and costs required to do so may be significant.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley  
N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Impacts of Distributed Generation**

Identify the impacts of DG on the distribution system with reference to the following specific questions.

**PUC-IR-12** What are the beneficial impacts of DG on the transmission and distribution ("T&D") system and more importantly, how may they be quantified and assessed for value?

**Response:** This issue was addressed in KIUC's Direct Testimony (KIUC-T-2, page 25, line 20 through page 26, line 8):

Sometimes, DG can lower T&D costs, or at least allow the deferral of upgrades to existing T&D investment. This is a prime motivator for many cooperatives and other utilities to encourage the use of DG. To achieve these savings, however, the DG must be located at a constrained substation or along a feeder where it can be used to support the grid. As a result, the availability of these benefits is highly variable and site specific.

In the short run, distributed generation deployment may result in only minimal cost savings at best due to a small reduction in transmission line losses from providing generation at the customer location rather than having to transmit bulk energy over long distances. In the long run, DG may result in a tangible benefit if the utility will not be required to build or can delay the building of its next large increment of power plant or T&D facilities as a result of the DG.

The beneficial impacts of DG on the T&D system may be quantified by comparing the T&D upgrade or construction option against the DG alternative. DG installation for T&D construction deferral may work when the upgrade is needed to support small additional load relative to the total capacity provided by the upgrade. KIUC addressed the issue of system benefits and costs in its Direct Testimony (KIUC-T-2, page 30, lines 5 through 9):

System benefits and costs can be optimized only when considered holistically. Since DG is one possible solution to not only generation, but also to meet and/or replace the need for T&D upgrades, KIUC favors inclusion of DG in the IRP process. Specifically, within any IRP, it may be useful to consider how effective DG may be to allow the deferral of a T&D upgrade project.

**Sponsor:** N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-13** What are the limits to the level of DG that the grid can absorb without adverse impacts? Please identify studies or other documentation in support of your response.

**Response:** As noted in KIUC's Direct Testimony (KIUC-T-2, pages 25 through 26), the benefits to the grid of DG are extremely variable and site specific. Similarly, the ability of a specific circuit on the grid to "absorb" DG is specific to the design and loading on that circuit. Nevertheless, some guidelines do exist to guide an examination of the realistic limits of DG deployment.

First, the consideration of a DG limit should be primarily based on the characteristics of a specific circuit, and the limit on DG installations should be applied to that circuit. In a Notice of Proposed Rulemaking<sup>2</sup> issued by the FERC in 2003 and applied to the interconnection of small generators to the transmission system, the FERC states:

For interconnection of the Generating Facility to a radial Low-Voltage circuit, the Generating Facility's capacity in aggregate with other generation on the circuit shall not exceed 15 percent of total circuit annual peak load as most recently measured at the substation; nor shall it exceed 15 percent of a Low-Voltage circuit line section design capacity. A line section is defined as that section of the Low-Voltage electric system between two sectionalizing devices.

Other guideline limits are applied in various jurisdictions. For example, California's Rule 21 Process Flow for Simplified Interconnection uses a similar screen of aggregate generating facility capacity on the line section being less than 15 percent peak load. Massachusetts uses the following screen, "Is the Aggregate Generating Facility Capacity on the circuit less than 7.5% of circuit annual peak load?"

Second, another approach to estimating the limit of DG that can be "absorbed" considers the total installed base of DG in relation to the utility's annual peak. This approach has been adopted in KIUC's Rule No. 17 Tariff for Net Energy Metering in accordance with the Hawaii net metering legislation:

Net energy metering will be made available to customers until the sum of the total rated generating capacity of all net metered customer facilities equals approximately 0.5% of the Company's annual system peak demand for the preceding calendar year.

---

<sup>2</sup> FERC Notice of Proposed Rulemaking, July 24, 2003, 18 CFR Part 35, Docket No. RM02-12-000, Standardization of Small Generator Interconnection Agreements and Procedures.

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-13 (cont.)**

Establishing the limit of DG installation on an individual circuit or on the entire system requires a combination of judgment and engineering analysis. KIUC would need to study this issue in some detail before recommending a specific screening value to be used.

**Sponsor:** N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-14** What are the limits of bi-directional power?

**Response:** KIUC has addressed this issue in its Direct Testimony (KIUC-T-2, page 25, lines 5 through 11):

It should be noted that KIUC's T&D system was originally designed for the one-way flow of power, from the generators to the customer. As such, integrating DG into this system can complicate system operations and offer unexpected impacts affecting system stability and personnel and customer safety, thus necessitating the need for engineering and system impact studies to determine any system modifications or upgrades that may be required to accommodate the DG.

