BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Application of HAWAIIAN ELECTRIC COMPANY, INC. For Approval to Commit Funds in Excess of $2,500,000 (excluding customer contributions) for the Purchase and Installation of Item Y-49000, Campbell Industrial Park Generating Station and Transmission Additions Project.	DOCKET NO. 05-0145

DECISION AND ORDER NO. 23457

Filed May 23, 2007

At 2 o'clock P .M.

Karen Higashi

Chief Clerk of the Commission

ATTEST: A True Copy
KAREN HIGASHI
Chief Clerk, Public Utilities
Commission, State of Hawaii.

Karen Higashi

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Excess of $2,500,000 (excluding)	
customer contributions) for the)	
Purchase and Installation of Item)	
Y-49000, Campbell Industrial Park)	
Generating Station and Transmission)	
Additions Project.)	

DECISION AND ORDER

By this Decision and Order, the commission approves the Joint Motion for Approval of Stipulation filed by HAWAIIAN ELECTRIC COMPANY, INC. ("HECO") and the DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, DIVISION OF CONSUMER ADVOCACY ("Consumer Advocate")[1] on December 4, 2006 ("Joint Stipulation"). In doing so, the commission approves HECO's requests to: (1) commit approximately $137,430,260 for the purchase and installation of Item Y-49000, Campbell Industrial Park Generating Station and Transmission Additions Project (the "Project"), in accordance with Paragraph 2.3.g.2 of the commission's General Order No. 7, Standards for Electric Utility Service in the State of Hawaii, ("G.O. No. 7"); and (2) construct an overhead 138 kilovolt ("kV") transmission line, approximately two miles

[1]The Consumer Advocate is an ex officio party to this docket pursuant to Hawaii Revised Statutes ("HRS") § 269-51 and Hawaii Administrative Rules ("HAR") § 6-61-62.

long, between HECO's AES Substation and the Campbell Estate Industrial Park ("CEIP") Substation, pursuant to HRS § 269-27.6. In addition, the commission denies the Motion to Strike filed by LIFE OF THE LAND ("LOL")[2] on March 27, 2007.

In other words, the commission approves HECO's proposals to construct at its facility in Campbell Industrial Park ("CIP"), a new 110 megawatt ("MW") combustion turbine or "CT" that will run on 100% biofuels, and a new 138 kV transmission line. As discussed herein, the commission's decision is based on the undisputed urgent need for new generation by HECO, and the fact that State policy and law support HECO's commitment to use 100% biofuels in the new generating unit. Although the commission recognizes that the Project may not be perfect, it is a step in the right direction to fulfilling the State's goals of energy security and sustainability, while meeting HECO's immediate and growing need for additional generation.

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[2]The parties to this docket are HECO, the Consumer Advocate, and LOL, which was granted intervention in this proceeding (collectively, the "Parties"). Southern Wines and Spirits of America, Inc. ("SWSA") was also granted participation without intervention in this docket. SWSA, however, filed a Notice of Withdrawal of Participation on November 8, 2006, which was approved by the commission in Order No. 23025, filed on November 17, 2006.

I.

Background

A.

Application

HECO is a Hawaii corporation organized under the laws of the Kingdom of Hawaii on or about October 13, 1891, and is now existing under and by virtue of the laws of the State of Hawaii. HECO is an operating public utility engaged in the production, purchase, transmission, distribution, and sale of electricity on the island of Oahu.

On June 17, 2005, HECO filed its application,[3] requesting that the commission: (1) approve the commitment of funds for the proposed purchase and installation of the Project, in accordance with G.O. No. 7; and (2) determine under HRS § 269-27.6, that the proposed 138 kV transmission line between the AES Substation and the CEIP Substation be constructed overhead. The total estimated cost of the Project is $137,430,260, as shown in HECO-R-901.[4] Details of the proposed Project are described below.

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[3]See HECO's Application, Exhibits I-XXI, Verification, and Certificate of Service, filed on June 17, 2005 ("Application").

[4]This amount does not include any sums attributable to HECO's "Community Benefits Package," which is the subject of a separate and parallel proceeding in Docket No. 05-0146. This amount is also higher than estimated in HECO's Application and Direct Testimonies because HECO's land cost estimates have increased since those filings. See HECO's Opening Brief, filed on March 2, 2007 ("HECO's O.B.") at 2 n.1.

1.

Project Description

The Project generally involves HECO's proposal to add firm peaking generating capacity on HECO's system, and includes the following major components: (a) the construction of a new nominal 110 MW generating facility (including the acquisition of a simple-cycle CT generator and related equipment and auxiliary facilities); (b) the construction of a second 138 kV transmission line (approximately two miles long) between the AES Substation and the CEIP Substation; (c) the expansion of HECO's existing Barbers Point Tank Farm site; and (d) the construction of substation upgrades for the AES Substation, CEIP Substation, and Kahe Substation, and auxiliary equipment and facilities related to the foregoing.

a.

Generating Facility

The main items that comprise the Generating Facility component of the Project include the following:

- A single combustion turbine, associated exhaust stack and related accessories;
- Blackstart generating equipment;
- Two fuel oil storage tanks;
- Demineralized water treatment and storage facilities;
- A two-story central control/administration building; and

- Other required power plant auxiliary equipment.[5]

HECO has selected, through a comprehensive competitive bidding process, a Siemens SGT6-3000E Combustion Turbine package for the Project.[6] According to HECO, its evaluation of the candidate combustion turbines took into account a variety of factors, including unit and system life-cycle costs, operational flexibility, ease of maintenance, reliability, externality factors, commercial factors, and vendor support.[7] In the end, HECO selected the Siemens unit for the Project because it was given an overall higher evaluation than the other units that were considered.

HECO asserts that the characteristics of the Siemens unit make it suitable for peaking use primarily because, from an operational standpoint, a simple-cycle combustion turbine like the Siemens unit can provide firm dispatchable power with relatively short starting times and higher ramp rates.[8] For

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[5]Application at 13.

[6]Transcript of Proceedings held on December 11, 12, and 13, 2006 ("Tr.") at page 250, lines 14-16, 19-20. Hereinafter citations to the Transcript will be in the following format: Tr. at 250:14-16, 19-20.

[7]Tr. at 250:20-25; see also HECO T-9 at 20-28.

[8]HECO states that, as early as 1998 in the IRP process, HECO has consistently maintained that the next firm capacity central-station generating unit on HECO's system should be a simple-cycle CT installed in 2009. See HECO's O.B. at 41. Subsequent IRP analyses confirmed that this type of unit is most appropriate to meet HECO's generation requirements. In its analyses, HECO considered such factors as: lead times for installing candidate units, cost, emissions, fuel diversity, rate impact, how the new unit will operate in conjunction with HECO's existing power plants, how such a mix of the units will operate to meet the daily, seasonal, and annual changes in electric

example, HECO explained that the existing steam units connected to HECO's Oahu grid may take between four to six hours to start up and reach full power, but the Siemens CT only takes twenty-eight minutes to start up and reach full power.[9]

Moreover, from a technical standpoint, combustion turbines like the proposed unit are fuel flexible. They can be designed to use a variety of fuels, including biodiesel, ethanol, diesel, naphtha, jet fuel, natural gas, and even hydrogen.[10] As further discussed below, HECO has committed to using 100% biofuels, such as ethanol and biodiesel,[11] in the new generating unit.[12] As a part of that commitment, HECO has agreed to work closely with Siemens to ensure that the new unit is designed to accommodate both ethanol and biodiesel.[13]

HECO explained that combustion turbines are generally offered in discrete size ranges. One size range is between

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demand, and how such a mix of units will respond to outages and system disturbances. See HECO's O.B. at 41-43.

[9]See Tr. at 251:12-16.

[10]See Tr. at 251:21-23.

[11]Ethanol is a fuel that is derived from agricultural crops (e.g., sugarcane, sorghum, or corn) through a distillation process, or from any cellulose material (including "green waste") through a biochemical conversion technology. Biodiesel is a fuel that is 100% vegetable oil based, and can be used in lieu of petroleum based diesel in almost any application. A variety of products are used as feedstock to make biodiesel, including rapeseed, soybean oils, and waste vegetable oil. See HECO T-9 at 13-14.

[12]See Joint Stipulation, Exhibit A.

[13]See id. Whether HECO selects biodiesel or ethanol will ultimately be determined by a competitive bidding process for fuel supply, and HECO will seek commission approval of any fuel contract resulting from this process. See id.; see also Tr. at 252:8-10.

76 MW to 117 MW, and the next larger size range is between 160 MW to 170 MW.[14] HECO considered installing commercially available combustion turbines that were smaller than 76 MW, but a screening analysis performed in HECO's Integrated Resource Planning ("IRP")-2[15] docket indicated that units smaller than 76 MW would not be as cost effective as the proposed 110 MW unit, and would probably not be able to overcome HECO's projected reserve capacity shortfall, discussed in Section I.A.3, below.

