

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Application of)
)
PUBLIC UTILITIES COMMISSION)
)
Instituting a Proceeding to)
Investigating Distributed Generation)
in Hawaii)
_____)

PUC Docket 03-0371

PUBLIC UTILITIES
COMMISSION

2008 JUN 16 P 12:55

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LIFE OF THE LAND'S

RESPONSES TO INFORMATION REQUESTS (RIRs)

&

CERTIFICATE OF SERVICE

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HREA-LOL-IR-1 (Introduction). Referencing page 5 of LOL's SOP, HREA understands the concepts of LOL's basic discussion of Imports, Exports and Economic Development. As a clarification, when LOL calculates imports and exports, is LOL including the outside investment coming to Hawaii (build new hotels/resorts or windfarms, etc.) and Hawaii investment elsewhere (Hawaii financial institutions, pension plans, the large estates, etc., invest outside of Hawaii)? Does LOL have an estimate of what the import/export ratio would be in that case?

Answer: In analyzing balance of trade issues, the monetary value of all imports and exports, must be included. This includes outside investments made in Hawai`i and Hawai`i investments made abroad. Secondary and tertiary flows must be analyzed. The total economic effect must be included in the analysis.

The Hawai`i Gross State Product (GSP-HI) refers to all transactions of goods and services by Hawai`i residents, wherever they live. The Hawai`i Gross Domestic Product (GDP-HI) refers to all transactions of goods and services by residents and non-residents within the state. GDP-HI is the correct metric to determine how various scenarios impact the state. Utilizing static input-output tables and/or dynamic models one can account for all direct and indirect financial flows. One can calculate the estimated change in GDP-HI for any given scenario. Each scenario will have employment and job impacts.

We cited the web-based article "Imports, Exports and Economic Development" by Enterprise Honolulu (formerly known as the Oahu Economic Development Board) as an illustrative example. Other studies were cited, including University of Nevada, Las Vegas (UNLV), and Black & Veatch)

Sources: (1) The Asia-Pacific Economic Cooperation (APEC) Forum: Sustainable Energy Development
www.apecnetwork.org/ESC/outreachproject.html

(2) Dollars from Sense: The Economic Benefits of Renewable Energy: Importing Energy, Exporting Jobs.
U.S. Department of Energy (DOE) Energy Efficiency and Renewable Energy (EERE)
www.eere.energy.gov/power/pdfs/dollars_import.pdf
www.eere.energy.gov/power/dollarsfromsense.html

(3) Energy-Efficiency Policies to Promote Sustainable Economic Growth in Hawaii: Responses to Technological Change and Globalization. Lawrence J. (Larry) Hill 22 March 2001
www.hawaii.gov/dbedt/ert/hillreport.pdf

Sustainable Energy Development

Introduction

The Asia-Pacific Economic Cooperation (APEC) Forum, a consortium of 21 Pacific-rim economies, implements its activities through ten groups, one of which is the Energy Working Group (EWG). The Energy for Sustainable Communities Program (ESCP) is part of EWG. One of the major activities of the program is a community outreach project in which members of the group:

- profile the energy sectors of selected APEC communities;
- institutionalize a sustainable energy planning (SEP) process in participating APEC communities; and
- identify, help finance and implement SEP-based projects.

The ultimate objective of the project is not to help communities plan *per se*, but rather to help communities use energy more effectively in achieving other municipal goals such as affordable housing, efficient transportation systems, economic development, job creation, and a cleaner environment. The short- and long-term effects of using energy more effectively are well known and documented.

In households, improving the efficiency of energy to provide a given amount of lighting, cooking, heating, cooling, and other services is equivalent to an increase in income. The expenditures formerly made on energy and water will be saved or used for other purchases. Over the long term, households adjust to lower expenditures on energy, choosing to consume more energy with their added income, increasing their comfort and well-being in the process.

For commercial establishments and industrial enterprises, using energy more efficiently reduces the cost of producing goods and services. Depending on the types of markets that these enterprises operate in, this resource-cost reduction can translate into lower production costs, higher output and more profits in the short term. Oftentimes, this also means that these commercial and industrial enterprises employ more workers to satisfy the increased demand for their products. The increased employment, of course, improves the performance of the local economy. In the long term, firms may choose to change the process they use to produce products because of lower energy bills, depending on the extent to which energy can substitute for other, relatively higher-cost inputs.

Local governments use energy and can benefit from using energy more effectively. Local governments own buildings that use electricity, gas, and water. They also light the streets. They run, maintain, and expand the local transport system that relies in large measure on gasoline and diesel. They run wastewater treatment plants that consume large amounts of electricity. They dispose of solid waste. Any increase in the efficiency of using resources to provide these services will provide additional funds in the community. Local governments can use these funds to reduce taxes or increase spending on other goods and services.

...

Perhaps the most important benefit to local governments of improving energy efficiency or using local renewable energy resources is the impact on local and state economies. This benefit depends on the degree to which local economies import their energy from surrounding communities or countries. By importing energy, these economies are "exporting" resource dollars to resource-producing regions. These dollars are no longer used in the community. If expenditures on imports are reduced, the savings will improve the performance of the local economy via the "multiplier effect" to the extent the savings are spent in the local economy. The multiplier effect is an economic phenomenon characteristic of all economies, relating to the effects of spending and respending on the economic growth of local economies. Also, the expenditures on energy-efficiency improvements themselves will improve local economic performance because the materials and labor for those improvements are likely to come from the local economy and not be imported from elsewhere energy system.

www.apecnetwork.org/ESC/outreachproject.html

Dollars from Sense: The Economic Benefits of Renewable Energy: Importing Energy, Exporting Jobs.
U.S. Department of Energy (DOE) Energy Efficiency and Renewable Energy (EERE)
www.eere.energy.gov/power/pdfs/dollars_import.pdf

Every year, Americans spend about \$1900 per person on energy purchases, which is about 8% of the average person's total expenditures on goods and services in a given year. Of this amount, approximately 40% goes to pay for electricity.

Energy purchases represent a significant cost to society - nationally and locally - and it is important to spend energy dollars in a way that strengthens the economy rather than depleting it.

In many cases, energy dollars leave the community, going to regional utilities or suppliers of oil or natural gas. Once those dollars have been spent on importing energy into the community or state, they are not available to foster additional economic activity. Because every dollar spent on imports is a dollar lost from the local economy; these energy imports represent a substantial loss to local companies in terms of income and jobs. The challenge is to meet our insatiable appetite for energy while supporting local economic development.

A growing number of state and local governments are investigating ways to keep their energy dollars at home - for many, the answer lies in renewable energy investments.

How Renewable Energy Investments Help the Economy

There are two main reasons why renewable energy technologies offer an economic advantage: (1) they are labor-intensive, so they generally create more jobs per dollar invested than conventional electricity generation technologies, and (2) they use primarily indigenous resources, so most of the energy dollars can be kept at home. ...

The advantages of renewable energy investments are becoming increasingly clear, even in area that have traditionally favored fossil fuels. "Texas is now a net energy importer," said Texas Land Commissioner Garry Mauro, speaking at the dedication of the state's first commercial wind-power project in November 1995. "We can accept our status as a net energy importer ... or we can face the challenge head on and serve as a model to others by embracing new ideas such as wind power and solar energy -- ideas that will make Texas the leader in renewable energy development, energy-efficient building techniques, job creation, and environmental health." ...

HREA-LOL-IR-2 (Introduction). Referencing LOL's discussion on page 9 on correlation, would it be correct to say that LOL's argument with respect to renewables would be true if we decouple the price of renewables from oil? Specifically, would LOL agree that LOL's arguments do not apply if we continue to price renewable according to the PURPA (Public Utility Regulatory Policy Act) of 1978?

Answer: Decoupling the price of oil and the price of renewables might decrease the correlation between oil and renewables, but would not create a zero correlation. As the economy grows (shrinks), the demand for, and thus the price of, all energy sources would rise (fall). Thus the price of oil and renewables tend to move in a similar way and are thus positively correlated.

Portfolios decrease the overall risk when they contain diverse components. Thus, increasing the number of components in a portfolio is desirable from a risk perspective, irregardless of PURPA. This contrasts sharply from the current approach, where we are the most monopolistic of any state in the nation in relying solely upon one fuel source for our energy needs.

We certainly would not agree that our arguments lack merit.

HREA-LOL-IR-3 (Introduction). Referencing LOL's discussion on page 14 regarding global warming, LOL has presented yet another take on why we need to take action to mitigate the effects of global warming. However, since we have failed in previous attempts in Hawaii to quantify the externalities of global warming, does LOL have something specific to propose as part of this docket?

Answer: Yes, island living requires a consciousness of the fragility of our resources. Hawai'i's continued reliance on imported fossil fuel for energy generation is short-sighted and wrong-headed. Therefore Hawai'i must consider every energy project within the framework of sustainability and good global citizenship. Working within this framework, the prioritization for energy generation will naturally shift with the use of clean and indigenous resources becoming the preferred method of energy generation.