The important point here is that the deployment of DG on a system designed for one-way power flow is not typically easy to accomplish and is not inexpensive. Very small DG units (single-digit kW sized) can be accepted much more quickly than larger units of 10s or 100s of kilowatts, or megawatt sized. The question to be addressed is not the limit of "bi-directional" power flow, but rather the ability of a circuit to automatically detect and clear a fault, and the continued proper operation of equipment such as protective relays, circuit breakers, reclosers and sectionalizers in the presence of electron flow from downstream of the substation.

**Sponsor:** N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-15**    Should the design of new distribution feeders consider DG?

**Response:**    See KIUC's response to PUC-IR-14 above.

**Sponsor:**     N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-16** Can the concept of micro-grids be made practical? Can they be effectively utilized in Hawaii?

**Response:** KIUC believes that it is still too early in the evaluation of the micro-grid concept to offer comments on its practicality, especially in Hawaii.

The following are various excerpts taken from the Northern Power System's press release entitled "**Northern Power Systems' MicroGrid® Power Network to Address Risk of Power Outages**" (*August 2003*), a copy of which is provided as Attachment PUC-IR-16.

"This first-of-its-kind MicroGrid® power network will operate in parallel with the bulk utility generation and distribution system....".

"....the Northern MicroGrid power network will achieve several important, larger objectives. It will create economic models for evaluating the feasibility and merits of such projects at specific locations....".

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**ATTACHMENT  
PUC-IR-16**



PRESS RELEASE

**CONTACT:**

Amy Klinger  
Northern Power Systems  
802-496-2955, ext. 289  
aklinger@northernpower.com

Chris Prew  
Tiziani & Whitmyre  
781-793-9380  
cprew@tizinc.com

## Northern Power Systems' MicroGrid® Power Network to Address Risk of Power Outages

*Networked, distributed generation system will offer power reliability and enhanced quality, ensuring electric service*

WAITSFIELD, VT - August 18, 2003 - Northern Power Systems announced today that it will engineer, build, and operate a custom-designed, utility-connected energy generation, storage and distribution network within the area known as Mad River Park in Waitsfield, Vermont. This first-of-its-kind MicroGrid® power network will operate in parallel with the bulk utility generation and distribution system and will demonstrate dramatically increased power quality and reliability to residences and businesses (including Northern's newly constructed headquarters facility) located in the park.

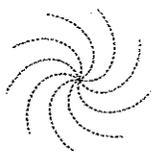
A next-generation power network architecture, the

MicroGrid is a natural evolution of Northern's ongoing work in on-site power systems that incorporate combined heat and power (CHP) and deliver critical load support for individual customers. MicroGrid power networks represent a practical new strategy to ensure continuous power, providing security and protection regardless of utility outages and other electrical grid anomalies. As a fundamental power architecture, MicroGrid power networks have wide application at many levels in the energy market, from commercial and industrial complexes and residential developments, to universities and medical campuses, and even substation scale systems.

>>



Northern's newly constructed headquarters facility will be the site housing all power generating equipment used in the Mad River Park Microgrid Power Network.



[www.northernpower.com](http://www.northernpower.com)

## **The Northern MicroGrid® Power Network at Mad River Park**

Undertaken with the support of the Washington Electric Cooperative (WEC), and the United States Department of Energy (DOE), the Mad River Park MicroGrid project will serve as a fully operational demonstration of the capability and benefits of clustering tightly integrated, small-scale generation, storage, and distribution technologies including engines, microturbines, wind turbines and photovoltaic panels. The system will feature multiple generation and storage devices, and will be connected to five commercial and industrial facilities, and up to 12 residences within the MicroGrid power network service area.

"This first-of-its-kind project will highlight, in a real-world setting, the vast potential for networked, distributed generation to cut energy costs and accelerate the use of clean, renewable energy," noted Dan Reicher, executive vice president of Northern Power Systems and former U.S. Assistant Secretary of Energy. "In a larger sense, the MicroGrid concept represents a tangible distributed generation solution to the serious effects of widespread power outages and recurring reliability problems in the U.S. electric grid," he added.

In addition to providing power to WEC's Mad River Park customers, the Northern MicroGrid power network will achieve several important, larger objectives. It will create economic models for evaluating the feasibility and merits of such projects at specific locations and advance the technical and institutional know-how necessary for the development and deployment of additional utility or customer-initiated MicroGrid networks in the United States. The Mad River Park network will also serve as a demonstration center under real load conditions. With a particular focus on emerging and renewable technologies, it will dramatically underscore why networked systems facilitate the use of distributed, sustainable energy. Last, the Mad River Park MicroGrid power network will provide a blueprint of how these technologies working together can deliver higher generating efficiencies and reduce overall environmental impact.

