BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

In the Matter of the	)	
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PUBLIC UTILITIES COMMISSION	)	DOCKET NO. 03-0371
	)	
Instituting a Proceeding to	)	
Investigate Distributed Generation in Hawaii	)	
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DIVISION OF CONSUMER ADVOCACY'S
PRELIMINARY STATEMENT OF POSITION

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I. PROCEDURAL BACKGROUND

With Order No. 20582 dated October 21, 2003, the Public Utilities Commission of the state of Hawaii ("Commission") instituted a generic proceeding to investigate the potential benefits and impacts of distributed generation ("DG") on Hawaii's electric distribution systems and market. The Commission made Hawaiian Electric Company, Inc. (HECO), Maui Electric Light Company, Inc. (MECO), Hawaii Electric Light Company, Inc. (HELCO) (HECO, MECO and HELCO are collectively referred to as the HEI Companies) and Kauai Island Utility Cooperative (KIUC) (collectively with the HEI Companies referred to as the Electric Utility Companies), the Division of Consumer Advocacy, Life of the Land, Hawaii Renewable Energy Alliance, Johnson Controls, Inc. and Pacific Machinery, Inc. (sometimes jointly referred to as the "Hawaii Energy Services Companies" or "HESCOs"), Hess Microgen, the Gas Company, LLC, the

County of Maui, the County of Kauai and the Department of Business Economic Development and Tourism parties to Docket No. 03-0371.[1]

In general, the purpose of this proceeding is to examine the potential benefits and impacts of DG on Hawaii's electric distribution systems and market. In its Order instituting this proceeding, the Commission indicates that the policies and framework developed in Docket No. 03-0371 will form the basis for rules and regulations deemed necessary to govern participation in DG projects.

In a related matter, the Commission also instituted a generic proceeding to investigate the feasibility of implementing a competitive bidding process for the procurement of new generation capacity in Hawaii (Docket No. 03-0372). To be beneficial to Hawaii's electric industry and the electric utility ratepayers, any supply side resource addition should meet the technical and economic system needs of Hawaii's electric utility companies in a least cost manner consistent with public policies and initiatives. Therefore, implementation of DG and competitive bidding for generating resources are interrelated and directly impact the least cost integrated resource planning (IRP) activities of each of the Electric Utility Companies.

II. DG TECHNOLOGIES

DG involves the use of small-scale electric generation units located at or near the load. In a broader sense, DG sometimes consists of a portfolio of technologies, tools

[1] The Orders that set forth the parties to the instant proceeding are Order Nos. 20582 and 20832.

and techniques to supply energy services to customers at or near the point of use, including demand side management. The Commission, however, focused this generic DG proceeding on supply side resources that generate and deliver electricity.

A. DG TECHNOLOGIES AND FUEL SOURCES

DG technologies include technologies that are currently commercially available and emerging technologies that are in the research and development stage. Table 1 summarizes DG technologies that are both commercially available and emerging.

DG technologies considered to be supply side resources use fossil fuels (oil, propane, synthetic gas, etc.) and renewable energy such as biomass, solar and wind. Some DG technologies, such as combined heat and power (CHP), use fossil fuel but offer greater efficiencies by providing both electricity and thermal energy from a single source. These types of technologies are commonly referred to as cogeneration resources.

B. FEASIBLE AND/OR COMMERCIALLY VIABLE DG TECHNOLOGIES

1. Technologies Generally Viable on the Mainland or in Other Areas.

DG technologies are being implemented on the mainland in 21 or more states. The predominant DG projects that have been implemented are diesel engines (including landfill gas) gas turbines, micro turbines, wind turbines, and small hydro (including matrix hydro). Landfill gas is dependent on having adequate quantities of methane gas at a landfill. Usually, the diesel generator or reciprocating engine used in this application can be moved to other locations if the volume of gas needed to run the engine is no longer available at the site.

Small hydro facilities were popular many years ago (20 to 30 years) when many “mom and pop” installations were refurbished after they were abandoned by investor-owned utilities many years before. These installations are typically in the 1,000 to 5,000 kW range.

