

ORIGINAL

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Application of) PUC Docket 03-0417
)
HAWAIIAN ELECTRIC COMPANY, INC.)
)
For approval to commit funds in excess of)
\$500,000 for Item Y48500, East Oahu)
Transmission Project)
_____)

PUBLIC UTILITIES
COMMISSION

2004 JAN -7 P 4: 12

FILED

MĀLAMA O MĀNOA'S MOTION TO INTERVENE

EXHIBIT 1

CERTIFICATE OF SERVICE

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project but which unanimously rejected HECO's preferred alternative. Ultimately, Malama intervened in the contested case proceeding before the Board of Land and Natural Resources ("BLNR") on HECO's conservation district use permit application; along with the other intervenors, Malama prevailed and HECO's application was rejected.

Although Malama's initial concerns with the Kamoku-Pukele 138 kV transmission line focused on the aesthetic and cultural impacts of the transmission line, the more it learned about the East Oahu Transmission Project, the more convinced it became that there simply was no need for it. The Hearings Officer, Retired Circuit Court Judge John McConnell, after hearing seven days of testimony, agreed. As the BLNR's decision rejecting HECO's application for the permit noted, "[b]ased on the presentations by the parties in the contested case, the Hearing Officer recommended that the public benefit for this project has been substantially overstated by HECO and is speculative, based on his evaluation of the evidence and testimony." Findings of Fact, Conclusions of Law, Decision and Order in DLNR File No. OA-2801 (attached hereto as Exhibit 1) at 63, n. 12.

HECO's current proposal, the Kamoku 46 kV Underground Alternative – Expanded, now relies on virtually the same justifications as HECO put forth for the Kamoku-Pukele line and seeks to fix the same "problems." By its December 18, 2003, application, HECO seeks this Commission's approval to spend in excess of \$500,000 on the East Oahu Transmission Project ("EOTP"). (HECO estimates the amount of the project at more than \$55 million, which it will undoubtedly attempt to shift to the ratepayers.) HECO contends that the EOTP is needed to prevent: (1) overload of the third 138 kV line transporting power to the Koolau/Pukele Service Area when the one line is out of service for maintenance and another fails for any reason (which

HECO asserts could occur beginning in 2005)¹; (2) overload of the third 138 kV line serving the Downtown area when one line is out of service for maintenance and another fails for any reason (which HECO does not predict could occur until 2023); (3) power outages in the Pukele service area if one of the 138 kV lines serving the Pukele substation is out of service for maintenance and the other fails for any reason; and (4) power outages at the Archer, Kewalo and Kamoku Substations if both of the underground 138 kV lines serving the Archer Substation failed simultaneously. (HECO Application, pp. 13-21.)

None of these multiple-contingency failures has ever occurred and, although HECO has the ability to calculate the probability of each of these failures, it has steadfastly refused to do so. HECO's representative testified in the contested case hearing before the BLNR that the impact of an outage in the Pukele service area would be so great that HECO did not need to consider the probability of such an outage occurring; according to HECO, even if that probability were once in one hundred years, any risk of an outage was unacceptable and justified the project.

Even though the Board of Land and Natural Resources rejected HECO's application for the conservation district use permit and found that the "need" for the project was overstated, HECO resolutely decided to continue on with its plans for the EOTP. It embarked on a "community dialog" and reconvened the CAC. Recognizing that Malama's interests would be directly affected, HECO invited Malama, as well as other community groups, neighborhood

¹ In support of its conservation district use application, HECO made similar dire predictions, which were all off the mark. For instance, in its July 1991 East Oahu 138 kV Requirements Study, updated in August 1992, HECO predicted that "[i]n 1994, if one line feeding the Koolau/Pukele area is out for maintenance, and another fails, the remaining line will become overloaded." (At 3, emphasis added.) In a 1994 study, HECO predicted that conditions that could result in the Koolau overload scenario would occur in 1998, and the 1998 East Oahu Transmission Requirements Update Study moved that date out to 2002, explaining "[t]he earlier 1992 and 1994 studies projected the overload problem would occur in 1994 and 1998 respectively. The delay of the problem is a result of the slower forecasted load growth." (At 5.) Thus, the so-called "Koolau overload" problem has been delayed 11 years with no action at all on HECO's part other than revising its unrealistic growth projections.

boards, and commercial interests, to participate. The predominant theme expressed by this community input and the CAC, as the report of HECO's consultant indicates, was that the project was not needed and/or that HECO had not shown adequate justification for the project. (HECO's Exhibit 11.)

Despite this community reaction, HECO has decided to move forward with its project and has filed the instant application. Malama now requests permission to intervene in this matter as a party.

Communications with regard to Malama's participation in this Docket should be addressed to:

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I. The Nature and Extent of Malama's Statutory or Other Right to Participate in the Hearing

The Hawai'i Supreme Court has directed state boards and agencies to adopt an expansive approach towards participation in agency hearings. See e.g., Life of the Land v. West Beach Development Corp., 63 Haw. 529, 532 (1981) (explaining that the legislative policy underlying the hearing process was to "encourage[] broad participation with intervention to be freely granted"). The Court has expressly acknowledged the importance of environmental

interests, and recognized that threatened injury to such interests confers standing on those living in the vicinity. See e.g., Mahuiki v. Planning Com'n., 65 Haw. 506, 654 P.2d 874, 880 (1982); Life of the Land, Inc. v. Land Use Com'n., 61 Haw. 3, 9, 594 P.2d 1079, 1082 (1979).

II. The Nature and Extent of Malama's Property, Financial, and Other Interest in the Pending Matter

Malama and its members have devoted substantial resources, financial and otherwise, to oppose HECO's efforts to run its transmission lines through conservation lands; in the process, Malama and its members have formed the conviction that the EOTP is not only unnecessary but will actually retard the development of a rational energy policy for the State of Hawai'i. Moreover, although Malama has no property interest in the path of the route now proposed by HECO, Malama is very concerned with the possibility that HECO will, as it has in the past, seek to change the scope of the project in the course of these proceedings in such a way as to directly impinge upon the property, cultural and aesthetic interests of Malama and its members. This in fact occurred during BLNR's contested case hearing before Judge McConnell when HECO, with no notice to the other parties, at the eleventh hour, attempted to introduce an entirely new alignment for its transmission line. Although no environmental or visual studies had been done for the new alignment, HECO asserted that the new proposal had no impacts on the conservation district and asked the BLNR to consider approving that alignment. The BLNR wisely refused (see Exhibit 1 at 66-67). Malama is very concerned that such an alignment might resurface, particularly if the Commission denied HECO's request to place the proposed 46 kV lines underground. In that event, of course, Malama and its members' property, cultural and aesthetic interests will be directly affected.

III. The Effect of the Pending Order as to Malama's Interest

Assuming HECO does not change its proposal and this Commission approves HECO's application as filed, the primary effect on Malama's interests will be to impose on Malama and its members an unnecessary and costly project; and, it will decrease HECO's incentive to vigorously pursue more environmentally sustainable energy alternatives. Moreover, if, as it did in the contested case before the BLNR, HECO seeks to redefine the parameters of its proposal and resurrects one of its Wa'ahila Ridge overhead routes, Malama's member's aesthetic, cultural and property interests will be directly affected.

IV. The Other Means Available Whereby Malama's Interest May be Protected

Malama has sought to exercise every means at its disposal to protect its interests, including participating in the CAC, educating the public, and intervening in the BLNR contested case proceeding. However, those means are insufficient to protect against any adverse impact that may arise from action by the Commission on HECO's application.

V. The Extent to Which Malama's Interest Will not be Represented by Existing Parties

The only existing parties are HECO, which obviously does not represent Malama's interest, and the Consumer Advocate. The Consumer Advocate, who represents the interests of the general public, may not have the same interest as Malama in promoting certain energy policies or alternatives to the EOTP, and will not have the same interest in protecting the property, aesthetic and cultural values of Malama and its members.

VI. The Extent to Which Malama's Participation Can Assist in the Development of a Sound Record

Malama's participation will assist in the development of a sound record. It has, within its membership, percipient witnesses to the history of the EOTP and HECO's ever-changing justifications for the project. Moreover, through its involvement over the past decade

with this project, and in particular as a result of participation at the hearing before the BLNR, Malama has developed substantial knowledge about HECO's transmission project, including the need for it and the alternatives to it. Malama believes that its participation will result in the development of a more complete and accurate record, as occurred in the contested case hearing before the BLNR.

VII. The extent to which Malama's Participation will Broaden the Issues or Delay the Proceedings

Malama seeks to address the issues raised by HECO's application, and its participation will not broaden the issues that are relevant to it. Malama's participation will not delay the proceedings but will facilitate the consideration of the relevant issues.

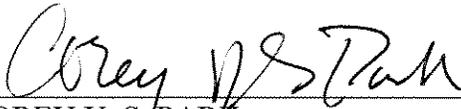
VIII. The Extent to Which Malama's Interest in the Proceeding Differs from that of the General Public

Malama and its members share the general public interest in avoiding an increase in electricity rates, particularly where that increase is unnecessary and may be imposed for the purpose of recouping the millions of dollars HECO expended in its ill-advised, and rejected, persistence in building a transmission line on Wa`ahila Ridge. In addition, Malama also has the further interest of promoting a sustainable energy policy for the State of Hawaii, which, while in the general public interest, is not an interest that is likely to be asserted by the present parties in these proceedings. Finally, Malama's interest in this proceeding will be further heightened if HECO seeks to amend its proposal and resurrects its alternative Wa`ahila Ridge alignment.

IX. Whether Malama's position is in Support of or in Opposition to the Relief Sought

Malama is firmly opposed to the relief sought by HECO. The evidence adduced in the CDUA contested case established that there is no need for the EOTP, and there are viable alternatives to address the conditions HECO claims justify the project.

DATED: Honolulu, Hawaii, January 7, 2004.



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BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of Conservation) DLNR File No.: OA-2801
District Use Application for)
)
HAWAIIAN ELECTRIC COMPANY, INC.,) FINDINGS OF FACT, CONCLUSIONS OF
) LAW, DECISION AND ORDER;
) CERTIFICATE OF SERVICE
to Construct a 138-kV Transmission Line at)
Wa'ahila Ridge, Honolulu, Hawai'i)
_____)

FINDINGS OF FACT,
CONCLUSIONS OF LAW, DECISION AND ORDER

The Board of Land and Natural Resources, having considered the testimony and evidence presented during the hearing herein (DLNR File No. OA-2801), hereby makes the following findings of fact, conclusions of law, decision and order:

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FINDINGS OF FACT

I. INTRODUCTION

A. Proceeding

1. This contested case hearing involves Applicant Hawaiian Electric Company, Inc.'s ("HECO") Conservation District Use Application ("CDUA"), dated November 16, 1995. The application is for a Conservation District Use Permit ("CDUP") to install a new 138,000 volt ("138 kV") transmission line on eight new steel poles to be erected within existing easements in the Conservation District atop Wa'ahila Ridge.

B. Parties

2. Applicant HECO is an investor-owned electric utility and is a "public utility" as defined in Hawai'i Revised Statutes ("HAW. REV. STAT.") section 269-1.

3. Intervenor Malama O Manoa ("Malama") is a nonprofit Hawai'i corporation formed in 1992 for the purposes of promoting community, celebrating Manoa Valley's cultural diversity and heritage, and preserving, protecting and enhancing its special qualities. Malama has more than 3,700 members, most of whom live in Manoa in the immediate presence of Wa'ahila Ridge, and many of whom hike on Wa'ahila Ridge, use the Wa'ahila Ridge State Recreation Area, or engage in traditional and customary practices on Wa'ahila Ridge. (Nakano, WDT,¹ pp. 19-21 and Nakano, Tr. 11/08/01 a.m.,² p. 1451, lines 3-14 .)

4. Intervenor The Outdoor Circle ("TOC") is a nonprofit Hawai'i corporation founded in 1912 whose mission is to keep Hawai'i clean, "green and

¹ Written testimony of the various witnesses will be referred to by the last name of the witness, followed by "WDT" for written direct testimony ("WST" for written surrebuttal testimony, as may be appropriate), followed by the page and line number of the testimony.

² Oral testimony of the various witnesses will be referred to by the last name of the witness, followed by "Tr." for transcript, the date of the testimony and whether the testimony was given in the "a.m." or "p.m." if the transcripts are separated by volumes between morning and afternoon testimony, followed by the page and line number of the testimony.

beautiful." TOC has eleven branches on five islands, and currently has a membership totaling 3,500. (Steiner, Tr. 11/08/01 p.m., p. 1525, lines 4-7, 14-21.)

