

LOL-HECO-IR-62

Ref: HECO-200.

Question(s):

- a. Please enclose copies of the witnesses public pronouncements re live working.
- b. Please include a copy of the witnesses letter dated January 3, 2001 to Ms. Kai Andrade, President, Engineers & Architects of Hawaii re: Kamoku-Pukele 138-kV Line Alternatives.

HECO Response:

- a. HECO objects to the request to provide copies of “the witnesses [sic] public pronouncements re live working”. The request is vague and ambiguous as it does not identify what the term “public pronouncements” means. HECO also objects to the request as unduly burdensome and onerous as the witness has made numerous presentations or given testimonies on the project between 1993 to the present (over a 100) in various public forums. Without waiving any objections, HECO provides the following response.

While the written materials distributed by the witness on the project between 1993 to the present in various public forums did not include the subject of live working, the topic of live working was raised and discussed. For example, in response to a question raised from the audience, the subject of live working was discussed at the EOTP public input meetings which were held in June and July 2004, although the witness is unable to recall the details of the discussion. Please see the response to subpart b.

- b. A copy of the January 3, 2001 letter to Ms. Kai Andrade is attached as pages 2-6.

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001



January 3, 2001

Ms. Kai Andrade
President
Engineers & Architects of Hawaii
P.O. Box 4353
Honolulu, HI 96812

Subject: Kamoku-Pukele 138-kV Line Alternatives
Life of the Land Presentation
December 8, 2000

Dear Ms. Andrade:

Thank you for allotting two meetings, December 1 and 8, 2000, for Hawaiian Electric Company's (HECO) Kamoku-Pukele project. Given the sensitivities surrounding this project, I feel obligated to clarify and correct some inaccurate and misinformed statements made by Mr. Henry Curtis of Life of the Land on December 8, 2000 to your group.

1970's Project and Kamoku-Pukele Project

Mr. Curtis erroneously states that HECO's project in the 1970's and the current Kamoku-Pukele project are one and the same. That is simply not true. The objective of the 1970's Halawa-Kamoku 138-kV transmission line project was to provide electrical capacity to serve **new** loads in and around Waikiki. During the 1960's and early 1970's, major commercial and residential development was occurring in and around Waikiki. At the time, the Pukele Substation was providing all of the power for the Waikiki area and its neighboring communities. However, the Pukele Substation was at near capacity and would not be able to serve all of the forecasted **new** loads. Thus, a need for a new substation (Kamoku) located proximate to the high growth load center was identified and two new 138-kV transmission lines from HECO's Halawa Substation, located in Halawa Valley, would be needed to power it. The preferred route for these two new transmission lines was along the leeward side of the Koolau mountain range, traversing Moanalua, Kalihi, Nuuanu and Manoa valleys then down from the mountains into and through Palolo Valley to the Kamoku Substation. As the planning for this project was underway and approvals for its construction were being secured, it became evident that the new loads that were initially forecasted were not materializing. This drop-off in forecasted new loads was driven by a general downturn and flattening of Hawaii's economy during the mid-1970's through the mid-1980's. Thus, this project was placed on hold in the early 1980's pending a need for the project materializing again.

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Then during the mid-1980's to the early 1990's, the Hawaii economy picked up again. However, as opposed to the concentrated Waikiki area growth anticipated in the 1970's, rapid growth in **new** load demands were projected in and around the Kakaako and Ala Moana areas as developers rushed to respond to the State's vision to recreate the Kakaako and waterfront areas of Honolulu. Thus, other substation projects and the transmission lines needed to serve them were initiated to accommodate this **new** load growth.

Until July 13, 1983, the island of Oahu had not experienced a complete blackout since 1943. The July 13, 1983 blackout precipitated a comprehensive investigation that resulted in a review of HECO's transmission system **reliability** by Stone & Webster Management Consultants, Inc. (S&W). One of the recommendations from S&W was to build a third 138-kV transmission line to the Pukele Substation for **reliability** purposes. Thus, the proposed Kamoku-Pukele project implements S&W's recommendation, as confirmed by subsequent planning and engineering studies over the years since then, to improve the transmission system **reliability** and service to customers in the existing Pukele service area.

To the casual observer and Mr. Curtis, the 1970's project and the current project may appear to be one and the same. But, from an engineering and operating perspective, the projects are totally different and independent. A simple comparison of the electrical single-line diagrams for the Halawa-Kamoku project proposed in the 1970's and the present day Kamoku-Pukele project further prove this point.

Hawaiian Electric Industries (HEI) Diversification

Mr. Curtis' unfounded suggestion that Hawaiian Electric Industries (HEI) diversification is the underlying cause for three blackouts on Oahu is simply without merit. Mr. Curtis failed to mention that a 1995 study done by Dennis Thomas and Associates, at the request of the Public Utilities Commission, concluded:

"Public suspicion that diversification was a contributing factor to reliability problems would probably resurface, even though, to date, we cannot declare that diversification has hurt the quality of HECO's service."

Ultimately, the construction of the Kamoku-Pukele project will meet HECO's objective to improve the reliability of its transmission system. HECO's resolve to complete this project is and always has been irrespective of the diversified nature of its parent holding company, HEI.