An emerging technology referred to as matrix hydro, is a matrix of smaller generators mounted on a panel that is lowered in the water, often in the stop log of the dam, is also under development. The individual generators in the matrix are approximately 450 kW but can be aggregated to a much larger capacity installation because of its modular design concept.

In recent years, many new small hydro installations have not been pursued. In part, development of new facilities is negatively affected by the FERC approval process. This regulatory process is expensive and time-consuming for large hydro facilities (greater than 5MW) and is prohibitively costly for a small hydro application on a per MW basis.

Wind turbines have become more prevalent in the past 5 years and have been installed in many different states on the mainland.

Solar energy (photovoltaics) have been developed in the southwestern mainland where sunlight is prevalent, but has not been developed in very many other parts of the mainland. Smaller photovoltaic applications are used for isolated (not connected to the grid) applications and are typically used to charge a battery that powers the remote device (weather station, highway sign, etc.).

Compressed-air energy storage plants have been constructed, but primarily as a research and development project. Compressed-air energy storage requires unique geological traits that do not exist in many geographic areas. This technology is very site specific. Geothermal is also similar to compressed air in that it requires unique geological properties and is very site specific. These types of plants have been constructed, but have not proven to be very reliable.

Biomass generating projects have been developed in several states and are usually associated with water treatment facilities or other industries that have wood waste or other biological waste that can be processed. This would be considered an existing and emerging technology for electric generating purposes.

2. Technologies Believed to be Viable in Hawaii

DG technologies in operation, or under development that are promising for Hawaii include solar thermal, photovoltaics, wind, biomass, geothermal, hydroelectric, fuel cells, micro-turbines, internal combustion engines and combined heat and power.[2]

The Consumer Advocate does not believe that policies or rules, governing the participation in Hawaii's electricity market through DG, should be limited to these

[2] See for example the "Renewable Energy Resource Assessment and Development Program" dated November 1995 prepared for the State of Hawaii, Department of Business, Economic Development and Tourism.

technologies or types of DG as new technologies may become commercially available and viable in the future. The viability and feasibility of available or planned DG technologies is site specific and should be analyzed in each of the Electric Utility Company's IRP to identify the least cost options for customers.

Recommendations regarding the exact location for the installation of specific technologies, as well as the appropriate amount of generation will depend on information that is provided in the IRP and/or through the discovery process.

III. <u>UTILIZATION OF DG OUTPUT</u>

A. DELIVERY TO THE END USER

Stand alone generating units serve customers that are not connected to the utility system. In this situation, the customer's service is solely dependent on the performance of the generating unit. As discussed later, the Consumer Advocate assumes that stand-alone or "isolated" generating units are not to be considered as DG for purposed of this proceeding. The following table summarizes how non-utility-owned generating units are utilized to serve customers:

Table 2.

Delivery of Non-Utility Generating Resources to End User

Generating Resource	**Utilization of Output**	**Interconnection Requirement**
I. Stand Alone, Not Connected to the Utility Grid		
	Output utilized by customer, customer dependent solely on the performance of its generating unit.	Not applicable; generating unit not interconnected with utility grid.
II. Interconnected to Utility Grid		
A. Direct Connection to Utility	Output sold to utility and utilized with other utility resources to serve customer needs. (See Footnote 3)	Established by agreement with utility based on system impact analysis.
B. Connect to Customer	Output utilized by customer, with utility "backup" (to provide balance of customer's needs; any excess may be delivered to utility for use by other customers.	Standardized requirements and agreement unless relative size of the generating unit to the load delivery system capabilities results in additional requirements determined from a system impact analysis.

DG are supply-side resources that are connected to the electric utility's delivery system and can provide power to the Electric Utility Company's customers through one of two means. The first is pursuant to terms of a purchased power agreement (PPA) where the entire energy produced by the DG facility is sold to the utility for resale to the utility's customers. In this situation, the DG facility does not serve specific customer loads.[3]

[3] In the "regulated" Hawaii environment, DG participants can not presently sell electricity services directly to other customers or have DG output delivered, or "wheeled" over the utility's delivery system to other utility customers.