HECO also considered units in the next higher capacity increment of 160 MW to 170 MW, but concluded that such units would not be feasible to convert to combined-cycle baseloaded units if system requirements in the future call for the conversion of the simple-cycle CT from peaking service to combined-cycle baseload service. In this scenario, the resulting capacity (240 MW - 250 MW) would far exceed the capacity of the largest unit currently on the system (AES at 180 MW). Increasing the size of the largest unit would require the system to carry more spinning reserve, which would subsequently trigger the need for even more generation to provide the additional spinning reserve.

HECO is proposing to install the new generating facility at its existing Barbers Point Tank Farm site located in CIP. Approximately ten acres of this nineteen acre parcel are

[14]See HECO's O.B. at 5-6 n.10.

[15]IRP is the planning process required of each energy utility in the State of Hawaii to systematically and thoroughly develop long-range plans for meeting Hawaii's future energy needs. IRP evaluates, integrates, and balances both resources that supply electricity and resources that reduce or better manage the demand for electricity. See HECO-220 at 1.

currently being used by HECO for low sulfur fuel oil storage and transportation facilities. The remaining nine acres are set aside for the new generating facility. HECO asserts that this site is the right location for the new facility because it is property that is already zoned for intensive industrial use; is adjacent to fuel supply facilities; is outside of any Special Management Areas; does not have air permit limitations; has alternate water supply sources other than potable; and has minimal negative environmental effects in other areas.[16]

Because a nominal 110 MW CT requires a significant amount of power to start, HECO intends to install a blackstart generator on the site to enable the unit to be started even in the event of an island-wide power outage. The blackstart generator is likely to be a diesel-fired reciprocating engine, which only requires battery power or compressed air to start. It is anticipated that the blackstart unit will be between 2.5 MW and 5 MW.

The new CT will be designed to run on naptha, diesel oil fuel, or biofuels (biodiesel and ethanol). To store the fuel for the unit, HECO proposes to install on-site, two floating-roof fuel storage tanks, which would allow one tank to be offline for cleaning and refilling. Each tank will be eighty feet in diameter and sixty feet high, and will have a capacity of approximately 2.2 million gallons (52,380 barrels). The storage tanks could be used to store any of the fuels that could be used by the CT. HECO represents that the two tanks could provide

[16]See HECO T-9 at 15.

sufficient storage to operate the generating unit continuously at full capacity for approximately twelve days; however, since the unit will be used primarily as a peaking unit, the proposed fuel storage tanks will likely provide enough capacity for more than thirty days of operation.[17]

HECO expects to use brackish water wells located on the Barbers Point Tank Farm property to provide process water for the proposed facility. Reverse osmosis or "RO" water (highly treated sewage effluent) may also be available to the area from the Honolulu Board of Water Supply, and could be used to meet some or all of the Project's needs.[18] Whether the source of the process water is brackish well water or RO water, it would require treatment before it can be used. To this end, HECO proposes to install a water treatment system, consisting of filters, reverse osmosis modules, and an electro-deionization polisher to produce injection water for CT nitrous oxides abatement. These components will be housed in a water treatment building, which will be sized to accommodate the installation of additional water treatment equipment in the event that future additional generating capacity is installed at the site.

HECO also proposes to build a control and administration building, which will house control panels, a control system operator console, and relay panels for the unit. This building will also be able to accommodate the installation of future control systems associated with the potential build-out

[17]See Application at 17.

[18]HECO's proposed RO water pipeline is the subject of Docket No. 05-0146 (Community Benefits Package).

of the site. In addition, HECO proposes to install other required plant auxiliary equipment, including an air cooled fin-fan heat exchanger to cool the lubricating oil and generating windings, main step-up and auxiliary power transformers to control the voltage going to the support equipment and to the transmission grid, and a settling pond to control storm-water runoff.

b.

138 kV Transmission Line

The AES-CEIP #2 138 kV Transmission Line Project, which is a component of the CIP Generating Station Project, proposes to add a new transmission line in the CIP area to provide a third transmission path to export power from the CIP area to address limitations of the existing transmission system in the CIP area. The existing AES-CEIP 138 kV transmission line will be divided to create two new transmission lines, the AES-CEIP #1 and AES-CEIP #2 transmission lines.

Currently, the firm capacity generation in the CIP area consists of: (1) 180 MW from AES Hawaii ("AES"); (2) 46 MW from the City and County of Honolulu's waste-to-energy facility ("H-Power"); and (3) 208 MW from Kalaeloa Partners L.P. ("Kalaeloa"). Generation from the CIP area totals 434 MW, which comprises 26% of Oahu's total firm generation capacity.[19]

The transmission system in and adjacent to the CIP area consists of four transmission substations and four transmission

[19]See HECO T-8 at 2.

lines. The four transmission substations are: (1) Ewa Nui Substation; (2) Kalaeloa Substation; (3) AES Substation; and (4) CEIP Substation. The four transmission lines that interconnect the four transmission substations are: (1) Kalaeloa-Ewa Nui 138 kV transmission line; (2) AES-Kalaeloa 138 kV transmission line; (3) AES-CEIP 138 kV transmission line; and (4) CEIP-Ewa Nui 138 kV transmission line.[20]

AES and H-Power are interconnected to the transmission system at the AES Substation. Kalaeloa is interconnected to the transmission system at the Kalaeloa Substation. Although there are four transmission lines in and adjacent to the CIP area, the AES-CEIP 138 kV transmission line and the Kalaeloa-Ewa Nui 138 kV transmission line are the two transmission lines that are wholly responsible for exporting all generation from the CIP area to the CEIP and Ewa Nui Substations, respectively, and then to the rest of the transmission grid.[21]

HECO maintains that the AES-CEIP #2 138 kV transmission line is needed now, independent of the addition of the CIP generating unit, to address the "CIP Reliability Concern" identified in a transmission study performed by HECO.[22] The CIP Reliability Concern stems from the fact that there are only two

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[20]See HECO T-8 at 2-3. HECO-801 provides a diagram of the transmission system in the CIP area.

[21]See HECO T-8 at 3.

[22]The transmission study, titled "Campbell Industrial Park Transmission Assessment for the Addition of New Generation at HECO's Campbell Industrial Park Generating Site," was submitted as Attachment 1 to HECO's letter to the commission dated June 17, 2005. The executive summary of the study was included as Exhibit XIV to the Application.

paths for power to be exported from the CIP area. On occasions in which one of these two lines is out of service for maintenance or repair, only one line will be available to export all of the generation from the CIP area. If the one remaining line were to trip unexpectedly, all generation from the CIP area would suddenly be lost. As a result, according to HECO, there would be insufficient reserve capacity available among HECO's generators at the Kahe, Waiau, and Honolulu Power Plants to provide sufficient spinning reserve to prevent a drop in the system frequency (i.e., 60 Hertz ("Hz")), which would result in the triggering of underfrequency load shedding and outages to customers.[23]

HECO further suggests that, with the addition of the proposed new generation, the total amount of electricity capable of being produced from the CIP area could potentially overload one of the two existing transmission lines in the area should the other line be out for maintenance or fail. Thus, to mitigate this situation, HECO proposes to construct the new AES-CEIP #2 transmission line.

The proposed route of the transmission line will run through the Barbers Point Tank Farm, along a new easement to be acquired from the adjacent Chevron refinery following the eastern property line of their refinery, across Malakole Street, and in new easements to be acquired from Campbell Estate within their property north of Malakole Street. HECO states that this route was chosen because it will result in the new transmission line

[23]See HECO T-8 at 6.

being alongside linear facilities, such as the existing coal conveyor and a planned drainage channel.[24]

Construction of the new line along this route, however, will result in the new line crossing the existing AES-CEIP #1 transmission line. Crossing of transmission lines will result in reduced reliability since there is an increased chance that one event could damage both lines. Thus, HECO intends to disconnect the existing AES-CEIP #1 transmission line at the potential crossing point, forming two sections. Each of these sections will then be connected to separate segments of the proposed new transmission line. The result will be two 138 kV transmission lines from the AES Substation to the CEIP Substation, each consisting partly of existing transmission line and partly of new transmission line.[25] The estimated cost for this component is $6,207,513, as shown on Exhibit V of the Application.

c.

Expansion of Barbers Point Tank Farm Site

Additional properties are required for the Project. HECO states that it is currently in negotiations with HRPT Properties Trust to purchase two additional parcels in the CIP area. The first is a forty-four foot wide parcel of

[24]See Application at 21. The proposed transmission line will not run through any residential areas. Id. at 54.

[25]Application at 21. Exhibit IX, attached to the Application, shows the construction sequence of the new transmission line segments and how they will be tied together with sections of the existing transmission line.

approximately two acres running between HECO's Barbers Point Tank Farm and H-Power that is needed to accommodate the proposed generating unit and auxiliaries. The second is a 1.76 acre property between Hanua Street and HECO's existing AES Substation to allow for expansion of the AES Substation to accommodate future additional capacity at the new generating station.[26] In addition, easements from Kapolei Property Development and Chevron will be needed for the proposed transmission line.

d.