Taking action on externalities and on global warming requires leadership and the political will. We will continue to advocate for sound full-cost energy policy. Perhaps the next time the utilities undertake an externalities study, they will hire a consultant who believes in quantifying externalities. Dozens and dozens of corporations, municipalities, states and nations have adopted the Kyoto Protocol. Hawai'i should not be among the last to do something positive. We need only look at other island states in the Pacific, such as Tuvalu, to see the devastation caused by rising seas. Tuvalu is currently trying to relocate its people because they have lost much of their coastal areas and salt water intrusion into their drinking water aquifer.

Specifically for this docket, there should be a priority promoted in favor of projects which have less impact on global warming.

Source: United Nations Framework Convention on Climate Change (unfccc.int), Kyoto Protocol to the United Nations Framework Convention on Climate Change (<http://www.cop3.org/>), Intergovernmental Panel on Climate Change (www.ipcc.ch), International Institute for Sustainable Development (IISD): Climate and Atmosphere (www.iisd.ca/process/climate_atm.htm), The Pew center on Global Climate Change (www.pewclimate.org/)

HREA-LOL-IR-4. Referencing LOL's definition on page 19 regarding of "Outages," is LOL implying that catastrophic outages can not be man-made or caused? Catastrophic would seem to be a measure of the extent of an outage and the element of suddenness or surprise, not its cause. Furthermore, if one is seeking to blame power outages on factors that relate to extreme weather (high temperatures, lightning, hurricanes, etc.), whether we attribute it to a deity initially or not, would LOL agree that there is now a persuasive argument that man is contributing to more severe weather?

Answer: The utilities file an "Annual Service Reliability Report" with the PUC. Ideally, the utility should post these reports on their web sites. HECO's 1998 report states: "The reliability indices are calculated using the data from all sustained * system outages except customer maintenance outages. If data normalization is required, it is done using the guidelines specified in the report on reliability that was prepared for the Public Utilities Commission, titled 'Methodology for Determining Reliability Indices for HECO Utilities,' dated December 1990. The report indicates that normalization is allowed for 'abnormal' situations such as hurricanes, tsunamis, earthquakes, floods, catastrophic equipment failures, and single outages that cascade into a loss of load greater than 10% of the system peak load." * An interruption of electrical service of 1 minute or longer

In our SOP, we stated: "Outages can be momentary (zero to a few minutes), sustained (more than a few minutes, but not catastrophic), or catastrophic (wide-spread blackout due to an Act of God). Reliability metrics are derived only from sustained outage data." This is LOL's interpretation of existing definition which we translated into English so that it can be understood by non-utility people. In stating this definition, LOL did not intend to state a bias for or against this definition. Rather, we wanted to contrast the definition to the issue of concern to the public: 'Will my lights go on?'

Our definition of "Outages" reflects the idea that consumers are concerned about outages and utilities are concerned about reliability metrics. Our statement did not

have anything to do with the causes of catastrophic failures. Nor did we intend to blame outages on extreme weather. Man may be affecting weather, but the issue we are concerned with is minimizing outages.

It should be noted that some insurance companies -- which are tracking weather trends -- anticipate rising insurance costs associated with payments for weather related damage. Continuing down the fossil fuel path will be an economic disaster for Hawai`i as the effect of climate change are evidenced.

Source: (1) Insurance industry worried about global warming. www.cnn.com/EARTH/9609/insurance/ (2) Sharon Beder, 'Insurers Sweat Over Global Warming', *Engineers Australia*, August 2001, p. 41. www.uow.edu.au/arts/sts/sbeder/columns/probe19.html (3) A number of giant insurance companies already suspect global warming has cost billions. See: Unlikely eco-warriors. archive.salon.com/05/features/world.html (4) Insurance Insecurities. (http://www.acfnewsourc.org/science/insurance_insecurit.html) (5) Europe's leading insurance companies are now so worried by global warming, they are likely to use their financial muscle to get governments and the world's oil ... See: The economic impact of global warming. news.bbc.co.uk/2/hi/business/2327795.stm (6) The Coming Storm Global Warming & Risk Management By Evan Mills. (<http://eetd.lbl.gov/EMills/PUBS/comingstorm.html>)

HREA-LOL-IR-5. As a follow-up to HREA-LOL-IR-5, HREA would agree that outage data can lead to one or more metrics (or methodologies of estimating or calculating) of reliability. Keeping in mind that reliability is the probability of a given event happening or not happening (Reference to HREA's SOP), the one reliability metric that might be of most relevance would be the "loss-of-load probability." In that case, would LOL agree that the customers loss of power would be highly correlated to loss of load, and hence reliability?

Answer: Loss-of-load probability measures generation outages, which may or may not impact customers. Other disturbances (failures of transmission lines, distribution lines, substations, etc.) also may or may not affect customers. We are unaware of any such correlation analysis, but would be open to reviewing any information HREA might have on the subject matter. Of public interest would be studies and analysis showing what percentages of outages and lost economic activity can be attributed to various types of failures (generation, transmission, distribution, substation). This is crucial in determining what area of the system needs strengthening. If a non-probabilistic solution were chosen, then the entire system would have to be gold-plated at great expense to the ratepayer. Another item that must be evaluated is the relative impacts to different rate classes, and the willingness or non-willingness of those classes of ratepayers to pay for greater protection against outages.

HREA-LOL-IR-6. Referencing LOL's definition on page 20 of "Intra-Government Wheeling," would LOL agree that the concept of wheeling (retail or otherwise) could also be between an agency's location to another location of the same agency?

Answer: In answering this question, LOL believes that HREA is asking if Intra-Government Wheeling can occur between two locations of the same quasi-governmental agency, such as NELHA. This is a subset of a larger question, of whether wheeling can occur between two separate governmental agencies, such as one state agency (such as NELHA) wheeling power to another state agency (such as the ADC). LOL strongly supports restructuring the electric utilities and would strongly urge that the PUC adopt a liberal interpretation of wheeling. As regulators become more comfortable with wheeling, further de-monopolization could occur.

HREA-LOL-IR-7 (Planning: Issue 1). Referencing LOL's definition of "real renewables," HREA is curious why LOL did not include biomass, geothermal, hydro (falling water), ocean current, and ocean thermal (use of differential water temperatures) in your definition of "real renewables" (resources)? We also assume by "moon" you are referencing to harnessing ocean and sea tides?

Answer: LOL's SOP stated "Priority should be given to ... those that are powered by real renewables (sun, moon, wave, wind)" This is a non-technical way of explaining renewables in English. The sun and creates solar power, wind power, hydro power and wave power. "Biomass, hydro (falling water), ocean current and ocean thermal" are all created by the interactions of the sun, earth and moon. The exception on your list is geothermal which is caused by planetary forces.

HECO/LOL-IR-0: Instructions to All Parties. Define CHP Systems. CHP Systems are a form of distributed generation ("DG") that utilize waste heat from the power generation process as energy (heat or steam) for heating or cooling purposes. Define DG. DG involves the use of small scale electric generating technology installed at, or in close proximity to, the end-user's location. The term DG refers to distributed generation (using conventional internal combustion engines) installed at or near a customer site, and operated in parallel with the utility grid, for the primary purpose of providing electricity to the customer.

Answer: Life of the Land disagrees with these definitions. DG and CHP overlap, but neither is a subset of the other. DG can involve small or large generators. The Honolulu Power Plant is not connected to the transmission grid and is used to provide cycling and peaking power to the local load. Thus it is DG. CHP includes Kalaeloa and AES, both 180MW generators, which are connected to the transmission grid.

On-site CHP usually matches the heat load of the building with the heat load from the CHP system. Thus, electricity is the real waste product which is then utilized. Some solar, wave and wind projects are DG because they will either directly power a site or feed power onto the subtransmission and/or distribution networks. Some CHP is powered by renewable energy resources, and some by fossil fuel. Different fuel and processes in CHP systems result in a wide range of pollution output.

DG can use non-internal combustion engines. For example, a Stirling Engine. ("An external combustion engine that converts heat into useable mechanical energy (shaftwork) by the heating (expanding) and cooling (contracting) of a captive gas such as helium or hydrogen. In a solar-powered Stirling engine, hydrogen is alternately heated and cooled to drive a piston up and down, converting solar heat to electricity . The system is closed (no fuel or cooling water is required) and produces little noise during operation." sol.crest.org/renewables/SJ/glossary/S.html)

HECO/LOL-IR-1 Ref: LOL Preliminary Statement of Position, pages 21-22: In order to facilitate the implementation of DG, isn't it appropriate for the regulated electric utility to be an active participant in the DG market? If the answer is no, please explain why not.

Answer: The effective installation of DG has been hindered for decades by the utilities. Now, seeing the writing on the wall, the utilities would like limited DG that only they can provide, and claim that this is better than very little DG. It is. However, it is insufficient. As we stated in our SOP:

"It is in the economic self-interest of the utility to use its resources to stymie Independent Power Producers. During the years of delay, the utility makes money, while the investor loses money. One way of delaying IPPs is by dragging out the negotiations regarding Interconnection Agreements and Power Purchase Agreements. The delays can be subtle: changing terms of contracts, raising new issues, delaying responses, offering financial deals customers who stay with the utility, etc. Some have suggested firewalls between different functions within the utility. Utility firewalls have not worked in Hawai'i. The only reasonable solution is divestiture. Utilities must separate into two companies via a stock split or the utilities must divest themselves of generation *. The new generation company would simply be another unregulated Independent Power Producer. The new transmission and distribution company (T&DCO) would be regulated. The controversial issue of the true avoided cost disappears once the T&DCO is separated from all IPPs."

