LOL-SOP-IR-55

In the MECO IRP-2 Evaluation Report, dated April 7, 2004, MECO stated that: (a) "Distributed generation (DG) is the application of small generators, typically ranging in capacity from a dozen to several thousand kW" (MECO-IRP, pg. 20). What is the lower and upper limit for the size of DG? (b) Please provide a copy of all documents which support the following statement: "DG may provide additional reliability to a customer whose operation is willing to pay for a higher level of reliability for certain loads that cannot be economically achieved through central station generation and T&D systems." (MECO-IRP, pg. 21) [emphasis added]. (c) What level of customer reliability requires on-site generation? (d) "Another potential benefit of DG is that its small size, modularity, and location at or near an end use site provides flexibility and choice that a traditional utility system may not be able to offer." (MECO-IRP, pg. 21) Does MECO believe that DG can be right-sized and planned with greater time-certainty than central generation?

HECO Response:

a. As stated on page 1 of the Companies' Preliminary Statement of Position, with respect to DG size, "the Companies have not attempted to define 'small' for purposes of this proceeding, but note that 'small' should be construed relative to the utility's system loads, and to the loads of large customers." HECO is not aware of specific definition of capacity rating for the lower limit and upper limit of distributed generation. For example, generation that might be considered distributed generation on the mainland, might be considered central station generation in Hawaii. In some cases, generation that might be considered distributed generation on Oahu, might be considered central station generation on Molokai or Lanai. (Note: MECO IRP-2 Evaluation Report was not dated April 7, 2004. It was filed with the Commission on April 30, 2004.)

b. MECO did not conduct any studies to support the statement. The statement by MECO was intended to point out the generally known fact that some customers install generation on their property to provide higher level of reliability for their electric power (e.g., emergency back-up generators for use during power outages).

c. The level of reliability that requires on-site generation is determined by the customer's specific needs and situation, and therefore can vary from customer to customer.

d. While the lead-time required for distributed generation is generally less than central station generation (though many of the issues that exist for central station generation also exist for distributed generation, as mentioned on page 5 of HECO's Preliminary Statement of Position), the potential for distributed generation to defer central station generation depends on a number of factors as pointed out on page 21 of HECO's Preliminary Statement of Position. Also, the smaller scale of distributed generation makes it possible to more closely meet growth in customer load demands compared to large increments of central station power. In some cases, however, the small scale of distributed generation may not be sufficient to keep up with overall system load growth. Further, the utility's ability to plan the timing of DG is constrained when DG is installed by third-parties, or based on the circumstances of individual customers (rather than system needs).

LOL-SOP-IR-56

Please provide all studies, reports and analysis that the Companies and its subcontractors conducted in the past 10 years with regard to the present transmission lines, subtransmission lines and substations, short-range and long-range transmission planning, consideration of new and/or modified transmission and subtransmission lines and substations, operation and maintenance of these infrastructures (including live-line analysis), for MECO, HECO and HELCO grids. Please include all studies, reports, and analysis on how the grid might look in the future.

HECO Response:

The Company objects to the requested IR because of the following reasons: 1) the question is overly broad, 2) does not reference the information provided in the Company's Preliminary Statement of Position, which would provide the context to respond to the IR request, 3) the request is voluminous and 4) assumptions over the past years have changed and providing a copy of all studies for the past 10 years would require explanation of the various studies and reports to ensure the accuracy of the information being presented, which would be labor intensive.

Not withstanding the Company's objection, the attached list of studies for HECO/HELCO/MECO contains studies, reports and analysis that the Companies and its subcontractors conducted in the past 10 years with regard to the present transmission lines, subtransmission lines and substations, short-range and long-range transmission planning, consideration of new and/or modified transmission and subtransmission lines and substations, operation and maintenance of these infrastructures (including live-line analysis), for MECO, HECO and HELCO grids. The Company also objects to providing either draft copies or final reports concerning independent power producer ("IPP") interconnection studies because the information contained in these reports are beyond the scope of the issues in this docket and

contain proprietary information, which was provided by the IPP developer. The list below does not contain transmission studies that were performed for IPP interconnection studies.

HECO STUDIES

Year	Month	Study
1994	8	Kamoku-Pukele 46 kV Alternatives Study
1994	9	HECO Undervoltage Load Shedding Design Study
1994	9	Reconciling the Loads in SLACA with the System Load Forecast
1994	12	Networking the Existing 46 kV Radial System
1995	4	Economic Impact of Planning for 95% of Projected Peak Load
1995	4	HECO Transient Stability Study
1995	6	Kamoku-Pukele 138 kV Transmission Alternatives Study
1995	10	Surge Protection Study of the Hawaiian Electric Co. 25 kV System (Electrotek)
1995	10	Waiau Combustion Turbine Black Start Using Airport On-Site Generation
1996	7	DSM: Transmission and Distribution Benefits
1996	11	DSM: Transmission and Distribution Benefits (Revised)
1998	3	East Oahu Transmission Requirements Update Study
1999	12	Honolulu, Iwilei, School 46 KV Network Bus Loading Limit Study
2000	3	Review of the Distributed Generation Alternatives to the Kamoku-Pukele Line
2000	10	HECO 2000 System Loss Analysis

Year	Month	Study
2003	9	Magnetic Field Measurement and Modeling Assessment for Proposed HECO 46 kV Underground Cables (Docket No. 03-0417 East Oahu Transmission Project)
2003	12	Evaluation of the Applicability and Practicability of Live Working (LW) Methods for Hawaiian Electric Company, Inc.'s (HECO) 138 kV Transmission System (Docket No. 03-0417 East Oahu Transmission Project)
2003	12	East Oahu Transmission Project, Alternatives Study Update (Docket No. 03-0417 East Oahu Transmission Project)
2003	12	East Oahu Transmission Project: Options to the Koolau/Pukele Transmission Line Overload Problem (Docket No. 03-0417 East Oahu Transmission Project)

HELCO STUDIES

Year	Month	Study
1994	12	Static Capacitor Requirement Study - West Hawaii
1995	5	IOC: Transmission and Generation Benefits - 1 MW Battery Energy Storage Project
1995	5	HELCO Puu Anahulu Generating Station at Waikoloa Transmission Interconnection Study
1995	6	HELCO Puna-Volcano-Kilauea 34.5 kV Voltage Upgrade Study
1995	12	HELCO North Kohala Diesel Engine Generators
1995	12	HELCO North Kohala Transmission Study
1999	8	Encogen Transmission Alternatives Study
1999	9	Encogen Transmission Alternatives Study - Addendum (9/1999)
2001	8	Transmission Line Overload Study for HELCO's Waimea-Ouli (7300) 69 kV Transmission Line
2001	12	HELCO Underfrequency Load Shed Scheme Update
2002	8	Switching Surge and Lightning Study for Undergrounding Keahole - Poopoomino 69 kV Overhead Line
2002	9	Waimea-Ouli (7300), Waimea-Keamuku (7200), & Keahole-Keamuku (6800) 69kV Line Overload Update Presentation (HELCO)
2002	11	Waimea-Ouli (7300) 69kV Line Overload Update Presentation
2002	12	Post-Contingency Response 6800, 7200 & 7300 Line Overloads Presentation
2003	3	Keahole-Keamuku (6800) 69kV Line Overload Study Presentation
2003	4	Keahole-Keamuku (6800) 69kV Line Overload Existing Pre/Post-Contingency Keahole Generation Requirements Presentation
2003	5	West Hawaii 69 kV Under-Voltage Evaluation
2003	12	Rating Study of HELCO 69 kV Transmission Line
2004	1	7200/7300 Line Overload Study Presentation

		Keahole-Keamuku (6800) 69kV Line Overload Study (6800 Line Overload Study) Draft Report (HELCO)

MECO STUDIES

Year	Month	Study
1994	8	MECO East Maui Five-Year Transmission Study
1994	8	MECO System Loss Study
1994	12	MECO Maalaea-Lahaina Third 69 kV Line Project
1995	3	MECO Short-Range Transmission Study 1996-2005
1995	12	Maui 69 kV & 23 kV Transmission Transformer Tap Study
1997	2	Maui Electric Co. System Allowable Wind Penetration in the Late 1990's
1999	6	Summary of the HECO, HELCO & MECO Wind Penetration Studies
2000	6	MECO 23kV System Study Considering Kahului Power Plant Generation Limitations

LOL-SOP-IR-57

Distribution systems can be radial or network. (a) Are networks more reliable? (b) Which areas of the state have the network distribution system? (c) Which areas of the state have a distribution system that is a network (as opposed to radial network)?

HECO Response:

a. Yes, networks are more reliable since the failure of one component in the network will normally not result in an interruption to the customers connected to that network.

b. The only distribution network system in the State is located in the Downtown Honolulu area. Although this network is considered to be a single distribution network system, it is divided into three separate sections based on groups of four circuits per section. The same three substation transformers feed the circuits for all three sections.

c. The only distribution system that is a network in the State is located in the Downtown Honolulu area. There are radial distribution systems but not radial networks. The radial and network terms are exclusive of each other.

LOL-SOP-IR-58

Transmission Lines have a maximum capacity (throughput), an average load (percent of capacity), and reliability metrics (how often does the line go down, how long is the average unscheduled down-time, what is the potential impact). Please provide a detailed analysis and all documents for each transmission system (HECO/MECO/HELCO) and analysis of subtransmission lines in the Downtown Honolulu and Waikiki areas.

HECO Response:

HECO objects to providing the maximum capacity of transmission lines because of concerns about the security of the transmission grid. This information could be provided under an appropriate protective order. HECO objects to providing the average load, reliability metrics and a detailed analysis for each transmission system because the information requested is overly broad and some of the information requested would require a voluminous amount of data. Notwithstanding the objection, the Company will provide data that is readily available to respond to the IR. HECO/HELCO/MECO currently does not calculate the average loading of its transmission lines. The raw data is available, but it has not been summarized, which would require the use of voluminous data points (i.e. loading of each transmission line for each hour of every day for one year or more). The Company typically uses load flow analysis to identify transmission system concerns and benchmarks the load flow cases on a yearly basis to ensure accuracy of this model.

HECO/HELCO/MECO currently does not tabulate the outage statistics for individual transmission lines. The raw data is available, but it is currently not broken down and summarized by individual transmission line.

However, the Company does have the system-wide customer reliability indices available, which provide the most current reliability metrics for HECO/HELCO and MECO. The reports titled "HECO Annual Service Reliability Report", "Hawaii Electric Light Company Annual

Service Reliability Report" and "MECO Annual Service Reliability Report" is filed with the Public Utilities Commission and the indices in the report describe the impact of all system outages on customer service.

The Company objects to the LOL request for "a detailed analysis and all documents for each transmission system (HECO/MECO/HELCO) and analysis of subtransmission lines in the Downtown Honolulu and Waikiki areas " because the request is overly broad and voluminous. Not withstanding the objection, a list of studies has been provided in response to LOL-SOP-IR-56. Analysis of the transmission and subtransmission system in the Downtown Honolulu and Waikiki areas has been provided in Exhibit 5 and 6 of Docket No. 03-0417 (East Oahu Transmission Project), which Life of the Land is participating in as an intervener and has access to the reports.

See also response to LOL-SOP-IR-56.

LOL-SOP-IR-59

Please provide all studies, reports, and/or analysis that the Companies and/or its subcontractors conducted in the past 10 years with regard to central station generation, distributed generation, renewable energy generation, penetration levels, energy storage, etc.

