

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
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS

AND

CERTIFICATE OF SERVICE

PUBLIC UTILITIES
COMMISSION

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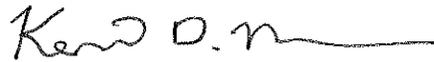
BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

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KAUAI ISLAND UTILITY COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS

COMES NOW, KAUAI ISLAND UTILITY COOPERATIVE, by and through its attorneys,
Oshima Chun Fong & Chung, hereby submits its Responses to the Division of Consumer
Advocacy's Information Requests.

DATED: Honolulu, Hawai'i, June 16, 2004.



ALAN M. OSHIMA
KENT D. MORIHARA

Attorneys for KAUAI ISLAND UTILITY
COOPERATIVE

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-27

Ref: KIUC Preliminary SOP, page 8, issue 2.

KIUC states that who should own and operate distributed generation project will largely depend on the type, size and location of the distributed generation project. Please provide all criteria that will need to be considered in determining who will own the DG project and explain how each criteria was determined and why it is reasonable.

Response:

As a member-owned cooperative, in determining whether KIUC should own a distributed generation project, KIUC would focus primarily on the interests of its members and whether being the owner would provide material benefits to KIUC and these members. While it is not feasible at this time to provide a list of all criteria that would need to be considered in making this determination on a case-by-case basis, some of the impacts that would be considered are the costs of owning, operating and maintaining the project, reliability, power quality and system stability impacts to KIUC's system and to its member-consumers, staffing and operational requirements, and how owning the project would satisfy its members' interests and could affect KIUC's margins. KIUC is obligated to show a material benefit to its members if it is to take ownership of such a project.

Sponsor:

Mike Yamane
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-28

Ref: KIUC Preliminary SOP, page 9, issue 2

a. KIUC states that is "would also consider being a possible owner of the DG facility, but not necessarily the builder or installer of the facilities, if it would provide material benefits to KIUC and its members."

1. Please define "material" as used in the statement. What are the parameters considered to determine whether a material benefit will be achieved?

Response:

See the response to CA-SOP-IR-27 above for a discussion of the parameters that should be considered in determining whether a material benefit will be achieved. KIUC considers a material benefit in this context as a benefit that, when considered by KIUC from an operational standpoint and its members from an interest and patronage capital standpoint, outweighs the risks and detriments of owning the distributed generation project.

2. Please explain why KIUC does not want to necessarily be the builder or installer of the facility if it was determined that the facility would provide material benefits to the utility.

Response:

This statement was made to recognize the fact that KIUC may not have the resources available to build and install the distributed generation facility. KIUC would consider owning the facility if it would provide material benefits to the utility, even if KIUC did not build and install the facility. KIUC would consider using outside consultants and contractors with expertise in the specific type of design to build and install the facility. During this period, KIUC personnel would manage these consultants and contractors to ensure that the facility is constructed in accordance with its standards.

b. KIUC goes on to state that owning the DG facility could protest [sic] the utility against the loss of revenues from customers leaving KIUC's electric grid. Since KIUC is a cooperative owned and operated by its members who largely consist of KIUC's electric customers, please explain KIUC's understanding of the benefits to customers installing a DG system and leaving KIUC's system.

Response:

As a member-owned cooperative, KIUC is in a position to assess the impacts of specific DG project ownership on its members' interests and on its system operations. KIUC is not in a position to assess the generic net benefits to customers, if any, from DG

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-28 (cont.)

project ownership, operation and maintenance and from leaving
KIUC's system.

Sponsor: Mike Yamane
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-29

Ref: KIUC Preliminary SOP, page 11, issue 3.

Please elaborate on how and why the owner of a DG project would share in the benefits a DG project would create for the electric utility system, especially if the owner of the project left the utility system?

Response:

For clarification purposes, the statement made on page 11 of KIUC's Preliminary SOP was made in the context of the Commission establishing policies that recognize the potential risk that any extensive or non-controlled infusion of distributed generation would have on an electric utility's revenues and on ratepayers, and was made under the assumption that the owner of the DG project would not leave KIUC's system in its entirety. If the owner of the DG project leaves KIUC's system, it is KIUC's position that they should not share in any benefits or savings that may result to the electric utility, if any.

As noted above, the owner of a DG project would not necessarily "leave" the utility system in its entirety. The owner may choose to retain membership in the cooperative in order to access backup and standby power from the utility. Under this situation, with the owner of the DG project still relying on KIUC to supplement or provide back-up for their electricity needs, KIUC believes that policies should provide certain guidelines to allow the utility to essentially recover its costs of allowing the DG project. These costs should be borne by the entities that are directly benefited by the distributed generation.

Regarding the sharing of benefits between KIUC and the owner of the DG project, it is not clear that the DG project would create any savings for the electric utility system. However, to the extent that such savings were realized, the benefits would accrue to KIUC's member-consumers, including the DG project owner remaining as a cooperative member.