The second is where the DG facility is intended to serve part or all of the specific needs of a customer, but the electric utility is also expected to serve as a resource if the DG facility is unable to provide sufficient energy to meet the customer load requirements. This situation could also involve delivering to the utility company excess energy produced by the DG facility not used by the customer.[4]

B. POSSIBLE APPLICATIONS TO SERVE LOAD (E.G., PEAKING, BASELOAD, ETC.)

The viable DG technologies in Hawaii can serve both peaking and baseload energy needs of the customer and/or the electric utility energy needs. Table 1 shows the type of use for each type of DG. Most fossil fueled DG such as diesel, microturbines and biomass can serve as baseload and peaking resources. These technologies can also be considered firm resources because they can be dispatched at any time since they rely on a fuel source that is considered reliable. Biomass could be considered less firm than diesel and microturbines depending on the source or reliability of the fuel source. Solar photovoltaic and wind generation are both dependent on intermittent "fuels" (i.e., sun and wind) and would not be considered to be firm capacity and energy resources. Solar photovoltaics and wind are also not dispatchable, and thus, cannot be relied on as

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4 The State has established "net metering" for eligible residential and commercial customers that own and operate DG facilities, intended to serve part or all of the customer's electricity requirement, on a first-come-first-served basis until the total rated generating capacity of such net metered DG facilities equals 0.5% of the UDC's system peak demand (see Hawaii revised statutes, section 269-101 and 269-102). It should be pointed out the renewable portfolio standard is determined using net electric utility sales, which only includes the excess energy generated and delivered to the utility under a net metering arrangement to count toward meeting the RPS.

peaking, baseload or backup resources. When available, however, their energy can be absorbed by the electric utility system if the amount of generation is a small percentage of the electric utility generating resources.

C. POSSIBLE FORMS OF DISTRIBUTED OWNERSHIP

DG projects can be owned by a customer, the utility company or a third party entity. The Consumer Advocate believes there should not be a restriction on who may own and operate DG projects. However, the Consumer Advocate's position is that it is important to recognize the differences in risk and/or benefits that relate to the ownership structure and the operational capabilities and features of the DG projects and the owner and operator of such projects.

The risk associated with ownership and operation of generating facilities is related to the vested interest of the owner and/or operator of the generating facility. For instance, the purpose of the electric utility owner/operator is to generate energy for sale to its retail customers. Furthermore, electric utilities in Hawaii are regulated by the Commission so that they are compelled to provide reliable service to their customers. On the other hand, a DG that is for the primary use of a customer that plans to use the DG energy for its energy needs first and then sell the remainder of the energy to the electric utility cannot be relied on as a reliable energy source for the electric utility, although the facility may serve as a reliable energy source for the customer. In fact, a third-party DG operator cannot be relied on to be a firm resource unless it is bound by performance incentives/disincentives to perform reliably. Even with such contractual incentives, the electric utility will be the only entity "on the hook" with the Commission to provide reliable capacity and energy to its customers.

Likewise, the economic benefit of a DG to the electric utility is maximized when the third party DG is operated as a firm resource (reliable). If the third party cannot or will not operate in this manner, the electric utility will need to install its own generation that is operated and maintained to be reliable.

D. OPERATIONAL CONSIDERATIONS

Operational responsibilities can directly affect the reliability benefits of the DG project and the ability of the project to serve ancillary functions. For example, if the DG project operation is under the control of the Electric Utility Companies, the generation produced by the project is more likely to be coordinated in conjunction with the generation from other resources and customer needs of the system, whereas, an arms-length relationship that may cause the Electric Utility Companies' preferred use of the DG to not be implemented would also provide a lesser value of the DG to the Electric Utility Companies.

The capacity and reliability of the DG technology is an important operational consideration. For instance, a 5,000 kW diesel generator installed on a 10,000,000 kW electric system on the mainland is a mere 5/100ths of 1% of the generating capacity of the electric system. However, 5,000 kW is 0.5% of a 1,000,000 kW peak demand electric system and 2.5% of a 200,000 kW peak demand electric system. During low load periods, however, these percentages are greater. If the DG facility is not dispatchable, it can potentially cause other utility generators to be turned off or operated at outputs that are inefficient. Furthermore, if the DG is not a firm resource, the electric utility will need to keep generating units on-line to replace the DG output if, for instance, the wind stops blowing (wind turbine) or the DG trips off because it is poorly maintained and considered unreliable.