### **Northern's MicroGrid® Power Network Defined**

A MicroGrid power network is defined as two or more distributed

generation or storage assets configured in a network and capable of operating either in parallel with, or independent from, a larger electric grid, while providing continuous power to one or more end users. The assets may be combinations of power generation and energy storage devices, depending on the requirements of a specific application.

Analogous to today's ubiquitous distributed computing environments, the MicroGrid power network is a natural evolution and extension of distributed generation applications in situations where power users may need flexibility, responsiveness, and reliability at levels higher than what is available from the transmission and distribution system.

### **How Will the Mad River Park MicroGrid® Power Network Work?**

The Mad River Park system—which will initially use propane-fueled reciprocating engines and microturbines, and a photovoltaic (solar) array—will be capable of being programmed to operate in several distinct modes, ranging from total isolation from WEC's system during the occurrence of specified power events (such as voltage sags, spikes or transients that cause power to deviate from utility or customer-defined parameters) to grid-following mode. Power coming from the local WEC substation will be monitored via a microprocessor-enabled protective relay, which will detect the occurrence of scheduled or unscheduled power events and enable the system to "island" the park from WEC's system during such occurrences via a fast switch, thereby providing a seamless and uninterrupted delivery of power.

Consisting of a number of on-site power generation assets, the Mad River system will initially generate an aggregate capacity of approximately 350 kW of electric power. In later phases, emerging technologies such as fuel cells, Stirling engines and flywheels will be examined and may eventually be incorporated into the network.

Located on the network side of the isolation relay, these generation assets will incorporate combined heat and power (CHP) applications to serve thermal loads at the various sites and offset the need for those sites to otherwise purchase or produce heat.

### **Benefits for Power Producers and Users**

Northern's MicroGrid Power Network is designed to offer important



An aerial view of a section of the Mad River Business Park in Waitsfield, Vermont, including Northern's new facility nearing completion in the bottom right corner.

benefits to power producers and users alike. For utilities, MicroGrid networks may offer a cost-effective alternative to upgrading aging or insufficient distribution systems and to expanding infrastructure beyond existing lines in order to meet growing demand. By offsetting grid-power with network power, utilities can better predict daily levels of energy output, while also expanding their customer base, especially during peak hours. Utilities will be able to dispatch the MicroGrid Power Network's generation in order to smooth bulk system demand, avoid price spikes, and potentially achieve conservation voltage regulation goals. And finally, the MicroGrid Power Network enables utilities to take advantage of spot sales opportunities, marketing such systems directly to ideal customers such as business parks, colleges and universities, and hospital networks.

Users realize significant benefits as well. MicroGrid Power Network customers receive the increased power quality and reliability that grid-

paralleled on-site power systems offer, plus, because sites are still connected to the traditional distribution system, some of the responsibilities of ownership associated with other alternatives to grid-power are reduced. MicroGrid Power Networks help stabilize costs for utility customers because the reduction in expenses for maintenance and improvements of infrastructure provides one less impetus for utilities to increase rates. In addition, at sites where heat recovery can be successfully introduced, there is a significant opportunity for MicroGrid Power Network customers to reduce their operating expenses by providing heat that would otherwise have to be generated.

#### **Support from Several Sources**

To help develop the project, Northern received support from WEC and the state energy office. In addition, Vermont Senator James Jeffords was instrumental in securing federal funding from the U.S. Congress for the

*Northern Power Systems designs, builds and installs ultra-reliable electric power system solutions for industrial, commercial and government customers worldwide. The company also conducts path-breaking research and development in the areas of renewable energy, distributed generation and hydrogen technology. Since our founding in 1974, Northern has installed over 800 systems in 45 countries on all seven continents.*

**Headquarters:**

Northern Power Systems  
182 Mad River Park  
Waitsfield, VT 05673 USA  
Phone: 1-877-496-2955  
Fax: 802-496-2953

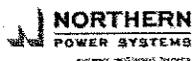
**California Office:**

Northern Power Systems  
33 New Montgomery Street,  
Suite 1280  
San Francisco, CA 94105 USA  
Phone: 1-415-543-6110  
Fax: 415-543-6105

[www.northernpower.com](http://www.northernpower.com)

Copyright, 2003, Northern Power Systems, Inc. All rights reserved. Northern Power Systems, the Yellow N Logo and 'power without limits' are trademarks of Northern Power Systems, Inc.

pr\_microgrid\_1.1lec



project, resulting in a \$550,000 grant from the Department of Energy. The grant is being administered by the National Renewable Energy Laboratory in Golden, Colorado.