HECO Response:

The Companies object to the request that they provide "all studies, reports, and/or analysis that the Companies and/or its subcontractors conducted in the past 10 years with regard to central station generation, . . . , renewable energy generation, penetration levels [related to the other enumerated items], energy storage, etc." on the grounds that request (1) is for information that goes beyond the subject of this proceeding, which is distributed generation, (2) is overly broad and unduly burdensome, and could be construed to encompass thousands of documents, (3) is vague, ambiguous, and not reasonably related to the scope of this docket, (4) would include proprietary, confidential information from the standpoint of the Company and from the standpoint of others, such as developers of renewable energy projects, and (5) is objectionable on the same grounds as requests for DG documents relating to the Companies' strategic and tactical planning, and internal management reports and analyses. Without waiving this objection, the Companies note that certain studies and analyses regarding these matters are included in IRP Plan and IRP Plan Evaluation filings, and in dockets regarding power purchase negotiations and approving power purchase agreements (which are subject to various protective orders). Also, see the attached comments that HECO provided to DBEDT, dated July 26, 2002, in its report entitled Creating Opportunities for Distributed Energy in Hawaii, and a presentation that HELCO made on February 14, 2003 to the Energy Roundtable, entitled Meeting Present and Future Electricity Needs of the Island of Hawaii.

With respect to studies, reports and/or analyses on distributed generation, see the list provided in response to LOL-SOP-IR-82.

Creating Opportunities for Distributed Energy in Hawaii

Comments to the State of Hawaii DBEDT

Submitted by
Hawaiian Electric Company, Inc.

On behalf of
Hawaiian Electric Company, Inc.
Maui Electric Company, Limited
Hawaii Electric Light Company, Inc.

Submitted on
July 26, 2002

Introduction

Hawaiian Electric Company, Inc. (HECO), Maui Electric Company, Limited (MECO), and Hawaii Electric Light Company, Inc. (HELCO) (hereinafter collectively referred to as the HECO utilities) submit the following comments to the State of Hawaii DBEDT as public comment for the report on "Creating Opportunities for Distributed Energy in Hawaii."

1. Total Energy Solution: Customer Choices

The HECO utilities are not only in the business of providing reliable electricity but also energy services and choices for their customers. This means developing customized bundled solutions, including Distributed Energy Resources (DER) options, to meet customer needs. It involves continuing to provide reliable power at a reasonable cost, encouraging demand-side management and energy efficiencies, and meeting customer expectations for power consumption and system design. Finally, it requires offering customers more paths to optimize energy usage (such as time-of-use rates) and bill management (such as rate options). Meanwhile, where customers have onsite generation, the HECO utilities continue to serve their customers when electricity is not available from their onsite generator.

2. HECO Utilities Support Onsite Generation

DER, including customer-sited fossil-fuel distributed generation (DG) and combined heat and power (CHP) systems, and renewables, such as solar water heating, photovoltaic (PV) systems, and, possibly, fuel cells (when viable and competitively priced), comprise a key part of the Total Energy Solution for the customer. The HECO utilities are actively supporting technology research, development, and demonstration (RD&D) projects in conjunction with the Electric Power Research Institute (EPRI), the Hawaii Natural Energy Institute (HNEI), and the Department of Energy (DOE), to remain at the forefront of available technologies and energy solutions. Our Companies are also pursuing initial opportunities for pilot DG/CHP projects for interested customers to gain hands-on experience with onsite applications from the standpoint of:

- Site selection and preparation,
- Installation,
- Interconnection,
- Operations,
- Maintenance,
- Performance,
- Safety,
- Fuel delivery,
- Fuel storage,
- Exhaust stack requirements,
- Environmental impacts (including noise, air emissions, and visual impact),

- Permitting,
- System energy efficiencies,
- Overall cost, and
- Customer role and contribution.

Total Energy Solution bundled packages may also include, subsequent to extensive monitoring of customer energy uses in the customer's facility:

- Energy efficiency technologies, such as lighting and equipment retrofits,
- Centrifugal chillers,
- Efficient motors, and
- Heat pumps.

MECO has recently signed a Memorandum of Understanding with the Grand Wailea Resort Hotel & Spa to establish an RD&D project for a DG/CHP system to be installed at the hotel in 2002. Additional pilot DG/CHP projects are being considered as opportunities arise.

The HECO utilities rank number one in the nation for solar water heating as promoted by the national Million Solar Roofs program. Sun Power for Schools continues as a successful and innovative Company initiative.

3. Vision of the Future: Virtual Electric System

In the not-too-distant future, increasing numbers of selected utility-owned and operated, and customer-sited, DG units may join larger central station utility and independent power producer generating units in being directly monitored and controlled for "seamless" and expanded load dispatch and control. This "virtual" electric system could eventually incorporate, by agreement, customer-owned and operated, and customer-sited, primary and standby DG for the aggregation of emergency standby power.

DER is an integral part of electric system planning and is considered in generation planning, transmission planning, and distribution planning. DER impacts the load to be served by the utility electric system, and DG units may be utilized for ancillary services (e.g., VAR support), mitigation of line losses on long distribution lines, peak generation, special purpose power quality enhancement, scalable and modular applications, and onsite standby generation. DG, combined with customer Demand Side Management (DSM) and load control, may in the future support deferral of new generation additions, and thus could play an even larger role in integrated resource planning.

As DG penetration increases, the distribution system may require upgrades in equipment, such as cables and transformers. Coordinated protection systems on the distribution systems may need modification to facilitate changes in power flow patterns. These changes can be made as DG becomes more prevalent.

4. DER Enhances Reliability for a Digital Economy

The HECO utilities rank high nationally with respect to duration of outages, system interruption frequency, and availability at the plug.

As we increase use of digital systems and equipment, reliability of the electric system becomes even more vital for the economy. In the computer and television age, reliable power is key for our productivity, comfort, convenience, and security. Power outages in the United States are estimated to cost the economy $119 billion per year.

Where customers require "high nines" reliability, for purposes such as specialized high technology applications or data farms, onsite backup DER may assist in providing the unique customer Total Energy Solution for enhanced reliability and power quality. The HECO utilities can work with customers to explore an appropriate configuration to supply energy needs.

The HECO utilities are closely monitoring the performance track record of DG units installed in Hawaii and on the mainland. Customers connected to the utility grid can utilize grid power when DG units are down for maintenance or otherwise unavailable. A HELCO standby charge for backup power is currently in effect on the Big Island.

5. DER Diversity Enhances Security of Electric System

Security of the electric system and state energy supply can be marginally enhanced with DER. Diversity in geographic location and configuration of key electric facilities, including supply infrastructure, could reduce single-point vulnerability to outages or catastrophic events. However, central station plants and transmission and distribution lines are expected to comprise the bulk of the electric system in Hawaii for the foreseeable future.

The HECO utilities welcome DER as a supplemental component of the electric system that may, in time, increase overall security. Meanwhile, prudent measures continue to be followed to protect the electric system, including power plant and substation guard protection, video monitoring, and stage of alert protocols and procedures as prescribed by government and defense agencies.

6. DER vs. Alternative Energy: Role in Reducing Dependence on Oil

Most DG units use diesel or propane fuel, similar to the fossil fuel used by central power plants. Some are shifting toward use of synthetic natural gas (SNG), a byproduct of transportation fuel production. The HECO utilities recognize, therefore, that proliferation of fossil-fuel DG does not wholly support the state energy policy objective of reducing our dependence on oil.

Some benefit is gained from DG applications related to increasing the overall efficiency of primary energy production with CHP and cogeneration applications. The overall efficiency of a CHP unit is approximately 85% as compared with 66% for the conventional approach of using power from the grid to meet electrical needs plus a separate, onsite boiler to meet heating/hot water requirements. Grid electricity can reach efficiencies of 50%, including both generation and transmission losses. Higher efficiencies translate to lower consumption of fossil fuels.

Increased integration of DER solutions complement the ongoing effort of promoting renewable power from geothermal, wind, and hydro to attain the Hawaii Renewable Portfolio Standards goals of net electricity sales from renewable sources of 7% in 2003, 8% in 2005, and 9% in 2010.

7. Interconnection

The HECO utilities support proper interconnection of DG systems in order to minimize power disturbances, degradation of system reliability, reduced system operating efficiency, and potentially damaging over-voltages, and to protect the safety of utility workers, customers, and the public. Critical objectives also include restoration procedures, protection of utility and customer equipment, generation facility protection, and maintaining proper operation of the utility system's overcurrent protection equipment. Case-specific interconnection requirements depend upon the size and design of the DG installation, but at a minimum are premised upon prevailing interconnection standards. Signed interconnection agreements with customers are needed to ensure clear understanding of respective rights and obligations in operating and maintaining grid-connected DG units.

A number of engineers at the HECO utilities have been closely involved in the national effort to develop interconnection standards (reference IEEE P1547). Over a six-month period in 2001, an internal cross-functional team developed draft Company interconnection standards that incorporated portions of the latest IEEE P1547 version and standards adopted in other jurisdictions such as Texas, New York, and California. After a call for comments on the HECO utilities' draft at the December 2001 DOE and DBEDT Interconnection Workshop in Honolulu, the proposed interconnection standards and no-sale interconnection agreement, as incorporated into a modification of the HECO utilities' Tariff Rule 14, were filed with the State of Hawaii Public Utilities Commission (PUC) on January 15, 2002. The latest version of this document, as of July 17, 2002, is currently accessible on the DBEDT Distributed Energy Web Page.

Key components of the filed interconnection standards include:

- Definitions,
- Generation interconnection guidelines,
- Design requirements,

- Operating requirements,
- Technology specific requirements,
- Protection, synchronizing, and control requirements, and
- Typical equipment and protective device requirements for large synchronous, induction, and inverter generators.

The HECO utilities should be contacted for the most current version of the interconnection standards prior to initiating a DG project.

Company procedures for interconnection requirements studies, development of interconnection agreements, and installation of interconnection equipment and facilities are constantly being reviewed. As an example, special order switchgear for a City DG project is being fast-tracked by utility engineers by working closely with the supplier and monitoring the delivery process. Efforts to expedite City approval of permits for vault and duct line construction are also being made.

8. Costs of DER: Diverse Perspectives

DER solutions can be competitive from the customer viewpoint yet impact the remaining "non-participant" ratepayers when large segments of load are removed from the utility grid.

This issue merits review in the context of stranded costs, regulatory reform, and competitive energy costs to support state economic vitality and growth.

Summary

The HECO utilities embrace DER as part of the customer's Total Energy Solution and as a key element in attaining state energy policy goals. Frontline efforts are underway to:

- Proactively pursue pilot customer-sited DG/CHP projects, such as the RD&D project at the Grand Wailea Resort & Spa,
- Partner with industry leaders in DG technology and renewable energy research, development, and demonstration projects, and
- Integrate DG solutions for utility system planning.

The recently filed Tariff Rule 14 modification, with interconnection standards and no-sale interconnection agreement, is an example of the focused and productive Company work in the DER area over the past year. Results of initial efforts will lead to a greater understanding of new technologies, a more diverse electric system, greater customer choice, and increased efficiencies. Hawaii as a whole will benefit from this transformation.

7/26/02

Hawaii Electric Light Company

MEETING PRESENT and FUTURE ELECTRICITY NEEDS of the ISLAND OF HAWAII

February 14, 2003

Hawaii Electric Light Company (HELCO), a regulated utility under jurisdiction of the Hawaii Public Utilities Commission (PUC), has served the electricity needs of the residents of the Island of Hawaii for over 100 years. Over these years HELCO has strived to provide reliable, high-quality electricity to its customers at a reasonable cost, meet the expectations of its shareholders, and actively support the island community as a company and as individuals. To fulfill its mission of providing electricity to the island's residents, HELCO has continually adapted to change - created by increasing power demand, technology improvements, customer needs and desires, and regulatory/legislative mandates.

Today, as never before, our nation, our island community, and HELCO are presented with needs and challenges that will have major impacts on our way of life. These needs and challenges include:

- providing reliable electric service;
- maintaining secure power systems;
- increasing the use of renewable energy resources, distributed generation, combined heat and power, and power from sustainable sources;
- increasing energy efficiency;
- attaining greater energy independence for Hawaii;
- adopting new clean technologies, especially hydrogen as a fuel source;
- reducing greenhouse gas emissions.

These are necessarily intertwined objectives which not only present challenges to us all, but which also present a window of opportunity for near and long-term societal benefits.