Substation Upgrades and Installation of Communications Equipment

With the addition of the AES-CEIP #2 transmission line, three new circuit breakers with their associated protection relays and instrumentation will be installed at HECO's AES Substation. The three circuit breakers will form a new breaker-and-a-half bay in the AES Substation to connect the new CT to the grid and interconnect the new 138 kV transmission line. These circuit breakers and relays will allow the generator or the transmission line to be disconnected from the grid for maintenance, or for automatic protection in the event of a fault.

To accommodate terminating the new AES-CEIP #2 transmission line within the AES Substation, the existing termination of the AES-Kalaeloa transmission line will be relocated to a different bay within the AES Substation. This relocation will require that the relays for the AES-Kalaeloa transmission line within the AES Substation be replaced. HECO

[26]Exhibit VII to the Application shows the two parcels HECO seeks to acquire.

states that the new relays will be state-of-the-art and different than the ones currently installed. Because the relays are to be replaced at the AES termination of the transmission line, the project scope also includes replacing the relays at the other end of the transmission line, i.e., at the Kalaeloa Substation, with the same new state-of-the-art type relays.[27]

HECO also proposes to install one new circuit breaker with its associated protection relays and instrumentation at HECO's existing CEIP Substation to complete a breaker-and-a-half bay. This circuit breaker is required for interconnection and termination of the new 138 kV transmission line to the CEIP Substation. HECO intends to modify the Kahe Substation by replacing six existing circuit breakers with new ones having a higher short circuit current capacity to accommodate the additional generating capacity at CIP. For reliability purposes, HECO will install two independent communication systems of differing technologies (fiber optic and microwave systems) in conjunction with the new 138 kV transmission line that will allow the protective relays on either end of the line to share information, and for the substation breakers to receive commands.

[27]See HECO T-9 at 8-9.

2.

Project Schedule

The projected in-service date for the Project is July 1, 2009.[28] In the Project Schedule (HECO-904), HECO identified two parallel critical paths for commercial operation of the unit in 2009. The first path starts with HECO's application for a Covered Source Permit with the State of Hawaii Department of Health ("DOH"). HECO states that it applied for a Covered Source Permit in October 2003 because it anticipated that it would take approximately forty-nine months from submittal to receipt of the final Covered Source Permit, including possible appeal. The second critical path starts with commission approval of the Application, which HECO filed on June 17, 2005. In this regard, HECO states that it allowed two years to obtain a final, non-appealable decision and order from the commission.

Following completion of the two critical path items, the paths merge and include lead time to receive the CT, and for construction, start-up, and testing. Several required permits and approvals for the Project, such as the environmental impact study ("EIS") and the Public Infrastructure Map Amendment or "PIMA," have been completed. According to HECO, other approvals (e.g., conditional use permit and building permits) and tasks, while necessary to complete the Project, have some flexibility as to when they may be completed while still allowing the estimated

[28]As discussed below, HECO argues that there is an immediate need for the new generating unit, and HECO intends to complete the Project as soon as possible. However, HECO anticipates that the time to complete the permitting and approval processes may preclude commissioning of the new unit prior to July 1, 2009. See HECO's O.B. at 2 n.2.

Project service date to be met, but they could become critical path items if significantly delayed or their schedule is affected by compression of other critical path items.

3.

Project Need

HECO contends that there is an immediate need for the firm generating capacity provided by the Project because HECO does not have enough reserve capacity[29] to ensure reliable service, both now and in the future, to its customers.[30] In this regard, HECO states that the crux of this docket stems from HECO's customers' expectations that electricity is always available (i.e., whenever they turn on a light switch or plug in an appliance), and HECO's "obligation to serve" that demand now and into the future by providing safe and adequate electric service in a reliable manner.[31] HECO further explains:

> Meeting this demand, however, is not a simple task and requires a great deal of planning by

[29]Reserve capacity is the difference between the total generating capacity and the expected or actual peak demand. For example, if there is a total generating capacity on the system of 1,000 MW and the expected or actual peak demand in a particular year is 800 MW, then the amount of reserve capacity is 200 MW. See HECO-201 at 16. According to HECO, reserve capacity is needed for several reasons, including: (1) the need to allow generating units to be taken out of service for routine maintenance or overhauls; (2) the need to allow for unexpected or forced outages of generating units that occur from time to time; (3) the need to allow for growth in demand over time; and (4) the need to account for the possibility that peak demand may be higher than expected. See id. at 16-17.

[30]As further addressed below, all Parties are in agreement that additional generation is needed on HECO's system.

[31]See HECO RT-1 at 4; HECO's O.B. at 2.

> Hawaiian Electric in many subject matter areas. If Hawaiian Electric does not have a sufficient amount of electric generating capability on Oahu to account for contingencies such as generating unit failures or demand for electricity being greater than forecast, then if these contingencies occur, Hawaiian Electric will not be able to provide electric service to some of Hawaiian Electric's customers. While Hawaiian Electric cannot guarantee an absolute, uninterrupted level of electrical service (that type of reliability would require layers of redundancy in all aspects of Hawaiian Electric's system at an inordinate cost) Hawaiian Electric can provide a reasonable level of generating system reliability if Hawaiian Electric is allowed an adequate amount of reserve capacity on Hawaiian Electric's system.
>
> . . . Hawaiian Electric does not have enough reserve capacity to assure its customers that they all will still have reliable electric service if a generating unit is unexpectedly forced out of service, or actual demand exceeds the forecasted demand. Hawaiian Electric has an existing need for additional generating capacity now to meet Hawaiian Electric's reliability standards and in the near future to meet the forecasted customer demand.[32]

HECO determines the amount of reserve capacity needed on its system in order to provide adequate generating system reliability through HECO's capacity planning criteria, which establish when and how much generation capacity is needed on the electric system. Generally, the inputs to the capacity planning criteria are: (1) the projection of load to be served; (2) the reduction in load to be served by firm capacity generation due to the contribution of energy efficiency, energy conservation, and load management programs, and customer-sited combined heat and

[32]HECO RT-1 at 4-5.

power ("CHP") systems; (3) the amount of firm capacity on the system provided by HECO and independent power producer generating units, their sizes, and their planned maintenance schedules; and (4) the availability of the existing generating units.[33] To determine the need for additional generation, these inputs are applied to HECO's capacity planning criteria, which consist of two rules and a generating system reliability guideline. The two rules of HECO's capacity planning criteria are:

> Rule 1
>
> The total capability of the system plus the total amount of interruptible loads must at all times be equal to or greater than the summation of the following:
>
> a. the capacity needed to serve the estimated system peak load;
>
> b. the capacity of the unit scheduled for maintenance; and
>
> c. the capacity that will be lost by the forced outage of the largest unit in service.
>
> Rule 2
>
> There must be enough net generation running in economic dispatch so that the sum of the three second quick load pickup power available from all running units, not including the most heavily loaded unit, plus the net loads of all other running units must equal or exceed 95 percent of the hourly system net load (which excludes power plant auxiliary loads but includes T&D losses). This is based on a minimum allowable system frequency of 58.5 Hz and assumes a 2 percent reduction in load for each 1 percent reduction in frequency.[34]

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[33] See HECO T-2 at 4.

[34] See Application at 25-26.

In addition to the two rules, HECO applies the following reliability guideline threshold of 4.5 years per day in determining the need date for new firm capacity:

> Capacity planning analysis will include a calculation of risk (Loss of Load Probability) in years per day for each year of each plan of the long-range expansion study. In cases where risk is calculated to be less than 4.5 years per day, the plan will be reviewed by the Vice President of Power Supply and the President for approval of use of the plan in the study.[35]

This means that HECO plans to have sufficient generating capacity to maintain generating system reliability above 4.5 years per day. In other words, there should be enough generating capacity on HECO's system such that the expectation of not being able to satisfy demand due to insufficient generation occurs no more than once every 4.5 years.

As detailed further below, the results of HECO's application of the foregoing criteria indicates that HECO has a shortfall of reserve capacity. In other words, HECO does not have enough reserve capacity on its system to meet its generating system reliability guideline or to satisfy its two rules in its capacity planning criteria.[36]

HECO applied the capacity planning criteria and performed an analysis of generating system reliability in its 2006 Adequacy of Supply report ("2006 AOS").[37] Specifically, HECO

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[35]See Application at 26-27.

[36]See HECO T-2 at 4-5.

[37]HECO's 2006 AOS, filed on March 6, 2006, was submitted as HECO-211, and was summarized in HECO T-2.

performed an analysis of the ability of the existing system to satisfy Rules 1 and 2, and the reliability guideline in its 2006 AOS. The results of HECO's analysis showed the following reserve capacity shortfalls:

Year	Reserve Capacity Shortfall (MW)
2006	-170
2007	-170
2008	-180
2009	-200
2010	-200[38]

Thus, in the 2006 AOS, HECO concluded from the results of its analyses that:

> even with the peak reduction benefits of energy efficiency [demand side management or "DSM"] and load management, the presence of CHP on Oahu, and the additional capacity from Kalaeloa and [distributed generation or "DG"] at HECO sites, HECO anticipates reserve capacity shortfalls in 2006 and projects these shortfalls to continue at least until 2009, which is the earliest that HECO expects to be able to permit, acquire, install and place into commercial operation its next central station generating unit.[39]

In its rebuttal testimony, HECO updated the information provided in its direct testimony regarding the need for new generating capacity. The updated information consisted of:

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[38]See HECO-211 at 31 (Table 4).