"This power network confronts the challenges of integrating distributed, renewable generation with customer loads and the utility grid," said Senator Jeffords. "It makes sense to put energy production closer to where it is used, and in a way that improves system reliability, creates opportunities for renewable energy and provides customer value."

To address regulatory issues and facilitate subsequent commercial adoption, the project will go through the Vermont Public Service Board's existing permit process. Northern will design the system, acquire, install, commission, operate and maintain all generation assets incorporated into it. Northern will also report on technology, safety, operating protocol, and economic benefit issues throughout the project.

About Washington Electric Cooperative, Inc. (WEC)

WEC is a rural electric cooperative formed in 1939, which serves 9,700 mostly residential members in 41 Vermont towns. WEC is a progressive energy services company serving a dispersed market whose density averages seven utility meters per mile, typically in the hill areas away from main roads. The Co-op experiences growth of approximately 1.5% per year, and has a system historic peak demand of 14 megawatts (2001).

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-17** Should utilities be offered incentives to facilitate DG?

**Response:** KIUC interprets the use of the term "incentive" in the context of this information request as applying similarly to how that term is used within the IRP framework (i.e., providing an incentive to a utility to encourage participation in and promotion of full-scale demand-side management programs). These incentives may take any form approved by the Commission, with one of the possible forms listed in the IRP Framework is to allow the utility to earn a greater than normal return on equity for ratebased and demand-side management expenditures (rate base bonus).

KIUC does not believe that such an incentive is applicable or appropriate in the context of a member-owned electrical cooperative. In the cooperative context, KIUC believes that an appropriate mechanism for KIUC to encourage DG would be to allow KIUC to have the right of first refusal for ownership of any DG being interconnected to KIUC's electrical system. This would allow KIUC to coordinate with any customer/member interested in DG to evaluate the specific benefits associated with each DG and to then ensure that the subsidization of any benefits by other KIUC's members/customers does not occur.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-18** How can utility distribution practices be modified to enable DG to provide distribution deferral and be compensated for it?

**Response:** Whether and what compensation should be provided to owners of generation systems should be determined on a case-by case basis. Any compensation provided should be determined based on actual net benefits provided by the DG system. The compensation and any corresponding commitment by the owners should be reduced to legally-enforceable commitments, such as laws, regulatory requirements, or agreements between the utility and the owner of the DG system.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Ownership**

**PUC-IR-19** If utilities are permitted to own distributed generation through affiliates, are any changes required to existing statutes, rules and regulations governing affiliates to guard against cross subsidization, to protect ratepayers and ensure competition between affiliates and non-affiliates on equal footing? Please identify potentially applicable statutes, rules and regulations and specify necessary changes.

**Response:** KIUC believes that HRS §269-19.5, which requires the filing of certain affiliated contracts and agreements with the Commission, provides sufficient guidelines to protect against cross-subsidization without modification. The purpose of this reporting and filing requirement is explained in HRS §269-19.5(b), which states the following:

The purpose . . . is to encourage companies providing essential utility and regulated transport service to Hawaii consumers to obtain their services, supplies, and equipment by relying, to the extent practicable, on competitive procurement practices; provided that when companies obtain their services, supplies, and equipment from affiliated interests, the contracts and agreement between the regulated entity and its affiliates must be shown by clear and convincing evidence to be in furtherance of the interests of the public.

As set forth by HRS §269-19.5(d), if the public utility is unable to establish by clear and convincing evidence the reasonableness of any payment or compensation to an affiliated interest for any services rendered or property or service furnished, the Commission has the right to exclude this payment or compensation from the rates that the utility is authorized to charge. The risk of the utility being denied rate recovery for these payments if they fail to meet this burden should provide sufficient incentive to the utility to make sure that payments to affiliates are reasonably priced to the services or property rendered/furnished so as to avoid any cross-subsidization issues.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Interconnection**

**PUC-IR-20** What costs are associated with DG interconnection to the distribution grid?

- a. If a utility overhead line is fully depreciated and upgrades or replacements are needed for distribution interconnection, does the DG customer pay for the upgrade replacement cost?

**Response:** Costs to interconnect a DG system are costs that the utility would otherwise not have incurred. The customer whose DG system causes these costs should be required to reimburse the utility for these costs; otherwise, that customer's system will be subsidized by KIUC's other customer/members.

- b. Should a DG customer be required to pay for distribution system upgrades that would have otherwise occurred in the absence of a DG interconnection?