In providing service to customers on a largely rural Big Island, HELCO's isolated utility grid and relatively small customer base have resulted in high costs to provide electric service, as compared to Maui and Oahu, and especially as compared to the mainland U.S. HELCO has only about 17 customers per square mile, versus almost 500 customers per square mile on Oahu. Big Island residential rates at over 20 cents per kilowatt-hour are now among the highest in Hawaii and the U.S.

Most of the population and economic growth in the past three decades has occurred in West Hawaii. As a result, 63% of West Hawaii's electricity demand must be transmitted from the East side of the island. Although 60% of current electricity needs are on the West side of the island, only about 16% of the island's generating capacity, (the existing 38-megawatt Keahole Power Plant), is located there. To meet the needs of West Hawaii, power must be transmitted over long distances from generating stations in East Hawaii, with resultant losses of energy and lower reliability. This geographical mismatch of electricity generation capacity and demand is likely to worsen in the future as the population in West Hawaii grows. Completion of the Keahole Power Plant additions will improve the situation by adding 56 megawatts of power in West Hawaii, where there is a need for the additional power.

CHALLENGE: MEETING CURRENT ENERGY NEEDS

The most immediate challenge facing HELCO is providing reliable power. HELCO currently has sufficient generating capacity to serve the needs of the Big Island, if all the capacity is available and there is adequate transmission line capacity. However, at times during 2002, due to a combination of malfunctioning old equipment and reduced generating output from independent power providers, rolling blackouts periodically occurred on the Big Island. Despite a need to meet the continuing growth in electricity demand, HELCO has been prevented from completing its long-planned installation of 56 megawatts of additional generating capacity at its Keahole Power Plant. As delays to the project have continued for over ten years, growth in electricity demand has reduced the utility's reserve generating margins.

Concurrently, as HELCO's existing generating stations have aged, HELCO has had to rely upon them more often, and has needed to spend more resources just to keep them running. Steam-powered and engine generator systems built as long ago as the 1950's were to have been retired in the mid-1990's with the completion of new capacity at Keahole Generating Station. The number of forced outages, such as those resulting from unscheduled maintenance and emergency repairs, of these old units has increased in recent years.

More recently, there have been problems with the reliability of two independent power producers (IPP's) that have contributed to the rolling blackouts. In early 2001, the completion of the 60-megawatt Hamakua Energy Partners (HEP) generating station near Honokaa was expected to alleviate the generation shortage. However, throughout the first two years of operation, the HEP plant has experienced an excessive number of unplanned trips and unscheduled maintenance overhauls. Although the HEP plant operators have taken a number of steps to alleviate these problems, unplanned outages continue to be a significant problem for HELCO and its customers.

Problems at the Puna Geothermal Venture's (PGV) geothermal generating station occurred early in 2002. Production was cut to 5 megawatts from 30 megawatts in April 2002 when the inner casing of PGV's KS-11 steam production well collapsed. PGV plans to restore output to 30 megawatts by mid-2003. However, the loss of this much capacity left HELCO short of the reserve margin it needed to meet the greatest customer loads of the year, which usually occur between Thanksgiving and New Year's Day. This shortage of available capacity, combined with the more frequent loss of generation from HEP and aging HELCO generating units, led directly to the situation in November, 2002 of periodic rolling blackouts.

The operational reliability problems with the IPPs that occurred in 2001-02 is a potent reminder of the need to maintain a balance regarding the ownership of generation resources, their geographic location, their cost, and the appropriate scale relative to the overall system. Though some have advocated spinning off all generation responsibilities to IPP's, HELCO takes its obligation to serve very seriously, and believes that it can best serve the needs of the Big Island reliably if it remains a key player in the provision of generating capacity.[1]

Given the Big Island's geography, location of generation resources closer to load centers improves reliability and lowers cost by avoiding energy transmission losses and capital upgrades for new transmission lines. For HELCO's comparatively small system, large-scale plants impose considerable reserve requirements that increase their cost relative to smaller,

[1] The Public Utilities Regulatory Policies Act of 1978 (PURPA), requires HELCO to purchase power from qualifying small power producers (such as PGV) and cogenerators (such as HEP).

more distributed power sources. Finally, the risk-adjusted cost to ratepayers must be balanced against the renewable/fossil mix of generation resources.

The successful completion of the Keahole Generating Station will go beyond reducing the occurrence of rolling blackouts. By providing generation in West Hawaii where the greatest needs exist and where forecasted future growth will occur, Keahole will help increase system reliability and efficiency by lowering energy losses over the cross-island transmission lines. If storms or other problems cause cross-island transmission lines to fail, the Keahole Generating Station will have sufficient capacity to maintain service in Kona. It will also enable HELCO to reduce the annual operating hours on its oldest and most inefficient generating units.

CHALLENGE: MEETING FUTURE ENERGY NEEDS

Continued population and economic growth on the Island of Hawaii will result in increasing electric power demands on the utility system. To meet this growth, HELCO will have to provide about 40-50% more power and energy over the next 15 years than it does currently. Demand for electricity is now growing more rapidly than anticipated. HELCO forecasted a sales growth rate for 2002 of 1.2%; the actual growth rate was 3.7%. If this rate of increase continues, HELCO will have to reassess its resource-planning schedule.

The completion of the Keahole Generating Station is but an interim solution to the provision of adequate power for a growing Big Island economy. The island community as a whole will need to give thought to the future, as to how we can best meet increasing energy requirements. There is great urgency to reach a consensus and plan for this future. HELCO intends to be part of this collaborative dialogue with the island community.

Meeting future energy needs will require a variety of solutions, a diversified mix of supply-side and demand-side options. These may include a balance of both central power stations and distributed generating (DG) units, fueled with a combination of fossil and renewable energy resources. New, clean energy technologies, such as hydrogen fuel cells which are currently being developed, may be introduced in the future with the potential to ultimately become significant sources of electricity generation.

Increase Usage of Distributed Generation (DG) Resources

There are many potential benefits associated with the use of DG, including: increased energy security; lower transmission losses; voltage support for isolated loads; increased system reliability; the deferral of central generation capacity additions; deferral of transmission system upgrades; and the incorporation of non-firm renewable energy. HELCO has already installed four one-megawatt capacity DG units around the island. However, the existing transmission and distribution system was not designed with DG in mind in its power flow, protection, restoration procedure, or voltage regulation practice. Therefore the reliability and grid benefits of DG must exceed the investment required to incorporate additional amounts of DG onto the system.

Customers may also benefit from the installation of DG units that combine power generation with the utilization of heat by-product for water heating and/or absorption cooling processes. Such Combined Heat and Power (CHP) technology can provide a net cost savings to the on-site user. Though HELCO may also realize benefits to its transmission system operation from customer-based CHP, there are other considerations. The loss of significant portions of

HELCO's customer base resulting from the installation of CHP units independent of HELCO increases the rates borne by remaining customers in the near-term, since HELCO's fixed expenses must still be recovered. Longer term, rates would decline if the total system costs for CHP are lower than long-run avoided costs.

HELCO believes that it must play an active role in providing DG and CHP services to its commercial and industrial customers. The challenge for HELCO will be to offer competitive options to its interested customers while at the same time minimizing rate impacts to the remaining customers.

Increase the Use of Renewable Energy (RE) Resources

HELCO is currently among the nation's leading utilities in the percentage of Renewable Energy (RE) used. Moreover, Hawaii Island is blessed with even greater potential for RE resources. But the price of RE is related to the price of oil, which escalates over time. If RE developers were to accept a fixed payment schedule that provides a fair rate of return, the risk-adjusted cost could be lower than the fossil fuel alternatives. Incorporating significant amounts of additional RE will require substantial investment, if a fixed rate is used. Appropriate funding mechanisms will have to be identified and implemented if commercially available RE is to be made cost competitive.

The challenge for HELCO will be in developing RE resources while maintaining a sufficient amount of firm generation to ensure reliable electricity while minimally impacting rates. In addition, HELCO will be faced with ensuring the quality of electricity provided to its customers. This will entail the incorporation of new storage technologies and proper planning and design to negate the impacts of incorporating non-firm energy sources into the generation, transmission, and distribution mix.

Increase Energy Efficiency

Enhancing the energy efficiency of utility customers has proven to be one of the lowest cost options to help the utility manage growth in energy consumption and to reduce peak demands for electricity. Customers benefit from lower energy costs, and the state's oil consumption is reduced. Utility Demand-Side Management (DSM) programs have been very successful in providing incentives and engaging customers in energy efficiency. Since 1995, HELCO's DSM programs have contributed peak demand reductions of 5.5 megawatts and reduced energy consumption. These programs have saved the burning of over 57,000 barrels of fossil fuels and prevented approximately 38,500 tons of emissions.

Throughout the first seven years of HELCO's DSM programs, many of the easiest and lowest-cost energy efficiency measures have already been undertaken, such as the introduction of solar water heating and new-generation T-8 fluorescent lighting technology. The challenge facing HELCO is to create a renaissance of the DSM programs that offer wider choices of conservation options and create higher levels of customer awareness. For all of this to work well, the utility needs a supportive regulatory environment in which it can pursue energy efficiency without financial penalty, flexibility to reshape programs to meet changing customer needs and evolving technology, and positive incentives to excel at the implementation of DSM programs.

Incorporate new technologies

New technologies offer great potential for expanding the available generation/transmission/ distribution resource options. These include fuel cells, micro-turbines, transmission enhancements to reduce losses, battery storage, and hydrogen as an energy carrier, among others. HELCO, along with its parent company Hawaiian Electric Company, are currently involved in pilot, demonstration, and research projects involving these technologies. The challenge for HELCO is to: 1) develop close working partnerships with customers; developers; and federal, state, and local government on all levels to fund and direct productive research and development in new energy technologies, and 2) from this collaborative effort to incorporate appropriate new technologies into the available mix of both supply-side and demand-side resource options.

CONCLUSION

HELCO was very pleased to have participated in the recent Energy Roundtable hosted by The Kohala Center. It is through such collaborative efforts and the established Integrated Resource Planning (IRP) process that our island community will be able to come together to discuss our increasing energy needs and how to best meet those needs in the future.

LOL-SOP-IR-60

(a) Please list the efficiency and cost per kilowatt hour for each utility generator. (b) Please list the efficiency and cost per kilowatt hour for the Honolulu Power Plant.

HECO Response:

a. See the attached table for heat rate information. The cost per kilowatthour for each utility generator will depend on the price of fuel and other variables.

b. See the attached table for heat rate information. The cost per kilowatthour for each utility generator will depend on the price of fuel and other variables.

HECO Units	
Unit	Heat Rate at Normal Top Load, Btu/kWh-net
Honolulu 8	11,735
Honolulu 9	11,708
Kahe 1	9,882
Kahe 2	9,671
Kahe 3	9,745
Kahe 4	9,516
Kahe 5	9,753
Kahe 6	9,981
Waiau 3	12,394
Waiau 4	12,056
Waiau 5	11,319
Waiau 6	11,239
Waiau 7	9,810
Waiau 8	9,932
Waiau 9	12,788
Waiau 10	12,744

Maui Units	
Unit	Heat Rate at Normal Top Load, Btu/kWh-net
Kahului 1	16,287
Kahului 2	15,815
Kahului 3	12,851
Kahului 4	13,406
Maalaea 1	10,893
Maalaea 2	10,893
Maalaea 3	10,893
Maalaea 4	9,912
Maalaea 5	9,912
Maalaea 6	9,912
Maalaea 7	9,912
Maalaea 8	10,375
Maalaea 9	10,375
Maalaea 10	9,396
Maalaea 11	9,396
Maalaea 12	9,396
Maalaea 13	9,396
Maalaea 14-15-16	8,766
Maalaea 17	12,034
Maalaea 19	12,034
Maalaea X1	10,964
Maalaea X2	10,964

Lanai Units	
Unit	Heat Rate, Btu/kWh net
Only total system heat rate available	9,874

Molokai Units	
Unit	Heat Rate, Btu/kWh-net
Only total system heat rate available	9,803

HELCO Units	
Unit	Heat Rate at Normal Top Load, Btu/kWh-net
Shipman 3	15,720
Shipman 4	16,325
Hill 5	13,861
Hill 6	12,333
Puna Steam	15,250
Kanoelehua D11	10,559
Waimea D12	10,559
Waimea D13	10,559
Waimea D14	10,559
Kanoelehua D15	10,559
Kanoelehua D16	10,559
Kanoelehua D17	10,559
Keahole D21	10,559
Keahole D22	10,559
Keahole D23	10,559
Panaewa D24	9,280
Ouli D25	9,280
Punaluu D26	9,280
Kapua D27	9,280
Kanoelehua CT1	15,716
Keahole CT2	13,261
Puna CT3	11,252
Keahole CT4	10,603

LOL-SOP-IR-61

(a) A Virtual Power Plant (VPP) refers to a network of grid-connected, utility-controlled, economic-dispatchable, peak load providing generators. (a) To what level of expertise have the Companies evaluated the VPP option? (b) What is the nameplate capacity and actual capacity of backup generators that exist in each utility service area? (c) "Hotel operators, for instance, generally do not want to own, operate and maintain power systems." (HECO-DG, pg. 11) What percentage of hotel owners do not own, operate and maintain back up generators? (d) How is the Companies CHP Application similar and different from the Iniki Plan proposed by Maui County.