[39]HECO T-2 at 36-37. In the 2006 AOS, HECO also evaluated two alternative peak forecast scenarios -- a higher load scenario and a lower load scenario -- due to uncertainty as to what actual demand and peak reduction benefits from DSM or CHP impacts would be in the future. See id. at 40-44. This evaluation indicated that the need for new generating capacity exists, even with significantly lower loads. See id. at 44.

(1) an updated sales and peak forecast; (2) updated information on HECO's efforts to install DG; (3) updated information on Kalaeloa's expected forced outage rate; and (4) updated planned maintenance schedules. With this information, HECO performed an updated generating system reliability analysis similar to that included in HECO's 2006 AOS.[40] This analysis showed that HECO's latest peak load forecast (issued in August 2006) was reduced by approximately 67 MW to 88 MW in the period from 2006 to 2009. The impact of this change, along with updates in other planning assumptions, reduced the projected estimate of the reserve capacity shortfall to approximately 120 MW by 2009, before installation of the new CT.[41] HECO stated, "[n]evertheless, the results of the analysis, based on the revised assumptions, indicate that Hawaiian Electric will continue to experience a reserve capacity shortfall and a continued need for additional firm generating capacity, even with the lower sales and peak forecast and additional DG."[42]

Most recently, in HECO's 2007 AOS, filed on February 27, 2007, HECO estimated the reserve capacity shortfall to be approximately 70 MW in the 2007 to 2008 period (before the addition of the Project estimated to be installed in mid-2009). HECO acknowledged that, although the most recent estimated

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[40]The results of the updated, current analysis were provided in HECO-R-201.

[41]See HECO RT-2 at 7-8. This included the impact of using 30 MW of leased DG units at substations to mitigate the shortfall pending the installation of new long-term capacity. See id. at 8.

[42]Id.

shortfall is much smaller than the 170 to 180 MW shortfall in the 2007 to 2008 period projected in the 2006 AOS, it is close to the updated information and analysis provided in HECO's rebuttal testimony.[43] Notwithstanding the lower projected shortfall, HECO maintained:

> The end result of the 2007 AOS with respect to this Project is that the 2007 AOS confirms the need for the Project and, in fact, assumes the construction, installation and operation of the Project in 2009. As stated in the 2007 AOS, after the planned 2009 addition of the Project, and in recognition of the uncertainty underlying key forecasts, HECO anticipates the potential for continued reserve capacity shortfalls which could range between 20 MW to 110 MW in the 2009 to 2012 period.[44]

In addition, HECO argues that the CT is needed in order to meet prudent generation planning requirements. In this regard, HECO asserts that it "cannot just add generation to its system overnight or otherwise on a moments notice."[45] For example, HECO estimates that the lead time to install a simple-cycle CT is approximately seven years. Thus, HECO states that it must anticipate generation additions years in advance of their actual need. According to HECO, the situation is further complicated by the fact that HECO must view generation additions in a broader context of both supply side (including alternative

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[43]HECO explained that the primary factor for the reduced shortfall was the significantly lower sales and peak forecast issued in August 2006, resulting in a reduction in peak demand used in AOS analyses.

[44]HECO's O.B. at 35.

[45]Id.

resources) and demand side (including reduction of demand for electricity) management of resources.

Moreover, HECO contends that the need for firm capacity in 2009 is consistent with HECO's IRP process. HECO identified the need for additional generation by mid-2009 in its IRP-2 Plan and its IRP-2 Evaluation Report. The Project was included in each of the HECO IRP-3 finalist plans, HECO's IRP-3 preferred plan, and HECO's IRP-3 final preferred plan. HECO also reiterated the need for the additional unit in HECO's 2004 AOS, 2005 AOS, and 2006 AOS.

B.

Stipulated Issues

Pursuant to Stipulated Procedural Order No. 22381, the issues in this proceeding are:

1. Whether HECO's proposed Project will provide facilities which are reasonably required to meet HECO's probable future requirements for utility purposes?

    a. Whether the location of the proposed generating unit is reasonable?

    b. Whether the Project is reasonable considering other feasible options?

2. Whether HECO's proposed CT is the appropriate type and size generating unit for HECO to meet its probable future requirements for utility purposes?

    a. Is it reasonable to use naptha, low sulfur diesel, biofuels, or blends thereof in the proposed CT?

3. Whether the impact of the proposed capital expenditures on HECO's revenue

requirements for ratemaking purposes is reasonable relative to the impact of HECO's other options?

4. Whether the projected consumer impacts (e.g., on rates and reliability) arising out of the approval of the proposed Project are reasonable?

5. Whether HECO's routing, location, configuration, and method of construction for the transmission line additions are reasonable?

6. Pursuant to the requirements of HRS § 269-27.6, whether all (as proposed by HECO) or part of the construction of a second 138 kV transmission line between the AES and CEIP Substations should be placed, constructed, erected, or built above the surface of the ground?[46]

C.

Procedural History

In accordance with the requirements of Stipulated Procedural Order No. 22381, HECO filed written direct and rebuttal testimonies, exhibits, workpapers, and responses to information requests ("IR"), and rebuttal IRs in support of its position. The Consumer Advocate and LOL filed written direct and cross-rebuttal testimonies, exhibits, workpapers, and responses to IRs in support of their respective positions.

On November 20, 2006, the commission convened a prehearing conference to discuss matters pertaining to the evidentiary hearing to commence on December 11, 2006. On November 21, 2006, the commission filed Order No. 23045 ("Prehearing Order"), setting forth the procedural terms to

[46]See Stipulated Procedural Order No. 22381, filed on April 12, 2006, at 4-5.

govern the remainder of the proceeding resulting from the prehearing conference. Among its terms, the Prehearing Order required that any joint settlement letters be filed with the commission by no later than December 6, 2006.

On November 22, 2006, HECO, the Consumer Advocate, and LOL filed a Joint Motion for Approval of Stipulation, agreeing that certain written testimonies of the Parties may be entered into the record without the necessity for the witnesses to appear at the hearing. By Order No. 23085, filed on November 28, 2006, the commission approved the Parties' motion.

On December 4, 2006, HECO and the Consumer Advocate filed their Joint Stipulation, discussed further below, which settled the issues in this docket between the two parties. HECO and the Consumer Advocate attached as Exhibit A to the Joint Stipulation, HECO's "Position on Biofuels for the New Combustion Turbine Unit," which summarized HECO's position, as a part of its settlement with the Consumer Advocate, to use 100% biofuels in the new generating unit. HECO and the Consumer Advocate noted that, with their agreements, there were no remaining differences between them that would be pursued at the evidentiary hearing. Thus, HECO and the Consumer Advocate mutually agreed to waive cross-examination of each other's witnesses, and agreed that their respective pre-filed written testimonies and exhibits may be entered into the record without the necessity for their witnesses to appear at the hearing. Because, however, the Joint Settlement did not affect LOL's rights, both HECO and the Consumer Advocate acknowledged that their respective witnesses

would nevertheless appear at the hearing, give oral summaries of their testimonies, and be subject to cross-examination by LOL and redirect by HECO or the Consumer Advocate as appropriate. HECO and the Consumer Advocate also understood that their witnesses were subject to the call of the commission.

By letter dated December 6, 2006, the commission informed HECO and the Consumer Advocate that it had no objections to the procedural agreements in the Joint Stipulation regarding, among other things, HECO's and the Consumer Advocate's mutual waiver of cross-examination of each other's witnesses. The commission, however, otherwise expressed no position as to the substantive agreements reached by HECO and the Consumer Advocate in the Joint Stipulation, including HECO's "Position on Biofuels for the New Combustion Unit," attached as Exhibit A to the Joint Stipulation. Instead, the commission reserved the right to rule on the merits of those matters, and all of the issues in the docket, at a future time.[47]

On December 11, 12, and 13, 2006, evidentiary hearings were held at the commission's hearing room.

On March 2, 2007, the Parties filed their Opening Briefs, and on March 16, 2007, the Parties filed their Reply Briefs.

On March 27, 2007, LOL filed a Motion to Strike, which requested that certain references to HECO's IRP-4 in HECO's Reply

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[47]See Letter dated December 6, 2006, from the commission to the Parties.

Brief (and other footnotes), which were allegedly not included in the official record of this docket, be stricken from the record.[48]

On April 3, 2007, HECO filed a Memorandum in Opposition to LOL's Motion to Strike.

II.

Positions of the Parties

A.