**Response:** KIUC distinguishes between charges to connect a new customer and charges to interconnect a DG system owned by a new or existing customer.

Any charges a new customer would incur to be supplied power by KIUC are in accordance with KIUC's tariff on new connections, which allows KIUC to charge a customer for the difference between the cost to connect the new customer and the anticipated 5-year revenue stream from the customer.

Charges a new or existing customer would incur to interconnect a DG system are specific to system upgrades identified to interconnect that specific DG system.

- c. Should subsequent DG customers on a particular feeder line be responsible for costs applied to the first DG customer on the line? If so, what type of crediting mechanism should be put in place for the first customer?

**Response:** While KIUC does not have specific experience with this situation, a charge/credit scheme similar to that used to connect new customers could be used. A new customer is charged the difference between the cost to extend a line to that customer's location and the anticipated 5-year revenue stream from that customer. As new customers are connected to that line extension, the initial customer receives a prorated credit.

- d. What mechanism should be used for recovery of these costs (i.e., fixed vs. demand charges, marginal cost vs. average cost, etc...)

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-20 (cont.)**

**Response:** For upgrades on the utility's system, the utility should be able to charge, prior to incurring, the real-time dollar expenses incurred by the utility to interconnect a DG system. Payment of expenses a customer incurs associated with interconnection equipment located on the customer's side of the meter is between the customer and supplying vendor.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-21** Should HECO's, HELCO's and MECO's Rule 14.H on interconnection specific to distributed generation be modified to further facilitate or encourage distributed generation? If so, please identify with specificity those aspects of Rule 14.H that must be changed? Should the same interconnection rules for distributed generation apply to both the HECO companies and KIUC?

**Response:** KIUC is not familiar enough with Rule 14.H to comment which, if any, of its aspects are currently promoting or discouraging DG. KIUC does offer that interconnection standards are typically developed to identify and focus on the technical and safety issues associated with interconnecting electrical generating equipment and that at no time should these issues be compromised in an effort to encourage more DG. Other areas/procedures should possibly be considered if it is desired for a utility to encourage DG.

Regarding Statewide interconnection rules, interconnection rules can include both "interconnection arrangements" and "agreement arrangements." Standard interconnection arrangements would likely include common elements that would apply to all DG projects, but most interconnection arrangements will have to be evaluated on a case-by-case basis depending on the DG mode of operation, location, and size relative to feeder load.

A standard HECO/KIUC agreement arrangement may work, assuming such agreements include reimbursement of any applicable interconnection or system upgrade costs by the DG owner, as well as other terms and conditions intended to protect KIUC and its members. See the response to CA-IR-40.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-22** What has been the experience of the parties to date with interconnecting distributed generation facilities under either HECO's, HELCO's or MECO's Rule 14.H?

**Response:** This information request is not applicable to KIUC because KIUC has not interconnected any facilities to either HECO's, HELCO's or MECO's system.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Rate Structure and Cost Recovery**

**PUC-IR-23** Is the current allocation of distribution charges between customer, demand and usage charges adequate or should it be modified to accommodate DG? What is the appropriate allocation between utilities and ratepayers of revenues foregone as a result of the deployment of DG?

**Response:** KIUC believes that its current rate structure, which includes a mechanism to collect costs to provide standby and other auxiliary services to certain customers supplying part of their own electrical energy needs, allows for a proper allocation and collection of distribution charges from its members/customers.

KIUC believes that the purpose for and application of a Standby Tariff mechanism is to eliminate inappropriate allocation of expenses (a.k.a. subsidizing for lost revenues) among either the utility or non-DG customers. As a member-owned cooperative, allocation of lost revenue between the KIUC and the ratepayers is one and the same.

Although KIUC does not believe that any changes are required to the mechanism as indicated above, KIUC believes that changes may be needed to its existing Rider "S" standby tariff to better reflect KIUC's current cost of providing this backup service, as noted in KIUC-T-2 (Page 35, line 21 to page 36, line 1).

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-24** Should credits be offered to customers or third parties that can defer the need for localized distribution expenditures. If yes, how should these credits be awarded, calculated and administered? And how should the cost of any credits or incentives be allocated and recovered by the distribution company?

**Response:** See the response to PUC-IR-18 above.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-25** How can services be identified for unbundling and how should rates be calculated? Please comment on the viability of the Consumer Advocate's proposal for unbundling (Consumer Advocate Testimony, Witness Herz at 60-63). Will unbundling rates ensure that the utility recovers its cost of service from the customer benefiting from DG and does not shift costs to other ratepayers? (See, e.g., Witness Herz, testimony at 23, 60)

**Response:** As reflected in Exhibit KIUC-RT-101 of KIUC's Rebuttal Testimonies, KIUC concurs with the Consumer Advocate that a cost of service study is an appropriate mechanism to identify and quantify each utility's costs to provide services to a DG customer (see Item 10(A)(1)) and that appropriate tariffs should be applied that result in a DG customer being served at a cost that is not subsidized by non-DG customers (see Item 3(B)(1)).