In short, ownership and operation of the DG by the Electric Utility Companies may be a lower risk, higher reliability option than other combinations of ownership and operation; however, other ownership and operation alternatives may work adequately depending on the type of DG project and the arrangement between the Electric Utility Company and the DG participant.

E. FACTORS RELATED TO THE INTERCONNECTION OF DISTRIBUTED GENERATION TO THE ELECTRIC GRID

The interconnection and parallel operation of non-utility generating units has real world impacts on the utility's electrical system. Careful technical considerations are needed to:

1. Maintain safety, reliability, power quality and safe restoration of service;
2. Protect the utility's equipment and the customer's equipment and facilities; and,
3. Avoid adversely impacting operating efficiencies of the utility's system.

In general, the physical interconnection takes into account design, operating and technology specific[5] requirements involving protection, synchronizing and control equipment.

The HEI Companies currently have a Commission approved standardized physical interconnection requirements, and a standardized interconnection agreement for DG.[6] These standards allow the interconnection of DG technologies with the electric grid while not impacting safety and reliability of the utility system. Having such standards in place provides for a streamlined, and perhaps less stringent, process in place for applications of alternative DG sources of electric power to the electric utility infrastructure. Such standards should be put in place for KIUC, if not already established.

The standardized interconnection agreement does not apply to a customer that enters into a power purchase agreement for sale to the utility of energy generated by the distributed generating facility.[7] In this case, the DG participant and the utility enter into an agreement that gives recognition to the impact the DG has on system operations

5 The interconnection of DG generators to the electric grid generally utilizes inverters, synchronous generators or induction generators.

6 See Commission Order No. 19773 dated November 15, 2002 and Order No. 20056 dated March 6, 2003 in Docket No. 02-0051 (consolidated).

7 The standardized interconnection agreement also does not apply to eligible generating customers receiving the net metering service described elsewhere under the existing net metering law. Increases in the size of eligible customer owned generator, however, may require the need to comply with interconnection standards.

and costs while taking into account the control the utility has over the output and operation of the generating resource.

IV. IMPACT OF DG

A. RELIABILITY ISSUES THAT NEED TO BE CONSIDERED

There are markedly different reliability considerations when comparing the impacts of DG on a mainland electric system versus the Hawaii electric utility systems. A major difference is that mainland electric utility systems have been designed to rely on interconnections with other neighboring electric utilities and the agreements among the utilities to maintain and share their generation resources. This arrangement makes it possible for individual utilities to perform maintenance outages on generating units and at the same time rely on other utilities for generation if another of the utility's generating units is unexpectedly forced, i.e., tripped, out of service.

The Hawaii electric utilities, on the other hand, are self-dependent. In other words, the individual electric utilities must maintain generating capacity to serve the utility's customer loads if the utility's other units are out of service and unable to meet the utility's energy requirements. As mentioned previously, the reliability of the DG facility will affect the amount of generation that the utility must have available to serve its customers as expected. If the DG facility is not deemed to be a reliable capacity resource, then the electric utility will have to continue to maintain adequate generating reserves in order to be able to continuously serve its customers.

B. ANCILLARY FUNCTIONS THAT DG MIGHT PROVIDE

DG supply-side resources that generate electricity may either be:

- Stand-alone resources serving only customer electricity needs and are not connected, i.e., "isolated", from the Electric Utility Company's system; or,
- Supply-side resources that are connected to, either directly or indirectly through customer-owned facilities, the Electric Utility Company's system.

DG resources connected to the Electric Utility Company's system are operated in synchronism, i.e., "parallel", with the utility grid. By definition, stand-alone isolated supply-side resources are not considered because they are not operating in parallel with the utility grid.

The generation ancillary functions are utility system operating requirements that are needed for the delivery of electric power and energy from resources to loads while maintaining reliable operation of the utility power supply and delivery system. These ancillary functions are identified and described below:

1. Scheduling, System Control and Dispatch--Required to schedule and dispatch the movement of power within an electric utility system from multiple resources to serve customer needs reliably and economically.