* Life of the Land raised this issue in our Final Position Statement, dated October 15, 1998 in PUC Docket 96-0493 Instituting a Proceeding on Electric Competition, Including an Investigation of the Electric Utility Infrastructure in the State of Hawai'i

The utilities have ventured into renewable energy through their ProVision and Renewable Hawaii Inc entities. Confusion abounds as to which company is offering what and who works for whom. Fairness demand divestiture.

Sources: (1) US Federal Energy Regulatory Commission www.emanifesto.org/FERCNOPR/FERCiiid.htm
(2) USDOJ (1995). Department of Justice. Promoting Competition in Telecommunications. Address by Anne K. Bingaman. Assistant Attorney General, Antitrust Division, U.S. Department of Justice. Before The National Press Club. Washington, D.C. February 28, 1995.
www.usdoj.gov/atr/public/speeches/telecomp.htm (3) The Prize: The Epic Quest for Oil, Money & Power. (1992) Daniel Yergin. 338.2, HD9560.6.Y47 (4) Power Struggle: The 100 Yr War Over Electricity. (1986). Richard Rudolph & Scott Ridley. 338.473636R, HD9685.U5R73 (5) The Next Greatest Thing Richard A. Pence, NRECA 1984 (6) Hawaii: The Electric Century (1991) Carl Myatt, HECO DU629.H7.M83 (7) HECO and Hawaii: A History Entwined HECO Web Page (8) Powerline. (1981) Barry Casper, Paul David Wellstone. 333.8C, HD9502.U53M625 (9) Powerlines: What's the buzz about cogen? A Hawaiian Electric Company, Inc. Publication. No. 3 Summer 1999 (10) Worldwatch Paper. Micropower - The Next Electrical Era by Seth Dunn. www.worldwatch.org/ (11) Island Business. Looking for Alternatives: With the nation's highest utility rates and a precarious reliance on imported oil, Hawaii is looking with new interest at the sun, wind and other renewable-energy sources. Cover Story by Peter Wagner. June 2001. www.islandbusinessmagazine.com/cov0601.html (12) United States Department of Energy's National Renewable Energy Laboratory (NREL). Making Connections: Case Studies of Interconnection Barriers and their impact on Distributed Power Projects. R. Brent Alderfer, Thomas J Starrs. NREL Technical Monitor: Gary Nakarado. Executive Summary. May 2000. (13) The DG Way: Tune in Or Miss Out. Robbin Christianson. On-Line Supplement to the Public Utility Fortnightly June 15, 2001. www.pur.com/

Antitrust Sources: The Computer Establishment, Katharine Davis Fishman. London: McGraw -Hill Book Company, 1981. ASIN: 0070211272. IBM: Colossus in Transition Robert Sobel (1981). (New York, NY: Times Books, 360 p.).

HECO/LOL-IR-2 Ref: LOL Preliminary Statement of Position, pages 21-22: If DG and CHP systems are beneficial in helping to meet the State's energy goals (e.g., increased energy efficiency and a reduction in the use of fossil fuels), then why would it not be reasonable for a regulated electric utility to be an active owner/operator in the DG/CHP market?

Answer: Life of the Land objects to this Information Request on the grounds that it is argumentative. The two clauses in this question (State Energy Goal, Ownership) are not related. The question seems to imply causation (A --> B; that is, State Energy Goals determines Ownership), while in fact, the clauses are independent (unrelated). Furthermore, the first clause presupposes a foundation of facts (CHP is beneficial) that may exist but is not in the record. Without waiving these objections, Life of the Land responds as follows:

Increasing the number of generators while increasing their efficiency will probably result in increased use of fossil fuels. Decreasing the rate of increase is not decreasing the use. LOL believes that we must dramatically decrease the total use of fossil fuels.

The second part of the question focuses on ownership. **Under the current regulatory process** HAR 6-74-7 states that utilities may not own cogeneration facilities. **Under the current regulatory process**, the IRP process is described as owner-neutral. That is, who owns something is irrelevant. Allowing the utility to own CHP is a violation of both HAR and the IRP provisions.

The question is based on wrong thinking. The goal of the utility should be to maximize economic prosperity while protecting the environment, instead of basing future plans on voodoo engineering accounting with built-in faulty assumptions. Planning should involve a comprehensive evaluation of all alternatives using legitimate financial accounting.

HECO/LOL-IR-3 Ref: LOL Preliminary Statement of Position, page 22: Does LOL believe that the Commission has the appropriate authority to oversee the regulated electric utilities' involvement in DG/CHP projects? If the answer is no, please explain why not.

Answer: The Commission has broad authority over all aspects of utility regulation. Further, the Commission has the right to suspend HECO Applications (such as CHP), and to reject HECO Applications (such as PBR). The commission has the authority to oversee the Companies ventures into CHP, if the Commission that it is legal, appropriate and in the public interest to allow a regulated utility into this CHP market. That is one of the reasons that the Commission opened this docket. As of now, the Companies have not received PUC approval to enter the CHP business, nor to run an unregulated division called Renewable Hawaii Inc. The Commission's decision re a regulated utility's entrance into the CHP market should in no way preclude other CHP companies from entering that market as well.

We have cell phones and personal computers because innovators successfully challenged the status quo. This docket is very much about breaking the status quo and encouraging innovation to advance.

Source: (1) The Regulation of Public Utilities. Charles F. Phillips, Jr (PUR). 338.473636P, KF2094P54 (2) Warning: Electric Ads May be Hazardous by Michael Shames, Utility Consumer Action Network (UCAN), October 1, 1997. www.ucan.org/law_policy/energydocs/oped10-1-97.html (3) Soft Energy Path. Amory Lovins. (1976)

HECO/LOL-IR-4 Ref: LOL Preliminary Statement of Position, pages 21-22: Why would a regulated electric utility have to divest itself of its generation division in order to be an active participant in the DG/CHP market?

Answer: It wouldn't. By definition, any monopoly can own 100% of a market and strangle all competitors. Having multiple competitors, including the Companies, might be acceptable, if deemed legal, appropriate and in the public interest. This is the current system which is begging for a positive paradigm shift. However, the Companies do not want to be merely active, they want 85% of the market for themselves. As LOL noted in our SOP, and in our answer to HECO/LOL-IR-1, domination by one company will lead to high prices and a lack of choice, as we know so well, from our current situation.

HECO/LOL-IR-5 Ref: LOL Preliminary Statement of Position, pages 21-22: Does LOL maintain that the divestiture of the generation divisions by the regulated electric utilities in California was successful in meeting the energy needs in a reasonable manner of California ratepayers?

Answer: Life of the Land objects to this Information Request on the grounds that it is argumentative. Life of the Land has never filed a document in any PUC docket that would lead one to conclude that Life of the Land supports a California-type deregulation. There is nothing in the public record that indicates that we believe that the California approach is reasonable. Without waiving that objection, Life of the Land responds as follows:

California electric restructuring was a failure. As is well documented, California was scammed by energy producers. The utilities attempted to have ratepayers bail them out for their nuclear mistakes. In the end, the utilities did not make out quite as well as they would have liked. However, some of their parent companies made billions off the backs of their ratepayers. To avoid this fiasco, Hawai`i needs a strong PUC with the political will necessary to protect the economy, jobs, and the environment, all of which can be achieved through real deregulation.

“As is often the case with business and government regulation, it was the utilities themselves that asked for regulation, knowing full well that they could easily dominate state public utility commissions. ‘Regulation’ evolved so that utilities were permitted to make 15 percent on invested capital - a tidy sum.” (Editorial: Deregulation just a grab for power by Molly Ivins. Wilmington Morning Star Monday, April 16, 2001.

//www.main.nc.us/cnnews/ WilmingtonStar04-18-01/ (“Ivins”).

California utilities made bad choices by investing heavily in nuclear power plants, resulting in price complaints by large customers. Some large customers threatened to get cheaper rates by installing on-site generators and by leaving the grid. As a result of actions by the California Governor, the California Public Utilities Commission (CPUC) proposed deregulating the electric industry. In 1996 the State Legislature unanimously approved legislation for deregulating the electric industry.