Sponsor:

Mike Yamane
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-30

Ref: KIUC Preliminary SOP, page 11, issue 4.

- a. What circumstances currently exist where DG could be effectively used on distribution circuits? Please provide copies of maps that show the distribution circuits and locations on KIUC's system that DG could be sited effectively.

Response:

KIUC is not currently aware of any existing circumstances where DG could be effectively used on its distribution circuits. This is not to state, however, that no such circumstances exist. In that connection, KIUC has not made any determinations as to any specific distribution circuits and locations on KIUC's system where DG could be sited effectively, and cannot make any such determination at this time without undertaking significant additional research and analysis.

- b. Provide the transmission and distribution load data that support the assessment made in response to part a of this information request.

Response:

Not applicable. See the response to part a. above.

- c. What generation planning reserve margin does the Company use for long-term planning?

Response:

PUC rules (Rule 5.3.a, Standards for Electric Service in the State of Hawaii, General Order No. 7, February 18, 1968) require all utilities to meet the following "adequacy of supply" criteria:

"The generation capacity of the utility's plant, supplemented by electric power regularly available from other sources, must be sufficiently large to meet all reasonably expectable demands for service and provide a reasonable reserve for emergencies."

To meet this criteria, the Company uses a single contingency loss of load reserve criteria that has previously been approved by the State of Hawaii PUC, which provides that with the utility's single largest unit out-of-service, KIUC must still be able to meet the island of Kauai's energy demand.

- d. What spinning and supplemental generating reserve margins (operating reserves) does the Company use during normal operating conditions?

Response:

The Company does not follow any fixed or standard spinning and supplemental reserve margin. Instead, the Company utilizes the proper economic dispatch as provided through its SCADA system to best match the given load requirements at a given period in

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CA-SOP-IR-30 (cont.)

time. As such, the amount of spinning reserve fluctuates depending on the actual units committed as well as the time of day. The spinning reserve criteria used by KIUC is at a minimum in order to keep the cost of fuel as low as possible.

- e. Does the Company believe the DG can supply generation planning reserves and operating reserves? If so, what DG can supply each type of reserves?

Response:

As indicated in our position statement, KIUC believes that if a sufficient number of DG systems are connected to its grid and scattered throughout a given area, KIUC could possibly rely on a percentage of the total capacity of these facilities, depending on their respective operating characteristics, for KIUC's planning reserves. On the other hand, because KIUC does not have a set standard for its operating reserve, DG systems would not necessarily apply.

Sponsor:

Mike Yamane
Gary Peers
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-31

Ref: KIUC Preliminary SOP, page 11, issue 4

- a. Please explain why KIUC contends that the electric utility would still need to locate a transmission and distribution system in an area served by only one distributed generation facility in order to supply power in the event the facility goes down for maintenance or for unexpected reasons.

Response:

Please note that this statement was made under the assumption that the individuals being served by the distributed generation facility would remain as members of KIUC (i.e., KIUC would still be required to supplement the individuals' energy needs or to entirely serve these individuals when the distributed generation facility goes down for maintenance or for unexpected reasons). Under those circumstances, KIUC would still be required to locate a transmission and distribution system to serve these members, and for transmission and distribution system planning purposes, KIUC would be required to take into account the total load of these members, including that normally provided by the distributed generation facility.

- b. What are all of the factors considered in reaching this determination.

Response:

See the response to part a. above.

Sponsor:

Mike Yamane

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-32

Ref: KIUC Preliminary SOP, page 12, issue 6, paragraph 1, lines 1 and 2

Please provide copies of all documentation supporting the conclusion that DG would result in only minimal cost savings at best due to the small reduction in transmission line losses from providing generation at the customer location rather than having to transmit bulk energy over long distances. Include all data that was relied upon to make this determination, including load flow analysis data.

Response:

Based on KIUC's experience in transmission planning and load flow analysis, the existing system losses are relatively small, less than 1.5 percent (1.5%) depending on load conditions. As such, the ability of a DG project to have a measurable impact on these transmission line losses is limited. It should be noted that although losses also occur on the distribution system, it is difficult to segregate losses between transmission and distribution. Further complicating this situation is the contribution to these losses from other grid-connected facilities, including transformers and other substation equipment. In order to estimate current transmission line losses with some precision, KIUC would need to calculate base power flow under peak load conditions for either some or all of its transmission lines. This analysis has not yet been conducted.

Sponsor:

Mike Yamane
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-33

Ref: KIUC Preliminary SOP, page 13, issue 6, paragraph 1, lines 6 and 7.

- a. Please identify the specific fixed costs that might be increased because of DG projects and explain why these costs would be necessary.