2. Reactive Supply[8] and Voltage Control from Generation Sources—Maintain voltage levels on the delivery system within acceptable limits. In order to do so, generation facilities are operated to produce (or absorb) reactive power.

3. Regulation and Frequency Response—Provide for continuous balancing of resources (generation) with the customer energy consumption and maintaining frequency at sixty cycles per second (60 Hz).[9] It is accomplished by having on-line generation follow moment-to-moment changes in customer energy consumption.

4. Energy Imbalance—Provided when energy scheduled from generating resources not under the utility's control and actual delivery of energy from such resources differs over a single hour.

5. Operating Reserve-Spinning Reserve—Generating capacity is reserved (not loaded) to enable it to ramp up to serve customer energy needs immediately in the event of a system contingency (outage) and is provided by generating units that are on-line and loaded at less than maximum output.

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8 Power provided and maintained for the explicit purpose of insuring continuous, steady voltage on transmission networks. Reactive power is energy that must be produced for maintenance of the system and is not produced for end-use consumption. Electric motors, electromagnetic generators and alternators used for creating alternating current are all components of the energy delivery chain which require reactive power.

9 This is a standard requirement to operate an alternating current (AC) electric system at 60 cycles per second.

6. Operating Reserve-Supplemental Reserve—Generating capacity is reserved (operating or not operating) to serve system energy needs in the event of a system contingency (outage). Supplemental reserves are not available immediately to serve system energy needs but rather within a short period of time (such as 10 minutes). It may be provided by generating units that are on-line but unloaded, by quick start generation (diesel and combustion turbine), or by interruptible load.

7. Generation Imbalance—A generator or system of generators must be able to automatically change their output when there is a difference between system energy needs and actual energy delivered from generation resources in the electric system during an hour.

Under current FERC rules, entities that use the utility's transmission and distribution system and do not perform the above ancillary functions must pay others to supply these ancillary functions. The ancillary function rates are based on the generating system embedded costs to provide the specific function. For instance, operating reserves are typically required to be a percentage (3%) of the MW output of the generator. Therefore, if 3% of the generator must be set aside to provide this function, 3% of the carrying costs and operating and maintenance costs of the specific generators providing the functions are divided by the MW capacity supplied by the generator to result in a rate per kW-month for the specific function.

These rates are filed and approved at FERC for utilities on the mainland. These rates are then used to charge wholesale and retail customers for the specific ancillary functions provided. Likewise, the generator owner is paid this rate for providing the function. To be applicable in Hawaii, rates for ancillary functions would need to be filed and approved by the Commission and incorporated in the Electric Utility Companies cost allocation and rate design (see discussion in Section V. B. below).

The Hawaii electric utility companies' isolated systems require generating resources that must perform similar ancillary functions. Existing Electric Utility Companies generating facilities provide ancillary functions to reliably operate the electric system. Alternative generation facilities, including DG facilities, may or may not be capable of providing these ancillary functions. Therefore, the potential benefit and impact of different DG facilities depends in part on the ancillary functions that can be provided by such facilities, as well as their ability to economically and reliably provide needed capacity and energy to the Electric Utility Company's system.

C. LOCATIONAL ISSUES RELATED TO DG IMPLEMENTATION

1. The Relationship Between the Placement of the DG Unit and the Electric Grid

FERC is giving recognition to the location of congested "load pockets" on the delivery system. Load pockets are areas on the utility's system where the load exceeds the generation capabilities, and delivery system constraints prevent the wide-scale importation of power from other parts of the delivery system or from other regions. As a result, the concept of "locational marginal pricing" has been utilized to give recognition to, among other things, the higher value of generating resources inside a load pocket for the benefits it provides to the constrained delivery system compared to generating resources located on the delivery system where no such delivery system constraints exist. With respect to Hawaii's Electric Utility Companies, the locational marginal pricing concept can be utilized to recognize the impact DG may have on alleviating transmission and distribution improvements and system losses.