“A \$73.4 million dollar ad campaign (financed by California electric ratepayers) will saturate the media in coming months claiming that ‘Choice is Coming’ to most of the state’s electric consumers on January 1, 1998. ... What they don’t say is that the state’s three large electric utilities (Pacific Gas & Electric, Southern California Edison and San Diego Gas & Electric) have been bailed out to the tune of almost \$24 billion dollars by the state’s electric customers. This hefty bailout includes an almost 100% payback for the uneconomic three nuclear power plants built by the utilities for which they received hefty profits.” (Warning: Electric Ads May be Hazardous by Michael Shames, Utility Consumer Action Network (UCAN), October 1, 1997.

www.ucan.org/law_policy/energydocs/oped10-1-97.html (“Shames”))

“Because the California deregulation scheme provided billions of dollars to the in-state utility companies, competition never materialized. ... Flush with billions of dollars in ratepayer subsidies, the parent companies which control the three utility companies went on a spending spree, repurchasing their own stock and spending billions of dollars buying power plants throughout the United States and in other countries. ... The utility companies are attempting to portray themselves as victims, like ratepayers. They say the fault lies with the power generators. ... But the utility companies are themselves are still power generators. ... The utilities have collected \$17 billion from ratepayers for ‘stranded assets,’ far more than they have paid out in higher energy bills. Additionally,

the parent companies of PG&E, Edison and SDG&E own unregulated energy generation companies that provide substantial power supplies to the state and throughout the nation.” (Factsheet: The history of the deregulation debacle. The Foundation for Taxpayer & Consumer Rights. consumerwatchdog.org/utilities/fs/fs000885.php3)

“Some parts of California are not suffering from power problems of any kind. In Los Angeles and Sacramento, the lights are still on and the rates have not doubled or tripled. As it happens, the people of Los Angeles and Sacramento own their own power plants.” (Ibid. Ivins)

“If done properly, electric deregulation could potentially bring benefits to small consumers because of innovations in telecommunications and because of increasingly economic ‘distributed’ generation. Distributed generation, like roof-top photovoltaic cells that convert sunlight to electricity, or fuel cells which chemically produce electric current, are emerging sources of electricity that can be placed in people’s homes or businesses. Telecommunications innovations, such as wireless networks and computer-telephone convergence will allow companies to turn computers into smart electric meters which not only measure power consumption but help control electricity usage in homes and businesses.

These two areas of innovation mean that small customers can use their home PCs or lease low-cost smart meters to provide an array of new energy services. Moreover, any company with a phone or computer connection to your home or business can offer electric service, combined with the other services they provide. For one-stop shopping aficionados, this could be dream come true.

Alas, this more promising version of electric deregulation won't happen any time soon. State regulators and legislators have given little attention to promoting distributed generation. They've given little, if any, attention to the question of how to deploy smart meters to customers without computers. They've not bothered to encourage electric marketers to pursue the small customer market. Instead, they offered a 10% "loan" and called it a day." (Ibid. Shames)

It is interesting that California is the subject matter of this question. The price of electricity in California is CHEAPER than the cost of electricity in Hawai`i. We have the highest electric utility rates in the nation. The Hawai`i premium (H price divided by the average nationwide price) is highest for electricity, ten times that of the Hawai`i premium for gasoline.

LOL's use of the term deregulation is perhaps better denoted as restructuring. That is, regulation would still occur, but it would be the regulation of companies competing fairly on a level playing field in the marketplace.

HECO/LOL-IR-6 Ref: LOL Preliminary Statement of Position, page 26: a. Does LOL acknowledge that to date there has been only a limited number of DG/CHP projects implemented in the State of Hawaii? b. Does LOL acknowledge that the involvement of the regulated electric utility in the DG/CHP market should result in a larger potential market for DG/CHP installations?

Answer: (a) There have been a limited number of CHP in Hawai`i, using HECO's limited definition of CHP. Under an expansive definition of CHP, there has been extensive CHP in Hawai`i. CHP facilities include the 180-MW Kalaeloa Cogeneration facility, the 180-MW AES facility and generators that existed at many of the former sugar mills around the state. Under an expansive definition of distributed generation, there have been and are many DG units in Hawai`i, including the Honolulu Power Plant.

Distributed Generation (DG) exists in the form of utility generators (Hana Substation), military generators (for example, the HECO-sponsored cogeneration unit at Fort Shafter), and 39-MW of back-up generators within the Kamoku [Transmission Substation] Service Area (according to the Revised Final Environmental Impact Statement (RFEIS) for HECO's proposed Kamoku-Pukele 138-kV Transmission Line project). The Kamoku Service Area includes Waikiki which has a large number of back-up generators and some on-site generation.

Cogeneration is common throughout the world: (1) The U.S. Department of Energy's "Energy Information Administration (EIA) reports that, as of 2000, CHP accounted for about 7.5% of electricity generation capacity and almost 9% of electricity generated in the US. Data assembled from an unpublished EIA survey and other EIA data suggest that 10.7% of total US electricity was generated by distributed generation technologies in 2000." www.jxj.com/magsandj/cospp/2002_04/chp_usa.html

(2) "In the current energy market, cogeneration supplies around 10% of European electricity production ... In 1997, the European Commission brought forward a strategy

paper to double the amount of cogeneration in the European market place. The implications of this strategy are that cogeneration would grow to provide 18% of European electricity by the year 2010.”

(www.jxj.com/magsandj/cospp/2002_04/cogen_in_europe.html)

(Source: Cogeneration and On-Site Power Production (Volume 3 Issue 4, July-August 2002))

Cogeneration is not new, it predates electricity. (Source: Website of HECO Witness, Kamoku-Pukele contested case hearing: Leonardo Da Vinci, in the 15th century, invented a thermal heat and mechanical energy system (cogeneration; combined heat and power) for cooking food). What is new in cogeneration, is interest in the field by the Companies. Just 5 years ago the Companies opposed cogeneration (See: What's the buzz about cogen? Powerlines. A Hawaiian Electric Company, Inc. Publication. No. 3 Summer 1999). The Companies seek to create a limited market for small, on-site, DG/CHP systems. The largest market share will develop when the PUC embraces competitive CHP.

(b) The Companies entrance into a market has no bearing of the market potential. In fact, Hawai`i would be more self-sufficient and secure if our portfolio of energy alternatives were more diversified, relying more on indigenous resources rather than fossil fuels. Hawai`i must become more energy self-sufficient and stop being wards of the HEI dynasty.

Source: (1) DBEDT (1995). RE Assess. & Dev Plan 1995. www.hawaii.gov/dbedt/ert/hes3/index.html (2) Public Utilities Commission (February 1996). Strategies to Facilitate the Development and Use of Renewable Energy Resources in the State of Hawaii. A Report to the Legislature Pursuant to S.C.R. 40, S.D. 1, 1994. www.hawaii.gov/dbedt/ert/puc940226/puc940226.html (3) Solar Energy: From Perennial Promise to Competitive Alternative (by KPMG (1999). www.greenpeace.org/~climate/renewables/reports/kpmg8.pdf * www.greenpeaceusa.org/media/publications/KPMG_summarytext.htm - 16k * www.greenpeaceusa.org/media/publications/KPMG_summary.htm - 1k

(4) DBEDT (2000). Hawaii Energy Strategy 2000. www.hawaii.gov/dbedt/ert/hes2000/index.html Hawaiian Electric Industries. Alternative Energy Development Efforts. November 1984. KFH 421.5 R47 A85 85-49.
(5) DBEDT (January 11, 2001) Combined Heat and Power Workshop

www.hawaii.gov/dbedt/ert/chp/index.html (6) Analysis of Renewable Portfolio Standard Options for Hawaii. GDS Associates. Submitted to the State of Hawaii Department of Business, Economic Development & Tourism. March 2001 www.state.hi.us/dbedt/ert/rps01/rps01.html

(7) U.S. DOE Perspectives on Distributed Generation Opportunities. Gary D. Burch. Hybrid Power Systems Manager. Office of Power Technologies, USDOE. Distributed Generation Opportunities for Hawaii and Other Pacific Islands. July 24-25, 2001. The Radisson Waikiki Prince Kuhio Hotel Honolulu, Hawaii. : (a) Orville Thompson: Orchid CHP System; (b) Maui Electric Company's Distributed Generation Project at Hana Maui by Bill Bonnet. Presentation at the Distributed Generation Opportunities for Hawaii and Other Pacific Islands. July 24-25, 2001. The Radisson Waikiki Prince Kuhio Hotel Honolulu, Hawaii. (8) Proceedings of the Workshop on Interconnecting Distributed Energy, December 12 and 13, 2001 * Sheraton Waikiki Hotel www.hawaii.gov/dbedt/ert/icw/ (a) Honolulu Hale Cogeneration System Overview by Mr. Michael Chang www.hawaii.gov/dbedt/ert/icw/chang/chang.html (b) Interconnection: Legal, Procedural, and Economic Issues by Tom Starrs, J.D., Ph.D. www.hawaii.gov/dbedt/ert/icw/starrs/starrs.html (c) Combined Heat and Power System at The Orchid at Mauna Lani by Mr. Orville Thompson www.hawaii.gov/dbedt/ert/icw/thompson/thompson.html

(9) United States Department of Energy's Energy Efficiency and Renewable Energy Network (EREN) Combined Heat and Power (CHP) Case Studies. www.eren.doe.gov/der/chp/pastcase.html Downtown Washington, D.C. Sections on College Park, Maryland, University of California, Davis, Children's Hospital, Philadelphia, Melrose Park, Illinois, Biomass CHP Plant Finland (10) Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects. R. Brent Alderfer, M. Monika Eldridge, Thomas J. Starrs National Renewable Energy Labs (NREL) www.nrel.gov/docs/fy00osti/28053.pdf

(11) Hawaii Energy Forum: Renewable and unconventional energy. Warren Bollmeier <http://hawaiienergypolicy.hawaii.edu/pages/reports.html> * Reducing Hawaii's energy demand through increased efficiency. Kyle Datta <http://hawaiienergypolicy.hawaii.edu/pages/reports.html> (12) Barker, Brent (former EPRI Journal editor-in-chief): Technology and the Transformation of the Electric Industry. Electric Power Research Institute (EPRI) Journal. November/December 1996 Vol. 21, Number 5: Pages 22-30. www.ece.umn.edu/areas/power/Energy_Course/energy/Deregulation/dist_gen/techtrans.html.

