BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAI'I

In the Matter of PUBLIC UTILITIES COMMISSION Instituting a Proceeding to Investigate Distributed Generation in Hawaii.	)))))))))	Docket No. 03-0371

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THE DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM'S

TESTIMONY

and

CERTIFICATE OF SERVICE

Filed _____, 2004

At _____ o'clock _____.m.

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Chief Clerk of the Commission

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OF THE STATE OF HAWAI'I

In the Matter of	)	
	)	
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	)	Docket No. 03-0371
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THE DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM'S

TESTIMONY

The State of Hawaii Department of Business, Economic Development, and Tourism is participating without intervention in Docket 03-0371. As outlined in the motion to participate and the Preliminary Statement of Position (PSOP), the primary purpose for the Department's participation is to carry out its Director's statutory responsibility, as State Energy Resources Coordinator (ERC), for formulating plans, objectives, criteria, for optimum development of energy resources and to conduct systematic analysis of existing and proposed energy resource programs of the electric utilities in Hawaii, as outlined in sections 196-3 and 4, Hawaii Revised Statutes (HRS). In particular, in this Docket, the Department is acting in support of section 196-4, (8) wherein the DBEDT Director is charged with the duty to:

> Serve as <u>consultant</u> to the Governor, <u>public agencies</u> and private industry on matters <u>related to the</u>

acquisition, utilization and conservation of energy resources;

The Department's Basic Position. The Department has consistently advocated increased use of distributed generation in the context of a regulatory structure that balances the interests of distributed generation owners/users, electric utilities, ratepayers, and providers of distributed generation systems.

The Department's advocacy of distributed generation is consistent with the State's statutory energy objectives as outlined in section 226-18, HRS, which states:

> (a) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:
>
> > (1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;
> >
> > (2) Increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased;
> >
> > (3) Greater energy security in the face of threats to Hawaii's energy supplies and systems; and
> >
> > (4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use.

1 (b) To achieve the energy objectives, it shall be the
2 policy of this State to ensure the provision of
3 adequate, reasonably priced, and dependable energy
4 services to accommodate demand.

5 DBEDT's encouragement of distributed generation stems from
6 the inherent characteristics of typical DG systems. DG can
7 increase the dependability or reliability of electricity service
8 above that practical from the utility system. Many DG
9 technologies, especially combined heat and power (CHP), offer
10 greater fuel efficiency, better economics, enhanced energy
11 security and reduced greenhouse gas emissions. Renewable DG
12 systems can also increase energy self-sufficiency, contribute
13 more to energy security, and reduce greenhouse gas emissions,
14 making them especially desirable from the State's perspective.

15 As discussed in the meeting held on March 31, 2004 to
16 discuss the Stipulated Prehearing Order,

17 The Department of Business Economic and Development
18 represented that it was interested in serving as a
19 resource for technical information for the parties in
20 the proceeding. Based on the representations of the
21 participants, the parties agreed that the participants
22 would be allowed to present recommendations on any of
23 the issues in the instant proceeding provided that any
24 recommendation be provided as the respective
25 participant's Preliminary Statement of Position,
26 followed by written testimonies in support of said
27 position in accordance with the Stipulated Regulatory
28 Schedule attached to this Stipulated Prehearing Order.

29 DBEDT's testimony, which is based upon its PSOP, is again

intended to offer ideas and resources on the issues in this docket that reflect the State's energy objectives for consideration by the parties. DBEDT does not intend to provide oral testimony.

Summary of DBEDT Position on Issues

The Department's position on the issues in this docket enumerated in the stipulated pre-hearing order were detailed in DBEDT's PSOP and are summarized below.

1. What must be considered to allow a distributed generating facility to interconnect with the electric utility's grid?

The Department cites Tom Starrs, of Kelso Starrs & Associates, who presented an *Overview of Interconnection Issues*[1] at a workshop in December 2001. He noted that, "integrating customer-owned, customer-sited DG facilities into the utility grid depends on the ability of consumers to purchase, install, and interconnect this equipment easily." He cited three sets of issues that needed to be addressed:

1. Technical requirements for interconnection to deal with safety and power quality issues;

2. Non-technical requirements for interconnection, such as legal, procedural, and economic issues; and

3. Metering arrangements, which determine energy value;

HECO Interconnection Standards (Technical Requirements) and Standard Interconnection Agreement (Non-Technical Requirements)

[1] Available at http://www.state.hi.us/dbedt/ert/icw/starrs/starrs.html

At the Workshop, Tom Simmons, then Manager of HECO's Power Supply Services Department, made a detailed presentation on Interconnection Procedures for the HECO system[2]. He announced that HECO had draft interconnection standards and a standard interconnection agreement. Ultimately these became effective March 21, 2003 by Public Utilities Commission (PUC) Decision and Order (D&O) No. 20056, filed March 6, 2003. By D&O No. 20220, filed May 30, 2003, the PUC approved a modification to the insurance provision of the standard interconnection agreement, which became effective June 6, 2003.