Response:

These fixed costs involve possible increased transmission and distribution system capital costs that may be required to build or upgrade KIUC's facilities to meet the demands of those customers/members being served by customer-owned DG projects that will still rely on KIUC to provide supplemental power or to entirely serve their needs when the DG facility is down for maintenance or for unexpected reasons. As indicated in the response to CA-SOP-IR-31 above, in those situations, KIUC will still be required in planning its transmission and distribution facilities needs to include these customers/members' loads without consideration of the DG facilities (i.e., KIUC will be required to serve these entire loads during the periods when the DG facility is down). However, although KIUC will be required to plan and develop its system to meet the entire loads of these customers/members, KIUC's potential revenues from these customers/members will be lost as a result of the DG facility operations. In other words, KIUC's fixed costs would remain the same, but at a lost revenue flow, thereby resulting in a possible net loss to the company and need to increase its rates on KIUC's remaining customers/members in order to meet its revenue requirement.

- b. Has KIUC performed any studies to determine that rates that would be charge if DG is implemented by a Customer? If yes, please provide a copy of such studies.

Response:

No.

Sponsor:

Mike Yamane

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-34 Ref: KIUC Preliminary SOP, page 13, issue 7, paragraph (b), lines 1 and 2.

What geographic areas of the KIUC's system would be conducive to DG from an environmental emissions perspective? Explain how this assessment was determined.

Response: KIUC has not performed an assessment to determine geographic areas that would be conducive to DG from an environmental emissions perspective. Such an assessment cannot be made at this time without undertaking significant additional research and analysis at a substantial cost to KIUC's members.

Sponsor: Joe M^cCawley

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
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CA-SOP-IR-35

Ref: KIUC Preliminary SOP, page 13, issue 7, paragraph (c).

- a. What are the existing transmission line losses in kWh and in percent of energy supplied to KIUC's customers? Provide all documentation to support your response.

Response:

KIUC's lost (a.k.a. unaccounted for) generation for calendar year 2003 was 22,449 MWH, which represents 4.7% of KIUC's system net output. These numbers can be found in Schedule C: Statistical Information (Page 36) found in KIUC's 2003 Annual Report to the PUC, filed March 29, 2004. A copy of Page 36 is provided as Attachment CA-SOP-IR-35(a).

KIUC estimates that less than 1.5% of KIUC system net output is due to losses incurred by its system grid. However, as referenced in the response to CA-SOP-IR-32, it is difficult to segregate the losses from transmission, distribution, and other grid inter-connected facilities without extensive analysis.

- b. Please provide a copy of the map of KIUC's transmission systems.

Response:

A map of KIUC's transmission system is included as Attachment CA-SOP-IR-35(b).

- c. What specific geographic areas of KIUC's transmission systems would benefit from the installation of DG projects? Provide all documentation to support this assessment.

Response:

KIUC has not performed any studies to assist in making this determination at the current time. As indicated in its Statement of Position, KIUC does not believe such a determination can be made except on a case-by-case basis at the current time, taking into consideration numerous factors, including but not limited to the size and type of DG involved, other DG facilities in the given area, and its impact on KIUC's system and margins. See KIUC's discussion of Issue 9 in its Statement of Position.

- d. Please identify these areas on the map provided in response to part b above.

Response:

Not applicable. See the response to part c. above.

- e. What is the booked transmission plant in service as of December 31, 2003?

Response:

\$64,514,000.

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-35 (cont.)

- f. Please provide a copy of the most recent transmission and distribution system loss study conducted for KIUC's system.

Response: See the response to CA-SOP-IR-32.

- g. Please provide a copy of the most recent capital improvement plans for the transmission and distribution systems.

Response: Attachment CA-SOP-IR-35(g) reflects KIUC's capital improvement projects, specific to its transmission and distribution system, as per KIUC's five-year Capital Improvements Program, which was filed with the PUC on December 29, 2003 pursuant to General Order No. 7.

- h. Identify all transmission and distribution delivery system constraints.

Response: As part of its normal planning process, KIUC identifies capital improvement projects needed to meet anticipated load growth (see the response in CA-SOP-IR-35(g)). Some of these projects may be planned to relieve current or projected system operating constraints. In this time of heightened homeland security concerns, KIUC does not believe it is prudent to identify any possible constrained points it may have on its transmission or distribution system.

- i. Please provide copies of all transmission and distribution improvement plans that have been determined necessary to relieve transmission and distribution delivery system constraints.

Response: See Attachment CA-SOP-IR-35(g).