HECO/LOL-IR-7 Ref: LOL Preliminary Statement of Position, pages 21-22: Does LOL acknowledge that utility participation in the DG/CHP market on a regulated basis should lead to a larger market than the current status quo of only a limited number of DG/CHP projects being implemented in Hawaii?

Answer: The Companies entrance into a market has no bearing of the market potential. In fact, Hawai`i would be more self-sufficient and secure if our portfolio of energy alternatives were more diversified, relying more on indigenous resources rather than fossil fuels. Hawai`i must become more energy self-sufficient and stop being wards of the HEI dynasty.

The existing small number of CHP is a result of HECO's definition of CHP, and is not a description of reality. To borrow a phrase from Hawaii Energy Utility Regulation and Taxation (<http://hawaiienergypolicy.hawaii.edu/pages/reports.html>) , HECO has been an "insider" at the PUC. If HECO continues to have this unfair advantage, then the size and definition of the CHP market, using HECO's definition of CHP, may be determined by HECO. However, the CHP market could reach levels much higher than envisioned by HECO if other players are allowed to compete on a level playing field.

The Companies have historically relied on central generation and transmission lines. The Companies believe that they must control the CHP penetration so that they can continue to maintain this old approach (central generation/transmission lines). This allows the Companies to maintain their excessive profits.

HECO/LOL-IR-8 Ref: LOL Preliminary Statement of Position, page 26: LOL asserts that all future generation be DG. If all future generation is DG, and the regulated electric utility is not permitted to participate in the market, then isn't there the potential that remaining customers could be significantly impacted if DG/CHP systems are not owned/operated by the regulated electric utility?

Answer: Life of the Land objects to this Information Request on the grounds that it is speculative, vague and ambiguous. The structure of the question is very confusing. The current question has an unusual logic: If A and B, then C if B, where

A - All future generation is DG

B - Regulated electric utility not permitted to participate in the market

C - potential that remaining customers could be significantly impacted

One plausible explanation is that the question really is: Doesn't B imply C? That is, if utilities are not permitted to own dg, then installing DG will hurt some of their ratepayers. Without waiving our objection, and assuming that this is the correct interpretation, then Life of the Land responds as follows:

The positive and negative benefits of various DG projects should be analyzed, and can be most effectively analyzed, within a comprehensive Integrated Resource Planning process. This would require the IRP Preferred Plan to have specifics rather than generalities, benchmarks instead of guidelines, substance instead of fluff, and requirements instead of guidelines, and allow for dialogue (2-way communication) rather than a continual stream of power point information briefings being spewed upon the attendees.

In other words, the IRP Preferred Plan would have to be a real plan with specific rules, benchmarks, and goals, including transmission planning, and all other reasonable

alternatives. The Plan should specify how it can be modified, similar to establishing rules on land use variances. Transmission Planning should be an integral part of the process. In addition, the computer simulation model used must be able to handle small dispersed generators. The CA uses ELFIN and the Companies uses PROSCREEN which are limited in this regard. The stumbling blocks to the implementation of DG should not be the unwillingness to use the necessary modeling techniques required to fairly and reasonable evaluate DG and all other reasonable alternatives.

Source: (1) The National Transmission Grid Study (<http://tis.eh.doe.gov/ntgs/reports.html#reports>); (2) National Transmission Grid Study Transmission Planning and the Need for New Capacity (certs.lbl.gov/NTGS/ISSUE_4.PDF); (3) Bonneville Power Administration's Revised Transmission Planning: Region-Wide Perspective (www2.transmission.bpa.gov/PlanProj/bpa_tbl_planning.pdf)

HECO/LOL-IR-9 Ref: LOL Preliminary Statement of Position, page 23: Does LOL acknowledge that until the installation of DG/CHP systems increase and there is an adequate track record of these systems' performance, that it would be premature at this time to assert that DG/CHP can delay and/or replace T&D facilities?

Answer: Life of the Land objects to this Information Request on the grounds that the information sought is a matter of public record and contradicts the assumptions found in the question. Without waiving our objection, Life of the Land responds as follows:

The question contradicts reality. Some DG/CHP has been in use in urban O`ahu since the mid 1980s, and some sugar-related industries have used CHP for much longer.

Technology is being refined constantly, and Hawai`i is a natural petrie dish for energy self-sufficiency projects.

CHP accounts for 9% of US and 10% of European electricity generated. MECO found that DG at the Hana Substation was more cost-effective than installing additional electric lines. The only track record not established is HECO's support for CHP and DG. The western Governments Association found that a future could exist through investments stressing central generation/transmission lines or an alternative future based on distributed generation.

Any evaluation of radically different solutions (transmission, load, central generation, on-site generation, fossil-fuel based, renewable based) to a given problem (capacity, reliability), requires a model that (1) does not presuppose one type of solution to be superior; (2) is capable of evaluating true alternatives; and (3) is reasonable. Analysis should include (1) risk (such as a Capital Asset Pricing Model), (2) balance of trade (import/export ratio), and (3) global warming impacts.

Modern finance theory provides a set of well established risk-based procedures based on the Capital Asset Pricing Model (CAPM), which, though widely accepted for capital budgeting and project valuation, have not for a number of historical reasons been adopted for electricity planning and cost estimation. As a consequence, electricity planners and policymakers do not generally understand the important financial and risk characteristics that differentiate renewables from fossil alternatives. As this article illustrates, standard textbook finance-oriented valuation produces cost estimates for fossil-based generation that are considerably higher than those produced by traditional engineering economics approaches.

Source: Determining the real cost: Why renewable power is more cost-competitive than previously believed by Shimon Awerbuch. Renewable Energy World (March-April 2003). Published by James X James www.jxj.com/magsandj/rew/2003_02/real_cost.html

HECO/LOL-IR-10 Ref: LOL Preliminary Statement of Position, page 25: Does LOL believe that it is prudent for the regulated electric utility to adopt a portfolio type approach to meeting the electric needs of its customers with a combination of DG/CHP resources, central station generation, renewables, demand-side management programs and conservation initiatives?

Answer: LOL believes that regulated utilities, as well as other independent power producers and energy service companies, should contribute to the diversity of Hawai`i's portfolio of energy alternatives. It is prudent for the T&D Company to purchase power from a wide portfolio of alternative sources of electricity. That being said, LOL again asserts that all energy choices must be viewed through the lens of global warming impacts on Hawai`i, as an archipelago. It is in the public interest to mandate energy security by increasing our use of indigenous resources and encouraging competition and customer choice in the field of energy generation. This proposed future contrasts with the current practices of utilities in Hawai`i. HECO, MECO, HELCO and KIUC use oil for virtually all of their self-generated electricity (>99.6%). The state of Hawai`i has a greater reliance on one fuel source for electricity (oil > 70%) than any other state has for any one fuel source. In order to change this over-reliance on one fuel source, the grid owner must not be in the energy generation business. Divestiture solves this problem.

HECO/LOL-IR-11 Ref: LOL Preliminary Statement of Position, page 23: Please explain in greater detail the positive impacts that DG/CHP will have on power quality and reliability.

Answer: DG is dispersed and its facilities are largely located within existing commercial centers, thus the DG infrastructure is less vulnerable to vandalism and terrorism. DG can provide for substation support when the transmission line is down (ex, MECO's backup generators at the Hana substation). CHP can provide 6 nines worth of power reliability which is required by some industries in this new digital and information era. DG can improve power quality and reliability by providing voltage support, reactive power support, power factor correction, network stability, peak power, spinning reserves, peak shaving capability and other services.

HECO/LOL-IR-12 Ref: LOL Preliminary Statement of Position, page 25: a. Please explain in detail what components of HECO's IRP process need to be overhauled. b. Did LOL raise the issue of overhauling the IRP process in any IRP Advisory Group or Technical Committee meetings? If the answer is no, please explain why not.

Answer: LOL participated in HECO's IRP-2 (Supply Side Advisory Group, Demand Side Advisory Group, Integration Advisory Group, Forecasting Advisory Group), intervened in MECO's IRP-2 (PUC DN. 99-0004), and participates in HECO's IRP-3 (Advisory Group, and all subcommittees) and MECO's IRP-3 Advisory Group. In MecO IRP-2, LOL strongly disagreed about whether MECO has complied with the existing IRP Framework (See PUC D&O 20884, re Stipulated Agreement). LOL has objected to numerous actions by HECO in their IRP-3. LOL supports the establishment of rules, benchmarks, and goals, and the inclusion of transmission planning as well as other reasonable alternatives. LOL supports requiring all Capital Expenditures to comport with PUC approved IRP Plans.