5. Intervenor Life of the Land ("LOL") is a nonprofit Hawai'i corporation founded in 1970 to preserve and protect the life of the land by promoting sustainable land use and energy policies and to promote open government through research, education, advocacy, and litigation. (Brady, Tr. 11/08/01 p.m., p. 1582, lines 14-21 .)

C. Procedural History of the Contested Case Hearing

6. HECO submitted its CDUA for the Kamoku-Pukele transmission line to the DLNR on November 16, 1995, together with an Environmental Assessment.

7. In May 1998, HECO submitted a Draft Environmental Impact Statement to the DLNR ("Draft EIS"), and in December 1998, HECO submitted a Final Environmental Impact Statement ("Final EIS"), which was rejected by the DLNR. A Revised Draft Environmental Impact Statement was submitted to the DLNR in September 1999 ("Revised Draft EIS"); the Revised Final Environmental Impact Statement was filed with the DLNR on September 26, 2000 ("Revised Final EIS") and accepted on November 9, 2000.

8. A public hearing on HECO's CDUA was held on March 22, 2001. Before the close of the public hearing, oral requests for a contested case hearing on the CDUA were made by Intervenor Malama, TOC, and LOL, as well as 'Ilio'ulaokalani Coalition, Inc.

9. Timely written requests for a contested case hearing on the CDUA were made by Intervenor TOC, Malama, and LOL.

10. The Board of Land and Natural Resources ("Board"), on May 11, 2001, authorized the appointment of a Hearings Officer to conduct a contested case hearing relevant to the petition for the CDUA. The Board's chairperson, pursuant to authority delegated by the Board, selected Retired Judge E. John McConnell as the Hearings Officer.

11. On August 10, 2001, pursuant to a telephonic prehearing conference, the parties stipulated that HECO and Intervenor had standing as parties to the contested case hearing.

12. Pursuant to Prehearing Order No.1, dated September 17, 2001, the contested case hearing was set for November 1 to November 9, 2001, the issues for consideration set forth, and the procedures outlined, including deadlines for the

submission of written testimony. The parties also stipulated that the DLNR's Division of Land Management's file on the CDUA, including the oral and written testimony given in connection with the March 22, 2001 public hearing on the CDUA, would be part of the contested case proceeding record.

13. In a prehearing telephone conference on September 21, 2001, the deadline for the Intervenor's filing of their direct testimonies was extended as a result of the events of September 11, 2001. The deadline was extended from September 28, 2001, to October 15, 2001.

14. On October 22, 2001, HECO filed four motions seeking to strike the written direct testimony of all of the Intervenor's witnesses as untimely in that the testimonies were not submitted by September 28, 2001. Following a telephonic hearing on October 30, 2001, HECO also sought to strike the testimonies of certain witnesses on the additional grounds that they were **irrelevant, unduly repetitious, and/or unreliable expert testimony**. The motions were **orally denied** and the Hearings Officer reaffirmed that the Intervenor's deadline to file all of their **written** testimony had been extended to October 15, 2001. A written Prehearing Order No. 3 setting forth the Hearing Officer's ruling was entered on January 7, 2002.

15. The contested case hearing commenced on November 1, 2001, and testimony was taken during seven hearing days: November 1, 2, 5, 6, 7, 8 and 9, 2001.

II. HECO'S PROPOSED PROJECT

16. HECO generates the bulk of its electricity in western Oahu, primarily at its Kahe Power Plant. It transmits the electricity to east Oahu and the rest of the island over two routes. The northern transmission corridor follows a course which traverses the Koolau Mountain range to the Koolau Substation on the windward side of Oahu and then back again over the Koolau range, terminating at the Pukele Substation located at the back of Palolo Valley. The southern transmission corridor follows a course along the leeward side of Oahu, terminating at the Kamoku Substation located in Moiliili. HECO's proposal is now to join the northern corridor and the southern corridor by connecting the Pukele Substation and the Kamoku Substation with a new 138 kV line (sometimes, "Kamoku-Pukele line"). (**See generally Executive Summary to Revised Final EIS, p. ES-1 - ES-9.**)

17. HECO considered eleven (11) alternative routes to connect the two substations. These included routes with all overhead lines, all underground lines, and a combination of the two. Two of the eleven alternatives follow the same route up Palolo Valley that does not involve Conservation District lands and is entirely underground. (**Revised Final EIS, pp. ES-6 - ES-7.**)

18. HECO's preferred route for which it seeks a CDUA is a combination of underground and overhead lines passing in part through Conservation District lands. From the Kamoku Substation, located near the intersection of Kapiolani Boulevard and Date and Kamoku streets, the proposed line would follow an underground path to the University of Hawaii Manoa campus near the National Marine Fisheries Service Building. There it would transition to an overhead line along University of Hawaii land and then follow existing easements over Conservation District land over Wa'ahila Ridge and the Wa'ahila State Recreation Area and then descend to the back of Palolo Valley to the Pukele Substation. The proposed action would require erecting eight new steel poles, estimated to be as high as 110 feet above grade, with three 138 kV conductors (electrical wires), on conservation land. **(Revised Final EIS, pp. 3-4)** These would replace the existing wooden poles, which range in height between 39 and 48 feet. **(id.)** The six existing 46,000 volt ("46 kV") conductors would be placed on the new steel poles along with the new 138 kV conductors. **(See Revised Final EIS, pp. ES-7 - ES-8.)** The present heights of the eight wooden poles ("Present Height") and proposed heights of the steel poles ("Proposed Height") are as follows:

<u>Pole</u>	<u>Present Height</u> (feet)	<u>Proposed Height</u> (feet)
P3	39	89-91
P4	40	75-86
P5	48	85-99
P6	43.5	85-90
P7	48	83-85
P8	39	90-109
P9	43.5	95-110
P2/15	48	79-90

(Revised Final EIS at 3-4.)

19. The proposed Kamoku-Pukele line would run for a total of approximately 3.8 miles, 1.5 of which would be underground and 2.3 miles overhead. Of the portion that is overhead, 1.9 miles would be on Conservation District land. **(Wong, Tr. 11/01/01, p. 202, line 23 - p. 203, line 3.)** Under HECO's adjustment No. 1 the Conservation District mileage totals 1.19. **(See Revised Final EIS, p. 1-6, 3-3.)**

20. HECO asserts that the Kamoku-Pukele line is needed to address two primary reliability issues: the "overall reliability issues of the Pukele Substation" and the projected overloads at the Koolau Substation (**Revised Final EIS, p. ES-4**). With respect to the Pukele Substation, HECO's concern is that if one of the two 138 kV lines servicing that substation is offline for maintenance and the second line goes down for any reason, then power would be lost to the entire Pukele service area. Having the third line from Kamoku would prevent an outage under these circumstances. Regarding the Koolau Substation, HECO is concerned that if one of the three 138 kV lines now servicing that substation is offline for maintenance, a second line goes down for any reason, and these events occur at a time when the load on the Koolau Substation exceeds the capacity of the remaining third line, then that line would automatically shut down and leave both the Koolau Substation and Pukele Substation (which receives power from the Koolau Substation) without power. Having a source of electricity from the Pukele Substation would prevent that outage. (**Revised Final EIS, pp. ES-5 - ES-6; Wong, WDT, p. 3, lines 10-45.**)

III. BACKGROUND

A. The Pukele and Kamoku Substations

21. The Pukele Substation is located at the back of Palolo Valley and serves the communities of Manoa, Palolo, St. Louis Heights, Makiki, McCully, Moiliili, Diamond Head, Kaimuki, Kapahulu, Kahala and Waikiki. (**Wong, WDT, p. 3, lines 11-22; Revised Final EIS p. ES-5.**)

22. The Pukele Substation was energized in about 1966 with two 138 kV source lines, the Waiiau-Koolau-Pukele line and the Halawa-Koolau-Pukele line. (**Shirai, Tr. 11/06/01 p.m., p. 1024, lines 4-5; Ex. M-32 (Pukele 138 kV Source Reliability Improvement Study dated September 1986), p. 1.**) The source lines to the Pukele Substation were constructed as "three-terminal" lines, coming from the Waiiau Substation and Halawa Substation through the Koolau Substation to the Pukele Substation without being sectionalized. (**Shirai, Tr. 11/06/01 p.m., p. 1031, lines 16-20; Ex. M-32, p. 1.**)

23. Transformers at the Pukele Substation reduce the voltage from 138 kV to 46 kV. The electricity is then distributed through eight 46 kV subtransmission lines to thirteen distribution substations, which provide electrical power to the Pukele service area. (**Wong, Tr. 11/01/01, p. 47, line 19 - p. 48, line 3; Ex. M-30 (Revised Environmental Impact Statement for the Proposed Halawa to Kamoku 138 kV Transmission Lines dated February 1979 ("1979 EIS")), pp. 1, 17.**)

24. Two of the 46-kV lines from the Pukele Substation, the Pukele 7 and Pukele 8 lines, currently run atop Wa'ahila Ridge in an existing easement

passing through the Conservation District and the Wa`ahila Ridge State Recreation Area. (Revised Final EIS, pp. ES-7 - ES-8.)

25. These existing poles were installed, and the easements for them obtained, in the early 1960s or late 1950s prior to the 1978 amendments to the Hawaii State Constitution, which mandated protection of natural beauty and other natural resources. Since the existing 46 kV lines were installed on Wa`ahila Ridge, Hawai`i has also adopted a "State Environmental Policy," recognizing visual resources as among the State's unique natural environmental characteristics which should be preserved to enhance our quality of life, and adopted statutes and regulations requiring review, with public participation, of environmental effects of certain proposed actions, including effects on scenic vistas and viewplanes. (Haw. Const. Art. IX, §1; Haw. Rev. Stat. chs. 6E, 183C, 205, 343, and Haw. Admin. Rules ch. 13.)

Deleted ref. to 1979 EIS →
B. The 1986 Pukele 138 kV Source Reliability Study

26. In 1986, HECO conducted a study to address one of the concerns it now raises: the potential for the Pukele Substation to go down when one of its 138 kV lines is removed from service for maintenance. (Ex. M-32 (Pukele 138 kV Source Reliability Improvement Study dated September 1986 ("1986 study")), p. 1.) At the time of the study, the Pukele Substation served approximately 25% of the total system load; HECO was concerned that if the Pukele Substation was out of service, a large portion of the total system load could be affected. The 1986 study evaluated alternate plans to reduce the possibility of losing the Pukele load when one line is removed from service for maintenance. (Id.)

27. Based on the 1981 through 1985 outage history of the lines, the 1986 study concluded that the Halawa-Koolau-Pukele line was "quite reliable," and that the majority of outages on the Waiiau-Koolau-Pukele line occurred on the source side of the Koolau Substation, i.e., between the Waiiau Substation and the Koolau Substation. (Ex. M-32 (1986 study), p. 3.)

28. The 1986 study evaluated three alternatives to improve the reliability of the 138 kV source to Pukele. Two alternatives involved bringing a third line to the Pukele Substation, as is now being proposed by HECO, but either from the School Street Substation, at a cost of \$16-\$30 million, or from the Halawa Substation, at a cost of \$20.4 million. (Ex. M-32 (1986 study), p. 4.) The third alternative, and the one that was recommended, was to convert the Koolau Substation to what is called "a breaker-and-a-half" scheme, which would sectionalize the Halawa-Koolau-Pukele and Waiiau-Koolau-Pukele lines. The cost of this alternative was estimated at \$2.7 million. (Id. at p. 3.)

29. Converting the Koolau Substation to a breaker-and-a-half scheme would eliminate the three-terminal lines. Three-terminal lines are not standard

industry practice because a fault on the line could cause loss of power to multiple substations. Three-terminal lines are undesirable, and HECO's consultants have stated that they should be avoided at all costs and not used even temporarily. (Wong, Tr. 11/01/01, p. 163, line 22 - p. 164, line 13; Shirai, Tr. 11/06/01 p.m., p. 1031, line 25 - p. 1032, line 10; Ex. M-35, p. X-14.)

30. HECO concluded that converting the Koolau Substation to a breaker-and-a-half scheme would improve the reliability of the 138 kV source to Pukele Substation, and that the lines would be less prone to outages once the sectionalizing breakers were installed since the majority of the faults on the lines to Pukele were on the source side of the Koolau substation. Not only would the conversion considerably reduce the probability of losing the entire Pukele load when one line was out for maintenance, but the time required to locate a fault would also be substantially reduced. HECO concluded that this should reduce the time required to restore the line, and reduce the anxiety caused by having only one line to Pukele in service when maintenance is being done on the other. (Ex. M-32 (1986 study), p.3, 5.)

31. Despite the 1986 study's recommendation to convert the Koolau Substation to a breaker-and-a-half scheme, HECO did not immediately implement the recommendation. (Wong, Tr. 11/01/01, p. 90, lines 3-5.)