Strategically located DG projects capable of performing functions more than just "as available" energy producers, can beneficially impact the Electric Utility Companies' electric transmission and distribution systems and customers at a reduced cost and improved system reliability. Strategically located DG projects could have a varying impact on transmission and distribution systems depending on the type of DG project that is implemented. For instance, a wind generation project may provide energy at a lesser cost than some existing generating resources. Wind generation, however, typically does not provide capacity on-demand because the resource is subject to nature and is often remotely located on the Electric Utility Company's system from the areas of customer concentration. So, wind might have a benefit to meeting customer energy needs, but little benefit to the Electric Utility Companies delivery systems. In Hawaii where there is no interconnection between Electric Utility Companies, this issue is particularly relevant; whereas on the mainland, with widespread interconnection between utilities, the concern may not be as great since the wind may be blowing in one area, but not another, etc.

On the other hand, a fossil-fueled generator that can be started on-demand and has high availability and can thus be relied on to provide reliable service. The fossil-fueled generation, however, may also have a higher incremental energy cost.

This type of DG project could better be relied on in the future to offset or avoid transmission and distribution investments that would affect the non-energy related components of electric rates.

2. Siting Issues That Will Affect the Implementation of DG

There are similar regulations and natural constraints that affect DG in a similar manner as traditional electric utility generator installations. These site related considerations include environmental permitting, aesthetics, noise, availability of fuels whether fossil or wind or biological waste. Of course, the site also needs to be adjacent to the electric utility delivery system (distribution or transmission) to deliver the energy from the DG facility to the electric system. If the DG is a customer-owned facility, the customer will be responsible for such issues. If it is a third party-owned facility, the third party will take on these responsibilities.

Air emission regulation is an example of siting consideration for DG. Air emission permits are dependent on EPA designations in certain areas. For instance, air emissions in the Honolulu area may be more restrictive than in other areas. Therefore, the availability of feasible energy from a fossil-fueled generation DG facility in this location may be significantly reduced.

VI. <u>DG IMPLEMENTATION</u>.

A. COMPETITIVE BID FOR NEW GENERATION

DG issues are addressed in this docket and competitive bidding for new generation is included in another Commission docket. If DG is developed by the electric utility company or by a third party (not the customer site) and the generating output is intended to be sold to the electric utility for resale to retail customers, DG projects should be measured or compared to other generating projects through a competitive bidding process. If a customer installs DG for its use first, then the customer makes its own economic decision by comparing the cost of the DG facility to the unbundled rates that would be implemented in conjunction with DG. Thus, the competitive bidding investigation initiated by the Commission, will be extremely important in assuring that all generation, including DG is implemented within the framework of a least cost IRP.

B. COST ALLOCATION AND UNBUNDLING UTILITY COSTS

The Federal Energy Regulatory Commission (FERC) compelled investor-owned utilities on the mainland to separate or "unbundle" transmission service from generation service. Furthermore, transmission rates were unbundled resulting in ancillary services that must be purchased in addition to the transmission reservation charge. Transmission rates, however, continue to be regulated. FERC then ordered the wholesale power supply function of electric utility companies to be deregulated. Thus, on the mainland, transmission rates continue to be rate regulated while generation prices are subject to what price the market will bear. In conjunction with this effort, individual utility transmission systems have been consolidated into large regional transmission organizations placed under the control of independent system operators.

The Hawaii electric utility companies are not connected to each other, as are the electric utilities on the mainland. Thus, an island electric system is a regional transmission system similar to the regional transmission organization on the mainland. The Hawaii electric companies are rate regulated as are the mainland transmission companies. But, the wholesale generation system in Hawaii is regulated whereas it isn't on the mainland.

On the mainland, generating units are valued on their ability to provide capacity and energy output and perform the "ancillary" functions described below. The value of generation is also dependent on the location of the resource relative to the customers located in areas of transmission and distribution delivery system constraints.

As discussed in the Statement of Position filed on October 16, 1998, in Docket No. 96-0493, the Consumer Advocate concluded that the electric industry in this State should not be deregulated as suggested by FERC. However, even in a regulated regime, unbundled generation and transmission rates should be used to provide proper price signals to DG projects. Thus, establishing a cost of service based value that can be used to measure the economic feasibility of specific DG projects.