HECO Response:

a. See MECO IRP report in Docket No. 99-0004, page 8-26 for a description of the evaluation of virtual power plants.

b. See response to CA-SOP-IR-12.

c. The requested information is not available.

d. The Companies' CHP application is similar to the micro-cogeneration portion of the Iniki Plan. See MECO IRP Report in Docket No. 99-0004, page 8-26, for a description of the micro-cogeneration portion of the Iniki Plan and see the Companies application in Docket No. 03-0366 filed on October 10, 2003 for a description of the Companies' CHP Program.

LOL-SOP-IR-62

What analysis has the Company conducted regarding areas or regions where DG might be feasible but where synthetic natural gas is (1) unavailable by pipeline; and (2) unavailable by other delivery systems

HECO Response:

1. No specific analysis has been done on this issue. The Companies generally consider other fuels if SNG is not available.

2. SNG is currently only available via pipeline.

LOL-SOP-IR-63

According to HECO: "the companies have made a limited number of proposals to customers to install and operate utility owned CHP systems at customers' sites, and have executed a number of letters of intent and memoranda of understanding to conduct preliminary engineering for potential CHP projects." (HECO-DG pg. 10): The Companies have (a) how many salespeople working on contacting entities re CHP; (b) how many customers have been contacted: (c) how many have expressed interest; and (d) how many have been given some type of discount or incentive as a result thereof? (e) Please provide a sample copy of a letter of intent and a memoranda of understanding.

HECO Response:

a. None. The Companies do not have a sales organization, but communicate with customers via their engineers and account managers.

b. The specific requested information is not available, but 30 to 40 customers have been contacted directly.

c. Twenty-eight companies have expressed some interest in the Companies' CHP Program.

d. Whether as a "result thereof" or not, HECO has a Standard Form Contract for Customer Retention (eff. 12/10/01) with the Hilton Waikoloa Village. It was filed 1/14/02 by Transmittal No. 02-01 H. Confidential information in Attachments 2, 3 and 4 to the contract were redacted pursuant to the tariff Rule No. 4, and were filed 2/1/02 pursuant to Protective Order No. 02-01 H (1/29/02).

MECO has a service contract with Castle & Cooke Resorts, LLC, which was filed and approved in Docket No. 03-0261.

Also, see attached for a list of Customer Retention rates filed with the PUC.

e. See attached

Sample
Letter of Intent

xxxxx xx, 2004

This Letter of Intent is entered into between Hawaiian Electric Company, Inc. (hereinafter referred to as "HECO") and xxxxxxxxxxx (hereinafter referred to as "xxxxxx"). Having reviewed HECO's updated proposal letter dated xxxx xx, 2004 and the conceptual proposal for a combined heat and power (CHP) system included therewith (also dated xxxx xx, 2004), xxxxxx acknowledges that HECO's proposal appears reasonable and that xxxxx is interested in having HECO complete a more detailed analysis and develop a more complete CHP proposal for xxxxx's planned expansion at its xxxxxxx.

Provided that the annual energy savings to xxxxx in the final detailed CHP proposal are at least within the $xx,000 range, xxxx will enter into a Combined Heat and Power (CHP) Agreement similar to the form provided by HECO herewith and have a HECO-owned and operated CHP system located on xxxx's xxxxxxx property (the "Project"). The "Facility Fee", if any, will be presented in the final proposal.

If the final proposal indicates that the Project cannot achieve the expected energy savings, or that HECO cannot achieve the expected energy savings with a CHP at a reasonably economical rate, then either party may decide not to proceed with the Project and xxxx will have no liability whatsoever for the cost of the detailed design work. However, if the final expected savings meet the target noted above, but xxxx decides not to proceed with the Project, then xxxxx shall pay HECO's reasonable costs for the design work not to exceed $xx,000.

Dated: _____, 2004

xxxx xxxxxx: _____
By its:

	CUSTOMER RETENTION RATES FILED WITH PUC		
	a. Transmittal No. 99-02 - HECO Rule 4 Standard Form Contract For Customer Retention		
	b. Transmittal No. 99-04 – HECO PUC Application for Schedule CR		
	c. Transmittal No. 99-01H – HELCO Rule 4 Standard Form Contract for Customer Retention		
	d. Transmittal No. 00-01H – HELCO PUC Application for Schedule CR		
	e. Transmittal No. 02-01H – HELCO PUC Application for Approval of Rule 4 Standard Form Customer Retention Contract for Hilton Waikoloa Village		
	f. Service Contract with Castle & Cooke Resorts, LLC, Docket No. 03-0261. Application filed September 17, 2003, PUC D&O 20811 filed February 24, 2004		

LOL-SOP-IR-64

"A number of the initial units are no longer operable and/or have been replaced." (HECO-DG, pg. 16) Who made these units?

HECO Response:

Ford Motor Company manufactured these units.

LOL-SOP-IR-65

If customers decrease their load, does it matter whether it was reduced through conservation, energy efficiency, small DG, large DG, small CHP, Or large CHP?

HECO Response:

Yes, depending on the type of energy measure used, there will be different affects on the system or customer facility. See, for example, the Companies' response to HREA-HECO-IR-8 and HREA-HECO-IR-12.

LOL-SOP-IR-66

Can DG be used for customers usage except for the peak periods, when the electricity from the DG facility is fed into the grid

HECO Response:

It might be possible, but it generally would not make sense since the customer would have to completely curtain its own usage during the peak period, or take electricity from the grid (in which case, as a practical matter, the electricity from the DG facility would be used by the customer during the peak period). See HECO response to HREA-HECO-IR-9 with respect to customer-sited emergency generation.

LOL-SOP-IR-67

(a) Can wind provide non-time-sensitive power to specific customers (for example, utility will sell electricity for water pumping to Parker Ranch when available)? (b) Would it be feasible for the utilities to sell green as-available electricity (that would exactly offset wind-created electricity fed into the grid)?

HECO Response:

a. Wind turbines can operate as long as the wind blows above that specific wind machine cut-in speed to rotate the blades and generate electricity. If the wind speed is gusty (wide wind speed fluctuation over a short period of time), then the varying output power quality could impact sensitive electronic equipment. If the end user does not have a time sensitive operation or sensitive electronic equipment then wind turbines could provide power for specific customers such as water pumping. A responsive control system will be required to modulate the load to compensate for the variable nature of wind power.

b. The Companies object to this information request because it is not within the scope of this docket. Without waiving this objection, the Companies response is that, in general, utilities can sell green as-available electricity (i.e., wind or hydro generated electricity) to its customers. This is currently being done on the Big Island. However, it may be difficult to have the green as-available technology exactly offset wind created electricity being fed to the grid. This difficulty is due to the general gustiness of the wind resource in Hawaii. The wind speed can fluctuate over a wide range over a short period of time as seen on the Big Island. If the wind farms are located at different locations, the output of the wind farms may also vary since the wind resource may be different.

LOL-SOP-IR-68

(a) What is the length of time needed to negotiate each interconnection agreement and each power purchase contract between the utility and HESS. (b) Please explain any time differentials in signing ICAs and PPAs with the utility regarding Hess's non-pre-packaged and pre-packaged CHP systems. (c) Please provide any studies, analysis and documents that would indicate that standardized interconnection agreements and standardized power purchase agreements lead to savings in time and/or money.

HECO Response:

a. The Companies have not negotiated any power purchase contracts with Hess. The Companies have worked with Hess to execute an interconnection agreement for the existing CHP system for Pohai Nani. The Companies are currently in the process of working with Hess on the execution of interconnection agreements for existing CHP systems for Hale Pauahi and The Fairmont Orchid. Detailed information on the interconnection agreement process can be found in the Companies' Rule 14 Quarterly and Annual Status Reports that are filed with the Commission in Docket No. 02-0051. The latest Quarterly Report was filed on April 30, 2004, and the latest Annual Report was filed on January 30, 2004, Docket No. 02-0051.

b. Since all of Hess's CHP systems are pre-packaged systems, the amount of time required to execute an interconnection agreement is generally contingent on the complexity of the CHP system interconnection (determined on a case-by-case basis) and the customer, and/or Hess if it is a three-party interconnection agreement, providing all of the necessary information to complete the interconnection review process.

c. The Companies have not conducted such studies or analyses.

LOL-SOP-IR-69

Please list all studies, reports, and/or analysis that the Companies and subcontractors conducted in the past 10 years with regard to the following statement:
"Basic economics is the single major impediment to the wide-spread deployment of DG in Hawaii." (HECO/2004 pg. 5)

HECO Response:

The Companies and subcontractors have not conducted studies, reports and/or analysis specific to the quoted statement. (The Companies, however, have analyzed, from time to time, the relative costs to customers of utility electric service and CHP system or DG options.) The reasons customers have for installing DG depend on the type of installation (i.e., emergency back-up generation, or industrial-sited cogeneration, or residential customer-sited photovoltaic unit). The wide-spread deployment of DG in the quoted sentence generally refers to the deployment of CHP systems, and DG for electricity generation. In many cases, customers, third-party developers, and the utilities would not pursue DG projects if lower cost alternatives were available. Based on discussions with customers, and a general review of the available literature, it appears that cost relative to their other options is a major factor in their decisions to install or not install CHP systems or DG. However, the desire of customers to not own, operate or maintain CHP systems, and to have an entity upon which they can rely to be there for the long-haul (e.g., the utility) is also a factor.

LOL-SOP-IR-70

In Hawaii, fully allocated embedded cost-of-service studies are the starting point for the allocation of revenue requirements among rate classes." (HECO/2004, pg. 31). (a) Please provide a copy of the Companies most recent cost-of-service study and the most recent class load study; (b) Please list the unbundled costs of providing electricity for each component (generation, spinning reserve, T&D, T&D losses, metering, etc.); and (c) Please list all cross-subsidies that exist between or within customer classes.

HECO Response:

a. - b. The requested cost-of-service study and class load study for each Company are voluminous. Please contact Dan Brown at HECO'S Regulatory Affairs Division at 543-4795 to arrange for inspection of the documents.

c. See the attached pages on subsidies.

HAWAIIAN ELECTRIC COMPANY, INC.

DOCKET NO. 7766 TEST YEAR 1995
FINAL D&O NO. 14412

Rate Class	Sales Rev. @Phase 2 ($000s)	Full Class Cost of Service ($000s)	Subsidy From/To Other Classes ($000s)	Subsidy From/To Other Classes (%)
(A)	(B)	(C)	(D) = (C) - (B)	(E) = (D) ÷ (B)
Schedule R	221,073.0	242,131.8	21,058.8	9.5%
Schedule G	38,916.1	34,853.4	-4,062.7	-10.4%
Schedule J	134,807.7	122,877.2	-11,930.5	-8.9%
Schedule H	32,456.8	33,008.7	551.9	1.7%
Schedule P	269,392.9	263,599.5	-5,793.4	-2.2%
Schedule F	4,124.5	4,300.4	175.9	4.3%
Total Sales Rev.	700,771.0	700,771.0	0.0	-

HAWAII ELECTRIC LIGHT COMPANY, INC.