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-26** Should the commission consider decoupling revenues from sales so that the utility is indifferent to installation of DG that has the effect of reducing sales?

**Response:** KIUC has not evaluated this type of rate structure and is therefore unable to provide comment. Please note that KIUC will be participating in the Commission sponsored Performance Based Rate Workshop on November 22 and 23, 2004.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-27** Should the electric utilities institute termination charges (exit fees) for customers who install distributed generation and if so how should they be designed?

**Response:** KIUC assumes that this information request contemplates that the customer leaves the utility system entirely, and does not remain a customer to take advantage of backup or standby power as needed to supplement operation of the DG unit. Retaining a customer for back-up or standby power is frequently the case with a DG installation, and is generally a more economic approach to ensuring the supply of power on a reliable basis. KIUC addressed the issue of providing standby and backup power extensively in its Direct Testimony.

A customer leaving the utility system in its entirety must design into its DG project the necessary redundancy and reliability. Assuming this is the case, the issue that must then be examined is the extent to which remaining customers will be able to cover the revenue requirement established to meet the costs of generation, T&D system improvements accomplished to meet forecast customer demand. In its Direct Testimony (KIUC-T-2, page 21, lines 11 through 15) KIUC stated, "In this case, the revenue requirement must be spread over the remaining smaller customer base, thereby incrementally increasing costs for all other members and customers. All other cooperative members and customers would then have to pay more to cover the utility's fixed costs, including costs associated with the T&D system."

A small customer, or number of small customers, leaving the utility system will have a minimal impact on utility operations and cost recovery. However, a large customer installing a MW-sized DG unit will have a material impact. KIUC favors consideration of exit fees designed to recover the fixed costs of Generation, Transmission, and Distribution investments. DG owners choosing to remain members/customers of KIUC would likely not be subject to any exit fees, with cost recovery built in to any applicable standby/backup charges.

**Sponsor:** N. Richard Friedman

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-28** Should standby rates similar to those implemented by HELCO (see Decision and Order No. 18575, filed on June 1, 2001, in Docket 99-0207) be adopted by HECO or MECO? Is the flat fee standby charge used by KIUC an appropriate approach for other utilities? Or should the Commission repeal and prohibit standby charges?

**Response:** KIUC is not adequately familiar with the data used to calculate HELCO's standby rate or how it is applied to be able to comment on if or how these standby charges should be adopted by other utilities in Hawaii.

In accordance with KIUC's definition of a standby tariff being a mechanism to recover expenses incurred to provide a service to a customer that is not recovered via the applicable rate schedule, KIUC believes that the intent and basis of a standby tariff mechanism should be continued. However, changes may be needed to KIUC's existing Rider "S" standby tariff to better reflect KIUC's current cost of providing this backup service, as noted in KIUC-T-2 (Page 35, line 21 to page 36, line 1).

Regarding whether the data and methods used to determine KIUC's standby tariff are appropriate for other utilities, please see KIUC's response to PUC-IR-29(c) regarding the appropriateness of a statewide standby charge.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-29** Please provide comments on the issues below related to standby service proposals.

- a. To the extent that standby rates are implemented (for those utilities that do not have them) or modified, should demand subscription or non-firm standby rates be included? Please comment on the viability and desirability of a non-firm or "best efforts" standby service (see e.g. County of Maui testimony, Witness Lazar at 78)

**Response:**

A standby tariff is a mechanism to recover expenses incurred to provide a service to a customer that are not recovered via the applicable rate schedule. See KIUC's response to HESS-SOP-IR-2. As mentioned in KIUC's Direct Testimonies (KIUC-T-2, page 35, line 21 to page 36, line 1), changes may be needed to KIUC's existing standby tariff calculations to better reflect KIUC's current cost of providing these backup services. In this regard, KIUC is currently undergoing a cost-of-service study, the results of which will help KIUC determine what changes may be necessary to the existing standby tariff with respect to the deployment of DG. See the response to CA-IR-41 (b). Given this, KIUC does not have adequate information to offer an opinion on the applicability of subscription or non-firm standby rates for KIUC.

With respect to "best efforts" standby service, as referenced by the County of Maui (COM), KIUC is not familiar enough with the COM's proposed "best efforts" standby service to properly answer this question at this time. See KIUC's response to COM-KIUC-DT-IR-77.