HECO's and the Consumer Advocate's Joint Settlement

As noted above, HECO and the Consumer Advocate resolved all of their differences on each of the issues in this docket by means of the Joint Stipulation. Specifically, HECO and the Consumer Advocate agreed as follows:

> 1. HECO should be allowed to commit funds for the construction and installation of the proposed Project in accordance with Paragraph 2.3.g.2 of G.O. No. 7, as the proposed Project will provide facilities which are reasonably required to meet HECO's probable future requirements for utility purposes. The proposed Project will provide HECO with the ability to quickly meet system peak demand, when needed.
>
> a. The proposed location of the proposed generating unit is reasonable because, among other things, the proposed Project will be constructed in an area that is designated as a State "Urban" District, is zoned "I-2," or "Intensive Industrial," is within an area of the Campbell Industrial Park designated for the construction of additional electrical generating facilities, is outside the Special Management

[48] See LOL's Motion to Strike, filed on March 27, 2007 ("LOL's Motion to Strike").

Area, does not require a Conservation District Use Permit, and is proximate to existing fuel storage facilities, transmission lines, and electrical substations.

b. The proposed Project is reasonable considering other feasible options because the proposed Project, among other things, is the only feasible option that can be expected to be placed in commercial operation in mid-2009 to address HECO's planning criteria violation expected to occur with the projected increase in system peak.

2. HECO's proposed combustion turbine appears to be the appropriate type and size of generating unit for HECO to meet its probable future requirements for utility purposes.

a. As a general matter, it is reasonable to use naphtha, low sulfur diesel, biofuels or blends thereof in the proposed combustion turbine.

b. For the reasons set forth in the Consumer Advocate's direct testimony, however, HECO's commitment to use one hundred percent (100%) biofuels in the proposed combustion turbine, as outlined on Exhibit A, attached to the Joint Stipulation, is appropriate and reasonable.

3. Based on presently available information, the impact of the proposed capital expenditures on HECO's revenue requirements for ratemaking purposes appears to be reasonable relative to the impact of HECO's other options.

4. Based on presently available information, the projected consumer impacts (e.g., on rates and reliability) arising out of the approval of the

proposed Project appears to be reasonable.[49]

5. HECO's proposed routing, location, configuration, and method of construction for the transmission line additions, as set forth in the filings made by HECO in the instant proceeding, appear to be reasonable.

6. Pursuant to the requirements of HRS § 269-27.6, the construction of a second 138 kV transmission line (approximately two (2) miles long) between the AES Substation and the CEIP Substation (as proposed by HECO) that is part of the proposed Project should be placed, constructed, erected, or built above the surface of the ground.[50]

In Exhibit A attached to the Joint Stipulation, "Position on Biofuels for the New Combustion Turbine Unit," HECO stated that it is aware of the State of Hawaii's policy to reduce the State's dependence on fossil fuels, and the Consumer Advocate's recommendation to use 100% ethanol or some other biofuel in the new CT unit. Accordingly, HECO committed to use 100% biofuels in the new unit, and set forth the following steps that it planned to take in order to fulfill that commitment:

Design to Accommodate Biofuels

1. Hawaiian Electric will work closely with the combustion turbine vendor such that the CT Unit will be designed to accommodate both ethanol and biodiesel.

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[49]HECO and the Consumer Advocate noted that the actual ratepayer impact of the Project will be addressed in a future rate proceeding when construction of the Project is complete, the actual Project costs are known, and the unit is placed in the test year rate base. See Joint Stipulation at 5 n.6.

[50]See id. at 4-5.

Establish a Biofuel Supply

2. Hawaiian Electric will initiate a solicitation process for a biofuel provider in 2006 with the selection of a biofuel provider and completion of a contract by the end of 2007.

3. This process will, among other criteria, require that the winning bidder be able to commit to the company, the regulators and the public that it has reliable sources for fuel that can meet the volumes necessary to reliably operate the CT Unit when operational, which is expected to be in the summer of 2009. This requirement includes demonstrating that a vibrant, multi-sourced national and international market supply exists in such fuels.

4. Commission approval will be sought for the negotiated contract with the selected biofuel supplier, and recovery of all reasonably incurred costs associated with the design modifications and use of the various biofuels, including the significantly lowered CT Unit output (about 15%) that is currently expected to result if the selected biofuel is 100% ethanol.

Modify the Air Permit to Allow Use of the Chosen Biofuel

5. Hawaiian Electric will work with [DOH] to provide a permitting process that will lead to permits to burn biofuels in the CT Unit.

6. Because the emissions data does not currently exist for biofuels and in order to ensure that ratepayer funds are spent effectively and wisely, Hawaiian Electric will implement the following process:

   a. In general, the CT Unit will go through acceptance testing using naphtha or low sulfur diesel in order to ensure that the CT Unit meets contract specifications and air permit requirements.

b. Following acceptance of the CT Unit, Hawaiian Electric will request DOH's approval to conduct testing at different loads using the chosen biofuel for which a supply contract has been executed, and to gather the emissions data needed to modify the air permit. After emissions data is collected using samples of the selected biofuel (i.e., biodiesel or ethanol), HECO will seek to modify the air permit to also allow 100% use of that biofuel. This entire process of collecting emission data and modifying the permit could take up to 6 months depending on DOH requirements.

c. Following the air permit modification, the unit will then be run by burning biofuel (100%).

Aggressive Implementation of the Process

7. Hawaiian Electric commits to an aggressive implementation of this process to run the CT Unit on one hundred percent (100%) biofuel, subject to the requirements of the Commission and DOH.

8. If there is an interruption of the biofuel supply or an emergency or operational problem that would affect the use of the CT Unit, Hawaiian Electric will work with the Consumer Advocate and the Commission to attempt to address such contingencies.[51]

At the evidentiary hearing, HECO's witness Robert Alm, Senior Vice President, Public Affairs, explained HECO's commitment to use more renewable energy as follows:

> As a whole and as a state, we all need to reduce our dependence on imported oil. We have a stake and responsibility for the future of our environment and believe that having more renewable technologies on our

[51]Joint Stipulation, Exhibit A.

> system is an integral part of our energy plan to meet future energy needs reliability and responsibly.
>
> The law requires us to meet a 20 percent renewable portfolio mandate by 2020, and we are committed to meeting it.
>
> Our plan is to add a portfolio of renewable energy resources on Oahu, Maui, and the Big Island. Having only one type of renewable resource, as opposed to a variety of renewable resources on our system, we believe could impact the reliability of the system and affect our obligation to serve our customers.[52]

Mr. Alm further explained HECO's belief that biofuel use is a matter of State law and policy:

> Q: [by HECO's counsel] So, Mr. Alm, do you believe that biofuel use is a matter of state law and policy?
>
> A: I certainly do. I -- you know, if you look at the ethanol requirement many years ago, that the state hung with, even though there were a lot of people who told them not to, we now have ethanol whenever we pull up at the gas pump.
>
> But in the 2006 legislative session, where energy became a major part of it, the governor and the legislature working together enacted four bills, which really are -- are, you know, a significant statement in what the -- the state policy is on energy. And three of the four bills specifically raised biofuels as a -- as an important component.
>
> Act 196 talks about biofuels in vehicles. Act 162, which is the [Renewable Portfolio Standards ("RPS")] one, adds a definition of biofuels. It defines renewable energy to include biomass and biofuels, so it makes the distinction and promotes both.
>
> And then the RPS standards were amended in a way to measure the use of biofuels in our units, specifically allowing for it to be

[52]Tr. at 308:15-25 - 309:1-5.

measured when it's cofired with a fossil fuel.

So the -- there is a very deliberate effort, I believe, by the state, by the administration, by the legislature, to encourage the use of biofuels in our units.

And then finally, Act 240 provides specific support for biofuel research, a specific biofuel preference and a hundred fifty thousand dollars appropriation to the Department of Agriculture to support the agricultural community of Hawaii in trying to meet the needs.[53]

In addition, Mr. Alm testified that the proposed unit fits into HECO's plan of having more renewables on HECO's system:

Q: [by HECO's counsel] How does this proposed unit fit into the company's plan of having more renewables on HECO's system?

A: We believe that our proposed unit accomplishes it in two ways: One, the unit will be a renewable unit. Initially, we had thought maybe 50 percent, but now our - we're welcoming an addition of a hundred megawatts-plus to our portfolio of renewable resources. And, two, it provides firm generation when we need it, which is critical to providing reliable power to the customers of Oahu.

You know, we also believe, you know, when you look at -- at our overall renewable plan, that the fuel switching in units is a very critical piece. You know, we are aware that the state has a policy to reduce dependency on fossil fuels, and we have been working to put biofuels in this new unit from the very beginning.

During the course of this case, the Division of Consumer Advocacy recommended that we commit to using a hundred percent ethanol or some other biofuel in the new CT unit. We have accepted that recommendation and are willing to commit to using a hundred percent biofuel.

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[53]Tr. at 313:6-25 - 314:1-13.

> Secondly, our -- our peaking unit will provide the kind of quick-start generation we need, both to provide power when we need it and to assist us should we have any system needs.
>
> Peaking capabilities like the proposed unit cannot be met with as-available generation. I think prior testifiers have made that clear. The need for renewable generation is now, and the proposed unit meets both the needs -- as I said, our reliable service, but at the same time forwarding the state's renewable energy goals.[54]

B.