DOCKET NO. 99-0207 TEST YEAR 2000
Rates Effective February 15, 2001

Rate Class	Sales Rev. @ Proposed ($000s)	Full Class Cost of Service ($000s)	Subsidy From/To Other Classes ($000s)	Subsidy From/To Other Classes (%)
(A)	(B)	(C)	(D = C - B)	(E = D ÷ B)
Schedule R	$73,451.5	$79,136.8	$5,685.3	7.7%
Schedule G	$19,930.8	$19,519.9	($410.9)	-2.1%
Schedule J	$44,032.9	$41,429.7	($2,603.2)	-5.9%
Schedule H	$4,661.5	$4,774.7	$113.2	2.4%
Schedule P	$36,446.1	$33,682.4	($2,763.7)	-7.6%
Schedule F	$738.0	$717.3	($20.7)	-2.8%
Total Sales Rev.	$179,260.8	$179,260.8	$0.0	-

MAUI ELECTRIC COMPANY, LTD.

DOCKET NO. 97-0346 TEST-YEAR 1999
Pending Rate Case
SUMMARY OF INTER-ISLAND SUBSIDY

	Maui Div. ($000s)	Lanai Div. ($000s)	Molokai Div. ($000s)	Total MECO ($000s)
Total Sales Rev. At Full COS	$131,633.9	$7,666.2	$8,016.5	$147,316.6
Total Sales Rev. From Rates	$135,469.1	$5,321.9	$6,509.3	$147,300.3
Subsidy From/To Other Classes	($3,835.2)	$2,344.3	$1,507.2	($16.3)

MAUI ELECTRIC COMPANY, LTD. - MAUI DIVISION
DOCKET NO. 97-0346, TEST-YEAR 1999
SUMMARY OF REVENUE REQUIREMENTS BY RATE CLASS

Rate Class	Sales Rev. @ Proposed	Sales Rev. @ Equal ROR	Subsidy $000s	Subsidy %
Schedule R	$49,416.4	$53,848.6	-$4,432.2	-8.97%
Schedule G	$13,621.7	$12,211.1	$1,410.6	10.36%
Schedule J	$29,368.1	$25,758.6	$3,609.5	12.29%
Schedule H	$3,605.5	$3,395.4	$210.1	5.83%
Schedule P	$38,865.7	$35,500.6	$3,365.1	8.66%
Schedule F	$591.7	$919.6	-$327.9	-55.42%
Schedule U	-			
Total	$135,469.1	$131,633.9	$3,835.2	2.83%

Pricing/Es:6-9-04
Subsidy-Summary.xls
Maui Div - TY 1999

MAUI ELECTRIC COMPANY, LTD. - LANAI DIVISION
DOCKET NO. 97-0346, TEST-YEAR 1999
SUMMARY OF REVENUE REQUIREMENTS BY RATE CLASS

Rate Class	Sales Rev. @ Proposed	Sales Rev. @ Equal ROR	Subsidy $000s	Subsidy %
Schedule R	$1,312.0	$2,743.1	-$1,431.1	-109.08%
Schedule G	$357.2	$462.9	-$105.7	-29.59%
Schedule J	$1,309.8	$1,487.8	-$178.0	-13.59%
Schedule H	$105.3	$131.4	-$26.1	-24.79%
Schedule P	$2,215.7	$2,780.7	-$565.0	-25.50%
Schedule F	$21.9	$60.3	-$38.4	-175.34%
Schedule U	-			
Total	$5,321.9	$7,666.2	-$2,344.3	-44.05%

MAUI ELECTRIC COMPANY, LTD. - MOLOKAI DIVISION
DOCKET NO. 97-0346, TEST-YEAR 1999
SUMMARY OF REVENUE REQUIREMENTS BY RATE CLASS

Rate Class	Sales Rev. @ Proposed	Sales Rev. @ Equal ROR	Subsidy $000s	Subsidy %
Schedule R	$2,480.1	$3,577.8	-$1,097.7	-44.26%
Schedule G	$918.7	$839.8	$78.9	8.59%
Schedule J	$1,740.5	$1,698.9	$41.6	2.39%
Schedule H	$365.0	$465.9	-$100.9	-27.64%
Schedule P	$916.7	$1,383.0	-$466.3	-50.87%
Schedule F	$88.3	$51.1	$37.2	42.13%
Schedule U	-			
Total	$6,509.3	$8,016.5	-$1,507.2	-23.15%

LOL-SOP-IR-71

(a) Should comparisons of alternative technologies include the multiplier effect job creation and economic growth, fuel volatility and security (b) For each of the following, please explain how the Companies analyses, incorporates and/or utilizes it in evaluating alternative energy plans and/or DG analysis: (1) job creation; (2) economic growth; (3) the economic multiplier effect; (4) balance of trade issues; (5) export expansion; (6) import substitution; (7) foreign investment; (8) leakage? (c) Does '"public interest" refer to "ratepayer interest" and/or "stockholder interest" or to some broader interest which is also concerned with jobs, economic prosperity and quality of life issues. (d) Should comparisons of alternative technologies include the multiplier effect job creation, economic growth, fuel volatility and security?

HECO Response:

a. It is not clear the type of comparisons of alternative technologies that are being referenced in this IR. The effects of different resource plans (which may include different resources) on the economy may be considered in IRP. See, for example, HECO's second IRP filed January 30, 1998 in Docket No. 95-0347, HELCO's second IRP filed September 1, 1998 in Docket No. 97-0349, MECO's second IRP filed May 31, 2000 in Docket No. 00-0004, and the Hawaii Externalities Workbook filed July 22, 1997 in Docket No. 95-0347. Assuming this IR is referring to comparisons of distributed generation technologies in this docket, macro-economic impacts of distribution generation could be covered as part of Issue 7 (i.e., What are the externalities costs and benefits of distributed generation?).

b. Assuming this IR refers to the analyses that HECO performed for its Preliminary Statement of Position ("SOP"), HECO's Preliminary SOP discusses economic impacts at various places (e.g., economic viability, page 1; costs avoided, page 21; efficiency and scale, page 23; electricity rates, page 30; uneconomic bypass, page 31). HECO did not specifically study the issues listed in this IR other than to the degree presented in its CHP Program application.

c. It is not clear the context in which "public interest" is being referenced in this IR. In

general, the use of the term "public interest" means a broader constituency than ratepayers or stockholders and may include impact to the general economy.

d. See the response to part a above.

LOL-SOP-IR-72

Are construction and operation costs similar for utilities and non-utilities?

HECO Response:

In general, the cost of constructing a generating facility, whether central station generation and or distributed generation, would be similar for a utility or a non-utility facility if designed and built to the same reliability and quality standard.

Operating costs for utilities and non-utilities depend on numerous factors, such as type and size of unit, type of fuel, location, mode of operation (baseload, cycling or peaking), hours of operation, number of starts and stops, operating permit requirements, system demand, ambient conditions, maintenance practices, wage rates and insurance costs. Therefore, in some cases operation costs may be similar and in other cases different.

LOL-SOP-IR-73

Should a DG system be allowed to provide electricity and/or heat to two adjacent properties?

HECO Response:

By definition, the provider of such services generally would be a utility under Hawaii law (assuming different customers were served on the adjacent properties, or public right of ways were used in serving the adjacent properties). See also response to CA-SOP-IR-14. The Companies have not considered the hypothetical case where electricity is provided to only one customer, but heat is provided to adjacent customers.

LOL-SOP-IR-74

How do the Companies believe that positive externalities associated with renewable energy DG (hedging against fossil fuel price volatility; hedging against fossil fuel price spikes; reduced environmental compliance risk; security risks) should be accounted for?

HECO Response:

For the purposes of this docket, externalities (both costs and benefits) for distributed energy (whether renewable or non-renewable) are considered in Issue 7 (i.e., What are the externalities costs and benefits of distributed generation?). This issue should be examined in this docket through the Statement of Positions of the parties to this docket and the remaining procedural steps of this docket. See also response to CA-SOP-IR-2.

LOL-SOP-IR-75

(a) Please list all studies, reports, and/or analysis that the Companies and/or its subcontractors commissioned and/or completed in the past 10 years with regard to the following statement: "In order for DG to be accepted in Hawaii, it must be highly efficient (such as CHP systems) and the application must be large enough for a reasonable economy of scale." (HECO/2004 pg. 6) (b) Please provide all documents, surveys, and community meeting minutes since January 2000 with regard to aesthetic impacts associated with any proposed windfarm at Kahe or Kahuku. (c) "Impacts can be negative if the distributed generation installation itself is visually obtrusive, such as may be the case with wind turbines, photovoltaic arrays, or exhaust stacks?" (HECO/2004, pg. 25) Please list all studies, reports, and/or analysis that the Companies and its subcontractors completed in the past 10 years with regard to visual impact analysis specific to Hawaii and limited to actual proposals.

HECO Response:

a. Please see HECO Response to CA-SOP-IR-7 regarding DG/CHP economy of scale.

b. HECO has not conducted any specific analyses of visual impact of wind turbines at Kahe or Kahuku. HECO has had only informal discussions with local community members and customers to seek input and community recommendations regarding a potential windfarm project and how best to present the project to the affected communities. General questions were raised about the visibility of wind turbines and specific locations, however, HECO was unable to provide that information at that time. HECO objects to providing minutes of such discussions on the basis that the information regarding the potential windfarm is beyond the scope of this investigation of small DG. To summarize some of the visual concerns raised, some Native Hawaiian Community members expressed concerns regarding the visual impact towers may have on the community, the mountains and culturally significant sites, and a desire to see pictures of where the towers would be located and what they would look like.

c. Maui Electric Company, Ltd's Waena Generating Station, Final Environmental Impact, November 1997.

See attached file for the State Department of Land and Natural Resources response to a proposed Air Force wind project at Kaena Point and their concerns over visual impact.

H017

BENJAMIN J. CAYETANO
Governor of Hawaii

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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Conservation and Resources Enforcement
Forestry and Wildlife
Historic Preservation
Land Management
State Parks
Water and Land Development

ref: OCEA/DH
file no. 96-081

Mr. Ray H. Jyo, P.E.
Director of Engineering
Department of the Army
Pacific Ocean Division, Corps of Engineers
Fort Shafter, Hawaii 96858-5440

SEP 12 1995

Dear Mr. Jyo,

Subject: FONSI for the Wind Generator System at Kaena Point Satellite Tracking Station, Kaena Point, Oahu, Hawaii

Thank you for submitting the subject FONSI and draft EA for our review. Our Department shares the concerns expressed by the Office of Environmental Quality Control's August 8, 1995 letter to you regarding the project. In particular, we believe that the proposed project will detrimentally affect the users of the adjacent State Park and Natural Area Reserve. Both Kaena Point State Park and Kaena Point Natural Area Reserve were created, in part, because of the scenic quality of the area. The relatively low profile structures that already exist at the sight do not significantly affect the area's scenic quality as would the proposed project. The sight of three or more very large support structures over 100 feet high with moving blades spanning 65 feet will significantly harm one of the primary characteristics that attract Kaena State Park users. One need only see the effect of the Kahuku Wind Farm on the rural scenery of the North Shore to assess this impact.

In sum, while we commend your effort to find a non-polluting energy source for the satellite tracking station, we believe that the proposed project will be a significant visual pollutant for the area. We cannot support your finding of no significant impact.

Please contact Don Horiuchi of our Office of Conservation and Environmental Affairs at 587-0381 if you have any questions.