To appropriately consider the cost and benefits with the deployment of DG facilities, cost allocation and rates need to be unbundled to recognize the ancillary functions and the locational cost deferentials to ensure that the needs provided by DG projects, and the benefits derived there from, are appropriately recognized in a manner that results in least cost for the Hawaii industry and the Electric Utility Companies' ratepayers. This should be done, however, in a manner that does not disrupt bundled rates used by the Electric Utility Companies, and the Commission's gradual approach in addressing inter- and intra-rate class subsidies.

The Electric Utility Companies' bundled costs and rates will need to be unbundled to give proper recognition to a DG's capacity and energy output, the ancillary functions provided by the DG project and the locational benefit on the delivery system of the DG project. A matching of the needs provided by DG with the Electric Utility Companies' IRP, cost allocation and rate structures will allow a matching of benefits and impacts to the needs served.

VI. THE IRP PROCESS

The Consumer Advocate is a participant to this proceeding to represent the interests of the Electric Utility Companies' ratepayers. As such, the Consumer Advocate's concerns are for DG technologies to be effectively deployed under policies and a framework that promotes reliable service at the least reasonable cost to the Electric Utility Companies' customers. In addition, the Consumer Advocate is required to consider the long-term benefits of renewable resources (see Hawaii Revised Statutes ("HRS") §269-54 (c))[10].

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[10] The IRP framework at paragraph IV.E.3 provides that cost and benefits shall "to the extent possible and feasible" be quantified and expressed in dollar terms. The paragraph requires that if it is "neither possible or feasible" to quantify a cost or benefit, that cost or benefit must be qualitatively measured.

Therefore, the Consumer Advocate recommends that the foregoing be accomplished with rules and regulations governing participation in DG projects that properly recognize the benefits, impacts and costs of DG in a manner that is consistent with State energy and environmental policies, while minimizing uncertainty and risks between Electric Utility Companies, ratepayers and DG participants.

A. EVALUATION OF DG AND ASSOCIATED COSTS

The benefit or impact of DG should be evaluated against the least cost option of serving such needs consistent with the Electric Utility Companies IRP. The IRP goal is to identify "meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost." The "Governing Principles (Statement of Policy)" states that the IRP "shall be developed upon consideration and analyses of the costs, effectiveness, and benefits of all appropriate, available, and feasible supply-side and demand-side options"; and further provides that the IRP plans "shall give consideration to the plans' impacts upon the utility's consumers, the environment, culture, community lifestyles, the State's economy, and society". (See "A Framework For Integrated Resource Planning", revised May 22, 1992, II.A. and II.B.)

In doing so, the IRP plans will need to consider the impact DG projects have, not only on providing capacity and energy, but also the ancillary functions required to operate the Electric Utility Companies system. In addition, the IRP plan will need to identify congested load pockets on the Electric Utility Companies delivery system to properly recognize the potential technical and economic impacts of DG projects. The

IRP should identify specific amounts of different types of DG that could be a least cost alternative for the utility's system. This would allow customers and third party suppliers to bid on these types of projects through a competitive bidding process.

B. REAL V. EXTERNALITIES (ENVIRONMENTAL, ENERGY AND SOCIAL POLICIES)

A DG project should be subject to the same scrutiny, analysis and quantification of externality costs and benefits as would any other resource or DSM measure considered in developing an IRP. Therefore, the DG project should be evaluated in the IRP similarly to other resource alternatives.

C. COMPLIANCE WITH STATUTORY AND REGULATORY GUIDELINES

As described below, the State of Hawaii has established non-fossil utilization objectives and established renewable portfolio standards to be met by the Electric Utility Companies under the Commission's jurisdiction. Some DG technologies have the potential to reduce the use of fossil fuels, either through renewable energy or through the efficiencies in generation to pursue more environmentally friendly means of meeting the State's growing energy needs. A Renewable Energy Resource Assessment and Development Program was prepared for the State of Hawaii, Department of Business, Economic Development and Tourism in November 1995. This study identified the potential for many types of renewable DG projects that could decrease the use of fossil fuels. This type of information should be reviewed by the interested stakeholders to assess the potential for actual implementation in order to quantify the potential to reduce the use of fossil fuels.