C. The 1987 (Super Bowl) and 1988 Pukele Outages

32. HECO cites a 1987 outage in the Pukele service area as part of its justification for the Kamoku-Pukele line. (See, e.g., Revised Final EIS, pp. 2-5, 2-11, 3-62.)

33. The 1987 outage occurred on Super Bowl Sunday in January 1987, when HECO was performing scheduled maintenance work on a bus at the Pukele Substation and a fault on one of the source lines caused an outage. (Wong, Tr. 11/01/01, p. 91, lines 8-15; Shirai, Tr. 11/06/01 p.m., p. 1048, lines 18-21.) Although Ken Morikami, HECO's Director of Project Management, testified at the March 22, 2001 public hearing that the entire Pukele service area was blacked out when one of the lines to Pukele was out of service for maintenance and the other was suddenly lost (Morikami, Tr. 03/22/01, p. 28, lines 15-25), that testimony was incorrect. (Wong, Tr. 11/01/01, p. 91, line 21 - p. 92, line 12.) Rather, only 30% of the Pukele service area was affected for between 15 and 45 minutes. (Wong, Tr. 11/01/01, p. 91, lines 8-15; Shirai, Tr. 11/06/01 p.m., p. 1024, lines 12-15.)

34. Had HECO promptly acted on the recommendation in its 1986 study to improve the reliability of the Pukele source by converting the Koolau Substation to a breaker-and-a-half scheme, the outage would not have happened since a fault on the source side of Koolau Substation, as occurred, would not have caused an

outage at the Pukele Substation. (Shirai, Tr. 11/06/01 p.m., p. 1048, line 22 - p. 1049, line 21.)

35. The single instance in the thirty-five years since the Pukele Substation was energized in which one of the lines to Pukele was suddenly lost while the other was out of service for maintenance occurred in 1988. (Wong, Tr. 11/01/01, p. 90, line 24 - p. 91, line 11 and p. 92, lines 13-18.) However, either no customers lost power because the outage lasted for only a fraction of a second or, at worst, customers lost power for a second or two. (Wong, Tr. 11/01/01, p. 91, lines 4-7 and p. 92, lines 13-18; Shirai, Tr. 11/06/01 p.m., p. 1023, lines 8-20.) Notwithstanding the above, Mr. Shirai testified that the 1987 and 1988 outages were "certainly an adequate reason for acting responsibly and practicably to address this problem of having only two transmission lines to Pukele substation." (Shirai, Tr. 11/06/01 p.m., p. 1003, line 2)³

D. Island Wide Outages, Investigations and Recommendations

36. On July 13, 1983, HECO experienced an island-wide blackout. This precipitated a request by the Governor of Hawaii and the Mayor of Honolulu to the Public Utilities Commission ("PUC") to order a comprehensive investigation of the blackout and a diagnostic review of the many factors affecting HECO's system reliability. (Revised Final EIS, p. 2-5; Ex. M-31 (Stone & Webster Management Consultants, Inc. Investigation of July 1983 Blackout dated February 1984 ("Stone & Webster report")), p. 1.)

37. Stone & Webster Management Consultants, Inc. ("Stone & Webster") was selected to conduct the investigation. It issued its report in February 1984, identifying areas for improvement and recommending steps that should be taken to minimize the possibility of reoccurrence, recognizing that "development of a power system that is totally free of interruptions cannot be guaranteed." (Ex. M-31 (Stone & Webster report), p. 1.)

38. Stone & Webster concluded that the cause of the blackout was a combination of unusual events, including that two major 138 kV lines were out of service for repairs and there was a three-phase fault on a third 138 kV line caused by a cane fire in west Oahu. (Ex. M-31 (Stone & Webster report), p. 4)

³ Based on the evidence presented in the contested case, the Hearing Officer believes had HECO implemented its own recommendations to convert the Koolau substation to a breaker-and-a half system, the 1987 Super Bowl outage would not have occurred. (Hearing Officer's Report, FOF 43 at p. 9.)

39. Stone & Webster made twelve principal recommendations, one of which was that at least two transmission line crews should be trained in "hot-stick" maintenance of 138 kV transmission lines to eliminate the necessity to take lines out of service for certain maintenance procedures such as changing insulators. (Ex. M-31 (Stone & Webster report), pp. 9, 144, 81.)

40. Stone & Webster also recommended, as one of their twelve principal recommendations, that "[a] second power corridor from Kahe to Makalapa and extended to the Pukele area via the leeward side of the Island is highly desirable to reduce the probability of a blackout, including during storms." (Ex. M-31 (Stone & Webster report), p. 9.)

41. At the time of Stone & Webster's investigation in 1983, electricity generated in western Oahu was transmitted to central and eastern Oahu over a single transmission corridor. (Wong, WDT, p. 2, lines 36-39; Ex. M-31, p. 3, 122.) HECO started building the southern corridor in 1985 (Wong, WDT, p. 2, line 43 - p. 3, line 1), and with the completion of the Archer-Kewalo and Kewalo-Kamoku 138 kV lines, the southern transmission corridor extends into the Pukele area via the leeward side of the island, as Stone & Webster recommended. As Mr. Shirai testified, the southern corridor is now complete. (Shirai, Tr. 11/06/01 p.m., p. 1040, lines 23-24.)

42. Following another island-wide blackout on April 9, 1991, which left customers without power for 7 to 12 hours, the PUC ordered another investigation into, among other things, the cause of the outage and the measures recommended to increase reliability and eliminate or mitigate a recurrence of the outage. Power Technologies, Inc. ("PTI") conducted the investigation. (Revised Final EIS, p. 2-5; Ex. M-35 (Investigation of 1991 Oahu Island-Wide Outage dated August 26, 1993 ("PTI report")), p. 1; Ex. M-44 (In re Investigation of Hawaiian Electric Company Inc. Regarding Recent Major Power Outage, PUC Docket No. 6281, Decision and Order No. 17099 filed July 30, 1999 ("PUC D&O No. 17099")), pp. 1-3.)

43. As part of its investigation, PTI examined the extent to which HECO had implemented the recommendations of the Stone & Webster report (Ex. M-35 (PTI report), p. 1 and Appendix VIII, pp. VIII-1 - VIII-22). Of the 147 recommendations PTI identified in the Stone & Webster report, PTI found that the vast majority had been implemented, and HECO found alternative solutions to most of the recommendations that HECO found too costly to implement. (Ex. M-35 (PTI report), p. 3.) However, PTI also found that "only those [Stone & Webster recommendations] associated with right-of-way clearing, line patrolling and maintenance, and live-line work were not fully implemented; unfortunately, these are also the only Stone and Webster recommendations that were a direct contributing factor in the April 1991 blackout." (Id.)

44. Specifically, PTI found that HECO's failure to effectively and fully implement live-line work techniques was a "key item . . . associated with the immediate cause of the April 1991 outage," and was an issue that "continue[d] to require proactive management response at all levels, and by every department of HECO." (Ex. M-35 (PTI report), p. 3.)

45. Of the 109 specific recommendations made in the PTI report, one of the four recommendations identified as deserving immediate attention was to increase the number of authorized linemen personnel in the live-line section from fifteen to twenty and initiate live-line work activities that will permit the replacement of complete structures while energized as soon as possible. (Ex. M-35 (PTI report), p. vii; Ex. M-44 (PUC D&O No. 17099), p. 9.)

E. 1991 and 1992 East Oahu 138 kV Requirements Studies

46. In a July 1991 study, updated in August 1992, HECO evaluated various alternatives to meet the projected load growth in East Oahu and concluded that installing a 138 kV line from Archer Substation to Pukele Substation via Kewalo and Kamoku Substations was the best solution to serve the increased loads projected in the East Oahu area. (Ex. M-34 (East Oahu 138 kV Requirements Updated, dated August 1992 ("1991/92 requirements studies")), p. 1.)

47. The 1991/92 requirements studies were based on several assumptions, including that the demand would increase as projected by the November 8, 1991 peak forecast, and that the Honolulu Power Plant would be retired at the end of 1994. (Ex. M-34, pp. 5, 7.) Those assumptions proved to be erroneous. For example, the November 8, 1991 forecast projected peak loads of 1,167 MW in 1991 and 1,435 MW in 1999 (Ex. M-34, Appendix F); the actual peak load in 1999 was even less than the projection for 1991 -- only 1,161 MW. (Ex. M-81 (Figure 2-9 from Revised Final EIS).) The retirement of the Honolulu Power Plant has been deferred to beyond 2017. (Ex. M-37, p. 5.)

48. The 1991/92 requirements studies predicted that, "[i]n 1994, if one line feeding the Koolau/Pukele area is out for maintenance, and another fails, the remaining line will become overloaded." (M-34, p. 3.)⁴

F. 1991 Pukele 138 kV Source Reliability Improvement Study Update

49. In October 1991, having failed to adopt the recommendation of its 1986 study to convert the Koolau Substation to a breaker-and-a-half scheme,

⁴ The Hearing Officer observed no evidence in the contested case that that has occurred. (Hearing Officer's Report, FOF 56 at p. 12.)

HECO again evaluated alternate plans to address its concern that, if one of the 138 kV source lines to Pukele was out of service for maintenance and the remaining line failed, the entire Pukele Substation would be out of service. (Ex. M-33 (Pukele 138 kV Source Reliability Improvement Study, Revised October 24, 1991 ("1991 update")), p. 1, 2.)

50. The 1991 update again reviewed the outage history for the Waiiau-Koolau-Pukele and Halawa-Koolau-Pukele lines, and again concluded that the majority of forced outages on both lines occurred on the source side of the Koolau Substation. (Ex. M-33 (1991 update), p. 5.)

51. HECO reexamined the alternatives originally evaluated in the 1986 study and again rejected adding a third line to Pukele, instead renewing its 1986 recommendation that the Koolau Substation be converted to a breaker-and-a-half scheme. The 1991 update concluded that "[a]lthough installing a third line to Pukele will provide more security for Pukele, the substantially lower cost of modifying the Koolau 138 kV bus must be considered. It is System Planning's judgment that the incremental improvement in reliability gained from a third line does not justify the substantial additional cost." (Ex. M-33 (1991 update), p. 9.)

52. The conclusion of the 1991 update, that the cost of a third line was not warranted by the incremental reliability improvement over the lower cost recommendation, was consistent with the conclusions in the 1990 report of the HECO Utilities' Reliability Task Force that "there are alternatives or measures that can be taken to mitigate the probability, extent and duration of outages. However, the underlying factor is that there are costs associated with each of these alternatives The utilities must therefore balance these costs against the potential improvement in reliability." (Ex. M-90 ("Methodology for Determining Reliability Indices for HECO Utilities" dated December 1990), p. 18.)

53. The 1991 update reaffirmed HECO's earlier conclusion that converting the Koolau Substation to a breaker-and-a-half scheme would considerably reduce the probability of losing the Pukele load when one line is out for maintenance, and substantially reduce the time required to locate a fault. "It will also reduce the anxiety caused by having only one line to Pukele in service when maintenance is being done on the other because of the reduced exposure of any one segment of the line." (Ex. M-33, pp. 9-10.)

54. By the time of the PTI report in 1993, the Koolau Substation had not yet been converted to a breaker-and-a-half scheme and the lines were the last three-terminal circuits on HECO's system. PTI recommended that the Koolau conversion, which at that time was scheduled for 1993, be completed as soon as possible because "[t]hree-terminal circuits should not be used even temporarily." (Ex.

M-35 (PTI report), p. X-14.) The modification was completed in 1994 or 1995. (Wong, Tr. 11/01/01, p. 90, lines 3-5.)

G. The Community Advisory Committee and the 1995 Alternatives Study

55. In 1992, HECO hired CH2M HILL to prepare an EIS for the Kamoku-Pukele line and to do site selection studies. Mr. Paul V. Luersen, an environmental planner with CH2M HILL, was the initial project manager and oversaw the collection of environmental data and helped to identify alternatives. (Luersen, Tr. 11/01/01, p. 195, line 23 - p. 196, line 4.)

56. At the start of the EIS process, HECO approached the five Neighborhood Boards in the project area (Kaimuki, Diamond Head/Kapahulu/St. Louis Heights, Palolo, Manoa, and McCully/Moiliili) to discuss the project and to invite each Neighborhood Board to send two representatives to be part of a Community Advisory Committee (sometimes called the Citizen's Advisory Committee) ("CAC"). The purpose of the CAC was to establish a line of communication with the community to identify concerns and issues. (Luersen, Tr. 11/01/01, p. 197, lines 9-22; Ex. M-38 (Kamoku-Pukele 138-kV Transmission Line Project Community Advisory Report dated June 5, 1995 ("CAC report")), p. 1); Kamoku-Pukele 138 kV Transmission Line Alternatives Study dated June 1995, Appendix C-1 to Revised Draft EIS and Revised Final EIS ("1995 Alternatives Study"), p. 1.)