Sponsor: Joe M^cCawley
N. Richard Friedman

ATTACHMENT
CA-SOP-IR-35(a)

ATTACHMENT
CA-SOP-IR-35(b)

ATTACHMENT
CA-SOP-IR-35(g)

KAUAI ISLAND UTILITY COOPERATIVE
FIVE YEAR CONSTRUCTION PROGRAM
(in \$000's)

Budget #	2004		
		2004 (\$000)	2005 (\$000)
	TOTAL PROJECT COST OF 2003 CONSTRUCTION WORK IN PROGRESS	\$ 1,178	
04001A	LINE EXTENSIONS < \$10,000	\$ 116	\$ 9
04001B	LINE REPLACEMENTS < \$10,000	\$ 159	\$ 11
04002A	LINE EXTENSIONS > \$10,000	\$ 204	\$ 16
04002B	LINE REPLACEMENTS > \$10,000	\$ 87	\$ 6
04002C	UNDERGROUND SYSTEM UPGRADE	\$ 464	
04005	DISTRIBUTION TRANSFORMERS	\$ 536	
04015	SYSTEM PROTECTION UPGRADE	\$ 81	
04016	POLE REPLACEMENTS	\$ 291	
04017	POLE RESTORATIONS	\$ 322	
04019	T-8 12KV BUS UPGRADE	\$ 460	
04022	SCADA SYSTEM UPGRADES	\$ 103	
04025	KUKUI'ULA SUBSTATION	\$ 1,151	\$ 1,726
04026	KUKUIULA DISTRIBUTION SYSTEM	\$ 115	\$ 806
04027	KUKUI'ULA TRANSMISSION LINE RELOCATION	\$ 30	\$ 1,032
04028	KUKUI'ULA U/G TRANSMISSION LINE	\$ 585	\$ 1,755
04029	FORCED SUBSTN COMPONENT REPLACEMENT	\$ 326	
04032	TRANSMISSION INSULATOR REPLACEMENT	\$ 193	
04036	RECONDUCTOR WAIAHI LINE	\$ 207	
04037	RECONDUCTOR PRINCEVILLE FEEDER GETAWAYS	\$ 84	
04038	RECONDUCTOR KAAPUNI ROAD	\$ 177	
	TOTAL TRANSMISSION AND DISTRIBUTION	<u>\$ 6,869</u>	<u>\$ 5,361</u>

KAUAI ISLAND UTILITY COOPERATIVE
FIVE YEAR CONSTRUCTION PROGRAM
(in \$000's)

Budget #	2005	2005		2006	
				(\$000)	(\$000)
	TOTAL PROJECT COST OF 2004 CONSTRUCTION WORK IN PROGRESS		\$ 5,361	\$ -	
05001A	LINE EXTENSIONS < \$10,000		\$ 103	\$ 9	
05001B	LINE REPLACEMENTS < \$10,000		\$ 141	\$ 11	
05002A	LINE EXTENSIONS > \$10,000		\$ 180	\$ 16	
05002B	LINE REPLACEMENTS > \$10,000		\$ 77	\$ 6	
05002C	UNDERGROUND SYSTEM UPGRADE		\$ 464		
05005A	DISTRIBUTION TRANSFORMERS		\$ 508		
05005C	TRANSFORMER OIL DISPOSAL		\$ 127		
05012	SYSTEM RELIABILITY PROGRAM		\$ 152		
05015	SYSTEM PROTECTION UPGRADE		\$ 76		
05016	POLE REPLACEMENTS		\$ 229		
05017	POLE RESTORATIONS		\$ 318		
05019	REPLACE T-7 AND STRUCTURE		\$ 635		
05021	RECONDUCTORING PROJECTS		\$ 232		
05022	SCADA SYSTEM UPGRADES		\$ 64		
05028	KILAUEA-PRINCEVILLE TRANSMISSION LINE		\$ 714		
05029	FORCED SUBSTN COMPONENT REPLACEMENT		\$ 318		
05030	HANAHANAPUNI TRANSMISSION STATION		\$ 1,270	\$ 2,000	
05031	RECONDUCTOR KILAUEA TOWN		\$ 175		
05032	TRANSMISSION INSULATOR REPLACEMENT		\$ 191		
	TOTAL TRANSMISSION AND DISTRIBUTION		<u>\$ 11,334</u>	<u>\$ 2,042</u>	

KAUAI ISLAND UTILITY COOPERATIVE
FIVE YEAR CONSTRUCTION PROGRAM
(in \$000's)

Budget #	2006		
		2006 (\$000)	2007 (\$000)
	TOTAL PROJECT COST OF 2005 CONSTRUCTION WORK IN PROGRESS	\$ 2,042	
06001A	LINE EXTENSIONS < \$10,000	\$ 104	\$ 9
06001B	LINE REPLACEMENTS < \$10,000	\$ 142	\$ 11
06002A	LINE EXTENSIONS > \$10,000	\$ 182	\$ 16
06002B	LINE REPLACEMENTS > \$10,000	\$ 79	\$ 6
06002C	UNDERGROUND SYSTEM UPGRADE	\$ 464	
06005A	DISTRIBUTION TRANSFORMERS	\$ 508	
06005C	TRANSFORMER OIL DISPOSAL	\$ 127	
06012	SYSTEM RELIABILITY PROGRAM	\$ 152	
06015	SYSTEM PROTECTION UPGRADE	\$ 76	
06016	POLE REPLACEMENTS	\$ 229	
06017	POLE RESTORATIONS	\$ 318	
06021	RECONDUCTORING PROJECTS	\$ 406	
06022	SCADA SYSTEM UPGRADES	\$ 64	
06029	FORCED SUBSTN COMPONENT REPLACEMENT	\$ 318	
06031	RECONDUCTOR HANAIEI TOWN	\$ 175	
06032	TRANSMISSION INSULATOR REPLACEMENT	\$ 191	
	TOTAL TRANSMISSION AND DISTRIBUTION	\$ 5,575	\$ 42