Very truly yours,

Michael D. Wilson, Chairperson

cc: OEQC

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LOL-SOP-IR-76

(a) Do the Companies use any probability analysis, confidendence interval estimates, correlation analysis, regression modeling or other statistical analysis? (b) Does this include analysis of the need for standby charges, spinning reserves, transmission line redundancy, distribution line redundancy, and multiple simultaneous DG equipment failures? (c) Please explain any type of probability analysis the Companies are aware of to evaluate the likelihood of multiple DG systems failing simultaneously; (d) Contingency planning calls for the utility to be able to have one generator down for service while a second one fails. Contingency planning calls for the utility to be able to have one transmission line to be down when another one fails. Should the utility have a higher standard for distributed generation, that is, the utility must plan for all generators to fail simultaneously? (e) Should utility upgrades occur where (1) the load is higher; (2) where the is a history of failures; or (3) where there is a higher probability of future failure. (f) Should all customers pay to upgrade the T&D grid for the benefit of those customers requiring higher levels of reliability?

HECO Response:

a. The Companies use regression modeling and other statistical analysis techniques for various purposes (for example, in forecasting electricity sales and number of customers). In addition, HECO's loss of load probability consideration, which is included in its firm capacity planning criteria, is a form of probability analysis. Confidence intervals are calculated in conjunction with the use of various statistical models.

b. In general, the need for standby charges, spinning reserves (for HECO) and operating reserves (for HELCO and MECO), and transmission and distribution line redundancy, have not been based on probability or statistical analyses. The Companies have not attempted to analyze "multiple simultaneous DG equipment failures", given the relatively small number of DG installations, and the lack of data with which to do such analyses. HELCO has implemented standby charges on the island of Hawaii, and the basis for the standby charges was addressed in Docket No. 99-0207. The bases for determining spinning and operating reserves, which generally depend on the characteristics of the generating units supplying power to the utility's system and the utility system characteristics, are beyond the scope of

this docket. T&D system planning generally is not based on probability analysis, for reasons explained in other proceedings.

c. If there was sufficient DG installed, and sufficient experience (i.e., data), statistical analysis could be performed to determine the probability of multiple DG system outages.

d. LOL's statement does not describe the planning criteria for either generation or transmission. Utilities may or may not have to plan for simultaneous failures of DG generators, depending on the purpose of the planning and the circumstances (including the number of DG installations), the outage characteristics of the DG units, and the relative sizes of the DG units). In the capacity planning analysis included in Docket No. 03-0366, the Companies did not assume that all distributed generators (whether installed by the Companies or by third-parties) would fail simultaneously. Moreover, in developing the standby charges in Docket No. 99-0207, HELCO did not assume that all distributed generators would fail simultaneously.

e. Assuming the question is referring to utility T&D upgrades, such upgrades are planned based on T&D planning criteria and planning judgment in order to provide reliable transmission and distribution systems on the islands. Transmission planning criteria establish minimum requirements, not design standards. Utilities must use their best judgment and planning expertise to build systems that will respond to various system requirements, including reliability, load growth, load distribution and service to critical loads. T&D line outages generally would be taken into account in exercising planning judgment, in addition to the other factors identified in T&D dockets.

f. The question of whether all customers should "pay to upgrade the T&D grid for the benefit of those customers requiring higher levels of reliability" is a hypothetical question that goes

beyond the scope of this docket, which involves DG. The Companies plan for a reliable T&D system to meet the reasonable need of its customers. Individual customers with requirements for a higher level of reliability or power quality can install equipment or take actions to improve the reliability or power quality of their own power supply. If the Companies install special facilities for the benefit of individual customers, then the individual customers may be assessed the cost of the special facilities. The Commission has allowed a charge to be made to customers served by the downtown Honolulu distribution network, since other customers are served by radial distribution systems.

LOL-SOP-IR-77

How does the Companies simulation models account for micro- and mini- on-site generators within an IRP Framework?

HECO Response:

The Companies have not performed any production simulation modeling as part of this docket.

In its CHP Program Application (Docket No. 03-0366), the Companies aggregated the projections of CHP projects and included the aggregated impacts in its production simulation modeling.

LOL-SOP-IR-78

What percentage of outages (number, duration) are caused by problems associated with generation, transmission, distribution, transmission substation, distribution substation, customer line feed, etc.?

HECO Response:

See HECO response to LOL-SOP-IR-58.

LOL-SOP-IR-79

(a) What is the percentage of the load for each transmission sector? (b) What is the government load for each of these sectors? (c) At what time does each transmission sector peak? (d) Can the peak load from neighboring sectors be added together to determine the peak load for both sectors combined?

HECO Response:

a. HECO Load Distribution By Load Center:

From Table 3-1 of HECO's East Oahu Transmission Project Alternative Study Update (December 2003) report, the HECO system day peak load was geographically distributed in the following fashion:

Downtown - 26%

Koolau/Pukele - 30%

Central - 18%

West - 26%

HELCO Load Distribution by Load Center:

Energy sales are the only statistics available for the HELCO system by transmission sector or district. Shown below are percentages based on 2003 energy sales.

Hilo - 42%

Kona - 35%

Waimea - 23%

MECO Load Distribution by Load Center:

The information provided below is based on 2002 peak data:

West Maui - 30%

South Maui - 32%

Central Maui - 30%

East Maui - 8%

b. HECO's customer-type sales data is not broken down by geographic area. On a total basis, government loads account for approximately 27% of HECO's total electricity billed sales in 2003.

On a total basis, government loads account for approximately 14% of HELCO's total electricity billed sales in 2003.

On a total basis, government loads account for approximately 10% of MECO's total electricity billed sales in 2003.

c. HECO/HELCO/MECO currently do not track when a specific geographic area's peak load occurs. The raw data is available, but it is currently not summarized to provide this information.

d. The peak load from neighboring geographical areas usually cannot be simply added together to determine the peak load for both areas combined as the peak loads are likely not coincidental in time.

LOL-SOP-IR-80

(a) Does the Supply Side Resources within the IRP Framework refer to only central station generators (CG); (b) Are DG generators excluded from IRP analysis? (c) Has the PUC ruled on whether CG and DG must be treated similarly or differently within the IRP Framework?

HECO Response:

a. The definition of "supply-side programs" in the IRP Framework is programs that are designed to supply power. Therefore, it does not refer to only central station generation.

b. Distributed generation is not excluded from the Companies' integrated resource planning ("IRP") analyses, although there are constraints on the Companies' ability to incorporate distributed generation in such analyses, as has been addressed in prior IRP Plan filings. Nevertheless, the Companies have developed a methodology to incorporate the revenues and cost impacts of CHP systems in their quantitative analyses for IRP. The methodologies are exemplified by those used to analyze the Companies' proposed CHP programs filed in Docket No. 03-0366.

c. HECO is not aware of any such ruling by the Commission.

LOL-SOP-IR-81

How does the Companies CHP Application and DG Statement of Position comply with the following: HAR 6-74-7 (a): A cogeneration facility or small power production facility shall not be owned by a person engaged in the generation or sale of electric power.

HECO Response:

HAR § 6-74-7 is part of subchapter 2 of Chapter 74, Title VI, which applies to the criteria for and manner of becoming a "qualifying small power production facility" and a "qualifying cogeneration facility". HAR § 6-74-2. In order to be a qualifying facility (or "QF"), a "small power production facility" and "cogeneration facility" must meet the ownership criteria specified in HAR § 6-73-7. See HAR § 6-74-4(a)(3), (b)(2). Section 6-74-7(a) merely provides that neither a cogeneration facility or a small power production facility meets the ownership criteria to be a qualifying facility if the facility is owned by a person primarily engaged in the generation or sale of electric power (other than electric power solely from cogeneration facilities or small power production facilities). Section 6-74-7(b) defines, for purposes of § 6-74-7, when a facility is considered to be owned by a person primarily engaged in the generation of sale of electric power.

The Hawaii PUC adopted its rules under a provision in the Public Utility Regulatory Policies Act of 1978 ("PURPA") requiring that state commissions implement rules adopted by the Federal Energy Regulatory Commission ("FERC"), and § 6-74-7 is identical to the FERC rule found in 18 CFR § 292.206. In adopting its rule, FERC apparently recognized that someone might attempt to misinterpret the rule, and explicitly stated that: "The Commission emphasizes the fact that nothing in this program limits the extent of utility ownership or operation of cogeneration or small power production facilities." 45 Fed. Reg. 17959, 17971 (March 20, 1980).

LOL-SOP-IR-82

(a) Please provide a list of all studies, reports and analysis that the Companies and its subcontractors conducted in the past 10 years with regard to DG and CHP (b) Please provide a citation or source for all documents listed in section a. (c) Please provide a copy of all documents in section a which are not in the public record. (d) Please provide a copy of the study on DG conducted by the California based consultant conducted by the utilities with support from EPRI.

HECO Response:

a. This IR requests "all studies, reports and analysis that the Companies and its subcontractors conducted in the past 10 years with regard to DG and CHP", and subpart (c) requests a copy of all documents listed in subsection (a). In order to be responsive to this request (and to certain other requests regarding production of documents related to CHP and DG), the Companies have (1) designated categories of documents that might be deemed to fall within the scope of these requests, (2) attempted to list (without being exhaustive) documents falling within a category, where it was not unduly burdensome to compile the list, (3) identified the documents they are willing to produce and the manner in which they are willing to produce such documents, (4) identified subcategories of documents (without attempting to list the documents, given the volume of documents that arguably fall within a category and the privilege that might be violated by listing documents), and the bases for objecting to the production of such documents.

The list of categories is appended to this response, and the Companies responses and objections with respect to each such category of documents are addressed below:

A. CHP Program, Docket No. 03-0336

The application, exhibits to application and filed workpapers are a matter of public record and will be made available for inspection and copying.

B. Informal Complaint No. IC-05-098

The response to the informal complaint, and the responses to the Commission's information requests, are a matter of public record, and will be made available for inspection and copying.

C. Interconnection Rule, Docket No. 02-0051 (Consolidated)

Relevant filings that are a matter of public record will be made available for inspection and copying. Certain portions of the Status Reports filed in the docket contain confidential customer information and are subject to Protective Order No. 20168, and such protected portions will be made available only to the extent allowed by the Protective Order.

There also are extensive communications between the Companies and their customers regarding interconnection agreements, before and after the implementation of Rule 14.H, as well as extensive internal communications, and the Companies would object to producing or listing such communications on the grounds that (1) such a production would be unduly burdensome, (2) the documents contain confidential customer information, and (3) internal communications contain information subject to the attorney-client and attorney work product privileges.

D. EPRI Publications

Although they do no appear to be within the scope of this IR, the Companies have listed various EPRI Publications related to CHP and DG, because they may be within the scope of other IR's cross-referenced to their response.

The Companies are members of the Electric Power Research Institute, Inc. (EPRI) (sometimes doing business as EPRIsolutions or EPRIGEN). EPRI makes reports and updates available to members providing funding related to the reports and updates on a

confidential basis, since the reports and updates contain proprietary commercial, research, development and/or trade secret information. These "Confidential Trade Publications" are made available to the members under licensing agreements that limit their use to internal use by the Companies (and their consultants working on matters for the Companies), and to use in the Companies' own business operations.

In certain prior proceedings, EPRI has allowed the Companies to make specific EPRI Reports available to parties to the proceedings and the Commission under a Protective Order and a signed Confidentiality Agreement pursuant to which: (1) the recipient agrees not to use or disclose the proprietary reports except for the purpose of participating in the docket, and (2) the recipient agrees to review the reports on the Companies' premises. Upon request, the Companies will communicate with EPRI regarding the extent to which and the basis upon which the listed publications may be made available for use in this docket.

E. Industry Publications

Although they do not appear to be within the scope of this IR, the Companies have listed various industry publications and articles related to CHP and DG, because they may be within the scope of other IR's cross-referenced to this response.

These publications and certain other information that the Companies propose to make available to the parties and the Commission are protected by copyright laws, and the information would be made available under the "fair use" exception to the copyright laws. The use of such copyrighted materials by the recipients, and the copying of such materials, would be subject to the copyright laws.