LOL's Position

LOL is a Hawaii-based non-profit environmental and community action group. Its stated mission is to "preserve and protect the life of the land through sustainable land use and energy policies and to promote open government through research, education, advocacy, and litigation."[55] LOL was permitted to intervene in this docket by Order No. 22244, filed on January 26, 2006.

LOL agrees that a need for additional firm capacity on HECO's system exists,[56] but it believes that the Project is not reasonably required because it will lead to future carbon emissions, which are harming the planet.[57] LOL's position is founded upon reducing the effects of climate change and global

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[54]Tr. at 310:16-25 - 311:1-25.

[55]LOL T-1 at 2.

[56]See LOL's Response to HECO-IR-1; Tr. at 488:3-4. In fact, LOL objects to the Project because it will not meet HECO's stated generation needs. See LOL T-1 at 57; Tr. at 486:11-17.

[57]See LOL's Response to HECO-IR-1.

warming,[58] and providing future generations with a sustainable world. LOL argues that climate change and global warming are real, and that the consensus among the majority of scientists is that human activity is causing the climate to change and that the burning of fossil fuels is the largest contributor to global warming.[59]

Regarding the Project, LOL states: "LOL opposes the Combustion Turbine proposal at Campbell Industrial Park. Because LOL opposes the Combustion Turbine, we oppose the use of any fuel for the Combustion Turbine. LOL opposes the use of ethanol, biofuels, naphtha, diesel, etc. in the combustion Turbine."[60]

LOL opposes the use of biofuels for several reasons,[61] summarized below:

> Biofuels negatively impact climate change in a number of ways: producing ethanol and biodiesel requires the use of large amounts of fossil fuels, water, and land. Hawai`i is parceling off its agricultural land, we have the lowest unemployment rate ever, and where we would get the water remains a huge issue. Will Hawai`i ever be able to grow enough

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[58]Throughout this docket, the Parties used the terms "climate change" and "global warming" interchangeably, without agreeing to any scientific definition of these terms. For purposes of this docket, the commission also interchangeably refers to the general, lay meanings of these terms, and leaves further development of this issue to future proceedings.

[59]See LOL's Opening Brief, filed on March 2, 2007 ("LOL's O.B.") at 14. LOL's witnesses T-1, T-2, and T-5 testified about climate change and global warming.

[60]LOL's Response to HECO-IR-16.

[61]LOL opposes the use of biofuels in the CT unit even though biofuels are legally defined as a type of "renewable energy" in Hawaii's RPS Law, HRS §§ 269-91 - 269-95, as discussed further below.

> biofuel to satisfy our needs? Life of the Land doubts it . . . .
>
> Should Hawai`i be using our precious agricultural lands to grow energy crops or food? Since Hawai`i imports 90% of our food, wouldn't promoting food security and feeding our people be a more prudent use of these lands?
>
> Biofuel production competes with food products for resources. In the US, corn that could be used to feed people and animals is siphoned off for fuel. In Brazil ethanol production displaces other crops which are then grown in newly decimated Amazon rain forests. The most productive source of biodiesel is palm oil. Most of the world's biodiesel is grown in Indonesia and Malaysia on recently destroyed rain forests. Indonesia ranks third in the world in greenhouse gas emissions from the carbon emitted by burning forests and peat soils to make room for mono-cropped palm oil plantations.
>
> In essence, we are substituting the greatest source of global warming - the burning of fossil fuels - for the second greatest contributor - deforestation.[62]

To meet the need for additional capacity, LOL instead proposes a 100% renewable plan, consisting of: 1000 MW of wave energy (LOL T-6, LOL T-10, LOL T-11, LOL T-12); 100 MW of Ocean Thermal Energy Conversion ("OTEC") (LOL T-6, LOL T-9); 60 MW from Seawater Air Conditioning ("SWAC")[63] (LOL T-6, LOL T-7, LOL T-8);

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[62]LOL's O.B. at 15-16; see also LOL T-2, LOL T-4.

[63]Citing the testimony of LOL T-7, Dr. David Rezachek, HECO and the Consumer Advocate dispute that SWAC can supply 60 MW by 2009. At the hearing, Dr. Rezachek testified that full build-out of a proposed downtown SWAC facility "might take six to eight years to fully develop," and that it would be fair to say that approximately 15 MW of reduction in peak usage could be expected by 2009 when the facility is expected to be built. See Tr. at 620:22-25 - 621:1-8.

and 20 MW from a Kahuku wind farm (LOL T-6).[64] In addition, LOL proposes greater energy efficiency (the subject of Docket No. 05-0069) penetration to decrease peak power needs, and solar energy as an alternative to oil (LOL T-6). As a part of its proposal, LOL also recommends the removal of HECO's Honolulu Power Plant, and replacing it with a semi-subterranean parking structure and park (LOL T-14).

LOL advocates that the resources in its plan should be acquired through a "commission-driven RFP approach," whereby a request for proposals or "RFP" would be issued for a particular technology upon commission approval of the technology, and then the commission would select the best proposal.[65]

Furthermore, LOL objects to the Project based on principles of environmental justice, arguing that HECO did not adequately consider the Project's impact on the Leeward Coast of Oahu, which is already overburdened with locally unwanted land uses (LOL T-3).[66]

C.

HECO's and the Consumer Advocate's Responses to LOL's Position

In sum, HECO responds to LOL's arguments as follows:

- LOL's arguments about global warming are irrelevant to this capital improvement

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[64]See LOL's Responses to HECO-IR-34, -46, -53, -57, and -66, and CA-IR-6.

[65]See id.

[66]The commission notes that issues relating to the impact of the Project on the surrounding community are the subject of Docket No. 05-0146 (Community Benefits Package).

project application and beyond the scope of this proceeding.

- HECO is not denying greenhouse gasses or global warming, and HECO recognizes that we are all part of the problem and part of the solution for CO_2 emissions. These issues were appropriately considered in HECO's EIS, which LOL chose not to review or comment on.

- LOL is not proposing an alternative plan or proposal for meeting HECO's reserve capacity shortfall; rather, LOL is merely introducing renewable energy concepts.

- LOL's proposal would jeopardize the electrical grid and risk the provision of electricity to the public. This is not an alarmist view to take as LOL is urging the commission to order HECO to implement largely untested, commercially unavailable technologies, and to do so under completely unrealistic conditions. If any of these technologies proposed by LOL is unable to be commercially operational in two years, late in getting online, unable to perform when needed, or otherwise unreliable, then HECO will not have the necessary generating capacity to serve its customers.

- Although LOL has provided some information about its proposed plan, it is not even close to being enough to prepare a meaningful assessment of the ability of LOL's proposed resource plan to meet the stated need for capacity in a timely manner. Analysis for LOL's plan is lacking, and LOL does not provide any permitting information or meaningful timeline to support its plan.

- LOL's plan is not feasible and fails to meet the public's need. Solar (Photovoltaic), wind energy, and wave energy are intermittent resources that do not provide the firm capacity needed by the system. Wave energy technology is considered developing and is not

commercially available. While OTEC is considered a firm power technology, it is a developing resource that is not commercially available. In addition, there are permitting challenges associated with wave energy and OTEC.

- LOL's proposed RFP procedure is inappropriate and untimely since the time required to conduct an RFP process would have to be added to the time required to conduct the required environmental assessments, obtain the required permits and approvals, and order, obtain delivery of, and install the resource components and equipment.

- HECO's commitment to use biofuels is an essential part of its overall effort to comply with the RPS mandate and the State's policy encouraging agriculture and the use of local (nonimported) biofuels.

- Any issues with respect to global warming are being addressed as part of HECO's IRP-4.[67]

- LOL's assertion that the Project places an undue burden on the community is uninformed and misguided. HECO went through great lengths to address the needs of the community near the power plant, as evidenced in Docket No. 05-0146, and the neighboring community went to great lengths to support the Project.

The Consumer Advocate responds to LOL's position, in sum, as follows:

- While the Consumer Advocate commends LOL for its bold proposal that attempts to move HECO away from its reliance on conventional technologies powered by the burning of fossil fuel, the Consumer Advocate points out that wind, wave, and OTEC facilities with the

[67]HECO's references to IRP-4 in its Reply Brief are the subject of LOL's Motion to Strike, discussed further below.

capability of meeting HECO's operational needs are not expected to be placed in service by the completion date of the proposed Project - in other words, by July 2009.

- Given the dire reserve capacity situation faced by HECO in recent years, the Consumer Advocate, in the interest of maintaining system reliability, recommends that the commitment of funds for the proposed Project be approved forthwith.

- Although the Consumer Advocate realizes that LOL's renewable energy alternatives will probably provide the State and the global community with benefits such as increased energy security and a reduction in greenhouse gas emissions when such facilities are placed into service, the absence of the completion of the permitting process, site selection, and selection of developers for LOL's cited renewable energy alternatives causes the Consumer Advocate great concern because without HECO's Project, there will not be sufficient generation available to meet the energy needs of HECO's customers.