KAUAI ISLAND UTILITY COOPERATIVE
FIVE YEAR CONSTRUCTION PROGRAM
(in \$000's)

Budget #	2007		
		2007 (\$000)	2008 (\$000)
	TOTAL PROJECT COST OF 2006 CONSTRUCTION WORK IN PROGRESS	\$ 42	
07001A	LINE EXTENSIONS < \$10,000	\$ 105	\$ 9
07001B	LINE REPLACEMENTS < \$10,000	\$ 144	\$ 11
07002A	LINE EXTENSIONS > \$10,000	\$ 183	\$ 16
07002B	LINE REPLACEMENTS > \$10,000	\$ 80	\$ 6
07002C	UNDERGROUND SYSTEM UPGRADE	\$ 464	
07005A	DISTRIBUTION TRANSFORMERS	\$ 508	
07005C	TRANSFORMER OIL DISPOSAL	\$ 127	
07012	SYSTEM RELIABILITY PROGRAM	\$ 152	
07015	SYSTEM PROTECTION UPGRADE	\$ 76	
07016	POLE REPLACEMENTS	\$ 229	
07017	POLE RESTORATIONS	\$ 318	
07019	REPLACE T-4	\$ 635	
07021	RECONDUCTORING PROJECTS	\$ 406	
07022	SCADA SYSTEM UPGRADES	\$ 64	
07025	WAILUA SUBSTATION	\$ 1,524	\$ 1,800
07029	FORCED SUBSTN COMPONENT REPLACEMENT	\$ 318	
07032	TRANSMISSION INSULATOR REPLACEMENT	\$ 191	
	TOTAL TRANSMISSION AND DISTRIBUTION	\$ 5,564	\$ 1,842

KAUAI ISLAND UTILITY COOPERATIVE
FIVE YEAR CONSTRUCTION PROGRAM
(in \$000's)

<u>Budget #</u>	2008	<u>2008</u> (\$000)	<u>2009</u> (\$000)
	TOTAL PROJECT COST OF 2007 CONSTRUCTION WORK IN PROGRESS	\$ 1,842	
08001A	LINE EXTENSIONS < \$10,000	\$ 107	\$ 9
08001B	LINE REPLACEMENTS < \$10,000	\$ 145	\$ 11
08002A	LINE EXTENSIONS > \$10,000	\$ 184	\$ 16
08002B	LINE REPLACEMENTS > \$10,000	\$ 81	\$ 6
08002C	UNDERGROUND SYSTEM UPGRADE	\$ 464	
08005A	DISTRIBUTION TRANSFORMERS	\$ 508	
08005C	TRANSFORMER OIL DISPOSAL	\$ 127	
08012	SYSTEM RELIABILITY PROGRAM	\$ 152	
08013	SAFETY EQUIPMENT	\$ 165	
08015	SYSTEM PROTECTION UPGRADE	\$ 76	
08016	POLE REPLACEMENTS	\$ 229	
08017	POLE RESTORATIONS	\$ 318	
08021	RECONDUCTORING PROJECTS	\$ 406	
08022	SCADA SYSTEM UPGRADES	\$ 64	
08029	FORCED SUBSTN COMPONENT REPLACEMENT	\$ 318	
08032	TRANSMISSION INSULATOR REPLACEMENT	\$ 191	
	TOTAL TRANSMISSION AND DISTRIBUTION	<u>\$ 5,375</u>	<u>\$ 42</u>

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-36

Ref: KIUC Preliminary SOP, page 15, issue 9, paragraph (b).

The SOP refers to the safety and performance standards that would need to be complied with if the DG facility were to interconnect to KIUC's grid. Would these interconnections also need to meet the National Electric Safety Code (NESC)? Explain.

Response:

The National Electrical Safety Code (NESC) is a standard promulgated by the Institute of Electrical and Electronics Engineers (IEEE). This standard covers the installation, operation, and maintenance of electric supply lines and associated equipment by a public or private utility in the exercise of its function as a utility. This Code contains the basic provisions that are considered necessary for the safety of employees and the public under the specified conditions. The NESC covers utility facilities and functions up to the "service point" (defined in the NESC as the "point of connection between the facilities of the serving utility and the premises wiring").

If the interconnection of a DG facility to the utility grid does not involve the installation, operation, or maintenance of any equipment beyond the NESC "service point", the requirements of the NESC would not apply to the DG interconnection. Conversely, if the DG interconnection did involve equipment beyond the service point, the NESC may apply.