57. When the CAC began meeting in June 1992, HECO requested that it help select the route to be used for the Kamoku-Pukele Line. (Ex. M-38 (CAC report), p. 2.) The CAC helped in the selection of 16 alternative routes, but asserted that HECO had not yet convinced the community that the line was needed, nor that HECO had explored all alternatives to installing a 138 kV line, nor that it had thoroughly identified the benefits and costs of the project. (Id.; 1995 Alternatives Study, pp. ES-1, 1-4.)

58. In response to the CAC criticism, after eleven (11) CAC meetings and two public meetings over a period of approximately eighteen (18) months, the CAC was put "on hold" and HECO commissioned CH2M HILL to do the Alternatives Study. (1995 Alternatives Study, pp. 1-4, 1-7, 2-1; Ex. M-38 (CAC report), p. 3) In June 1994 the CAC was "reactivated" to provide input for the Alternatives Study. (1995 Alternatives Study, p. 2-1; Ex. M-38 (CAC report), p. 3; Luersen, Tr. 11/01/01, p. 198, lines 2-9.)

59. The CAC disagreed with CH2M HILL's conclusion in the 1995 Alternatives Study – that the Kamoku-Pukele line was the best alternative. The

neighborhood boards of Palolo and Diamond Head/St. Louis Heights, believed that the conclusion was predetermined by the list of HECO-defined problems that any alternative would have to address. (Ex. M-38 (CAC report), p. 3; 1995 Alternatives Study, pp. 6-6 and Appendix A.)

60. One of those problems was the overload of the third line to the Koolau Substation when the other two lines were out of service, which, apparently based on updated load projections, was then predicted to occur in 1998 rather than 1994, at a system load of 1,213 MW. (1995 Alternatives Study, p. ES-2.)

61. The alternatives that scored highest in the ranking system developed to determine the preferred alternative were demand side management ("DSM"), downward revision of the load forecasts, increased maintenance of the 138 kV lines, and a 46 kV network that would utilize the existing subtransmission lines. (1995 Alternatives Study, Table 5-3.) Although the 46 kV network would satisfy HECO's criteria, the environmental planners determined that in their professional judgment, the 46 kV network alternative would place the service area at an undue increased risk from line faults, voltage irregularities, and blackouts. (Id., pp. 6-2 - 6-4). Therefore, the Kamoku-Pukele line, which was ranked ninth in overall preference (and eleventh by the CAC), emerged as the only alternative that solved all the "problems" HECO had identified, and the alternative that, in the professional judgment of the environmental planners, was the most technically efficient and cost effective. (Id., p. 6-5.)

H. The 1998 East Oahu Transmission Requirements Update Study

62. In 1998, HECO updated the 1991/92 requirements studies to assess the impact of changed conditions on the conclusions and recommendations in the 1992 update, which was to build an Archer-Kewalo-Kamoku-Pukele 138 kV line called the Honolulu City Line. (Ex. M-37 (1998 East Oahu Transmission Requirements Update Study ("1998 Update study")), p. i.)

63. The 1998 update study acknowledged that the assumptions upon which the 1991/92 requirements studies were based, such as load growth, load distribution, and generation addition/retirement dates had changed. (Ex. M- 37 (1998 Update study), p. i.)

64. By 1998, the Archer-Kewalo and Kewalo-Kamoku segments of the line were already under construction. (Draft EIS, figure 2-5.)

65. Notwithstanding the downward revisions in HECO's load projections (Ex. M-37 (1998 Update study), Appendix C), or the deferred retirement date of the Honolulu Power Plant (id., p. 5), HECO's 1998 Update study concluded that the Honolulu City Line was still needed. (Id., p. 15.)

66. With respect to the anticipated overloading of the third line to the Koolau Substation in the event that one line failed while another was out of service for maintenance, which was the most pressing problem identified in the 1992 update (Ex. M-34, p. 3), the 1998 update study predicted that condition would occur in 2002, and explained "[t]he earlier 1992 and 1994 studies projected the overload problem would occur in 1994 and 1998 respectively. The delay of this problem is a result of the slower forecasted load growth." (Ex. M-37, p. 5.)

IV. RELIABILITY OF HECO'S SYSTEM

A. Reliability of HECO's System

67. The reliability of HECO's system compares favorably with mainland utilities. HECO reported to the PUC that its average service reliability for 2000 (which measures both duration and frequency of outages) was the third best in 22 years, at 99.98%. HECO's website announces that HECO is in the top 15% of U.S. utilities with the shortest duration of outages. (Wong, Tr. 11/01/01, p. 98, line 23 - p. 99, line 5; Shirai, Tr. 11/06/01 p.m., p. 1016, line 15 - p. 1017, line 11.)

68. HECO measures reliability across the whole system, not just transmission or distribution reliability, and does not break down the reliability data by specific geographical area, although it has the capability to examine outages by service area. Although it has not examined the reliability data with respect to the Pukele service area specifically, HECO has no reason to believe that customers in the Pukele service area experience more frequent outages, or outages of longer duration, than HECO's other customers. (Revised Final EIS, p. 2-4; Shirai, Tr. 11/06/01 p.m., p. 1022, line 16 - p. 1023, line 3; Shirai, Tr. 11/07/01 a.m., p. 1115, lines 16-23.)

B. Changes Since 1986

69. Although the Pukele Substation was constructed with only two 138 kV source lines and has operated that way for more than thirty-five years (Wong, Tr. 11/01/01, p. 84, lines 15-22), and notwithstanding that HECO believed in 1979 that the Pukele system was "reasonably reliable" because it had a backup 138 kV line (Ex. M-30, p. 17), HECO now believes that "to contend that two transmission lines are adequate for the importance of this service area is irresponsible and shows a lack of understanding and concern over the impact of a major outage to critical customers and communities." (Shirai, Tr. 11/06/01 p.m., p. 1002, lines 21-25.)

1. Improvements made to the Koolau Substation

70. Both the probability of an outage at Pukele, as well as the impacts of such an outage, appear to have decreased significantly since HECO began planning this line, which, according to Mr. Shirai, was fifteen years ago. (Shirai, Tr.

11/06/01 p.m., p. 1040, line 23 - p. 1041, line 1.) The conversion of the Koolau Substation to a breaker-and-a-half scheme in 1994 or 1995 considerably reduced the probability of losing power to the Pukele Substation when one line is out of service for maintenance and, had it been done earlier, would have prevented the only blackout HECO contends could have been prevented by a third line to Pukele. **(Wong, Tr. 11/01/01, p. 90, lines 6-10; Shirai, Tr. 11/06/01 p.m., p. 1049, lines 18-21; Revised Final EIS, pp. 2-5, 2-11, 3-62.)**

71. The statement in the Revised Final EIS, that "the no action alternative would directly allow the repeat of outages, such as occurred on Super Bowl Sunday in 1987" **(Revised Final EIS, p. 3-62)**, is misleading.⁵

72. HECO appears to contend that the 1987 outage of 30% of the Pukele service area for 15-45 minutes and the momentary outage in 1988 are sufficient reason to build the Kamoku-Pukele Line **(Shirai, Tr. 11/06/01 p.m., p. 1003, line 22 - p. 1004, line 2)**. Fifteen years ago, however, when the Pukele load was at it highest levels **(id., p. 1038, lines 14-25)**, HECO did not consider the 1987 outage a sufficient reason to correct a condition it knew was substandard and undesirable, even though the cost would have been less than \$3 million, because it had more important priorities. **(Id., p. 1049, line 18 - p. 1050, line 12.)**

73. Since the Koolau Substation was modified and the lines were sectionalized in 1994 or 1995, there have been no power outages in the Pukele service area caused by losing a transmission line while the other was out of service for maintenance. **(Wong, Tr. 11/01/01, p. 96, lines 2-22; Shirai, Tr. 11/06/01 p.m., p. 1026, lines 15-17.)**

2. Improvements in the Vegetative Management Program

74. HECO has made other improvements in the past fifteen years which would be expected to further reduce the probability of faults on the source lines to the Koolau and Pukele Substations. For example, Stone & Webster, finding that HECO's tree-trimming practices were "inadequate" and "could be improved," made a number of recommendations regarding vegetative management. **(Ex. M-31 (Stone & Webster report), pp. 77, 78-79.)** In 1993, PTI found that, along with failure to implement live-line maintenance, HECO's failure to implement Stone & Webster's recommendations regarding vegetative management and tree-trimming was a direct contributing factor of the April 1991 blackout. **(Ex. M-35 (PTI report), p. 3.)** Of the

⁵ Based on the evidence presented in the contested case, the Hearing Officer suggests if the same circumstances that caused the outage in 1987 were to occur now, there would be no outage. **(Hearing Officer's Report, FOF 84 at p. 18.)**

many recommendations PTI made, four were identified as requiring immediate attention, including:

Perform a detailed inspection of all spans in the 138 kV system to establish present clearance distances to trees, wire crossings and other conductive objects is sufficient for at least one year.

Develop the relationships between circuit normal and emergency loadings and conductor sag changes (for each conductor size used on the 138 kV transmission system) and incorporate the data into the process of assigning tree-to-conductor distances through a joint effort of Operations and Engineering.

(Ex. M-35 (PTI report), p. vi.)

75. HECO reported to the PUC that, as of May 11, 1999, it had completed the four priority recommendations. (Ex. M-44 (PUC D&O 17099), p. 9.) HECO also reported implementing PTI's recommendations regarding vegetation management, including revising its tree-trimming policy and, as of May 11, 1999, HECO had implemented 81% of PTI's recommendations. (Id., pp. 10, 4.)

76. The only two outages of the Pukele service area caused by failure of a transmission line while the other line or some other component was out of service for maintenance were both directly caused by trees contacting transmission lines. (Shirai, Tr. 11/06/01 p.m., p. 1048, line 22 - p. 1049, line 4; p. 1023, lines 4-15.)⁶

77. If HECO has incorporated the relationships between normal and emergency circuit loadings and sag changes into its process of assigning tree-to-conductor distances, as it reported doing to the PUC (Ex. M-44 (PUC D&O 17099), p. 9), then Mr. Shirai's testimony that the source lines to the Koolau Substation could sag enough to allow tree contact at loads less than the emergency loadings of those lines (Shirai, 11/06/01 p.m., p. 1066, lines 7-23) is incorrect.

78. Stone & Webster and PTI also made numerous recommendations regarding improved inspection and maintenance procedures to

⁶ Based on the evidence presented in the contested case, the Hearing Officer observed now that HECO has improved its tree-trimming policy and vegetation management plan, the possibility of tree contact with the transmission lines should be reduced. (Hearing Officer's Report, FOF 89 at p. 19.)

minimize the risk of outages, most of which HECO has reportedly implemented. (See Ex. M-31 (Stone & Webster report), pp. 77-80; Ex. M-35 (PTI report), § IV.)

3. The load in the Pukele service area has decreased

79. The potential impacts of an outage of the Pukele service area, in terms of the size of the load that would be lost, appear to have decreased. Fifteen years ago, the Pukele peak load constituted approximately 25% of the Oahu peak load. (Ex. M-32, p. 1.) The system peak load in 1986 was 986 MW (Ex. M-81), meaning the Pukele peak load was approximately 246.5 MW. By 2000, the Pukele peak load had decreased to approximately 200 MW and, as a proportion of the Oahu peak load, declined to approximately 17%. (Revised Final EIS, p. 3-52; Wong, Tr. 11/01/01, p. 85, line 20 - p. 86, line 1.)

80. Stone & Webster recommended in 1984 that HECO investigate remedial improvements to allow for restoration of a significant amount of the load in the event power was lost to the Pukele Substation due to the simultaneous outage of both transmission lines. (Ex. M-31 (Stone & Webster report), p. 85.) According to the 1993 PTI report, HECO implemented that recommendation by adopting a switching scheme to move 20% of the load to other substations. (Ex. M-35 (PTI report), p. VIII-13; see also Shirai, Tr. 11/06/01 p.m., p. 1028, line 16 - p. 1030, line 20.) There is also back-up generation of 39MW to 52 MW available in the Pukele service area. (Revised Final EIS, p. 3-61.)

81. Moreover, when the Kamoku Substation becomes operational in 2002 (Wong, Tr. 11/01/01, p. 142, lines 18-21), the commercial customers in Waikiki, which are the customers for whom HECO believes a power outage would be unacceptable (Shirai, Tr. 11/06/01 p.m., p. 1055, lines 8-19; Tr. 11/07/01 a.m., p. 1153, line 2 - p. 1154, line 3), will have another source of power over an alternate route, since the purpose of the Archer-Kewalo and Kewalo-Kamoku 138 kV lines is to serve customer load in the Kakaako, Ala Moana and Waikiki areas. (Revised Final EIS, p. ES-5.)