DG projects that help with meeting the renewable portfolio standard and promote the State's non-fossil fuel utilization objectives should be encouraged. For example, the State is encouraging the development of non-fossil fuel sources as part of Hawaii's long-term objective of energy self-sufficiency (see HRS § 269-27.2). Also, the State has established renewable portfolio standards for the Electric Utility Companies' of 7%, 8% and 9% of net electricity sales by year-end 2003, 2005 and 2010, respectively (see HRS § 269-92). Legislation recently introduced and passed by the legislature increases the renewable portfolio standard to 15% for 2015, and 20% for 2020 (See Senate Bill No. 2474).

D. IRP CYCLE AND IMPLEMENTATION PLANSD

The IRP framework specifies that each utility shall conduct a major review and update of its IRP every three years (See Framework, paragraph III.B.2.). In review and updating of the IRP, all supply-side options that may be supplied by the utility or others should be considered. After identifying and reviewing supply-side options, the utility may screen out those options that are deemed "clearly infeasible" (See Framework, paragraph IV.D.).

The utility's IRP plan "shall govern all utility expenditures for capital projects, purchased power and demand-side management programs" (See Framework, paragraph III.D.5.). Accordingly, once approved by the Commission, the IRP action plan for the upcoming five-year period is to influence and control all supply-side resource decisions and acquisitions. Even power that a utility may be required to purchase under PURPA is to be reviewed in light of the utility's approved IRP action plan. Any such power purchased must eventually be incorporated into the utility's succeeding IRP plans.

The planning for DG should be incorporated into the development of each Hawaii electric company's IRP. The types of DG that should be included in the five-year action plan should be those that are commercially viable at the time that the plan is developed, and considered to be suitable for use in Hawaii (these were mentioned in Section II. A. above). New technologies can be incorporated in the development of the next IRP so as not to interrupt the implementation of the five-year action plan in the Commission approved IRP.

It is important to note that the IRP process must be on-going to be utilized as an effective planning tool. In this regard, the Commission approved five-year action plan should not be modified. The timing of events set forth in the plan, however, may be subject to change depending on how well the sales and load forecasts match the forecasted levels upon which the plan was developed. At the same time, the process should continue to provide all the participants an opportunity to consider emerging technology that may become commercially viable subsequent to the submission of the current approved plan in developing the next IRP. Finally, the plan must set forth the goals and objectives that are intended to be achieved with the action plan, the measures by which one will be able to assess the achievement of each goal and objective and the time line for achieving these goals and objectives. This must be done at the inception of the planning process to allow for an effective assessment of the alternatives under consideration in developing the five-year action plan.

VII. SUMMARY

Thirteen issues in the Commission's pre-hearing order address the benefits and impacts of DG on electric utility companies and their customers. Table 3 cross-references the Consumer Advocate's Statement of Position to the Commission's thirteen issues.

The Consumer Advocate's Statement of Position on the issues established to consider potential benefits and impacts of DG on Hawaii's electric distribution systems and market can be summarized as follows:

A. PLANNING

DG, like all other resources, shall be considered in the context of the Electric Utility Companies' IRP. Each Electric Utility Companies' IRP should represent the least cost plan to reliably serve customers and that meet the State's renewable portfolio standards and the State's non-fossil fuel energy goals.

B. IMPACT

DG benefits and impacts are directly related to the needs (i.e., capacity, energy, ancillary, locational T&D benefits and satisfying renewable and non-fossil fuel standards and goals) served by such facilities. The evaluation of such DG benefits and impacts should be consistent with the IRP determination of the Electric Utility Companies' least cost options to serve such needs.

C. IMPLEMENTATION

The Electric Utility Companies' bundled rate structures do not recognize DG benefits and impacts consistent with Item B above. Therefore, the Electric Utility Companies' IRP costing models and rate structures require unbundling to recognize DG benefits and impacts between Electric Utility Companies', ratepayers and DG participants.

In summary, recommendations regarding the exact location for the installation of specific technologies, as well as the appropriate amount of generation will depend on information that is provided in the IRP and/or through the discovery process.

DATED: Honolulu, Hawaii, May 7, 2004.

Respectfully submitted,

By ______________________________
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