Sponsor:

Joe M^cCawley

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-37

Ref: KIUC Preliminary SOP, page 16, issue 9, paragraph (e).

Please explain the possible deregulations to the transmission and distribution system that could be caused by DG.

Response:

KIUC, in paragraph (e) on page 16 of its Preliminary Statement of Position, mentions that possible *degradations* in the electric utility's transmission and distribution system may result from interconnecting to a DG system. Examples of this include:

- A DG system degrading the utility's system reactive performance. This would occur when a DG system operates at a power factor that draws reactive power from the utility.
- A utility's level of service to other customers may be lessened, or degraded, as a result of the utility, at the request of the DG owner, delaying high speed re-closing of the utility's feeder circuit. The DG owner may request this to allow his interconnected generator sufficient time to remove itself from a de-energized feeder prior to automatic re-close.
- Instability of the utility's system associated with under-frequency situations occurring as a result of sporadic operating characteristics of the DG system.

These are just some examples of the possible impacts to KIUC's system operations. For the interconnection of a specific DG project, KIUC may need to conduct a detailed system impact study.

Sponsor:

Joe M^cCawley

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-38

Ref: KIUC Preliminary SOP, page 16, issue 9, paragraph (k).

Please expand on the standards, regulations and requirements that KIUC believes is most important to the utility, if a DG facility were allowed to interconnect to KIUC's grid. Explain.

Response:

There is no one standard, regulation or requirement that KIUC believes is most important. Instead, KIUC would expect that all applicable zoning, land use, environmental and other laws, regulations and requirements, including but not limited to those imposed by the PUC, would be complied with by a DG facility and its owner and operator. At a minimum, the DG facility would need to comply with the latest versions of the standards identified in Rule 5.2 of HPUC General Order No. 7, to the extent these standards apply to the DG project's design, installation, operation and maintenance.

Sponsor:

Joe M^cCawley
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-39

Ref: KIUC Preliminary SOP, page 17, issue 10.

Please identify the specific tariffs that will allow KIUC to provide on-site generation that is owned by KIUC.

Response:

The KIUC SOP discussion is hypothesizing utility ownership of the on-site generation project, but focuses on electric service being provided under existing tariffs. Under this scenario, electricity would be supplied in accordance with existing tariffs that apply to the applicable customer service class.

Sponsor:

Joe M^cCawley
N. Richard Friedman

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
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CA-SOP-IR-40 Please provide the following for all the generating units:

- a. Nameplate ratings (MVA).
- b. Nameplate power factor.
- c. Nameplate exciter rating (kW).
- d. Maximum operating capability (MW).
- e. Nameplate reactive capability (MVA_r).

Response: See the following table:

Unit	MVA	PF	Exciter kW	MW	MVA_r	Comments
D1	2.50	.8	12	2.00	2.2	
D2	2.50	.8	12	2.00	2.2	
D3	3.25	.8	14.4	2.75	2.0	
D4	3.25	.8	14.4	2.75	2.0	
D5	3.25	.8	14.4	2.75	2.0	
D6	9.836	.8	5.1	7.85	8.0	
D7	9.836	.8	5.1	7.85	8.0	
D8	9.836	.8	5.1	7.85	8.0	
D9	9.836	.8	5.1	7.85	8.0	
S1	12.50	.8	34.5	10	5.4	
GT1	20.65	.85	56	19.2	9.0	
GT2	23.00	.85	76.8	23.7	10	
UH	.625	.8	12.5	.50	N.A.	Upper Waiahi hydro
LH	1.00	.8	7.5	.80	N.A.	Lower Waiahi hydro
KPS	48.875	.8	187	27.5	40.0	

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
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CA-SOP-IR-41 Please identify all of the generating units that provide load following, spinning reserves and supplemental reserves service.

Response: Load following – All units are available to provide load following service. However, units are dispatched and loaded via an economic dispatch program. For any given system load, this program will look at all the available units and determine the most economic combination of units.

Spinning reserve – All units are available to provide spinning reserve service. However, the Company does not have a defined plan for spinning reserve. The Company utilizes the proper economic dispatch as provided through its SCADA system to best match the given load requirements at the particular period in time. The amount of spinning reserve fluctuates depending on the actual units committed as well as the time of day. However, the spinning reserve criteria used by KIUC is at a minimum in order to keep the cost of fuel as low as possible.

The amount of spinning and supplemental generation the Company carries depends on the generating units committed by economic dispatch at that time. As an example, under normal conditions, on April 20, 2004 the Company carried the following reserve:

<u>Time</u>	<u>Reserve</u>
0400	9.7 MW
1100	9.4 MW
1900	10.7 MW
2300	12.95 MW

Spinning reserve on May 25, 2004 when one SWD unit was out of service for maintenance (D6), the Company carried the following reserve:

<u>Time</u>	<u>Reserve</u>
0400	18.0 MW
1100	12.27 MW
1900	13.3 MW
2300	8.73 MW

Supplemental reserve service – See the above information.