C. PUC Decision and Order No. 18627

82. Mr. Luersen testified that "[p]roviding a new transmission line to connect Pukele and Kamoku Substations would improve reliability consistent with the findings of government agencies as well as HECO's standards related to transmission reliability." (Luersen, WDT, p. 3, lines 38-40.) However, Mr. Luersen admitted that he was only superficially familiar with HECO's planning criteria, which he was referred to as "HECO's standards related to transmission reliability," and has no personal knowledge that the line would improve reliability consistent with HECO's standards relating to transmission reliability. (Luersen, Tr. 11/02/01, p. 236, line 24 - p. 237, line 21.)

83. Regarding his reference to findings of governmental agencies, Mr. Luersen was relying on the PUC's Decision and Order No. 12627, In re the Matter of the Application of Hawaiian Electric Company, Inc. for Approval to Commit Funds in Excess of \$500,000 for Item BT-476 Installation of Kewalo-Kamoku 138 kV Transmission Line, PUC Docket No. 7602 ("PUC D&O No. 12627"). In that Decision and Order rendered in 1994 the PUC commented in approving the Kewalo-Kamoku 138kV line that "... the new circuit will also provide a third feed to the Pukele Substation, the most heavily loaded 138 kV substation in the HECO system. This will improve system reliability and will ultimately benefit rate payers." That decision however was concerned with the Kewalo-Kamoku line not the Kamoku-Pukele line. It does not address the use of conservation lands and in any event would not control any future PUC order concerning the Kamoku-Pukele line. (Luersen, Tr. 11/02/01, p. 232, line 22 - p. 235, line 16; see Ex. H-44 (PUC D&O No. 12627), p. 4.)

84. HECO has not yet sought the PUC's approval for the current project and has elected not to do so until after a decision has been made on its CDUA which is the subject of this proceeding. (Wong, Tr. 03/22/01, p. 45, line 16 - p. 46, line 14.)

D. The State Adjutant General's October 19, 2001 Letter

85. On October 19, 2001 State Adjutant General and Director of Civil Defense at the prompting of a legislator wrote a letter in support of the project. (Ex. H-76).⁷

V. VISUAL IMPACTS

86. HECO acknowledges in its Revised Final EIS that the proposed Kamoku-Pukele line atop Wa'ahila Ridge will be visible from a wide geographic area, "from the crest of the Koolau Range to Waikiki and Diamond Head, and from Round Top and Mt. Tantalus on the west to Mauumae Ridge and the top of Waialae Ridge to the east," and "would have an adverse impact on visual resources from a number of vantage points." (Revised Final EIS, p. 4-77; p. 4-78 (the "Visual Resources" section of the Revised Final EIS has been designated, and is hereinafter referred to, as Ex. H-49).)

87. According to the Revised Final EIS, the most prominent visual feature of the Kamoku-Pukele line will be the steel poles, which, in contrast to the

⁷ The Hearing Officer indicated that letter, however, contains no facts nor analysis supporting the inference that this project is essential to the effective functioning of the "critical facilities" listed in HECO's proposed findings of fact No. 175. (Hearing Officer's Report, FOF 105 at pp. 22-23.)

existing 39-foot to 58-foot wooden poles, will range in height from 75 feet to 110 feet. (Ex. H-49, p. 4-77; Witten, 11/05/01, p. 674, lines 6-9.) The new steel poles will not only be roughly double the height of the existing poles, they also will be up to five feet in diameter at the base. (Witten, Tr. 11/05/01, p. 679, line 24 - p. 680, line 5; CDUA (Ex. M-93), p. 2; see, e.g., Exs. M-24 & M-25)

88. Although there is a backdrop of Norfolk Island pines along the ridge, some of the key poles such as P4, the big H-structure, and P7 will extend above the vegetation, and the other two poles, P5 and P6, will become much more noticeable as the eye follows the transmission lines. (Fujimori, Tr. 11/07/01 at 1326, lines 21-25 and 1327, lines 1-12).

89. There will be significant visual impact to the lower portion of Wa'ahila Ridge as viewed from many critical points on the University campus where students pass and enter the campus, such as the entry of the Upper Campus Road where the Business School is located and looking across the playfields and from the business center all the way to Spalding Hall where there is open space to see the ridgeline. (Fujimori, Tr. 11/07/01, lines 21-25; 1328, lines 1-10 and 22-25; and 1329, lines 1-4). The ridgeline is also visible when one moves from Hemenway Hall to Varney Circle on the campus. (Fujimori, Tr. 11/07/01 at 1329, lines 5-9).

90. Although many of the visual simulations show the ridge in a frontal view, when viewed from an oblique angle, the poles begin to compress and appear to be in closer proximity to each other, which increases their visual presence on the ridgeline. (Fujimori, Tr. 11/07/01 at 1329, lines 10-19).

91. The visual impact will be significant in Manoa Valley, especially where there is a concentration of people such as town centers, commercial centers and major roads in the area. (Fujimori, Tr. 11/07/01 at 1324, lines 3-15). The mid-range of Wa'ahila Ridge is very visible from practically all of Woodlawn Avenue and from the Longs/Safeway shopping complex. It is also visible from various areas at the University of Hawaii. (Fujimori, Tr. 11/07/01 at 1324, line 16). The visual impact will be significant at the State recreation area on top of the ridge. (Fujimori, Tr. 11/07/01 at 1324, lines 22-24).

92. One will clearly see the proposed poles extend above the ridgeline from the University campus to the back of Manoa Valley, and particularly from the Manoa Public Library to the town center shopping complex. (Fujimori, Tr. 11/07/01 at 1325, lines 5-11).

93. One's eyes automatically move to focus on vertically oriented elements, such as tall poles, because they extend in silhouette above the ridgeline. (Fujimori, Tr. 11/07/01 at 1325, lines 12-19).

94. HECO presented a model of Wa'ahila Ridge on a scale of one inch to 200 feet. (Fujimori, Tr. 11/01/01, p. 79-80. Exhibit H-59.)

95. It is important to preserve scenic beauty in Hawaii for both its inherent value for residents and for Hawaii's economic base which is heavily reliant on tourism. Scenic views are an important means of attracting visitors. (Whalen, Tr. 11/07/01, p. 1238, lines 18-25).

A. Visual Impact Assessment

96. In the Revised Final EIS, HECO used the Visual Absorption Capability ("VAC") method suggested by Tom Witten, the landscape architect hired by HECO, to assess visual impacts of the proposed transmission line. (Ex. H-49, p. 4-69; Witten, Tr. 11/05/01, p. 618, line 23 - p. 619, line 20; id., p. 643, lines 2-7.)

97. The VAC is a measure of the physical capacity of a landscape to absorb proposed development and still maintain its inherent visual character and quality. The lower the VAC, the less physical capacity the landscape has to absorb a proposed development and still maintain its visual integrity. Developments such as the proposed transmission line in a landscape with a low VAC cause the landscape to lose its visual character and integrity; in other words, development in such landscapes would have negative visual impact. (Witten, Tr. 11/05/01, p. 648, line 6 - p. 649, line 1.)

98. Mr. Witten testified that four of the nine principles governing a VAC analysis were particularly applicable in this case:

One, was that areas near landscape focal point[s], such as ridgelines, have lower capabilities to absorb modification.

The second one is the higher the complexity and diversity of the landscape, the higher [the] VAC. Such as if you have a diversity in landscape materials, color, texture, height and form, then the VAC is higher in that consideration.

The third is ridge tops are likely to have a low VAC [due] to the consequent scrutiny as focal points. For example, observer positions in general, [are] inferior or lower, and the lands visible from a greater number of observation positions will have a lower VAC.

The fourth is uniformly tall dense stands of trees have high VAC due to the screening ability. That is, a high VAC when its in the foreground, but a little bit lower when its in the background.

(Witten, Tr. 11/05/01, p. 621, lines 6-23.)

99. The middle ridge area, which is the Conservation District land, generally has a low VAC; "[i]t's very difficult to have any change along the ridgeline not be viewed." (Witten, Tr. 11/05/01, p. 622, lines 20-22. See also Ex. H-49, p. 4-72.) Mr. Witten characterized the VAC of the ridge as "very low." (Witten, Tr. 11/05/01, p. 690, lines 19-21; id., p. 694, lines 3-4.)

100. Mr. Witten testified that, near the Cook Island pines on the middle ridge, the VAC increases because there is the opportunity for the trees to create a screen or act as a backdrop for the poles. (Witten, Tr. 11/05/01, p. 622, line 23 - p. 623, line 1.) However, HECO's simulations demonstrate, and Mr. Witten agreed, that because of the height of the new poles relative to the Cook pines, the screening effect will be lost when viewing the new poles from locations lower than the ridge. (See, e.g., Exs. M-49, M-52, M-55, M-56, M-58, M-61; Witten, Tr. 11/05/01, p. 667, lines 1-11.) Mr. Luersen concurred that the screening effect of the trees would be lost or reduced with respect to views of the new poles 5, 6 and 7 from the Manoa Library, the Manoa Chinese Cemetery, and the Wa'ahila Ridge Trail. (Luersen, Tr. 11/2/01, p. 263, line 19 - p. 265, line 14.)

101. According to the visual impact assessment in the Revised Final EIS:

In the Conservation District and along Wa'ahila Ridge, replacement of existing poles with taller structures and the addition of 138-kV conductors and a shield wire would create visual impacts on the surrounding communities where the views are largely unobstructed and within a landscape setting that has a low visual absorption capability. Those views closer to Wa'ahila Ridge would be affected more than those farther away. Some of the views from within the Wa'ahila Ridge State Recreation Area would remain essentially the same, while in other views, the new steel poles and the additional conductors and shield wire would increase the negative effect that the existing shorter poles and the existing conductors have on the quality of those views. At the park's viewpoint into Manoa Valley and at some locations on the trails, the poles and conductors would be visible and would increase the negative visual effect caused by the existing poles and conductors. At other locations, the poles and conductors would not be seen. The visual impact would diminish the enjoyment of some users of Wa'ahila Ridge's recreational opportunities.

(Ex. H-49, pp. 4-77 - 4-78.) Mr. Witten did not disagree with the conclusion in the Revised Final EIS. (Witten, Tr. 11/05/01, p. 662, line 1 - p. 665, line 4.)

102. Both Mr. Witten and Mr. Luersen agreed with Mr. Whalen that HECO's proposed transmission line will have adverse visual impacts, and will not preserve or improve upon the natural beauty of the Wa'ahila Ridge Conservation District land. (Whalen, Tr. 11/07/01 p.m., p. 1231, line 21 - p. 1232, line 18.) Mr. Witten testified as follows:

Q. In your professional opinion, would the proposed line on Wa'ahila Ridge preserve or improve upon the natural beauty of Wa'ahila Ridge?

A. I don't think it's going to improve upon it. We were trying to assess the visual impacts and determined there are visual impacts.

Q. And they're negative visual impacts, right?

A. Yes.

Q. So isn't that the same as saying it doesn't preserve the natural beauty, if it has negative visual impacts?

A. You could put it that way.

(Witten, Tr. 11/05/01, p. 669, lines 11-24.) Mr. Luersen testified that "[a]fter construction the visual impacts of the project . . . I mean, it will be adverse," and that "[t]he project is not preserving the natural beauty because of the taller poles[.]" (Luersen, Tr. 11/01/01, p. 208, lines 22-24; id., p. 211, lines 3-4.)

B. Visual Mitigation Efforts

103. Based on the public reaction to the visual impacts of the proposed project, HECO believes that visual mitigation "is probably the most important issue in regards to the Conservation District." (Wong, Tr. 03/22/01, p. 56, lines 17-21.) Thousands of people whose comments were included in the Revised Final EIS objected to the visual impacts of the project. (Mitchell, Tr. 11/07/01 p.m., p. 1281, lines 10-13; id., p. 1279, lines 10-12.)

104. Mr. Luersen, HECO's environmental planner, testified he had never seen a larger public response to a draft EIS in Hawaii. (Luersen, Tr. 11/06/01, p. 932, lines 1-6).

105. Because of the concerns with the visual impacts of the project, HECO commissioned computer generated "before and after" simulations showing the existing condition and the potential visual impact of the project from 29 view corridors. HECO's simulations also showed the potential effects of HECO's mitigation efforts, and were included in the Revised Final EIS so the public could assess for itself the potential visual impacts of the project from the identified view corridors. (Wong, WDT, p. 4, lines 14-21; id., p. 5, lines 9-16; Wong, Tr. 11/01/01, p. 58, lines 7-21; Revised Final EIS Figures 4-10a - 4-46b; Exs. M-46 through M-76.)