If the minutes of the HECO IRP-3 meetings do not accurately reflect LOL and other peoples concerns about the IRP process, then it should be noted that the minutes are written by and approved by the utility without non-HECO advice, comment or consultation. This is another failure in the process. The current IRP Advisory Group is window dressing for continuing business-as-usual.

In an early HECO IRP-3 meeting, a community member asked that copies of Recommendations made by the IRP Advisory Group for the HECO IRP-1 and IRP-2 be made available. After stammering, HECO said it would be too much work to put that together. The public wants to know if their limited time is being used productively or is being wasted watching the company dog and pony show.

Carl Freedman (1) submitted a critique of HECO's IRP-2 to HECO (Comments on potential improvements to HECO's IRP process, by Carl Freedman. Haiku Design & Analysis, dated July 9, 1996. Submitted to Earle Ifuku, HECO Integration Advisory Group, HECO); and (2) co-wrote a paper entitled Hawaii Energy Utility Regulation and Taxation. <http://hawaiienergypolicy.hawaii.edu/pages/reports.html> which includes a section on ways of overhauling the IRP process.

The Gas Company critiqued HECO's IRP-2 (Statement of Position of The Gas Company re to HECO IRP Docket No. 95-0347, dated July 13, 1999. The Gas Company noted: "IRP-97 is deficient in that it omits a critical discussion and analysis of the committed and planned transmission and subtransmission projects. ... IRP-97 is deficient in that it fails to consider all potential categories of resource options that could avoid or defer more expensive capital projects." (This portion of TGC's document was included in Life of the Land's comments to the Kamoku-Pukele RDEIS).

In HECO IRP-3 LOL was invited to pre-IRP meetings. We were told by a HECO Senior Vice-President that the meetings were restricted to HECO invitees only, but that the actual IRP membership would be more expansive, but that turned out not to be true. The IRP Advisory Group consisted of HECO invitees only. Some members of the public showed up to sit in the peanut gallery, but that number dropped off rapidly since the meetings were so scripted and it appeared that the outcomes had been determined in advance. The meetings consist of about 50 people, with the largest representation from the utility. The Advisory Group membership is chosen by HECO. Most meetings are inadequately noticed. The agenda of each meeting is set by HECO. The minutes are written by HECO and approved by HECO. The meetings are boring and consist of little more than a power point show of selected information by HECO. At the meetings, the information is presented in the "Gospel according to HECO" format version and theirs is

the only version that merits adoption. The vast majority of the people at the meeting are representatives of businesses, governmental agencies and IPPs, and they say nothing. In the end, HECO takes all the information behind closed doors, and comes up with a preferred plan. This plan is then filed with the PUC.

Then the process starts all over again. The PUC invites intervenors to join the docket. The parties (the utility, CA and the intervenors) go through a discovery phase (information requests) and write Statements of Position. An attempt is made to reconcile these SOPs. In the case of MECO IRP-2, the Stipulated Agreement described how all meaningful discussion of contentious points would be shifted to the next IRP (MECO IRP-3). Then the utility requested that the PUC accept the Stipulated Agreement as an Information Filing, rather than having the PUC issue an Approval (in whole or in part). So what meaningful role did the IRP Advisory Group play in the MECO IRP-2 process?

In HECO IRP-2, HECO found that CHP would not be feasible or viable for the next 20 years. In HECO IRP-3, HECO has found that Hybrid Renewable Energy Systems (such as Parker Ranch's solar/wind facility) are not commercially available, not feasible and/or not viable on Oahu for the next 20 years. HECO is currently investigating Pumped Storage Hydro (PSH) at two sites on Oahu, but since they have not decided to do it themselves, PSH has also be declared to be not commercially available, not feasible and/or not viable during the next 20 years. To appear on the list of Supply Side Options, it appears to be necessary and sufficient for the utility to approve its inclusion, and it only approves options that they are planning to do. Thus MECO IRP-2 considered PSH, while the next Company IRP, HECO IRP-3, is not considering it.

The CA believes that the 5-year IRP Plan should allow for temporal changes (changing the date of various planned events), but that the substantive part of IRP should be

binding. LOL believes that there should be rules, benchmarks and goals created as part of an IRP Plan, and that there should be a written process for enacting any changes to the current IRP Plan. HECO thinks the IRP is a guideline, and if the guideline is sufficiently vague, then the existing IRP would permit them to do whatever they want to do, and that has borne itself out.

This whole IRP process is a terrible waste of ratepayer money. This waste also extends to other HECO programs. For example, over half of the cost of the solar water heater program is overhead. Yet this portion of the program is considered a sacred cow, so reasonable cost cutting measures are never considered within the IRP DSM Subcommittee.

LOL proposed in 1997 that HECO put out for bid a proposal that an independent management company manage the Solar Water Heater (SWH) program for the utilities. The management Company could receive bonuses for maximizing the penetration level of SWHs. The correct metric for success in the SWH program is installed cost/kWhr of deferred electricity.

Note: Additional information about relative positions taken by the various parties can be found in PUC DN 95-0347 (HECO IRP-2) and 99-0004 (MECO IRP-2). The above interpretation by the CA is found at MECO/CA-FIR-21 and the above interpretation by HECO is found at CA/MECO-FIR-1 of DN 99-0004.

HECO/LOL-IR-13 Ref: LOL Preliminary Statement of Position, pages 20-21: Please provide LOL's assessment of the type and total MW of renewable DG that can be implemented on Oahu over the next 5 years.

Answer: Life of the Land objects to this Information Request on the grounds that it is vague, ambiguous and unduly burdensome. In addition, Life of the Land objects on the ground that information sought is a matter of public record and thus available to the requesting party through alternative means. Without waiving that objection, Life of the Land responds as follows:

Can is the operative word. It requires the PUC to level the playing field. The definition of renewable energy is also critical. Under SB 2474 (2004), the state legislature created a definition of renewables that would allow the utility to be 20% renewable by 2010 while terminating all wind and photovoltaic projects in the state. Utilizing Life of the Land's definition of real renewables, the renewable energy penetration level on Oahu is limited only by what is allowed by HECO and approved by the PUC. There is no technology or feasibility limit. KPMG (HEI's Auditor) found that photovoltaics can supply 75 percent of the Netherlands electrical needs (29% on rooftops). Biomass, Wave, Wind, OTEC and other renewables, combined with DSM (SWAC, SWH; analysis by Datta) can account for more than 100% of Oahu's needs by 2010. In fact, wave power alone could provide all of Hawai'i's energy needs. In truth, we have an abundant variety of feasible options, but a truculent utility has stopped innovation in Hawai'i. A transformation of this magnitude would create a huge one-time investment followed by continued economic prosperity as money circulates within Hawai'i instead of being exported for oil.

Each dollar that stays within Hawai`i ripples across the state. Each dollar that is exported bleeds out of our economy. Transforming Hawai`i from an energy importer to an energy exporter would strengthen the economy in numerous ways.

HECO/LOL-IR-14 Ref: LOL Preliminary Statement of Position, page 24: Please explain how DG that is fueled by fossil fuels can reduce the use of fossil fuel by 100%.

Answer: DG that is fueled by fossil fuels can not eliminate the use of fossil fuels. DG can consist of all renewable energy systems, all fossil fuel systems, or hybrid systems. Utilizing any of them will decrease the use of fossil fuels, for a given level of load. Hawai`i must consider every energy project within the framework of sustainability and good global citizenship. Working within this framework, the prioritization for energy generation will naturally shift with the use of clean and indigenous resources becoming the preferred method of energy generation.

HECO/LOL-IR-15 Ref: LOL Preliminary Statement of Position, page 24: Does LOL believe that there are financial and contractual risks and uncertainties associated with entering into long term contracts with IPPs?

Answer: There are financial and contractual risks and uncertainties associated with everything to do with the future. But long-term contracts with renewable energy producers secure costs and facilitates better planning. Putting all or most of Hawai`i's future into one barrel is unhealthy. The volatility of the oil market has put Hawai`i at great risk. No other state in the nation takes such energy risks.

HECO/LOL-IR-16 Ref: LOL Preliminary Statement of Position, page 24: a. Is it the position of LOL that tearing down the Honolulu Power Plant and replacing it with on-site generation would be an appropriate use of "valuable harbor front lands"? b. Please explain how DG located closer to population centers is more "aesthetically pleasing" than central station generation located in an industrial zoned area. c. Please explain how DG is "earth friendly".

Answer: (a) Creating an ocean park (boardwalk) from Waikiki to Aloha Tower is feasible, and would be popular. The park would front the Kakaako Medical Center. The Foreign Trade Zone would have to be moved to Kalaeloa. Other cities have found harbor/ocean parks are residential and tourist meccas. Some new commercial activities and parking structures could strengthen existing commercial activities (such as Aloha Tower). The issues that would need to be addressed are soil clean-up at HPP and the installation of Renewable Energy DG. LOL would only support DG and/or CHP/DG solutions. We would oppose building a large generator, either downtown or in Leeward Oahu.