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
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CA-SOP-IR-42 For each of the generating units identified in response to the above information request please provide the following:

a. Unit rating (MW).

Response: See Attachment CA-SOP-IR-42a.

b. 2003 fixed operating and maintenance cost.

Response: See Attachment CA-SOP-IR-42b.

c. Unit ramp rate (MW/minute).

Response: See Attachment CA-SOP-IR-42a.

Sponsor: Jeff Deren

ATTACHMENT
CA-SOP-IR-42a

Attachment CA-SOP-IR-42a

Unit	Rating (MW)	Ramp Rate (MW/min)	Comments
D1	2.00	4.0	
D2	2.00	4.0	
D3	2.75	4.0	
D4	2.75	4.0	
D5	2.75	4.0	
D6	7.85	1.5	
D7	7.85	1.5	
D8	7.85	1.5	
D9	7.85	1.5	
S1	10	3.0	
GT1	19.2	5.0	
GT2	23.7	5.0	
UH	.50	N.A.	Upper Waiahi hydro
LH	.80	N.A.	Lower Waiahi hydro
KPS	27.5	8.0	

ATTACHMENT
CA-SOP-IR-42b

**Kauai Island Utility Cooperative
Distributed Generation IR's**

<u>CA-SOP-IR</u>	<u>IR Description</u>	<u>Gen Unit</u>	<u>Description</u>	<u>Response</u>	<u>Total O&M</u>
42 b	2003 Fixed O&M Costs O&M Accts 5000-5530	680	CE Boiler		\$ 85,224.34
		681	Steam Turbine		\$ 55,164.47
		682	Steam Plant Aux		\$ 86,172.22
		683	HRSG		\$ 36,024.50
		684	GT-1 Hitachi		\$ 19,254.70
		685	GT-2 JBE		\$ 41,448.93
		686	Diesel #1		\$ 7,286.92
		687	Diesel #2		\$ 7,332.34
		688	Diesel #3		\$ 156,215.13
		689	Diesel #4		\$ 2,823.42
		690	Diesel #5		\$ 9,664.09
		691	Diesel #6		\$ 851,045.57
		692	Diesel #7		\$ 189,537.56
		693	Diesel #8		\$ 30,828.70
		694	Diesel #9		\$ 775,449.10
		695	SWD Auxiliaries		\$ 369,093.30
		696	SWD Centrifuges		\$ 22,653.11
		697	SWD Ultrafiltration		\$ 8,521.27
		698	General Operations		\$ 18,449,677.52
		699	General Maintenance		\$ 510,986.16
		700	Other		\$ 226,293.64
		701	LESC		\$ 72,892.37
		702	KPS		\$ 9,949.45
		720	Lihue Hydro		\$ 250,555.51
			TOTAL		\$ 22,274,094.32

* Includes fuel & lube oil costs >

**Kauai Island Utility Cooperative
Distributed Generation IR's**

<u>CA-SOP-IR</u>	<u>IR Description</u>	<u>Response</u>
	<u>Acct. No.</u>	<u>Description</u>
		<u>Total</u>
43 a	Production Plant-in-Service	
	3120 Boiler Plant Equip	\$ 10,978,043.57
	3330 Water Wheels, Turb & Generators	\$ 268,646.11
	3430 Prime Movers	\$ 50,218,510.91
	TOTAL	\$ 61,465,200.59
43 b	Accessory Electric Equip PIS	
	3150 Access Elec Plt-Steam Prod Plt	\$ 573,849.58
	3450 Access Elec Plt-Other Prod Plt	\$ 8,138,144.83
	TOTAL	\$ 8,711,994.41
43 c	FERC Account 3140 PIS	
	3140 Turbogenerator Units	\$ 1,717,285.27
43 d	Rotors, Generators, & Access PIS	
	3440 Generators	\$ 9,293,725.97
43 e	Exciters & Voltage Regulators PIS	
	n/a	
46	2003 Prod & Trans Depr Exp	
	3100-3460 Production Plant	\$ 4,000,540.82
	3500-3560 Transmission Plant	\$ 2,289,925.31
	TOTAL	\$ 6,290,466.13
47 a	2003 Total Production Expense	
	5020 Steam Expenses	\$ 628,347.97
	5120 Maint of Boiler Plant	\$ 344,675.98
	TOTAL	\$ 973,023.95

**Kauai Island Utility Cooperative
Distributed Generation IR's**

<u>CA-SOP-IR</u>	<u>IR Description</u>	<u>Response</u>
5430	Maint of Resv, Dams & Water	\$ 124,017.98
5530	Maint of Gen & Elec Equip	\$ 3,881,096.14
	TOTAL	\$ 4,978,138.07
5470	Fuel-Diesel	\$ 17,031,559.00
5471	Fuel-KPS Naphtha	\$ 557,183.77
5472	Fuel-KPS Diesel	\$ 2,997.04
	TOTAL	\$ 17,591,739.81
47 c	2003 Maint Supv & Engineering	n/a
47 d	2003 Maint of Boiler Plant	\$ 344,675.98
47 e	2003 Maint of Electric Plant	\$ 8,773.30
	TOTAL	\$ 65,073.93
CA 35 (e)	Booked Transmission PIS @ 12/31/03	\$ 64,513,889.00
	3500-3560 Transmission Plant	

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
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CA-SOP-IR-43 Please provide the following information as of December 31, 2003 for each Company's generating units:

a. Production plant in service.