106. HECO hired a professional color consultant and a landscape architect to help it come up with ideas to mitigate the visual impacts. (Wong, Tr. 11/01/01, p. 61, lines 5-9.) The three main ideas that HECO has pursued to mitigate the visual impacts of the project are pole coloration, pole relocation, and landscaping. (Id., p. 61, l. 9 - p. 62, l. 18; id., p. 140, ll. 7-10.)

1. Pole Coloration

107. During the course of the project, HECO determined that "appropriately coloring a pole could make a difference in visually blending the pole with the surrounding environment from distant views." (Wong, WDT, p. 4, lines 23-31.)

108. HECO hired professional color consultant Sharman Miller to help select colors for the proposed poles on Wa'ahila Ridge. (Wong, WDT, p. 4, lines 33-34; Wong, Tr. 11/01/01, p. 65, lines 9-13.) Ms. Miller worked on this project from November 1997 to April 1998, with Kerstan Wong. (Written Direct Testimony of Sharman Miller ("Miller, WDT"), p. 3, lines 3, 6 (as corrected - see Miller, Tr. 11/06/01 a.m., p. 709, line 20 - p. 710, line 1).)

109. Color selection is site-specific because each site differs in topography, coloration and background. For this project, Ms. Miller worked at four pole sites: Site 1 consisted of pole 3 ("P3"); site 2 included P5, P6 and P7; site 3 was P9, P10 and P8; and site 4 was P15. (Miller, Tr. 11/06/01 a.m., p. 712, lines 6-13.)

110. With respect to each pole site, Ms. Miller determined the view corridor with the greatest visibility to the community and the most critical viewing time of day. She then chose preliminary groups of colors and created sample boards by cutting 2' by 6' plywood sheets and painting them with the sample colors. The sample boards were taken to the pole sites and held up while Ms. Miller and HECO staff viewed them from the critical viewing sites using binoculars and critiqued them. This process was repeated until Ms. Miller and HECO were satisfied with the color selection. (Miller, WDT, p. 3, line 25 - p. 4, line 5.)

111. The primary viewing site chosen for pole sites 2 and 3 was from the Manoa Public Library. Ms. Miller testified that the background vegetation at site 2 was ironwood trees that were "in some cases" more than fifteen feet tall, and that with a six-foot person holding up a six-foot color sample board the sample colors could be viewed only up to a maximum of 13-14 feet. Nonetheless, Ms. Miller testified that in some cases she could see the sample boards against the sky, as opposed to against the backdrop vegetation, but she could not remember at which pole sites that was the case. (Miller, Tr. 11/06/01 a.m., p. 713, lines 16-21; id., p. 714, lines 16-19; id., p. 715, lines 8-19; id., p. 717, line 21 - p. 718, line 23.)

112. Ms. Miller concluded that "[w]e successfully blended the single-color poles with the vegetation and topography. Their visual impact was greatly neutralized." (Miller, WDT, p. 4, lines 17-21; Miller, Tr. 11/06/01 a.m., p. 719, lines 20-23.) She recommended that "[t]he poles should be painted to minimize/neutralize their visual impact." (Miller, WDT, p. 4, lines 27-29.) HECO's visual simulations, however, do not support Ms. Miller's conclusions. Those simulations show that, when viewed from Round Top Drive, the Manoa Public Library, or the Manoa Chinese Cemetery, not only does painting the poles not minimize or neutralize their visual impact, it makes the poles more visually prominent. (**Compare, e.g. Exs. M-46 & M-47 (simulations of proposed project viewed from Round Top Drive); M-52 & M-53 (simulations of proposed project viewed from Manoa Public Library); M-55 & M-56 (same); M-49 & M-50 (same); M-58 & M-59 (simulations of proposed project viewed from Manoa Chinese Cemetery).**)

113. Mr. Kerstan Wong, HECO's project manager for the Kamoku-Pukele transmission line, agreed on redirect examination that, in the simulations of the proposed project without HECO's attempts at visual mitigation, the poles seemed less visible than in those simulations which showed the effects of HECO's pole-painting efforts, (Wong, Tr. 11/01/01, p. 161, lines 5-15). This was consistent with the Hearings Officer's observation. (Miller, Tr. 11/06/01 a.m., p. 732, lines 5-13.)

114. Ms. Miller also agreed that, as depicted in HECO's simulations of the view from the Manoa Public Library, which she had identified as critical view corridor for poles P5, P6, P7, P8, P9, and P10, the poles were not successfully blended with the surrounding vegetation and topography. Ms. Miller contended, however, that when she stands at the Manoa Public Library, what she sees is not what is shown in the simulations. (Miller, Tr. 11/06/01 a.m., p. 722, line 4 - p. 723, line 18.)

115. HECO is apparently no longer confident that painting the poles will effectively mitigate the visual impacts. Mr. Wong testified that perhaps HECO would not paint the poles. (Wong, Tr. 11/01/01, p. 161, line 22 - p. 162, line 2.) Additionally, Mr. Wong indicated that Ms. Miller's color selection work is not yet complete, it having always been contemplated that she would be sent back into the

field for more color testing before the poles were painted, so the color for the poles may be changed. (Id., p. 170, line 15 - p. 171, line 10.)

2. Pole Relocation

a. Adjustment 1

116. One of Mr. Witten's recommendations for mitigating the visual impacts of the project was to "modify the pole locations along the lower Wa'ahila Ridge area." (Witten, WDT, p. 9, lines 11-14.)

117. When Mr. Witten did his original analysis for the EIS in 1998, he recommended that, to the extent HECO felt it was possible to make adjustments to the right of way, the poles should be relocated off the ridge. HECO responded that it could only do that in the lower portion, near the water tanks. As a result, the potential realignment on the lower ridge was included in the EIS as adjustment 1 (Witten, Tr. 11/05/01, p. 649, line 14 - p. 651, line 2), and adopted as part of HECO's proposed alternative.

118. The Revised Final EIS explains that:

In response to comments on the May 1998 Draft EIS, HECO made a commitment in the December 1998 Final EIS to investigate the possibility of "relocating portions of the alignment along the lower Wa'ahila Ridge area to minimize the extent to which the new poles would change the existing profile view of the ridgeline" as a mitigation measure. As a result of this commitment, HECO has identified an adjustment to the proposed action's alignment on lower Wa'ahila Ridge that would situate new poles at lower elevations to the east of the existing 46 kV easement to minimize changes to the profile of the lower ridge. This option is referred to as adjustment 1.

(Revised Final EIS, p. 1-6, 3-3.) Adjustment 1 would require new easements. (Id., p. 3-3.)

119. The EIS examined the environmental impacts of adjustment 1, as well as the proposed action and alternatives. (Id., p. 1-7.) Visual simulations of adjustment 1 were included in the Revised Final EIS (Revised Final EIS, Figures 4-18c, 4-19d, 4-20c, 4-25d, 4-26d, 4-28c, 4-29b, 4-30b, 4-31c, 4-32c, 4-32f, 4-32i, 4-34c, 4-36d, 4-38c, 4-39c, 4-40c, 4-41c.)

b. Another proposed alignment: the so-called "McCrorry" or "Swale" Alignment

120. During the evidentiary hearing of this contested case proceeding, HECO raised, at first almost in passing, another possible alignment of some of the poles on the lower part of the ridge. At the end of the cross-examination of Mr. Wong by Intervenor TOC, the Hearings Officer asked what else HECO had done about pole relocation. Mr. Wong responded, after describing the realignment contemplated by adjustment 1, "[a]s of now, that's the only ones that we looked at." (Wong, Tr. 11/01/01, p. 141, lines 3-6.) However, Mr. Wong then testified:

THE WITNESS: Yeah. In fact, at the March hearing, one of the board members asked that question, whether we could actually relocate some of the other poles on the ridge to get that same effect that we were trying to do near the water tanks. So, yes, we have been talking with our expert witness, Tom [Witten] [sic] about that, and there could be other opportunities to relocate poles for visual mitigation.

MR. McCONNELL: But as far as this proceeding, you don't have any evidence in that regard?

THE WITNESS: Not at this time, no.

(Id., p. 141, line 17-p. 142, line 3.)

121. The March testimony Mr. Wong referred to was that given at the March 22, 2001, public hearing on the CDUA. During the hearing, the following exchange occurred:

MS. [LYNN] McCRORY [Kauai BLNR member]: Mr. Wong, if you know that you can best camouflage against the mountains and that for visual impact that would have less objections, have you considered putting all of [the poles] below the mountain ridgetop? Are we talking about a great deal more of expense just to drop so there is really nothing above the ridgetop?

[MR. WONG]: That's a tough question, because in this area, as most people know, especially in this area going down to the water tanks, there is a hiking trail there. It is a pretty used hiking trail, so that means we would have to bring the poles right up to the hiking trails.

Right now the poles are off of the established hiking trails. The trails that you see are actually illegal trails or trails that shouldn't be used by the public.

MS. McCrory: Would it be easier to move the hiking trails?

MR. Wong: We could consider that, but you got to balance, now, because any time we have to make new trails, we've got to take away vegetation that is on [the] ridgeline. So it has to be a balance of addressing the aesthetic impact versus moving vegetation. That's a trade-off, and, you know, it's definitely something that is a possibility.

But based on the comments we got from the public, this ridge is heavily used by hikers and bikers, so there would be a lot of trade-off as far as vegetation to do that and concerns from people regarding the vegetation up there.

(Tr. 03/22/01, p. 81, line 12 - p. 82, line 18.)

122. The Hearing Officer observed there was no reference in any of the written testimony of any HECO witness to any pole relocation for visual mitigation purposes other than adjustment 1, nor did Mr. Wong testify regarding any relocation other than adjustment 1 in his direct testimony at the hearing. **(Hearing Officer's Report, FOF 143 at p. 32.)**

123. Nevertheless, on redirect examination, Mr. Wong testified that HECO had done some survey work in response to Board Member McCrory's question at the public hearing and had determined that poles 8, 9, and 10 could be moved off the ridge and into the swale between the ridge and St. Louis Heights, so they wouldn't be visible from Manoa, but new easements would be required. **(Wong, Tr. 11/01/01, p. 166, line 22 - p. 168, line 17.)**

124. Although, as noted above, Mr. Wong testified on November 1, 2001 that "we have been talking with our expert witness, Tom [Witten] [sic] about" the alignment, HECO, in fact, did not discuss it with him until November 5, 2001, the same day it elicited Mr. Witten's testimony that he was familiar with the proposal and had looked at two visual simulations of the proposed realignment viewed from Manoa. **(Witten, Tr. 11/05/01, p. 651, line 18 - p. 652, line 9; id., p. 626, line 8 - p. 628, line 8.)**

125. Although Mr. Witten testified that the first time he saw a general pole location study of the relocated pole sites **(Ex H-111)** was on the day of his testimony **(Witten, Tr. 11/05/01, p. 651, line 18 -23; p. 652, lines 5-9)**, the exhibit is dated July 23, 2001. **(Ex. H-111.)** The exhibit had not previously been produced to the Intervenor. **(Wong, Tr. 11/01/01, p. 172, lines 18-21.)**

126. Mr. Witten was not shown any simulations of the visual impacts of the newly proposed realignment viewed from St. Louis Heights (**Witten, Tr. 11/05/01, p. 651, line 21 - p. 652, line 4**) since, although HECO anticipates potential opposition from St. Louis Heights residents, it has not yet assessed the visual impacts from St. Louis Heights. (**Wong, Tr. 11/01/01, p. 172, line 22 - p. 173, line 4.**)

127. The environmental impacts of the new proposed alignment have not yet been assessed. (**Wong, Tr. 11/01/01, p. 171, line 22 - p. 172, line 2.**)

128. Much of the documentation supporting the Revised Final EIS is specific to the pole sites in the existing easement. For example, section 4.9, addressing the potential impacts on flora, is based on the studies conducted by botanist Winona Char. (**Revised Final EIS, p. 4-30.**) Ms. Char testified that her testimony and opinions were based on the assumption that the proposed alignment of the poles would follow the existing alignment. (**Char, Tr. 11/02/01, p. 355, lines 9-14; Char, WDT, p. 6, lines 16-30.**) The survey methods used for Ms. Char's 1993 and 1998 studies did not reveal the presence of three specimens of *Acacia koaia* (dwarf koa trees) located three feet, five feet and eleven feet from the existing easement because those studies concentrated on the areas around the poles and under the easements. (**Char, Tr. 11/02/01, p. 356, line 13 - p. 357, line 14. See also, Exs. H-2, H-4.**) Ms. Char also surveyed the proposed pole locations for adjustment 1. (**Ex. H-5.**)

129. Similarly, the geotechnical and related work done by HECO assumed that the installation of the poles would occur on the existing easements and was limited to the "existing pole locations." (**Ex. H-30, p. 1.**)

130. Although the impacts of this alignment have not been fully evaluated, it appears the so-called "swale" or "McCrorry alignment" would do nothing to mitigate the visual impacts of poles 4, 5, 6, and 7, which will be unaffected by this supposed realignment. (**Witten, Tr. 11/05/01, p. 672, line 24 - p. 673, line 10.**) HECO's simulations demonstrate that those poles will have a significant adverse visual impact on the view of the ridge from viewing locations in Manoa Valley. (**See, e.g., Exs. M-49, M-50, M-55, M-56, M-58, M-59, M-61.**)

131. Although HECO has conducted simulations of this alignment and questioned one of its consultants about them (**Witten, Tr. 11/05/01, p. 628, lines 1-23**), and even attempted to cross-examine a witness from The Outdoor Circle, Mr. Alan Fujimori, about them (**Fujimori, Tr. 11/07/01 p.m., p. 1352, lines 10-12**), HECO has never produced the simulations or any other material concerning this alignment (other than Ex. H-111), despite being ordered to do so (**Id., p. 1352, lines 17-25**).