DBEDT defers to DG owners and vendors as to whether there is a need to change or update the HECO interconnection agreement.

IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems[3] was approved as an American National Standard in October 2003. Additional related standards under development include:

- IEEE P1547.1 Draft Standard for Conformance Tests Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems[4];
- IEEE P1547.2 Draft Application Guide for IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems[5];
- IEEE P1547.3 Draft Guide For Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems[6]; and
- IEEE P1547.4 Draft Guide for Design, Operation, and Integration of Distributed Resource Island Systems with Electric Power Systems.[7]

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[2] Available at: http://www.state.hi.us/dbedt/ert/icw/simmons/simmons.html
[3] Available at http://grouper.ieee.org/groups/scc21/1547/1547_index.html
[4] Available at http://grouper.ieee.org/groups/scc21/1547.1/1547.1_index.html
[5] Available at http://grouper.ieee.org/groups/scc21/1547.2/1547.2_index.html
[6] Available at: http://grouper.ieee.org/groups/scc21/1547.3/1547.3_index.html

Interconnection for Smaller Systems

Cost is an important consideration in deciding whether or not to deploy DG. The National Association of Regulatory Utility Commissioners (NARUC) has developed *Model Interconnection Procedures and Agreement for Small Distributed Generation Resources*.

Net Metered Renewable Energy DG Technical and Non-Technical Interconnection Process

Currently, net metered renewable energy DG interconnection, which is less than 10 kW is very simple. The customer-generator and electrical contractor simply complete a Net Energy Metering Agreement[8].

DBEDT suggests similar simplified interconnection agreement procedures be considered for non-renewable and renewable systems to some greater threshold than the current 10 kW. Perhaps the 50 kW limit for renewable net metered systems set by Act 99, Session Laws of Hawaii 2004, could be applied to interconnection of both renewable and fossil DG systems.

2. Who should own and operate distributed generation projects?

Given the potential advantages of DG to electric utility customers/end users, Hawaii's electric utility systems, and society as a whole, DBEDT believes that electric utility customers/end users, energy service companies/DG vendors, and the electric utilities should be allowed to own and operate DG projects. DBEDT supports a level playing field relative to the utilities, which could also complement their marketing of energy

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[7] Available at http://grouper.ieee.org/groups/scc21/1547.4/1547.4_index.html

[8] HECO's Net Metering Agreement is available at http://www.heco.com/images/pdf/NEM_agreement.pdf

efficiency measures.

3. What impacts, if any, will distributed generation have on Hawaii's electric transmission and distribution systems and market?

The positive impacts on Hawaii's electric transmission and distribution systems can be significant if deployments of DG are targeted to areas where there are existing or potential constraints, or need for redundant lines for reliability. Such deployments appear particularly appropriate for utility DG/CHP programs. In addition, incentives could be offered for non-utility DG/CHP in targeted areas.

DG should also be used instead of transmission and distribution system additions or upgrades for businesses or organizations requiring greater reliability than the centralized utility system can offer as competitively as DG. Also, it is not equitable to expect all ratepayers to pay for the high level of power quality needed only by a few.

4. What is the role of the regulated electric utility companies and the Commission in the deployment of distributed generation in Hawaii?

DBEDT supports the concept of regulated utility sales of CHP services to utility customers. The caveat is that such utility sales must be in an open, level competitive market. DBEDT offers some resources for the consideration of the parties that offer ideas on this issue. Additional detail was provided in our PSOP.

In his paper, *Distributed Generation - A Fair and Simple*

Plan for Utilities and Policy-Makers[9], R.S. Brent of Solar Turbines Incorporated suggests that "distributed generation faces institutional barriers erected in the era before distributed generation technology emerged as an economic alternative", including "existing rate and regulatory regimes that fail to offer appropriate incentives to utilities and customers who would substitute distributed generation facilities for distribution and generation."

Mr. Brent focuses on methods that provide incentives to customers and utilities to install cost-effective distributed generation facilities through "localized" least-cost planning.

5. What are the appropriate rate design and cost allocation issues that must be considered with the deployment of distributed generation facilities?