Response: See Attachment CA-SOP-IR-42b.

b. Accessory electric equipment plant in service.

Response: See Attachment CA-SOP-IR-42b.

c. FERC Account 314 plant in service (or by applicable NARUC account).

Response: See Attachment CA-SOP-IR-42b.

d. Rotors, generators and their accessories plant in service.

Response: See Attachment CA-SOP-IR-42b.

e. Exciters and voltage regulators plant in service.

Response: See Attachment CA-SOP-IR-42b.

f. Energy generated (kWh).

Response: See Attachment CA-SOP-IR-42b.

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
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CA-SOP-IR-44 What were the 12-month coincident peaks in 2003?

Response: See the following table:

Month	MW	Month	MW
Jan	69.28	July	71.30
Feb	66.88	Aug	73.10
Mar	67.79	Sept	72.30
Apr	65.41	Oct	73.46
May	69.03	Nov	71.47
June	69.30	Dec	71.78

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
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CA-SOP-IR-45 What were the production and transmission insurance expenses incurred in 2003 and charged to the FERC Account No. 924 (or by the applicable NARUC account)?

Response: See the following table:

Account	\$ Amount
Production Plant	\$120,954
Transmission Plant	\$64,644

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-46 What are the 2003 production and transmission depreciation expenses?

Response: See Attachment CA-SOP-IR-42b.

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-47 For each generating unit, please provide the following 2003 expenses:

a. Total production.

Response: See Attachment CA-SOP-IR-42b.

b. Fuel.

Response: See Attachment CA-SOP-IR-42b.

c. Maintenance supervision and engineering.

Response: See Attachment CA-SOP-IR-42b.

d. Maintenance of boiler.

Response: See Attachment CA-SOP-IR-42b.

e. Maintenance of electric plant.

Response: See Attachment CA-SOP-IR-42b.

Sponsor: Jeff Deren

**KAUAI ISLAND UTILITIES COOPERATIVE'S RESPONSES TO THE
DIVISION OF CONSUMER ADVOCACY'S INFORMATION REQUESTS
DOCKET NO. 03-0371**

CA-SOP-IR-48 Please provide a copy of the most recent avoided cost calculation for qualifying facilities.

Response: See Attachment CA-SOP-IR-48.

Sponsor: Jeff Deren

**ATTACHMENT
CA-SOP-IR-48**

DERIVATION OF SCHEDULE "Q" MODIFIED AVOIDED ENERGY COST PAYMENT RATES

LINE	DESCRIPTION	ON-PEAK	OFF-PEAK	SOURCE
1	Heat rate	12,105 btu/kwh	9,058 btu/kwh	Avg. incremental heat rate (1998 Budget)
2	Composite fuel price	<u>\$11.7901</u> per mmbtu	<u>\$11.7901</u> per mmbtu	Composite cost of generation
3	Unadjusted payment rate	\$0.1427 per kwh	\$0.1068 per kwh	Line 1 x line 2 / 1000000
4	Power factor adjustment	(\$0.0027) per kwh	(\$0.0034) per kwh	Based on OLP rate schedule power factor adjustment
5	O&M adjustment	<u>\$0.0000</u> per kwh	<u>\$0.0000</u> per kwh	No change in hourly O&M with no units shut down
6	Pre time-weighted rate	\$0.1400 per kwh	\$0.1034 per kwh	Line 3 + line 4 + line 5
7	Hour weighting	<u>58.33%</u> 14/24 hrs.	<u>41.67%</u> 10/24/hrs.	Percent of daily on- or off-peak hours
8	Time-weighted, peak time-related payment rate	\$0.0817 per kwh	\$0.0431 per kwh	Line 6 x line 7
9	Weighted On-peak rate		\$0.0817 per kwh	Line 8 (On-peak)
10	Weighted Off-peak rate		<u>\$0.0431</u> per kwh	Line 8 (Off-peak)
11	Schedule "Q" Modified payment rate		\$0.1248 per kwh	Line 9 + line 10
12		.0027 x .5833=	0.0016	
13		.0034 x .4167=	<u>0.0014</u>	
14			0.0030	
15			<u>0.1248</u>	
16	Schedule "Q" Modified payment rate without power factor adjustment		\$0.1278 per kwh	

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