132. Although the order to produce the documents related to this alignment was made in the context of HECO's attempt to cross-examine Mr. Fujimori

and is prefaced by the comment "if you're going to renew this effort" (**Fujimori, Tr. 11/07/01 p.m., p. 1352, lines 17-25**), it should be clear that the reach of the order was not limited to the cross-examination of Mr. Fujimori but, rather, applied to HECO's contention that this new alternative should be considered by the Board. At the close of the hearing, HECO clearly "renew[ed]" its efforts to propose this new alignment when it argued that the evidence was relevant and that the Hearings Officer and the Board should consider the alternative as a possible mitigation measure. HECO's lead counsel argued:

We wanted to introduce it as new evidence of the fact that we had seriously studied it, studied it to the extent that we had provided the parties and the hearings officer with evidence of the exact locations that we have picked, if the proposal were to go through the swale area, where they would be located.

* * *

So the issue of whether an EIS is required is really before the Board and would be before the Board if you recommended and if they adopted this alignment as a mitigating measure to our proposal.

In that light, it would be perhaps very relevant to the Land Board to consider where the location of this alignment would be situated on Wa'ahila Ridge.

(Hearing Officer's Report, FOF 153 at pp. 33-34; compare HECO's Closing Arguments, pp. 16-17)

3. Landscape Mitigation

133. Mr. Witten's other recommendation with respect to visual mitigation was that trees be planted around poles in the middle ridge area to create a partial screening of the lower portions of the poles and create a greater diversity in the landscape to increase the visual absorption capability of the landscape. (**Witten, WDT, p. 9, lines 16-19; Wong, WDT, p. 5, lines 32-33.**)

134. HECO's simulations demonstrate that given the height of the proposed poles the contemplated landscape mitigation has only a negligible effect on their adverse visual impact. (**See, e.g., Exs. M-49 (without landscape mitigation) & M-50 (with landscape mitigation); M-52 (without landscape mitigation) & M-53 (with landscape mitigation); M-55 (without landscape mitigation) & M-56 (with landscape mitigation); M-63 (with landscape mitigation); M-65 (with landscape mitigation).**) Mr. Witten agreed that landscape mitigation does not successfully

mitigate the negative visual impact of the poles. (Witten, Tr. 11/05/01; p. 666, lines 5-8.)

135. The height of the proposed poles significantly limits the effectiveness of landscape mitigation. Further plantings or vegetation around the poles is difficult because of vandalism and lack of water. xxx

C. The Zond Windfarm Permit Involved Factors Not Present Here

136. When Mr. Luersen was asked, "[b]ased on your analysis, would it be reasonable to grant HECO a Conservation District use permit," he carefully answered, "See, I think it is reasonable for HECO to expect that they would get a permit, and part of that is because transmission lines have been permitted in the Conservation District and built . . . but the other reason is the Board granted a conservation permit to a project in Maui in the spring of 2000. It is the Zond wind farm project[.]" (Luersen, Tr. 11/01/01, p. 212, line 25 - p. 213, line 19; see also id., Tr. 11/02/01, p. 257, line 23 - 258, line 2.)

137. Mr. Luersen testified that there were parallels between HECO's project and the Zond Windfarm project ("Zond project") that interested him, such as the facts that both projects involve tall towers in the Conservation District, there was a concern with the impact on birds with both projects, both projects had native plant species present, and both projects would have visual impacts. Yet, Mr. Luersen testified, Safe Power Action Network ("SPAN"), a group which included members of Malama O Manoa, Life of the Land, and The Outdoor Circle, supported the Zond project. Mr. Luersen testified that he thought it was curious that a project with similar problems would be treated differently on another island. (Luersen, Tr. 11/01/01, p. 213, line 9 - p. 215, line 6.)

138. SPAN's November 9, 1999 letter on the Draft Environmental Assessment for the Zond project commented on the quality of the Environmental Assessment and the visual simulations, and expressed support for an alternative energy source which would allow Maui Electric Company to avoid \$46 million in oil purchases and avoid the air pollution from that oil; however, it also expressed concerns about the visual and noise impacts of the proposed project. (Ex. M-91 .)

139. According to the DLNR staff report on the Zond project, the focus of the testimony at the public hearing, like SPAN's comments, was supportive of "the development of renewable, reliable, and cost-effective energy resources." The staff report observed that "Hawaii's dependence on the use of fossil fuels for electrical energy is an issue most of the residents are aware of and would like to see alternate energy systems be created and encouraged by the State." (Ex. H-42, p. 24.)

140. Mr. Luersen agreed that, as the staff's reasoning for recommending the Board grant the CDUA was explained in the staff report, the applicant benefited from the strong public support for the development of renewable, reliable cost effective energy resources, a factor which would not reasonably be expected to weigh in favor of HECO's CDUA. (Luersen, Tr. 11/02/01, p. 259, line 24 - p. 260, line 5; p. 261, lines 21-25.)

VI. AREA GEOLOGY, TOPOGRAPHY AND GROUNDWATER

A. Description of Area

141. The geology of the Wa'ahila Ridge area is basically volcanic with deep ridges and lots of angles associated with the different microclimates. There are very quick differences in altitude and there is variable rainfall along the ridge. The incidence or exposure is very different in different places. So microclimates are the rule rather than the exception. (Hamblin-Katnik Tr. 11/7/01 at 1305, lines 5-12).

142. There are two streams that run parallel to the ridge: Mānoa and Palolo. (Hamblin-Katnik Tr. 11/7/01 at 1305, lines 16-18).

B. Geology/Topography

143. The geological composition of the lands adjacent to and within the Conservation District on Wa'ahila Ridge consists mostly of basalt ridges. Basalt ridges are erosional remnants of the Ko'olau volcano flow slopes made up of jointed, blocky basalt flows with a covering of silty clay soil. Soils on the steep slopes of the ridge flanks are generally thin and consist of clayish silt with abundant organic debris. Soils on the gentler slopes at the ridge tops are generally several feet thick and have a firm silty clay texture. Saprolite, consisting of decomposed basalt, may be present below the soil on the tops of the ridges. (Revised Final EIS at 4-5).

144. The erosion potential at most of the sites is minimal due to a combination of level terrain combined with thin soils over saprolite and rock. There is some moderate erosion potential at some sites which are steeply sloped. Because of the limited ground clearing and excavation required, the erosion during construction can be limited by the use of best engineering practices. (Fujioka Tr. 11/5/01 at 480, lines 7-17).

145. In the area of soil stability or the potential for soil slippage, soil and rock conditions can support the proposed foundations. (Fujioka Tr. 11/5/01 at 480, lines 18-21). There are a number of factors that could affect the stability of the area such as faults or fractures. Faults result from movements that have occurred since the original laying down of the deposition of the bedding planes. Faulting due to slides in this area would probably be unlikely. Fractures are common and occur during the

cooling of lava flows. They are essentially breaks through the lava. **(Fujioka Tr. 11/5/01 at 521, lines 16-24; at 522, lines 21-23; at 523, lines 1-8; at 525, lines 9-15).** Geologic conditions, such as the presence of faults and fractures, are taken into account during the design of the project. **(Fujioka Tr. 11/5/01 at 525, lines 12-15).**

146. From the base of Wa'ahila Ridge and throughout the Conservation District, slopes range from moderate (11 to 30 percent) to severe (31 to 50 percent) and very severe (over 50 percent). **(REVISED FINAL EIS at 4-11).**

147. Slopes of 11 to 30 percent occur near the base of Wa'ahila Ridge and near the top of the ridge at Wa'ahila Ridge State Recreation Area. The soil consists of silty clay and loam over lava rock or gravelly alluvium. The erosion hazard for 11 to 30 percent slopes on silty clay soils is classified as moderate to severe by the U.S. Soil Conservation Service (USCS). Slopes of 31 to 50 percent occur in the St. Louis Heights area and on the northwest and southeast flanks of Wa'ahila Ridge. Soils consist of silty clay and loam over lava rock or volcanic cinders. The erosion hazard for these soils on slopes of 31 to 50 percent is classified as severe by the USCS. Both sheet erosion (erosion caused by water moving in a sheet over a broad front) and gully erosion (erosion caused by water moving through a gully) are prevalent on these slopes. Slopes of more than 50 percent occur on the northwest and southeast flanks of Wa'ahila Ridge. The slopes are covered by basalt boulders, with scattered thin clay soils interspersed among the boulders. At the crest of the ridge, northwest of the Pukele Substation, the surface consists of very steep slopes in excess of 140 percent developed on saprolite. Slopes greater than 50 percent are not suitable for construction of access roads. Structures situated on slopes greater than 50 percent are susceptible to sliding. The erosion hazard for soils on slopes greater than 50 percent is very severe. **(Revised Final EIS at 4-11).**

148. Twenty overhead poles between Dole Street and the Pukele Substation have been identified for replacement. Of these 20 poles, four (4) are located on 11-to-30 percent slopes; fifteen (15) poles are located on 31-to-50 percent slopes; and one (1) pole is located on a slope greater than 50 percent. **(Fujioka Tr. 11/5/01 at 569, lines 1-6; Revised Final EIS at 4-11).**

149. Most of the pole locations are on the top of the ridge and are fairly level. Even on the top of the ridge, there are level areas on slopes. Therefore even if maps characterize the areas as steep, they may be characterized as steeper than the actual pole sites. **(Fujioka Tr. 11/5/01 at 526, lines 1-15; at 528, lines 13-21 and 24-25; at 529, lines 1-6.)** It should be noted that there are adjacent steep slopes at some locations, which could make the site potentially unstable. Further investigations with borings would help to further evaluate the stability of these sites. **(Fujioka Tr. 11/5/01 at 480, lines 22-25; at 485, lines 11-18; Fujioka Surrebuttal Testimony to Horst Brandes at 4, lines 10-14.)** When a site is referred to as unstable, it means that conditions there at the localized site may result in the failure of pole foundation and

not any generalized instability in the area that would lead to a landslide or affect downslope properties. (Fujioka Tr. 11/5/01 at 568, lines 14-21.)

150. Formal geotechnical field investigations, such as borings, can be performed, as necessary, after required permits are obtained. (Fujioka Tr. 11/5/01 at 485, lines 6-10; at 488, lines 8-17; at 489, lines 17-19; at 490, lines 3-8; at 491, lines 3-11; Fujioka Written Surrebuttal Testimony to Horst Brandes, at 4, lines 7-9; at 5, lines 17-23; Fujioka Written Surrebuttal Testimony to Michael Garcia at 3, lines 41-42; at 4, lines 7-10; at 4, lines 23-28).

151. Borings are done at a later stage in the project rather than at preliminary stages due to the level of effort required, which is similar to the level of effort required for construction of a project. It involves helicopter setups and the mobilization of men and equipment to remote sites. Drilling spoils are developed. Due to the level of effort, the costs involved in doing the foundation investigations is quite significant relative to the cost of the construction and normally not done until the design phase, after the permit and approval of the line is obtained. (Fujioka Tr. 11/5/01 at 569, lines 13-25; at 570, lines 1-7).

152. While subsurface conditions could make a site untenable for the proposed construction based on stability or erosion, those conditions are unlikely in the present case. (Fujioka Tr. 11/5/01 at 485, lines 19-22; Fujioka Written Surrebuttal Testimony to Horst Brandes, at 4, lines 14-16). It is probable that the soil conditions would support the transmission lines given adequate engineering. (Fujioka Tr. 11/5/01 at 490, lines 22-25; at 491, lines 1-2; Fujioka Written Surrebuttal Testimony to Michael Garcia at 4, lines 20-22).