- While not appropriate in the context of this docket, the Consumer Advocate points out that LOL's wind, wave, and OTEC proposals appear to reference promising technologies that could - and should - be considered in the IRP process. Given that the goal of IRP is "the identification of the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost,"[68] discussion of the merits of LOL's cited energy alternatives is well-suited for consideration by HECO in the formulation of HECO's next IRP (IRP-4).

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[68] "A Framework for Integrated Resource Planning," attached to Decision and Order No. 11630, filed on May 22, 1992, in Docket No. 6617 ("IRP Framework"), Section II.A., at 3.

- The biofuel proposal that is included in HECO's and the Consumer Advocate's Joint Stipulation contains safeguards to ensure that HECO will obtain its biofuel supply at reasonable prices. Commission approval of HECO's negotiated biofuel contract will provide sufficient motivation to ensure that HECO works to secure the best deal for itself and its customers.

III.

Findings and Conclusions

A.

Commitment of Funds

This is a capital expenditure docket, review of which is governed by G.O. No. 7, which states, in relevant part:

> Proposed capital expenditures for any single project related to plant replacement, expansion or modernization, in excess of [$2,500,000][69] or 10 per cent of the total plant in service, whichever is less, shall be submitted to the Commission for review at least 60 days prior to the commencement of construction or commitment for expenditure, whichever is earlier.[70]

Pursuant to G.O. No. 7, and after careful consideration and review of the entire record in this proceeding, the commission finds that the Project, as set forth in HECO's and the Consumer Advocate's Joint Stipulation, is reasonable and in the public interest. The commission first recognizes the dire need for additional generation due to the reserve capacity shortfall

[69]In Docket No. 03-0257, the commission increased the monetary threshold governing the filing of capital expenditure applications, from $500,000 to $2.5 million, exclusive of customer contributions, effective July 1, 2004. See Decision and Order No. 21002, filed on May 27, 2004, in Docket No. 03-0257.

[70]G.O. No. 7, Paragraph 2.3.g.2.

faced by HECO in recent years. In fact, as stated above, all Parties agree that additional generation is needed on HECO's system. The commission also finds that the need is immediate, and that the Project must be installed by July 2009 or as early as possible, as requested by HECO.

As to LOL's position, the commission agrees with the Consumer Advocate, who commends LOL for "champion[ing] many renewable energy technologies that would have the effect of reducing the State's dependence on foreign oil."[71] The commission, however, finds that there is insufficient evidence in the record indicating that the renewable energy technologies proposed by LOL in its renewable alternative plan could actually be selected (through LOL's proposed RFP process), sited, permitted, installed, and be fully operational by July 2009. Accordingly, the commission finds that LOL's proposed plan is not a viable alternative to the Project, particularly given HECO's undisputed urgent need for new generation, discussed above.

This is not to say that the commission takes lightly the environmental concerns raised by LOL during this proceeding. The commission acknowledges that global warming and climate change are legitimate and important issues, which have a direct bearing on the regulated electric utility industry as well as other modern industrial activities, as a whole. However, the commission accepts the Consumer Advocate's recommendation that LOL's concerns would be more appropriately addressed in the IRP

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[71]Consumer Advocate's Opening Brief, filed on March 2, 2007 ("Consumer Advocate's O.B.") at 9.

process, the stated goal of which is "the identification of the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost."[72] Indeed, the commission recently named LOL as a party in the HECO IRP-4 docket,[73] and the parties to that docket -- the same Parties in this docket -- have already agreed, among other things, that "externalities, including the issues of climate change and global warming" will be addressed throughout the IRP-4 process.[74] In sum, while very important, LOL's broad-based environmental concerns and proposals are simply too broad to be adequately addressed and resolved in this capital expenditure proceeding, given that it is undisputed that the Project is needed by July 2009, and that the climate change issues will be more appropriately addressed as a part of the long-range utility planning process in HECO's IRP-4.[75]

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[72]IRP Framework, Section II.A., at 3.

[73]See Order No. 23328, filed on March 29, 2007, in Docket No. 2007-0084 ("Order No. 23328"). Official notice of the commission's records pertaining to the HECO IRP-4 docket is taken pursuant to HAR § 6-61-48. Although references to IRP-4 in HECO's Reply Brief were the subject of LOL's Motion to Strike, the commission denies that motion, as addressed below.

[74]See Stipulation Regarding Hearing and Commission Approval, filed on March 7, 2007, in Docket No. 03-0253 (HECO IRP-3), attached as Exhibit 1 to Order No. 23328 ("IRP Stipulation"), at 7, 13.

[75]In addition, the commission notes that the Legislature recently passed H.B. 226, C.D. 1, 2007 Leg., 24th Sess. (Hawaii 2007) ("H.B. 226"), with the dual purpose of: (1) establishing, as state policy, statewide greenhouse gas emissions limits at or below the statewide greenhouse gas emissions levels in 1990 to be achieved by January 1, 2020; and (2) establishing a greenhouse gas emissions reduction task force to prepare a work plan and regulatory scheme to achieve the statewide greenhouse gas emissions limits. The task force, which

As to HECO's commitment to use 100% biofuels, the commission finds that commitment to be reasonable and consistent with State policy to reduce Hawaii's dependence on imported fossil fuels and encourage sustainability through economic diversification, export expansion, and import substitution. As an island State without oil resources, Hawaii has had to rely on imported oil, contributing to an undesirable "large imbalance between the amount of goods and services exported from Hawaii in comparison to the amount of goods and services imported to Hawaii."[76]

Accordingly, by Act 272, 2001 Session Laws of Hawaii ("Act 272"), Hawaii's RPS Law was enacted with the purpose of "lessen[ing] Hawaii's dependence on imported oil[.]"[77] Likewise,

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will be co-chaired by the Deputy Director of DOH and the Director of the Department of Business, Economic Development, and Tourism, is required to consult "with all state agencies having jurisdiction over sources of greenhouse gases, including the public utilities commission, on all elements of its plan that pertain to energy-related matters[.]" H.B. 226 at Section 6(1). Based on the foregoing, the commission finds that climate change issues will also be more thoroughly and appropriately addressed via the regulatory framework developed pursuant to H.B. 226.

[76]Act 95, 2004 Session Laws of Hawaii ("Act 95"), Section 1.

[77]Act 272, Section 1. The RPS Law was originally enacted in 2001 as Act 272, was modified in 2004 by Act 95, and was most recently amended by Act 162, 2006 Session Laws of Hawaii ("Act 162"). Under the RPS Law, RPS is defined as the percentage of electrical energy sales that is represented by renewable electrical energy. Each electric utility company that sells electricity for consumption in the State is required by law to meet the RPS of: (1) ten percent of its net electricity sales by December 31, 2010; (2) fifteen percent of its net electricity sales by December 31, 2015; and (3) twenty percent of its net electricity sales by December 31, 2020. On January 11, 2007, by Order No. 23191, the commission opened Docket No. 2007-0008 to examine Hawaii's RPS Law, and in particular, the appropriate penalty framework to establish under Act 162 for failure to meet the RPS.

in modifying Act 272, the Legislature, in Act 95, intended to: "decrease Hawaii's need to import large amounts of oil, and increase import substitution, economic efficiency, and productivity, by increasing the use and development of Hawaii's renewable energy resources through a partnership between the State and the private sector."[78] Importantly, the RPS law specifically defines "renewable energy" as including "biofuels."[79] Thus, the commission finds that State law explicitly supports HECO's commitment to use biofuels for the Project.

The commission further agrees with HECO and the Consumer Advocate that the Project supports the State's goal of encouraging development of local agriculture, in that HECO expects the Project to provide a stable market for locally grown and produced biofuels. Mr. Alm explained this point in his testimony as follows:

> The Governor's recent summit on biofuels, which included the major businesses and leaders in the State, was a great step in collectively looking at creating local renewable energy alternatives so that Hawaii will become less reliant on fossil fuels in the future.
>
> . . .
>
> Hawaiian Electric cannot itself create a biofuels industry. We are not in the agriculture business, we own no land suitable for agricultural production and we have no expertise in refining a biofuels [sic] like ethanol. We do, however, believe we can play a critical role by providing a stable market for biofuels. A fuel contract to supply Hawaiian Electric is according to the biofuel

[78]Act 95, Section 1.

[79]HRS § 269-91.

> industry, one of the best means of securing financing for their business plans.
>
> . . .
>
> While these efforts to encourage a local biofuel industry are not part of this proceeding, we appreciate the role that we can play in creating and expanding the market for biofuels in Hawaii.[80]

Similarly, the Consumer Advocate states: "The Consumer Advocate's position is that using a locally produced renewable fuel source (e.g. ethanol) for the proposed CIP Project is better than burning fossil fuel in the combustion turbine and consistent with the state's energy policy to use renewable resources to reduce the state's dependence on fossil fuels."[81] LOL also conceded there are some benefits to biofuels: "(1) keeping areas green; (2) keeping areas unpaved, allowing for aquifer recharging; (3) minor reductions in some greenhouse gases; and (4) economic diversification."[82] LOL also recognized that "[t]here is evidence that corn ethanol lowers greenhouse gas emissions from 12-29%."[83]

Based on the all of the foregoing, the commission also finds that using biofuels, which may eventually be locally grown and produced, is preferable to burning fossil fuel for the Project, and will advance the State's policies of reducing the State's dependence on fossil fuels and diversifying the State's

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[80]HECO RT-12 at 6-8.