HECO/LOL-IR-16 b. Please explain how DG located closer to population centers is more "aesthetically pleasing" than central station generation located in an industrial zoned area.

(b) A central generation station, and large DG (such as HPP) are eyesores. They occupy valuable space, require single use for the land, are visible for miles, and are almost always accompanied by large ugly overhead transmission lines and substations creating visual blight. DG is often located inside buildings or on roofs, and are part of a multi-use structure (for example, commercial activities and electrical generation);

HECO/LOL-IR-16 c. Please explain how DG is "earth friendly".

(c) All human activities create environmental footprints. All human activity can be measured by its environmental footprint (air pollution, acid rain, global warming, water

pollution, land use, loss of habitat, loss of biodiversity; rise in alien species, cultural impacts, environmental justice). The energy industry (extraction, transport, generation) leaves a larger environmental footprint than any other human activity in human history. A true Externalities Study would evaluate the relative impacts to Hawai`i and beyond for various scenarios. The general size of the footprint associated with RE DG is smaller than DG/CHP which, in turn, is generally smaller than CG. An environmental footprint that is relatively small could be considered to be Earth-Friendly while a large environmental footprint could destroy life on earth.

HECO/LOL-IR-17 Ref: LOL Preliminary Statement of Position, page 26: HAR 6-74-7 applies to the criteria for and manner of becoming a qualifying small power production facility and a qualifying cogeneration facility. If the owner of a CHP facility does not seek the benefits of being a qualifying facility, what are the limitations on ownership?

Answer: LOL does not oppose the ownership of CHP by the Companies, after divestiture. In pointing out the section of HAR, we are merely pointing out that the existing HAR precludes the utilities from owning CHP. Any revision of this section should, must, create a level playing field. We believe that divestiture creates more fairness than firewalls. As for HECO's assertion that this phrase appears in the section on QFs, we note that sections of law and administrative rules are often misplaced. For example, SB 2474 (2004) places DLNR and DBEDT functions in the HRS Chapter on the PUC. The literal reading of the rule states that utilities cannot own CHP.

HECO/LOL-IR-18 Ref: LOL Preliminary Statement of Position, page 26: Since HAR 6-74-7 prohibits utility ownership of a qualifying facility, how would the qualifying facility status impact other parties who own and operate a CHP system and file for qualifying facility status?

Answer: There should be no difference between the Companies generation division and the IPP's generation division, with divestiture, this issue becomes moot. See LOL response to HECO/LOL-IR-17.

CA-SOP-IR-102 Ref: Life of the Land's Preliminary SOP, page 3. What does Life of the Land consider to be an indigenous fuel to be in the State of Hawaii? Provide copies of all documentation supporting LOL's response.

Answer: Webster's Dictionary defines indigenous as native. An indigenous fuel is a fuel which naturally occurs in Hawai`i, that is, it does not have to be imported into Hawai`i. Increasing the use of indigenous fuel is the same thing as decreasing the use of imported fuel.

Constitutional Convention: The 1978 Constitutional Convention's Committee on Environment, Agriculture, Conservation and Land's Standing Committee Report ("SCR") No. 77 proposed revision of Article XI, Section 1 of the Hawaii State Constitution. The people of Hawai`i voted in favor of this amendment.

Committee Report: "Your Committee on Environment, Agriculture, Conservation and Land ... begs leave to report as follows ... The consensus of your Committee with regard to self-sufficiency was to constitutionally recognize the growing concern and awareness of Hawai`i as being overly dependent on outside sources for, among other resources, food and energy. Your Committee spent much time considering the need for a separate section on an energy policy for the State. However, it was concluded that the promotion of energy conservation, the development of clean, renewable sources of energy, and the achievement of increased energy self-sufficiency would be adequately covered by the provisions of this section."

Constitutional Amendment: "For the benefit of present and future generations, the State and its political subdivisions shall conserve and protect Hawaii's natural beauty and all natural resources, including land, ... and shall promote the development and

utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State.”

Analysis: The history of a constitutional amendment is important in clarifying the meaning of a passage. “ ... a constitutional provision must be construed ... in the light of the circumstances under which it was adopted and the history which preceded it [.] Carter v. Gear, 16 Haw. 242, 244 (1904), affirmed, 197 U.S. 348, 255 S.Ct. 491, 49 L.Ed. 787 (1905).

Hawaii Revised Statutes (Section 196-1): “The State of Hawaii, with its total dependence for energy on imported fossil fuel, is particularly vulnerable to dislocations in the global energy market. This is an anomalous situation, as there are few places in the world so generously endowed with natural energy: geothermal, solar radiation, ocean temperature differential, wind, waves, and currents--all potential non-polluting power sources.”

Indigenous Fuel: Fuel which is found in Hawai`i. Indigenous fuels include power from wind, sun, waves, geothermal, hydro, biomass, ocean thermal, dedicated biomass, etc. It excludes imported fuels: oil, coal, fossil-fuel based heat recovery, fossil-fuel based hydrogen (“black hydrogen”), synthetic natural gas, LNG, garbage-to-energy (most waste is from imports, including imports made from fossil fuels such as plastic).

As noted in LOL’s SOP, investing in native resources will lead to a growth in employment, income and GDP. Furthermore, it will increase local control over our future by decreasing the balance of trade deficit and produce energy security.

CA-SOP-IR-103 Ref: Life of the Land's Preliminary SOP, page 18, Virtual Power Plant

a. What does LOL propose to be the number of hours of operation, etc., associated with a Virtual Power Plant? b. What is the capacity of the Virtual Power Plant? Provide copies of all documentation relied upon.

Answer: A Virtual Power Plant (VPP) consists of a large number of backup and emergency generators. Each time the VPP is activated, a subset of generators within the VPP could be activated, depending on the nature of the need and on the individual characteristics of the generators. The number of hours that any given back-up generator can operate depends upon the characteristics of the generator, Department of Health regulations, and county codes.

Life of the Land does not have a reasonable estimate of the capacity of backup generators. Nor do we have an understanding of the current state and county codes that regulate backup generators. We hope that this docket allows for the opportunity to determine these answers. We have reviewed a number of publicly available source materials on existing back-up generators. Excerpts are provided below.

All of the documents elaborated in the next sections are fully available and are in the public domain. The Kamoku-Pukele Revised Final EIS is available in most libraries. DLNR has a full set and the PUC has the first few volumes (PUC DN 03-0417). The BLNR contested case hearing transcript is available for review in the Land Division, DLNR 1151 Punchbowl. The newspaper articles are on the web. HB 1652, 2001 is available on the State Legislature Webpage. The comments by the Gas Company are available either through the relevant PUC docket or attached to Life of the Land's comments for the Kamoku-Pukele EIS. Maui County's Virtual Power Plant concept and Iniki Plan are summarized in the MECO IRP-2 Plan (PUC DN 99-0004) submitted to the PUC on May 31, 2000.

(1) Kamoku-Pukele Revised final EIS, page 3-61: "Diesel generators installed by customers to meet their own needs to comply with code requirements or address safety concerns provide some back-up generation in the [Kamoku] service area. The load served by these emergency generators is estimated between 39 to 52 MW." The EIS is available in public libraries.

(2) BLNR CDUA-2801 Contested Case Hearing (Witness: Chris Shirai, HECO)

page 997

1 HEARINGS OFFICER McCONNELL: We're back on the record. For the record, everyone is here. Your next witness, Mr. Kudo.

MR. KUDO: Mr. Chris Shirai.

CHRIS SHIRAI, called as a witness, having been first duly sworn to tell the truth, the whole truth, and nothing but the truth, was examined and testified as follows:

HEARINGS OFFICER McCONNELL: Can you state your name for the record.

THE WITNESS: Chris Shirai.

DIRECT EXAMINATION

BY MR. KUDO:

Q. Mr. Shirai, who are you employed by?

A. I'm employed by Hawaiian Electric.

Q. And what is your position with Hawaiian Electric?

A. My position is vice president of energy delivery.

Q. And what is your relationship to this particular project?

A. I'm the executive sponsor of this project.

1096

HEARINGS OFFICER McCONNELL: Mr. Curtis?

CROSS-EXAMINATION

BY MR. CURTIS:

1113

Q. Do police stations, hospitals and other facilities outside of Waikiki in the Pukele service area also have backup generators?

A. I know that the hospitals have. I'm not sure about police stations. I would think they would have it for maybe computer equipment.

Q. So perhaps 40 percent of the load could be handled by things that are already on it; 20 percent shifted out, 20 percent absorbed by backup generators?

A. Did you say 96 megawatts of --

Q. I said 69 megawatts of name plate, which you, in the EIS, translate to be 39 to 52 megawatts of available energy in Waikiki, and additional backup generators that exist in hospitals and other facilities around the Pukele service area that should be able to displace somewhere around 20 percent of the load if the load at Pukele goes down. Is that correct?