F. CHP/DG Market Assessments And Customer Analyses

Although it is not clear to what extent such documents may be within the scope of this IR (or other cross-referenced IRs), the Companies have made proposals to, communicated with, analyzed, and communicated internally about CHP/DG possible and actual proposals to specific customers, and entered into Memoranda of Understanding (MOUs) and/or Letters of Intent (which are subject to entering into definitive agreements that would be subject to Hawaii PUC approval) with a number of customers. The MOUs and LOIs (a number of which have been superceded or are no longer effective) are listed in Category F.

The Companies have also taken a number of steps to assess the market for CHP/DG and have conducted studies and analyses (or had such studies and analyses conducted) regarding the market for CHP/DG.

If and to the extent that such documents are deemed to be within the scope of this request, the Companies object to providing documents regarding the market for DG and/or CHP systems in Hawaii, and plans, analyses, and communications done by or on behalf of the Companies with respect to engaging in the CHP or DG business or responding to competition, on the grounds that: (1) such documents contain proprietary commercial and financial information, and the disclosure of such confidential information on a public basis or to entities engaged in the sale of competing services could adversely impact the Companies' transactions with customers, adversely impact the Companies' costs of doing business, and result in higher costs to ratepayers; (2) the uncontrolled disclosure of proprietary information would give providers of competitive services information useful in making their own marketing decisions, without expending the time and money necessary to

gather and develop the data, and would allow providers of competitive services to profit or otherwise derive benefits at the expense of the Companies and their ratepayers; (3) requests that the Companies produce "all" documents are overly broad and unduly burdensome given the volume of documents (including e-mails, agendas, power point presentations, etc.); (4) information produced pursuant to such requests could include preliminary and/or outdated analyses, which have been superceded by later analyses that are more relevant to the subject-matter of this proceeding; and (5) many of the documents contain information that is protected by the attorney-client privilege and/or the attorney work product privilege.

The Companies also object to the production of customer-specific information on the grounds that (1) such information is confidential and has been protected from disclosure by the Commission in other proceedings, (2) in some cases, the customer specific information is already subject to a protective order in another docket, and (3) the disclosure of such information has not been consented to by the customers.

The Companies are willing to make the MOUs and LOIs available to the Commission ("PUC"), the Consumer Advocate ("CA"), the Parties, and the Participants under an appropriate protective order, although customer specific information may have to be redacted from copies made available to persons other than the PUC and CA if the definition of Qualified Persons is not restrictive enough.

The Companies are in the process of compiling a list of customer proposals and presentations to customers, and analyses of such proposals. Once the list is compiled, it will be provided to the PUC and parties. The Companies are willing to make the listed documents available to the PUC and CA under an appropriate protective order, but object to

providing such documents to other parties and participants, at least until the definition of Qualified Persons in the Protective Order is determined.

The Companies retained a consultant, Energy and Environmental Economics, Inc. (""E3"), to assist in developing a method to analyze customer-specific CHP System proposals on the end-users of the system and on other stakeholders (non-participating customers and shareholders). E3 developed a "Distributed Generation and Economic Model (DG Tool and Methodology), the latest version of which is dated August 30, 2002. The DG Tool was intended to be used to help analyze CHP projects on a project-by-project basis, and has been superceded by the programmatic method used for the CHP Program application (although the considerations included in both models are generally the same). The Companies note that the cost information (such as 2002 fuel price assumptions and estimated costs for non-packaged CHP systems) included in the DG Tool also are outdated.

The Companies will make the draft E3 DG Model report, available to the PUC, the CA, and other parties and participants under an appropriate Protective Order. The draft report refers to information included in Section 5 and an "attached CD", but these parts of the report were not transmitted to the Companies and the Companies would object to providing persons other than the PUC and the CA with Section 5 and the attached CD had they been transmitted, at least until the definition of Qualified Persons in the Protective Order is determined.

The Companies also are in the process of compiling the customer-specific CHP System "potential" information used to help develop the forecasts of CHP System penetration for the CHP Program application. The Companies are willing to make the compiled information available to the PUC and CA under an appropriate protective order,

but object to providing such information to other parties and participants, at least until the definition of Qualified Persons in the Protective Order is determined.

Analyses of the penetration of customer-sited emergency generation are addressed in response to CA-SOP-IR-12.

The Dispersed Generation Assessments done by RUMLA, Inc. (dated September 1997) are addressed in response to subpart (d) below.

For the record, the Companies also object to providing access to certain internal management reports and documents regarding DG, and communications regarding such documents, on public policy grounds. Some of these documents contain information that is in the nature of self-critical assessments. Requiring that this information be subject to review by parties in a regulatory proceeding would have a "chilling" effect on the entire self-analysis process. In addition, many of the internal communications are not in a form to be transmitted outside the Companies. Were these documents and communications subject to review in a regulatory proceeding, their candid nature and, therefore, their value would diminish significantly in the future, and the Companies' internal communications and management process would be seriously hampered.

The requirement that this information be provided would not adequately balance the need for the information against the Companies' need to manage. For example, the Federal Freedom of Information Act ("FFIA"), codified at 5 U.S.C. §552, and the Uniform Information Practices Act (Modified), codified at H.R.S. Ch. 92F, contain broad disclosure requirements based on the public's interest in open government. However, even such broad disclosure acts provide exceptions from the broad disclosure requirements that are intended to permit the efficient and effective functioning of government. It is common in such acts to

protect from disclosure pre-decisional agency memoranda and notes, and/or government records that, by their nature, must be confidential in order to avoid the frustration of a legitimate government function. This is similar to the "deliberative process privilege" recognized by the Pennsylvania Public Utility Commission with respect to its own internal staff reports. See Pennsylvania Public Utility Commission v. West Penn Power Company, 73 PA PUC 122 (July 20, 1990), West Law Slip Op.

The Companies would object to disclosure of the internal management reports and communications even under a protective order. The value of these reports and communications will be diminished if the Companies are required to provide the documents, even if the documents were provided pursuant to a protective order.

The Companies object to requests that the Companies list documents that are not produced on the grounds that (1) attempts to list the documents would be unduly burdensome given the volume of documents, (2) adequate time has not been provided to survey, much less list, all such documents, and (3) listing documents subject to the attorney-client privilege and/or attorney work product privilege could result in the disclosure of privileged information.

Appropriate Protective Order

The Companies' understanding was that TGC and/or the Consumer Advocate were going to propose language for a Protective Order that would limit access to confidential information to employees and consultants of a party meeting certain specified criteria. Given the nature of the confidential proprietary, commercial and financial information that has been or may be within the scope of information requested in this docket, the Companies propose that "Qualified Person", to whom such proprietary information may be made

available or disclosed, be defined in the manner "Qualified Person" was defined in Protective Order No. 15492, issued April 8, 1997 in Docket No. 7702 (the communications infrastructure investigation)[1]. "Qualified Person" would include the following:

a. The author(s), addressee(s) or originator(s) of the confidential information (provided that such person shall be a Qualified Person by virtue of this subparagraph only with respect to the confidential information of which such person was the author, addressee or originator);

b. The Commission and its staff;

c. Counsel of record for a Party (including persons employed directly by counsel to assist in the preparation, evaluation, and presentation of this case before the Commission, who would not be excluded if they were Independent Consultants employed by, or employees of, a Party);

d. The Consumer Advocate, its staff and any consultants retained by the Consumer Advocate for this proceeding;

e. Independent Consultants employed by a Party who are not employees of the Party, or in-house subject matter experts and/or regulatory personnel, who are not engaged in developing, planning, marketing, or selling the Party's products or services or designing prices of the Party's products or services to be charged customers;

f. Any other person approved by the Party asserting the claim of confidentiality; and

g. Any other person designated a qualified person by order of the Commission.

b. See responses to subpart a, above.

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[1] Categories "a" and "c" are edited by adding parentheticals, to account for changes in more recent

c. See responses and objections to subpart a, above, which are incorporated herein.

d. The Companies previously have objected to providing the Dispersed Generation Assessment for HECO, HELCO an MECO, dated September 1997, by RUMLA, Inc., on the grounds that the assessments are proprietary and contain confidential customer information. Without waiving such objection, copies will be made available for inspection and copying with confidential portions, if any, redacted and made available under an appropriate protective order.

Protective Orders.

A. CHP PROGRAM
Docket No. 03-0366

	Title		
1	PROGRAM APPLICATION filed October 10, 2003		
	Exhibit	A	HECO/HELCO/MECO CHP Forecast
		B	HECO/HELCO/MECO CHP Systems, Capacity and Capital Costs
		C	Evolution in Company's Approach to DG/CHP
		D	HESS Teaming Agreement
		E	HECO/HELCO/MECO Proposed Schedule CHP Tariff Sheets, Including Schedule CHP Eligibility Criteria and Combined Heat and Power Agreement
		F	Generic CHP System Information
		G	UIF Form for a Generic CHP Unit
		H	HECO/HELCO/MECO Utility CHP Program Analysis
		I	HECO/HELCO/MECO Proposed Energy Cost Adjustment Clause Tariff Sheets
		J	HECO/HELCO/MECO Proposed Schedule Q Tariff Sheets
2	SUPPORT WORKPAPERS for CHP Program filed November 13, 2003		
	Exhibit	H	
		I	

B. INFORMAL COMPLAINT No. IC-03-098

	Title			
1	HECO/HELCO/MECO Response to Informal Complaint No. IC-03-098 filed August 5, 2003			
	Part I		General Response to Informal Complaint	
	Part II		Response to Paragraphs (1-6, 8-14, 16, 20-21) in Appendix to the 7/1/03 letter from Complaintants	
	Part III		Responses to PUC IRs	
			Response to PUC-IR-1 includes:	MECO/HECO Customer Sited Combined Heat and Power EP-P10124/C5150 Interim and Commissioning Reports May 1, 2003
			Response to PUC-IR-3 includes:	EPRI Research and Development Agreement EP-P10124/C5150 "HECO Consumer-sited Combined Heat and Power Project"
			Response to PUC-IR-4 includes:	Grand Wailea and MECO MOU, RD&D MOA, Standard Interconnection Agreement and Maintenance and Extended Warranty Agreement
			Response to PUC-IR-5 includes:	Hess Microgen Packaged Cogeneration Systems brochures
			Response to PUC-IR-7 includes:	Hess Teaming Agreement with HECO/HELCO/MECO
			Response to PUC-IR-11 includes:	Combined Heat and Power Feasibility Study, prepared for Grand Wailea Resort by MECO and Onsite Energy Corp.

C. RULE 14.H INTERCONNECTION STANDARDS/AGREEMENT

	Title	Author	Date
	RULE 14.H DISTRIBUTED GENERATION INTERCONNECTION STANDARDS, INTERCONNECTION AGREEMENT AND OVERVIEW FOR HECO/HELCO/MECO		
	a. PUC D&O No. 20056		March 6, 2003
	b. Rule 14.H Tariff Sheets Effective		March 21, 2003
	c. Rule 14.H Interconnection Agreement Tariff Sheets Insurance Modification Effective		June 6, 2003
	d. Rule 14.H Annual Status Reports		Jan. 31, 2003
			Jan. 30, 2004
	e. Rule 14.H Quarterly Status Reports		May 9, 2003
			July 31, 2003
			Oct. 31, 2003
			April 30, 2004
	Note: Certain customer information is redacted from the Rule 14.H status reports and provided under a protective order.		