[81]Consumer Advocate's Response to LOL-CADT-IR-16.

[82]LOL's O.B. at 61.

[83]Id. at 64.

economy. In addition, in response to LOL's concerns regarding costs of biofuels and that the production of biofuels promotes unsustainable practices, the commission finds that there are sufficient safeguards in the Joint Stipulation and in the requirement that the commission approve any biofuel contract negotiated by HECO,[84] to ensure that HECO will obtain biofuel at reasonable prices and from appropriate sources.

The commission recognizes, as does the Consumer Advocate,[85] that the Project may not be perfect. However, this Project is a step in the right direction toward energy security and sustainability, as we address the immediate and growing need for electricity generation.

For all of these reasons, the commission concludes that the Project, as outlined in the Joint Stipulation, is necessary and consistent with State policy and laws, and is reasonable and in the public interest. Accordingly, the commission concludes that HECO's request to commit funds for the Project under G.O. No. 7 should be approved.

B.

Construction of Overhead Transmission Line

HECO's request to construct overhead the new AES-CEIP #2 transmission line as a component of the Project is made pursuant to HRS § 269-27.6, which provides:

> (a) Notwithstanding any law to the contrary, whenever a public utility applies to the public

[84]See HAR § 6-60-6.

[85]Consumer Advocate's O.B. at 10.

utilities commission for approval to place, construct, erect, or otherwise build a new forty-six kilovolt or greater high voltage electric transmission system, either above or below the surface of the ground, the public utilities commission shall determine whether the electric transmission system shall be placed, constructed, erected, or built above or below the surface of the ground; provided that in its determination, the public utilities commission shall consider:

(1) Whether a benefit exists that outweighs the costs of placing the electric transmission system underground;

(2) Whether there is a governmental public policy requiring the electric transmission system to be placed, constructed, erected, or built underground, and the governmental agency establishing the policy commits funds for the additional costs of undergrounding;

(3) Whether any governmental agency or other parties are willing to pay for the additional costs of undergrounding;

(4) The recommendation of the division of consumer advocacy of the department of commerce and consumer affairs, which shall be based on an evaluation of the factors set forth under this subsection; and

(5) Any other relevant factors.

(b) In making the determination set forth in subsection (a), for new 138 kilovolt or greater high-voltage transmission systems, the public utilities commission shall evaluate and make specific findings on all of the following factors:

(1) The amortized cost of construction over the respective usable life of an above-ground versus underground system;

(2) The amortized cost of repair over the respective usable life of an above-ground versus underground system;

(3) The risk of damage or destruction over the respective usable life of an

above-ground versus an underground system;

(4) The relative safety and liability risks of an above-ground versus underground system;

(5) The electromagnetic field emission exposure from an above-ground versus underground system;

(6) The proximity and visibility of an above-ground system to:
(A) High density population areas;
(B) Conservation and other valuable natural resource and public recreation areas;
(C) Areas of special importance to the tourism industry; and
(D) Other industries particularly dependent on Hawaii's natural beauty;

(7) The length of the system;

(8) The breadth and depth of public sentiment with respect to an above-ground versus underground system; and

(9) Any other factors that the public utilities commission deems relevant.

(c) A public utility making an application to the public utilities commission under this section shall clearly and fully state and support its evaluation of each factor set forth in subsection (b).[86]

Upon review, the commission finds that the construction of the 138 kV transmission line as a component of the Project is necessary and reasonable. As set forth above, HECO maintains that the new 138 kV transmission line is needed independent of the Project in order to address reliability concerns. In addition, the new line is needed in order to mitigate a potential

[86]HRS § 269-27.6.

overload of one of the two existing transmission lines in the area upon the addition of new generation in the CIP area. The proposed route of the transmission line will run through the existing Barbers Point Tank Farm, and alongside linear facilities, such as the existing coal conveyor and a planned drainage channel. In fact, all Parties agree (or do not oppose) that the routing, location, configuration, method of construction for the transmission line additions, and the overhead construction of the 138 kV transmission line are reasonable.[87]

HECO provided a detailed evaluation of the factors listed in HRS § 269-27.6 in Exhibit XV, attached to the Application. As set forth in Exhibit XV, HECO concluded, among other things, that the cost of installing the new AES-CEIP #2 transmission line underground is estimated to cost approximately $9 million more than installing the line overhead.[88] The commission finds reasonable HECO's evaluation of each of the factors listed in HRS § 269-27.6, and conclusions related thereto. Thus, upon review of the entire record, and there being no objection to the construction of the line overhead, the commission adopts HECO's evaluation of the factors in HRS § 269-27.6 in Exhibit XV, and concludes that HECO's request to construct the AES-CEIP #2 transmission line overhead should be approved.

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[87]LOL's O.B. at 29; Joint Stipulation at 5.

[88]See Exhibit XV, attached to the Application, at 1.

C.

LOL's Motion to Strike

In LOL's Motion to Strike, LOL requests that "HECO's Reply Brief's reference to IRP-4 (found on pages 15-18), and footnotes number 18, 13, 30, and 31 be stricken on the grounds that they are not part of the Official Record."[89] In particular, LOL appears to object to references made by HECO to the IRP Stipulation that was filed in connection with the closing of HECO's IRP-3 docket (Docket No. 03-0253), and the opening of HECO's IRP-4 docket (Docket No. 2007-0084).

In response, HECO argues that, contrary to LOL's allegations, references to IRP-3, IRP-4, and future action in IRP proceedings were made extensively in the record of this docket by all Parties, including LOL. Specifically with respect to the IRP Stipulation, HECO asserts, among other things, that: it referenced the IRP Stipulation in connection with the Consumer Advocate's recommendation in this docket that HECO consider LOL's renewable energy technologies in the development of HECO's IRP-4; there is no prejudice to any of the Parties since the parties who agreed to and executed the IRP Stipulation are the same Parties in this docket; and the commission should not have to ignore the information it has in its own files.

Upon review, the commission finds that the record in this docket is replete with references to the IRP process in general, and specifically to IRP-3 and IRP-4 by all Parties in the docket. The commission further notes that it may take, and

[89]LOL's Motion to Strike at 2.

often does take as a matter of administrative practice, official notice of its records in other proceedings pursuant to HAR § 6-61-48. As to footnotes 18,[90] 13, 30, and 31 in HECO's Reply Brief, the commission finds that the subject matter therein was already referenced in the record; alternatively, to the extent the subject matter was not already referenced, the commission's broad rules of evidence as set forth in HAR § 6-61-43[91] would allow the admission of the footnotes.

Accordingly, finding no reasonable basis for LOL's Motion to Strike, the commission concludes that it should be denied.

IV.

Orders

THE COMMISSION ORDERS:

1. HECO's request to expend an estimated $137,430,260 for the purchase and installation of Item Y-49000, Campbell Industrial Park Generating Station and Transmission Additions Project, as described in the Joint Stipulation, is approved;

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[90]LOL's reference to footnote 18 appears to be a typographical error, and the commission assumes that LOL meant to refer to footnote 8 of HECO's Reply Brief.

[91]HAR § 6-61-43 states:

> Neither the commission nor a hearings officer is bound by the common law rules relating to the admission or rejection of evidence. The commission or hearings officer may exercise its own discretion in these matters, limited only by considerations of relevancy, materiality, and repetition by the rules of privilege recognized by law, and with a view to doing substantial justice.

provided that no part of the Project may be included in HECO's rate base unless and until the Project is in fact installed, and is used and useful for public utility purposes.

2. HECO's request to construct and install a 138 kV transmission line above the surface of the ground, as part of the Project, is approved, pursuant to HRS § 269-27.6.

3. HECO shall submit a report within sixty days of the Project's commercial operation, with an explanation of any deviation of ten percent or more in the Project's cost from that estimated in the Application. HECO's failure to submit this report will constitute cause to limit the cost of the Project, for ratemaking purposes, to that estimated in the Application.

4. HECO shall conform to the commission's order set forth in paragraph 3, above. The failure to adhere to the commission's order shall constitute cause for the commission to void this Decision and Order, and may result in further regulatory action as authorized by law.

5. LOL's Motion to Strike is denied.

DONE at Honolulu, Hawaii MAY 23 2007.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By _____
Carlito P. Caliboso, Chairman

By _____
John E. Cole, Commissioner

APPROVED AS TO FORM:

_____
Kaiulani Kidani Shinsato
Commission Counsel

05-0145.cp

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Decision and Order No. 23457 upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

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DATED: MAY 23 2007