Rate Design

The authors of *Small Is Profitable*[10] state that DG poses four primary threats to the existing vertically integrated business model. First, DG results in the loss of revenue, because the customer simply purchases fewer kWh or fewer distribution services. Second, more substantial market capture by DG can result in stranded grid capacity no longer needed. Third, the ability to deploy DG more rapidly than centralized generation or transmission upgrades can partially strand new capacity additions. Fourth, the combination of the first three threats can create a "death spiral" in which the higher prices to remaining customers induce more of them to leave this system,

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[9] Available at http://uschpa.admgt.com/SolarT-DGforUtilsPolicyMkrs2002.pdf

[10] *Small is Profitable.* Rocky Mountain Institute, 2003, available for purchase at: http://www.smallisprofitable.org/

creating a self-reinforcing cycle of ever-increasing unit prices.

Their recommendations for states with traditional utility recommendation are:

1. Decouple utility revenue requirements from kWh sold, and create incentives to lower customers' bills, not price per kWh.

2. Require mandatory integrated resource planning as the basis for prudent cost recovery

3. Restructure distribution tariffs to reduce excessive fixed charges

4. Adopt renewable portfolio standards and tradable credits.

Cost Allocation for DG

In the PSOP, DBEDT cited work by Ms. Ellen Petrill, of the Electricity Innovation Institute (E2I), on *DER Costs and Benefits: Finding Win-Win-Win Approaches* that offered a number of ideas regarding utility deployment of DG that we believe merit consideration. The report entitled, *A Framework for Developing Collaborative DER Programs: Working Tools for Stakeholders*, was provided with the PSOP.

The goals of this effort are to:

- understand DER costs and benefits from various stakeholder perspectives

- create incentives that accurately reflect and fairly allocate these costs and benefits

- facilitate pilot programs that can show how to reduce DER costs and monetize benefits, and how to better integrate DER into prevailing electricity markets.

DBEDT believes the parties should place additional focus on considering cost and benefit analysis as a tool to determine what entity should build or own a particular project.

Customer Retention Rates

DBEDT believes that, if utilities can provide customers with DG, customer retention rates - existing or in the future - no longer seem justifiable.

Standby Charges

DBEDT is concerned that excessive, inflexible, or inappropriate standby charges may discourage deployment of DG. DBEDT recommends re-evaluation of Hawaii's existing standby charges and consideration of the policies described in California Public Utilities Commission's (CPUC) Decision 01-07-27 *Interim Decision Adopting Standby Rate Design Policies*[11] , (See Section 7. Discussion and Summary of Adopted Standby Rate Design Framework[12] and Conclusions of Law[13]).

6. What revisions should be made to the integrated resource planning process?

We note that the HECO utilities are planning for forecasted combined heat and power for the first time in

[11] Available at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/8823-06.htm#P266_103971
[12] Section 7 at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/P273_105965#P273_105965
[13] Conclusions of Law at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/8823-10.htm#TopOfPage

IRP-3. We believe that this should be continued, but consideration should be given to including non-CHP DG into the IRP. For example, the Navy uses 10 MW of non-CHP combustion turbines to reduce its demand charges by shaving its peak demands.

7. What are the impacts of distributed generation on power quality and reliability?

Generally, DG can enhance power quality and reliability for users. As noted in our discussion of Issue 3, "DG should . . . be used instead of transmission and distribution system additions or upgrades for businesses or organizations requiring greater reliability than the utility system offers."

The utility can also benefit from improved power quality and reliability provided by DG as demonstrated by both MECO and HELCO in recent years.

8. What forms of distributed generation (e.g., renewable energy facilities, hybrid renewable energy systems, generation, cogeneration) are feasible and viable for Hawaii?

DBEDT believes that all commercially available forms of distributed generation are feasible in Hawaii. Fossil fueled DG/CHP that would use natural gas on the Mainland would need to use synthetic natural gas, LPG, naphtha, or diesel in Hawaii.

9. What is the potential for distributed generation to reduce the use of fossil fuels?

Generally, renewable DG will reduce fossil fuel use by 100% of fossil fuel previously used to produce the electricity now

1 produced by the renewable DG. Customer sited DG without heat
2 recovery may have efficiency comparable to the utility system,
3 but will avoid line losses.

4 **10. What utility costs can be avoided by distributed generation?**

5 Very generally, some transmission and distribution costs and
6 fuel costs can be avoided.

7 **11. What are the externalities costs and benefits of distributed**
8 **generation?**

9 In general, DBEDT believes that the efficiencies of DG, and
10 especially CHP and renewable DG relative to fossil fuel central
11 station generation create benefits that outweigh the costs.

12 **12. The parties and participants can also address issues raised**
13 **in the informal complaint filed by Pacific Machinery, Inc.,**
14 **Johnson Controls, Inc. and Noresco, Inc. against HECO, MECO**
15 **and HELCO on July 2, 2003.**

16 The parties that filed the complaint have withdrawn as
17 interveners in this Docket. DBEDT encourages the complainants
18 and the utilities to arrive at an amicable resolution of the
19 issues.

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Testimony upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

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