D. INDUSTRY PUBLICATIONS - EPRI

	Title	Report Number	Author	Date of Publication	Copy Write	Confidential
1	Technology Assessment of Residential Power Systems for Distributed Generation Markets	1000772	EPRI Solutions	December 2000		
2	Intelligence Update - Emerging Distributed Power Technologies (3/99, 6/99/ 9/99, 12/99)		EPRI Solutions	January 2000		
3	The U.S. Market Potential for Microturbines	TR-114271	EPRI/Resource Dynamics Corp.	December 1999		
4	Performance and Electrical Characterization Tests on a Microturbine Commercial Prototype	TR-114270	EPRI	December 1999		
5	Polymer Electrolyte Membrane (PEM) Fuel Cell/Uninterruptable Power Supply (UPS) Development for Electric Utility Battery Replacement Markets	TR-111678	EPRI/Power Computing Solutions Inc.	December 1998		
6	Assessment of Distributed Resource Technologies	TR-114180	EPRI/Arthur D. Little Inc.	December 1999		
7	Technology Assessment of Residential Power Systems for Distributed Generation Markets	TR-113897	EPRI	December 1999		
8	Assessment of Microturbines as Distributed Generators	TR-114182	EPRI/Arthur D. Little Inc.	December 1999		
9	Distributed Generation Implementation Guidelines: Siting, Environmental Permitting, and Licensing	TR-111545	EPRI/Continental Cogeneration, Inc., Onsite Energy & Stanley Consultants Inc.	December 1998		
10	Integration of Distributed Resources in Electric Utility Systems: Current Interconnection Practice and Unified Approach	TR-111489	EPRI/Power Technologies Inc.	November 1998		
11	Gas Turbine Recuperators	TR-113745	EPRI/Steven I. Freedman	December 1999		
12	Assessment of Emission Control Technologies for Distributed Resource Options	TR-113743	EPRI/Energy and Environmental Analysis, Inc.	December 1999		
13	Carbonate Fuel Cells and Diesels as Distributed Generation Resources	EPRI TR-102163	EPRI/RUMLA, Inc.	October 1993		

D. INDUSTRY PUBLICATIONS - EPRI

	Title	Report Number	Author	Date of Publication	Copy Write	Confidential
14	Distributed Utility Penetration Study	EPRI TR-106265	EPRI/Energy and Environmental Economics	March 1996		
15	Strategic Market Assessment of Distributed Resources	EPRI TR-106055	EPRI/Applied Decision Analysis, Inc, Brattle/IRI, Distributed Utility Associates and Econix	December 1995		
16	Distributed Generation Implementation Guidelines: Operations, Maintenance , and Training	TR-1115444	EPRI/Continental Cogeneration, Inc., Onsite Energy & Stanley Consultants Inc.	December 1998		
17	Packaged CHP System Assessment	1005009	EPRI Project Manager	March 2004		
18	Small Gas Turbines for Distributed Generation Markets	GTI-00/0219	EPRI Solutions	December 2000		
19	Assessment of the Benefits of Distributed Fuel Cell Generators in the Service Areas of Central & South West Services, Inc.	EPRI TR-102468	EPRI/RUMLA, Inc.	October 1993		
20	Distributed Generation Assessment Guidelines - A Market-Based Framework for Evaluating High-Value Applications	EPRI TR-102532-V1	EPRI/RUMLA, Inc.	December 1993		
21	Distributed Generation Characterization and Assessment for San Diego Gas & Electric	TR-104405	EPRI/RUMLA, Inc.	October 1994		
22	EPRI Investment Strategies Project	TR-104171	EPRI/Applied Decision Analysis, Inc,	October 1994		
23	Technical Assessment of Breakthrough Technology for High Efficiency Distributed Power Systems	TR-107075	EPRI/Fuel Cell and Distributed Generation Research Target	October 1996		
24	Distributed Generation Workstation User's Manual	EPRI TR-106914	EPRI/SEPRIL Services, LLC	December 1996		

D. INDUSTRY PUBLICATIONS - EPRI

	Title	Report Number	Author	Date of Publication	Copy Write	Confidential
25	The Distributed Utility: Strategic Implications in an IRP Setting		EPRI/Robert Aldrich	December 1992		
26	Assessment of Micro-Generation Technologies for Distributed Generation Applications	EPRI TR-107634	EPRI	September 1997		
27	Distributed Resources 1995: Planning for a Competitive Market	TR-105791	EPRI/Barakat & Chamberlin, Inc.	August 1995		
28	Integration of Distributed Resources in Electric Utility Distribution Systems: Distribution System Behavior Analysis for Urban and Rural Feeders	TR-112737	EPRI/Ontario Power Technologies	November 1999		
29	Distributed Resources Strategic Review	TR-110245	EPRI	April 1998		
30	Quantifying the Market for Distributed Resource Technologies	TR-111962	EPRI/Hagler Bailly Consulting, Distributed Utility Associates	December 1998		
31	Integration of Distributed Resources in the Electric Utility Distribution Systems: Distribution System Behavior Analysis for Suburban Feeder	TR-111490	EPRI/Ontario Power Technologies	November 1998		
32	Integration of Distributed Resources in the Electric Utility Distribution Systems: Functional Definition for Communication and Control Requirements	TR-111491	EPRI/Utility Consulting International	November 1998		
33	State-of-the-Art of Fuel Cell Technologies for Distributed Power	EPRI TR-106620-R1	EPRI/Fuel Cell and Distributed Generation Research Target	August 1997		
34	Converting Existing Backup Generators into Dispatchable System Resources	TR-114186	EPRI	February 2000		
35	Getting Connected on Interconnection		EPRI PEAC	July 23, 2001		
36	Evaluating What's Best for the Commercial Customer: Energy Efficiency Measures, High-Efficiency Electric Equipment, and Cogeneration	BR.020266 or CU.3009R	EPRI/EEI	1992		
37	Handbook of High-Efficiency Electric Equipment and Cogeneration System Options for Commercial Buildings	CU-6661	EPRI	December 1989		
38	Economics of Electric Alternatives to Cogeneration in Commercial Buildings	EM-6056, Project 2034-9	EPRI	October 1988		

D. INDUSTRY PUBLICATIONS - EPRI

	Title	Report Number	Author	Date of Publication	Copy Write	Confidential
39	Proceedings: Electric Alternatives to Commercial Cogeneration	CU-6606, Project 2983 1	EPRI	January 1990		
40	Dis-Gen Advisor - Market-Based Guidelines for Evaluating Distributed Generation Investments for T&D Grid Support & Customer Energy Service Applications	TR-102532-V2	EPRI	June 17, 1995		
41	Strategic Market Assessment of Distributed Resources	TR-106055	EPRI	December 1, 1995		
42	Technical Assessment of Breakthrough Technology for High Efficiency Distributed Power Systems	TR-107075	EPRI	1996		
43	Distributed Utility Penetration Study	TR-106265	EPRI	March 1996		
44	Residential Fuel Cells - Technology Readiness Assessment	TR-105832	EPRI	April 1996		
45	State-of-the-Art of Fuel Cell Technologies for Distributed Power - Technical & Strategic Assessment of Products, Markets, and Retail Competitiveness	TR-106620	EPRI	July 1996		
46	State-of-the-Art Assessment of Polymer Electrolyte Membrance Fuel Cells for Distributed Power Applications	TR-107064	EPRI	November 1996		
47	Distributed Generation Workstation User's Manual	TR-106914	EPRI	December 1996		
48	State-of-the-Art of Fuel Cell Technologies for Distributed Power	TR-106620-R1	EPRI	August 1997		
49	TAG Technical Assessment Guide	TR-105124	EPRI	May 1995		
50	TAG Technical Assessment Guide	TR-105124-R1	EPRI	November 1997		
51	Defining a Value Equation for Distributed Resources	1000421	EPRI	January 2000		
52	PQ News - New Project Will Test DG and Energy Storage Equipment		EPRI	October 17, 2000		
53	Integrating Distributed Generation into the Electric Distribution System		EPRI	February 2002		

E. INDUSTRY PUBLICATIONS - NON-EPRI

	Title	Author	Date of Publication	Copy Write	Confidential
1	Distributed Energy: The Reality and the Hype	ESource			
2	Economic Market Potential for Electric Utility Use of Distributed Generation	Edison Electric Institute	June 20, 2001		
3	Economic Market Potential for Utility Owned Distributed Generation	Distributed Utility Associates			
4	CHP Market Assessment Report	ONSITE SYCOM Energy Corporation			
5	Thorny Details	Louis Harris (Electric Perspectives)	March /April 2001		
6	Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects	Marketing Connections	Revised July 2000		
7	Economic Assessment of DG Proposals	Merrimack Energy	September 28, 2001		Confidential
8	Responding to the Bypass Threat and Establishing Strategic Goals for the Short and Long Term	Merrimack Energy Co, Ltd.	January 2001		Confidential
9	Review of Competitive Strategies	William Hopkins - Navigant Consulting, Inc.	January 2, 2001		Confidential
10	Making Connections - Case studies of Interconnection Barriers & Impact of Distributed Power Projects	National Renewable Energy Laboratory	May 2000		
11	Distributed Resource, carve out a niche in competitive markets	CarolAnn Giovando	July/August 2000		
12	Making the Most of Available Energy	Steve Vandenberg	June 29, 2001		
13	Connecting Distributed Energy Resources to the Grid: Their Benefits to the DER Owner/Customers, the Utility, & Society	Oak Ridge National Laboratory	February 2002		
14	Reliability & Distributed Generation	Arthur D. Little			
15	CHP Market Assessment Report	Onsite Sycom Energy Corp.			
16	Distributed Energy: The Reality & the Hype	E Source, Inc.	July 2000		
17	The Vision of Distributed Generation	Leslie Lamarre	April/May 1993		
18	News Watch In bid to retain large customers Virginia Power Plots Plan Construction at Industrial Sites	Electric Power Alert	June 23, 1993		
19	Cogeneration Energy Purchase Agreement	Merrimack Energy	September 25, 2001		

E. INDUSTRY PUBLICATIONS - NON-EPRI

	Title	Author	Date of Publication	Copy Write	Confidential
20	Hawaii Energy Utility Regulation and Taxation Practice, Policy and Incentives for Energy Efficiency, Renewable and Distributed Energy Resources (A Report for the Hawaii Energy Policy Project)	Carl Freedman of Haiku Design & Analysis and Jim Lazar of Microdesign Northwest	July 11, 2003		
21	Analysis of Residential and Small Commercial Cogeneration Technology	GRI-93/0168 - Energy International Inc.	April 1993		
22	Residential Cogeneration System Development	GRI-94-0029 - Kohler Company	December 1993		
23	Auxiliary Power Generation for Gas Heating Systems: Evaluation of the Business Potential	GRI-95/0343 - Battelle	October 1995		
24	Power Enhancement and Delivery System PEDS	Power Technologies, Inc.	April 1999		
25	Reliability Planning In Distributed Electric Energy Systems	LBL7877 - California Univ., Berkeley Lawrence Berkeley Lab	October 1978		
26	Commercial Market Segment Opportunities for Small-Scale Power Generation Peakshaving	GRI-99/0072 - Energystics, Inc.	March 1999		
27	Commercial Energy Decision-Maker Interviews on Market Acceptance and Peakshaving Opportunities for Small Scale Power Generation	GRI-99/0116 - Gas Research Institute	June 1999		
28	Low-Cost Self Generation by Commercial Customers: Utility and Regulatory Attitudes in Selected Markets	GRI-99/0171 - Gas Research Institute	August 1999		
29	The Distributed Utility: Technology, Customer and Public Policy Changes Shaping the Electrical Utility of Tomorrow	Report 007.5.92.17 - PG&E/Carl L. Weinberg	December 1992		
30	Making Connections, Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects	NREL	May 2000		
31	Distribution Planning with Distributed Generation	Electrotek	2001		
32	Generator Interconnections: A Primer On Procedures and Agreements	Bruder, Gentile & Marcoux, L.L.P.	June 2001		

F. CHP SYSTEMS LETTERS OF INTENT/MEMORANDUM OF UNDERSTANDING

	Customer	Company	Date of LOI/MOU
1	Pacific Allied	HECO	May 13, 2003
2	BYUH	HECO	May 6, 2004
3	Hickam C-17	HECO	January 24, 2004
4	Outrigger Beachwalk Ph1	HECO	July 2, 2003
5	Kaiser Hospital	HECO	May 10, 2004
6	Sheraton Keauhou	HELCO	May 16, 2003
7	Grand Wailea Laundry	MECO	June 25, 2003
8	Outrigger Wailea	MECO	Nov. 19, 2003
9	Maui Prince	MECO	April 2, 2004
10	Outrigger Hotels	HECO	January 4, 2002
11	KSL Grand Wailea	MECO	January 17, 2002
12	Outrigger Waikoloa Beach	HELCO	May 19, 2003