- b. Should regulated utilities be required to charge themselves or their affiliates the same standby charges with respect to the regulated utility or affiliate owned, operated and maintained distributed generation facilities?

**Response:**

KIUC should not be required to charge itself a standby charge for KIUC owned, customer sited DG systems. As KIUC proposes, KIUC would own customer sited DG systems only when the positive impacts to KIUC's members/customers exceed the negative impacts of non-KIUC ownership. Cost recovery for these KIUC owned DG systems should then be allowed via the same cost recovery mechanisms used for other generation facilities owned by KIUC.

- c. Should standby rates be the same for all Hawaii electric utilities including KIUC?

**Response:**

While the general process and definitions used to determine a standby rate may be similar for each of the Hawaii electric utilities, including KIUC, KIUC believes that because of the uniqueness of each island's electrical system, each island utility should be allowed to calculate its own unique standby rate based on its own set of circumstances.

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-29 (cont.)**

- d. Should supplemental service be distinguished from stand-by service and if so, should supplemental service continue to be charged at the otherwise applicable tariff?

**Response:** KIUC's Rider S standby tariff offers Standby, Auxiliary, Supplementary or Breakdown Service to customers with onsite generation. KIUC is currently undergoing a cost-of-service study, the results of which will help KIUC determine what changes to the charges or structure may be appropriate.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-30** Please describe the electric utilities' current policies regarding "hook up fees" or impact fees. Should existing policies regarding hook up fees be revised so as to remove barriers to development of distributed generation? Please comment on the County of Maui's proposal regarding impact fees. (see discussion County of Maui Testimony; e.g., Kobayashi at 12; Lazar at 18-19, 33)

**Response:** See KIUC's response to PUC-IR-20(b) above.

A hook-up fee is a general term used to describe the engineering and other imposed costs incurred by KIUC to connect a customer's load to KIUC's system. They cover expenses that occur prior to, during, or immediately after connecting a customer's load and are independent of any expenses that might be incurred to interconnect a customer's on-site generation. See KIUC's response to HREA-KIUC-T-2-IR-3. As such, KIUC believes that hook-up fees pose no barrier to the development of DG.

KIUC does not fully understand the County of Maui's definition and suggested application of Impact Fees to be able to offer any comment on that matter.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-31** Should a systems benefit charge be adopted to recover costs of distributed generation? If yes, how should such a charge be established?

**Response:** Any costs associated with DG need to be determined on a case by case basis and then distributed among those that benefit from the DG system.

Because it is KIUC's position that KIUC would own, i.e., incur DG costs, only when ownership would provide a net benefit to KIUC's members/customers, costs associated with a DG system that are not owned nor beneficial to KIUC and its members/customers should be the burden of the DG owner. Costs incurred by KIUC to own a net beneficial DG system should be allocated among all of KIUC's members/customers via an appropriate cost recovery mechanism.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-32** Will an inverted block rate design (see e.g. County of Maui, Witness Kobayashi at 12, Lazar at 86) result in better allocation of costs of new DG facilities? What are other benefits of inverted block rate design (if any) with respect to promoting DG?

**Response:** KIUC's familiarity with inverted rate designs is limited to their application to promote energy conservation.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**PUC-IR-33** How should costs associated with distributed generation be recovered?

- a. How should the costs of fuel purchased for utility owned, customer site DG facilities be handled? Should it be included in the energy rate adjustment clause applicable to all customers or recovered in some other manner?

**Response:** KIUC is proposing to evaluate the impacts of each DG system on a case-by-case base and then own and operate those systems only when KIUC ownership would provide overall benefits to all of KIUC's members/customers. In these cases, KIUC believes that the fuel cost recovery mechanism for a customer sited supply-side resource should be the same as for a traditionally sited utility owned supply-side resource. As with other traditional supply-side generation, that portion of a DG facility's fuel expense not recovered in base-rates should be recoverable via the energy rate adjustment clause passed along to all customers.

- b. Should regulated utilities be permitted to include in their regulated rates the cost of distributed generation equipment and its maintenance?

**Response:** Yes. As with any traditional supply-side resource that a utility owns or acquires via a power purchase agreement, a utility should be allowed to use its rate collection mechanism to recover costs associated with a distributed generation facility.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

**KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE  
PUBLIC UTILITIES COMMISSION'S INFORMATION REQUESTS**

**DOCKET NO.: 03-0371**

**Integrated Resource Plan Process**

**PUC-IR-34** How should the existing IRP process and the deployment of DG be synchronized to maximize the benefits of DG?