A. Theoretically that's correct.

(3) BLNR CDUA-2801 Contested Case Hearing (Witness: Paul Luersen, CH2MHill)

194

MR. KUDO: Call to the stand Paul Luersen.

MR. McCONNELL: Would you raise your right hand, please? Do you solemnly swear or affirm the testimony you give will be the truth, the whole truth and nothing but the truth?

THE WITNESS: I do.

MR. McCONNELL: State your name, please.

THE WITNESS: Paul V, as in Vincent, Luersen, L-U-E-R-S-E-N.

DIRECT EXAMINATION BY MR. KUDO:

Q. Would you give us your address for the record, please?

A. 1585 Kapiolani Boulevard, Suite 1420, 96814.

Q. And what is your profession?

A. I am an environmental planner and project manager.

Q. And where are you employed?

A. I am employed with CH2M Hill.

Q. What is your position with them?

A. I am a vice president and the area office manager for Honolulu.

Q. What are your duties and responsibilities at CH2M Hill?

195

A. I oversee work done in the Honolulu office. I manage the staff. I help to obtain work for the staff, and I also do projects.

Q. As part of your duties and responsibilities at CH2M Hill, what services do you --

A. Prepare EIS's and manage projects, various types of projects, such as environmental investigations and provide technical support for permits, such as transmission lines or waste water systems.

Q. And how many years have you been involved in this type of work?

A. I have been involved with environmental planning for 25 years.

290

MR. McCONNELL: Mr. Curtis.

CROSS-EXAMINATION BY MR. CURTIS:

Q. Do you know if hotels have backup generators within Waikiki?

A. Well, according to HECO, yes, some of the hotels have internal combustion engines, backup generators.

(4) Honolulu Star-Bulletin: Airport Back-up Generators: East Powers Up: Electricity slowly returns after the nation's worst blackout affects 50 million people over much of the Northeast. The state Department of Transportation has contingency plans in the event of a power failure, said spokesman Scott Ishikawa. Hawaii airports are equipped with backup generators, which would power security checkpoints and allow planes to take off and land, Ishikawa said. Honolulu Star-Bulletin. Friday, August 15, 2003
<http://starbulletin.com/2003/08/15/news/story1.html>

(5) Failed State Legislation (HB 1652, 2001): Report Title: Energy; Distributed Generation Owners General Partnerships Established. Description: Authorizes the public utilities commission to establish distributed generation owners general partnerships. Hotels and commercial establishments in Waikiki have 50 MW of backup generators. Residential and business customers have some photovoltaic (solar-electric) systems. MECO owns back-up generators located at Hana, Maui, and HELCO owns a grid-connected photovoltaic generator on the Kailua-Kona Gymnasium. HECO, MECO, and HELCO have sun power for schools photovoltaic systems on schools, although the total installed on all school roofs totals less than 0.03 MW. The military also employs distributed generators.
www.capitol.hawaii.gov/session2001/bills/HB1652_.htm

(6) Public Utilities Commission (The Gas Company): "In TGC's motion to intervene, TGC alleges, among other things, that it is a fuel supplier to certain forms of distributed generation, including emergency back up generators and various engines used to

generate electricity and heat.” PUC Order 20832. PUC Docket 03-0371. Instituting a Proceeding to Investigate Distributed Generation in Hawaii. Filed March 3, 2004

(7) Hickam Air Force Base: “One of the problems facing island military bases, like Hickam, is that they are dependent on civilian and other military communities for water, sewage and electrical needs. With a population of 8,000 residents and an additional 5,000 civilian workers, Hickam can be considered a tiny community, which has problems that would match those of Honolulu should the millennium bug become a problem. But Lorenz, chairman of Hickam’s Y2K compliance efforts, said the Air Force recently ran tests to determine if it had enough generators and if they were strategically located to provide adequate power if Hawaiian Electric failed on Dec. 31. ‘Regardless if Hawaiian Electric doesn’t work then,’ Lorenz said, ‘we should have enough backup generators.’” Pacific Fleet winning battle against time: A carrier and other ships perform key systems tests at sea in advance of Y2K By Gregg K. Kakesako Honolulu Star-Bulletin <http://starbulletin.com/1999/07/12/news/story5.html>

(8) University of Hawaii: “The director of student housing, Darryl Zehner, said the most important action for residents at UH is to ‘Follow directions of the staff.’ Zehner said the staff has two-way radios in case of a communications breakdown. He said the resident halls also have back up generators and the cafeteria has adequate amounts of food.” Eye of the storm: Prepare now: Hawai’i due for large-scale hurricane. By Beth Fukamoto Ka Leo Contributing Writer. June 20, 2002. www.kaleo.org/vnews/display.v/ART/2002/06/20/3d11a21f267fd

CA-SOP-IR-104 Ref: Life of the Land's Preliminary SOP, page 22, paragraph 1, lines 2 through 5 a. Please identify the other solutions that were considered as reasonable by LOL. b. Would an unregulated IPP that purchases and operates generation that was previously owned by a regulated utility be an economical solution for customers?

Answer: (a) LOL's SOP states: "Some have suggested firewalls between different functions within the utility. Utility firewalls have not worked in Hawai'i. The only reasonable solution is divestiture. Utilities must separate into two companies via a stock split or the utilities must divest themselves of generation." Life of the Land raised this issue in our Final Position Statement, dated October 15, 1998 in PUC Docket 96-0493 Instituting a Proceeding on Electric Competition, Including an Investigation of the Electric Utility Infrastructure in the State of Hawaii. We do not believe that there are other reasonable alternatives.

(b) In a fully unregulated marketplace, companies are guaranteed their existence and a reasonable profit. As the market becomes less regulated, companies must sell goods and services in a more competitive way. Competition has winners and losers. Whether a given IPP (for example, an owner of generation previously owned by a regulated utility), survives and/or prospers will be determined by their future actions in the marketplace. LOL's use of the term deregulation is perhaps better denoted as restructuring. That is, regulation would still occur, but it would be the regulation of companies competing fairly on a level playing field in the marketplace. It is in the economic interest of consumers that there is a mix of companies, a mix of products, and a mix of fuels, and not whether a particular company exists. Having a portfolio of suppliers selling a portfolio of electricity created by different fuels, will be in the economic interest of consumers.

CA-SOP-IR-105 Ref: Life of the Land's Preliminary SOP, page 22, paragraph 2, line 4
If generation is no longer owned by the utility, how would Net Metering arrangements continue to be feasible? Explain.

Answer: For all practical purposes, Net Metering is current done between a customer and the grid division of a utility. This would continue after divestiture, where the customer would deal with the T&D Company.

CA-SOP-IR-106 Ref: Life of the Land's Preliminary SOP, page 26, number 14 Please explain why all new generation should be DG?

Answer: A central generation station, and large DG (such as HPP) are eyesores. They occupy valuable space, require single use for the land, are visible for miles, and are almost always accompanied by large ugly overhead transmission lines and substations. DG is often located inside or on roofs, and are part of a multi-use structure (for example, commercial activities and electrical generation).

All human activities create environmental footprints. All human activity can be measured by its environmental footprint (air pollution, acid rain, global warming, water pollution, land use, loss of habitat, loss of biodiversity; rise in alien species, cultural impacts, environmental justice). The energy industry (extraction, transportation, generation) leaves a larger environmental footprint than any other human activity in human history. A true Externalities Study, which defines "externalities" up front, would evaluate the relative impacts to Hawai`i and beyond for various scenarios. The general size of the footprint associated with RE DG is smaller than DG/CHP which, in turn, is generally smaller than CG. An environmental footprint that is relatively small could be considered to be Earth-Friendly while a large environmental footprint could destroy life on earth.

Dated: June 16, 2004



Henry Q Curtis
Executive Director

Certificate of Service

I hereby certify that I have this date served a copy of the foregoing Information Requests by Life of the Land, Docket Number 03-0371, upon the following parties. Life of the Land hand-delivered the Original plus 10 copies to the PUC; 3 copies to the Consumer Advocate. Life of the Land mailed 2 copies to Alan M. Oshima, Esq. (KIUC); and 1 copy to each of the following parties: Thomas W. Williams, Jr. Esq. (HECO); William Bonnett (HECO); Patsy H. Nanbu (HECO); Alton Miyamoto (KIUC); George T. Aoki, Esq. (TGC); Steven P. Golden (TGC); Gail S. Gilman (TGC); Brian Moto (Maui); Cindy Y. Young (Maui); Calvin K. Kobayashi (Maui); Warren S. Bollmeier II (HREA); John Crouch (HREA); Rick Reed (HREA); Sandra-Ann Y. H. Wong, Esq. (HESS); Christopher S. Colman (HESS); Michael de'Marci (HESS); Jim Reisch (PMI); Lani D. H. Nakazawa, Esq. (Kauai); Glenn Sato (Kauai); John W. K. Chang, Esq. (DAG); Maurice H. Kaya, P.E. (DBEDT); Steven Alber (DBEDT).

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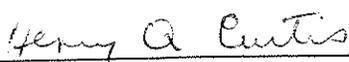
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Dated: June 16, 2004



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