Live-Line Maintenance

Mr. Curtis implies that HECO does not perform live-line maintenance. This is not true. HECO has for a number of years performed live-line maintenance where appropriate on our overhead facilities. However, Mr. Curtis fails to note that there are limitations to



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performing live-line maintenance safely. One major limitation is that facilities need to be initially designed and constructed to be "live-line maintainable." A majority of HECO's transmission system was designed and installed before live-line maintenance was adopted as an industry standard. Thus, a majority of the transmission facilities cannot safely be live-line maintained. Another limitation is that ideal weather conditions are needed to safely perform such work. When applied to transmission lines traversing Koolau ridgelines and other mountainous areas subject to rapid and often unpredictable changes in weather, application of live-line maintenance techniques is limited. And finally, even where the facilities are designed and constructed for live-line maintenance and ideal weather conditions exist, not all maintenance work can be performed with the facilities energized. De-energizing a line is simply a must before certain maintenance work can be practically and safely performed.

Generation Issues

Mr. Curtis' convolutes the issue of improving transmission system reliability by voicing concerns about oil use. Oil use is an electric generation issue, not a transmission system reliability issue. Transmission lines are used to move bulk power from generating facilities to major load centers regardless of how the electricity is generated. To illustrate this point, if all of Oahu's oil burning generation facilities were replaced with renewable energy sources, the reliability concerns with the transmission system would remain and the most efficient means to resolve those concerns would still be the construction of a transmission line. More specifically, Pukele Substation would still only have two transmission lines bringing power to it leaving it vulnerable whenever it is necessary to de-energize either of the two existing lines for required maintenance.

Distributed Generation

Mr. Curtis suggested that Distributed Generation (DG) is a viable alternative to the Kamoku-Pukele project. As I mentioned in my presentation to your group on December 1, 2000, whenever one of the two transmission lines currently bringing power to Pukele is out of service for required maintenance, should the second line go out for any reason, the entire Pukele service area will experience a blackout. The proposed Kamoku-Pukele transmission line will prevent such a blackout that otherwise would leave 18 percent of the electrical load in Honolulu's urban core, including Waikiki, without power. Thus, any viable alternative to the Kamoku-Pukele transmission line must be able to instantaneously pick up the entire electrical load of the Pukele Substation (which is approximately 200 megawatts) in order to match the benefits of the proposed transmission line.

Unfortunately, Mr. Curtis fails to explain how his vision of DG can match these benefits in a technically feasible and cost effective manner. It appears Mr. Curtis refuses even to acknowledge that viable alternatives are only those that effectively meet the very need for the project in the first place. Namely, the need for improved reliability for customers in the Pukele service area.



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As part of the Revised Final Environmental Impact Statement for the project, HECO nevertheless evaluated a variety of scenarios to implement DG as a comparable alternative to the Kamoku-Pukele project. For analysis purposes, it was assumed that at least 39 megawatts (MW) of emergency generating capacity already existed in the Pukele Substation service area. Thus, a potentially viable DG scenario would have to somehow provide 161 MW (200 MW minus 39 MW) of emergency capacity within the service area. The most likely scenarios based on available technologies included the installation of 161 MW of all-internal combustion engines (ICEs), all-microturbines, all-fuel cells, or a combination of ICEs, microturbines, and fuel cells. The least cost DG scenario was the installation of all-ICEs, which had estimated costs ranging from \$81 million to \$161 million. The most expensive DG scenario was the installation of all-fuel cells, which had estimated capital installed costs ranging from \$161 million to \$805 million. The estimated capital installed costs for the all-microturbines scenario ranged from \$145 million to \$258 million. The combination of ICEs, microturbines and fuel cells ranged from \$122 million to \$343 million.

In addition to the high costs associated with DG, additional technical and environmental issues cause it to be an impractical alternative, contrary to Mr. Curtis' assertions. These issues include fuel supply, siting, operations and maintenance, electrical interconnection, permitting, other costs, and load diversity.

Given the high capital cost (\$81 million to \$805 million) and the numerous technical uncertainties, DG is not a practical alternative to the Kamoku-Pukele line (\$31 million). This is not to say that DG in itself should be discounted because there are some practical applications for it and with innovation and time, it will have a place in the electric industry. However, as an alternative to a major transmission line, DG is not feasible in the time frame necessary to address the present reliability issues facing customers served by the Pukele Substation.

Public Opinion

Mr. Curtis noted that Neighborhood Boards from Hawaii Kai to Kalihi have expressed opposition to this line. This is not true. Out of the sixteen Neighborhood Boards from Hawaii Kai to Kalihi, only about half have expressed out right opposition to the line. The remaining boards have remained neutral and two boards actually expressed conditional support for the need of the project. Mr. Curtis failed to mention that the Public Utilities Commission, Consumer Advocate and a Federal study have noted in the past that constructing a third transmission line to the Pukele Substation would indeed improve the reliability of the transmission system.

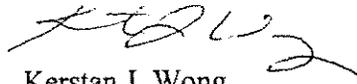


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Thank you for giving me the opportunity to speak to your group and to clarify some of Life of the Land's statements about the Kamoku-Pukele project.

If you have any questions, please feel free to call me at 543-7059.

Sincerely,



Kerstan J. Wong
Project Manager

cc: Victor Russell (fax: 942-0771)
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