**Response:** Each utility should plan for and facilitate deployment of DG through the IRP process by evaluating the viability and feasibility of available or planned DG technologies for inclusion in the utilities' resource plan. See Items 1(B)(3) and 3(A)(1) of Exhibit KIUC-RT-101 of KIUC's Rebuttal Testimonies.

**Sponsor:** Mike Yamane  
Joe M<sup>c</sup>Cawley

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:

DIVISION OF CONSUMER ADVOCACY  
335 Merchant Street  
Room 326  
Honolulu, HI 96813

3 copies  
Hand Delivery

THOMAS W. WILLIAMS, JR., ESQ.  
PETER Y. KIKUTA, ESQ.  
Goodsill, Anderson, Quinn & Stifel  
Alii Place, Suite 1800  
1099 Alakea Street  
Honolulu, Hawaii 96813

1 copy  
U.S. Mail

MR. WILLIAM A. BONNET  
Vice President  
Hawaiian Electric Company, Inc.  
Hawaii Electric Light Company, Inc.  
Maui Electric Company, Limited  
P. O. Box 2750  
Honolulu, Hawaii 96840-0001

1 copy  
U.S. Mail

MS. PATSY H. NANBU  
Hawaiian Electric Company, Inc.  
P. O. Box 2750  
Honolulu, Hawaii 96840-0001

1 copy  
U.S. Mail

MR. ALTON MIYAMOTO  
President & CEO  
Kauai Island Utility Cooperative  
4463 Pahe'e Street  
Lihue, Hawaii 96766

1 copy  
U.S. Mail

BRIAN T. MOTO, ESQ.  
CORPORATION COUNSEL  
County of Maui  
Department of the Corporation Counsel  
200 S. High Street  
Wailuku, HI 96793

1 copy  
U.S. Mail

CINDY Y. YOUNG, ESQ.  
DEPUTY CORPORATION COUNSEL  
County of Maui  
Department of the Corporation Counsel  
200 S. High Street  
Wailuku, HI 96793

1 copy  
U.S. Mail

<p>MR. KALVIN K. KOBAYASHI  ENERGY COORDINATOR  County of Maui  Department of Management  200 S. High Street  Wailuku, HI 96793</p>	<p>1 copy  U.S. Mail</p>
<p>MR. WARREN S. BOLLMEIER II  PRESIDENT  Hawaii Renewable Energy Alliance  46-040 Konane Place, #3816  Kaneohe, Hawaii 96744</p>	<p>1 copy  U.S. Mail</p>
<p>MR. JOHN CROUCH  Box 38-4276  Waikoloa, HI 96738</p>	<p>1 copy  U.S. Mail</p>
<p>MR. RICK REED  Inter Island Solar Supply  761 Ahua Street  Honolulu, HI 96819</p>	<p>1 copy  U.S. Mail</p>
<p>MR. HENRY CURTIS  Life of the Land  76 North King Street, Suite 203  Honolulu, HI 96817</p>	<p>3 copies  U.S. Mail</p>
<p>SANDRA –ANN Y. H. WONG, ESQ.  1050 Bishop Street, #514  Honolulu, Hawaii 96813</p>	<p>1 copy  U.S. Mail</p>
<p>CHRISTOPHER S. COLMAN, ESQ.  Deputy General Counsel  Amerada Hess Corporation  One Hess Plaza  Woodbridge, N.J. 07095</p>	<p>1 copy  U.S. Mail</p>
<p>MR. MICHAEL DE'MARSI  Hess Microgen  4101 Halburton Road  Raleigh, NC 27614</p>	<p>1 copy  U.S. Mail</p>
<p>LANI D. H. NAKAZAWA, ESQ.  Office of the County Attorney  County of Kauai  4444 Rice Street, Suite 220  Lihue, HI 96766</p>	<p>2 copies  U.S. Mail</p>

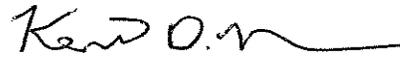
MR. GLENN SATO  
ENERGY COORDINATOR  
c/o Office of the County Attorney  
County of Kauai  
4444 Rice Street, Suite 220  
Lihue, HI 96766

1 copy  
U.S. Mail

JOHN W. K. CHANG, ESQ.  
Deputy Attorney General  
Department of the Attorney General  
State of Hawaii  
425 Queen Street  
Honolulu, Hawaii 96813

1 copy  
U.S. Mail

DATED: Honolulu, Hawai'i, November 22, 2004.



---

ALAN M. OSHIMA  
KENT D. MORIHARA

Attorneys for KAUAI ISLAND UTILITY  
COOPERATIVE