153. If sites are found that could be unstable based on soil conditions or based on possible rock falls, the potential instability could be addressed with the use of appropriate foundation types, such as deep pier foundations or with drilled and grouted-in-place steel anchors or reinforcement. (Fujioka Tr. 11/5/01 at 481, lines 1-6). Furthermore, unusual or other risky conditions can be resolved by moving the pole location during the design process. A relatively large variation in the exact location of the poles, within the general alignment, would not pose a major engineering problem during the design process. (Fujioka Tr. 11/5/01 at 485, lines 22-25; at 486, lines 1-3; Fujioka Written Surrebuttal Testimony to Horst Brandes, at 4, lines 16-19).

154. Investigations of the project area have not revealed odd or unusual aspects of the pole locations which could make them unsuitable for the planned construction of the project with respect to erosion potential or stability. (Fujioka Tr. 11/5/01 at 482, lines 9-18; Exhibits H-29 and H-30).

155. HECO assures that during and after construction, it will use best engineering practices or best management practices for erosion control. (Fujioka Tr.

11/5/01 at 483, lines 11-15; Fujioka Written Surrebuttal Testimony to Hamblin-Katnik at 3, lines 27-31). Topographic surveys may also be conducted, as necessary, once permit approvals are obtained. Topographic surveys serve as a basis for grading and erosion control plans. (Fujioka Tr. 11/5/01 at 487, lines 13-17; Fujioka Written Surrebuttal Testimony to Horst Brandes at 5, lines 1-4). HECO states it will also address the potential for debris flow if necessary after permit approval is obtained. (Fujioka Tr. 11/5/01 at 486, lines 18-21; Fujioka Written Surrebuttal Testimony to Horst Brandes at 4, lines 32-34).

156. There are two possible types of foundations that could be used for the Project: deep pier foundations and anchored spread foundations. (Exhibits M-87 and M-88). Pier foundations insert steel reinforcement as a cage into a hole which is approximately five to seven feet in diameter. The hole is then filled with concrete, with a couple of feet of soil on top, followed by a baseplate that is bolted onto the concrete foundation. The total length of the pier foundation, depending on the soil type, ranges from ten to twenty-five feet. (Fujioka Tr. 11/5/01 at 496, line 25; at 497, lines 1-24). The deepest depth of a pier foundation is thirty feet. (Fujioka Tr. 11/5/01 at 498, lines 20-21). The spread foundation involves a foundation about two to three feet thick with anchors drilled approximately 30 feet. Each anchor is approximately four to six inches in diameter drilled into the ground and grouted into place. (Fujioka Tr. 11/5/01 at 502, lines 17-24).

157. The use of either a deep pier foundation or anchored spread foundations would tend to firmly fix surface soils and reduce the potential for debris flows at the pole foundation locations. (Fujioka Tr. 11/5/01 at 486, lines 22-25; Fujioka Written Surrebuttal Testimony to Horst Brandes at 4, lines 7-9).

C. Groundwater

158. There are water dikes in Mānoa Valley, but they are usually at the head of the valley where the active volcano started originally. This is where dikes are formed because dikes come up at the latest stages of flow. They stop, cool under pressure, and become impermeable. They are found near the volcanic crater and caldera. (Chuck Tr. 11/8/01 at 1643, lines 2-9).

159. It is not known if the poles are located in the area of the dike complexes. (Chuck 11/8/01 at 1643, lines 10-21).

160. There are no studies that indicate that groundwater tables would be encountered when the pier foundations are excavated to a depth of about 30 feet. While the depth to groundwater in the bedrock of Wa'ahila Ridge is not specifically known, it is generally considered to be several hundred feet below the ground surface. Other wells in the area of Mānoa are in the basal area of about plus 20 feet elevation and plus 30 feet at the most. (Chuck Tr. 11/8/01 at 1641, lines 3-25).

161. There will be no unmanageable effect on the flow of groundwater should HECO's use of pier foundations encounter dike complexes underlying Wa'ahila Ridge because the foundations are concrete, which are impermeable. The foundations merely will be replacing the rock dike, and therefore, will not have any different effect on the flow of groundwater. (Chuck Tr. 11/8/01 at 1640, lines 20-25; at 1641, lines 1-2).

162. With regard to the potential for water development, Barry Usagawa, who is the principal planning executive for the Honolulu Board of Water Supply, was contacted and indicated that this area is not slated for groundwater development. (Chuck Tr. 11/8/01 at 1642, lines 4-18).

163. As such, the Project will not have any significant effect on groundwater resources.

VII. ARCHAEOLOGICAL AND CULTURAL ISSUES

A. Archaeological Sites

164. In 1996, an archaeological inventory survey was conducted by PHRI⁸ in connection with the route selection of the transmission line between the existing substations at Kamoku and Pukele. (Rosendahl Tr. 11/6/01 at 764, lines 19-23; Exhibit H-21).

165. The archeological inventory survey was reviewed by the Archaeology Branch of the State Historic Preservation Division and comments were provided. In February 1999, the State Historic Preservation Division concurred with PHRI's findings and recommendations. (Rosendahl Tr. 11/6/01 at 769, lines 20-25; at 770, lines 1-21; Exhibits H-22 through H-24).

166. The methodology used for the survey was standard for archaeological inventory surveys involving relevant background, research into historical documents and archaeological literature, and conducting a field survey of the project area. In this case, a variable intensity survey of the various alignments was done. Relatively higher intensity coverage was given to the natural areas that had not been modified, relatively less intensity to highly developed areas. (Rosendahl Tr. 11/6/01 at 765, lines 13-24).

167. In the course of the archaeological survey, six archaeological sites were identified. Two of the sites were in the Conservation District, and four were in the urban district. (Rosendahl Tr. 11/6/01 at 766, lines 4-7; Exhibit H-21).

⁸ Paul H. Rosendahl, Ph.D. – Consulting Archaeologist, Inc. dba PHRI.

168. Of the two sites in the Conservation District, one was a previously unrecorded site within approximately 1,750 feet seaward of Pukele Substation. This was a relatively recent historic period complex of elements associated with the old Kawao Community Park in the back of Palolo Valley. The second site in the Conservation District was a previously unrecorded site outside but immediately adjacent to the corridor. It was a small complex of dryland agricultural features, stonewalls and terraces on the northwest facing slope of Kalaepohaku Ridge. **(Rosendahl Tr. 11/6/01 at 766, lines 8-19; Rosendahl WDT at 6, lines 29-40; Exhibit H-21).**

169. The other four sites were found in the urban district. These consisted of two previously recorded sites immediately adjacent to the corridor. These include a complex of historical buildings at the University of Hawaii at Mānoa and the Church of the Crossroads. Both of these sites are on the Hawai'i State Register of Historic Places. The Church of the Crossroads is on the National Register of Historic Places. Other sites include a pre-contact cemetery located along Dole Street, and an irrigation ditch that is a remnant of an old irrigated pond field system. **(Rosendahl Tr. 11/6/01 at 766, lines 20-25; at 767, lines 1-19).**

170. The other sites were evaluated using the criteria and process that is utilized by the State Historic Preservation Division. The complex of recent historic elements with the old community park was evaluated as not significant. The three other sites, the dryland agricultural site, the irrigation ditch, and the cemetery were all evaluated as significant for their information content. The cemetery site and the irrigation ditch were evaluated as significant for traditional cultural values. **(Rosendahl Tr. 11/6/01 at 767, lines 22-25; at 768, lines 1-7).**

171. In terms of the alignment alternatives, it is unlikely that the irrigation ditch will be affected by the project since the site is not located next to any existing or proposed pole locations. Any potential impact could be mitigated by avoidance and preservation through the use of archaeological monitoring. **(Rosendahl Tr. 11/6/01 at 768, lines 11-19).**

172. With respect to the Church of the Crossroads and the University Complex, it is unlikely that there will be any impacts other than significant adverse visual impacts discussed elsewhere. **(Rosendahl Tr. 11/5/01 at 768, lines 20-25; at 769, line 1).**

173. In terms of underground alternatives, two sites were potentially impacted: the precontact cemetery under Dole Street. The full extent of the cemetery is unknown. Potential impacts could be mitigated by archaeological monitoring in accordance with a burial treatment plan and a monitoring plan that would be reviewed and approved by the preservation division. There is also a complex of dryland

agricultural features near the underground alternative. Potential impacts could be mitigated by avoidance and preservation with monitoring. (**Exhibit H-21**).

174. In 1997, the National Trust for Historic Preservation ("NTHP") listed Wa'ahila Ridge as one of America's 11 Most Endangered Historic Places. (**Rosendahl Tr. 11/6/01 at 771, lines 13-25**).

175. In response to the NTHP's listing, Dr. Rosendahl prepared an assessment for HECO to determine whether the ridge met the federal criteria for eligibility for inclusion on the national register and/or the criteria for placement on the state register of historic places. This assessment was later supplemented in 1998. (**Rosendahl Tr. 11/6/01 at 770, lines 24-25; at 771, lines 1-17; Exhibits H-25 and H-26**).

176. Dr. Rosendahl determined Wa'ahila Ridge in its entirety did not meet the eligibility criteria for inclusion in the national register. (**Rosendahl Tr. 11/6/01 at 772, lines 1-6**).

B. Dr. Rosendahl's Cultural Impact Assessment Study Was Only an Identification Study and Not a Documentation Study, No Documentation Study Has Been Completed

177. HECO apparently began assessing the impact of its proposed installation of steel transmission poles on the cultural resources associated with Wa'ahila Ridge in 1993, when it first hired Dr. Rosendahl of PHRI. (**Rosendahl, WDT, p. 6, lines 19-29**.) Since that time, Dr. Rosendahl has conducted a number of studies for HECO and rendered other related services. (**Id.**) His work resulted in his November 1998 "Cultural Impact Assessment Study," which provided the main basis for HECO's evidence on the impact of its proposed project on Native Hawaiian cultural practices on Wa'ahila Ridge. (**See Exhibit H-27**.)

178. Dr. Rosendahl's cultural assessment was not intended to be a detailed study but only what he referred to as an "identification" study. Dr. Rosendahl describes his identification study as follows:

This documented effort indicates it [is] likely that the full range of current Native Hawaiian cultural practices associated with Wa'ahila Ridge has been identified, even though only the general nature of these practices has been determined but not documented in detail.

(**Rosendahl, WDT, p. 19, lines 36-39; see also, Rosendahl, Tr. 11/06/01 a.m., p. 773, lines 17-22; and Tr. 11/06/01 a.m., p. 783, lines 1-5**.)

179. In choosing this less detailed level of study, it appears that HECO and/or Dr. Rosendahl presumed that the project was "unlikely to have any determinable adverse impacts on current native Hawaiian cultural practices." Dr. Rosendahl's study states:

The overall rationale guiding the present identification study has been that the level of study effort should be commensurate with the potential of the proposed HECO project for making any adverse impacts upon any native Hawaiian cultural practices currently conducted by cultural practitioners within the Wa'ahila Ridge portion of the transmission line project area. The identification study presented here is believed to comprise a reasonable approach for the assessment of potential cultural impacts within this specific project area. The potential for the project to result in adverse impacts upon any current native Hawaiian cultural practices, beliefs, or features would seem likely to be minimal or indeterminate; that is, given the specific construction details of the proposed project, it is very unlikely that the continued exercise of any current practices would be in any way constrained, restricted, prohibited, or eliminated.

Because the project is believed unlikely to have any determinable adverse impacts on current native Hawaiian cultural practices associated with Wa'ahila Ridge, the level of study effort comprising the present identification study is believed sufficient. . . . Whatever the nature of any current native Hawaiian cultural practices associated with Wa'ahila Ridge, the proposed HECO project, as currently conceived, would not significantly affect the continuation of such practices.

(Ex. H-27, p. 9.)

180. As outlined in Dr. Rosendahl's Cultural Impact Assessment Study, this presumption that there would be no adverse impact apparently guided HECO's approach to assessing the traditional and customary practices on the ridge. Initially, HECO could not identify any traditional cultural practices on the ridge. Its May 27, 1998 Draft Environmental Impact Statement concluded: "No native Hawaiian or other ethnic groups have been identified through research or during the scoping process who are currently using any of the areas along Wa'ahila Ridge associated with the proposed action for any traditional or customary rights. . . ." (Draft EIS, pp. 4-54.) Subsequently, at the request of Historic Hawai'i Foundation, Dr. Rosendahl made a presentation on behalf of HECO on the effects of HECO's projects on historic resources. His conclusion, based on a study commissioned by HECO which he described as "narrowly defined," was that there were "no traditional and customary

access and use rights asserted by any Native Hawaiian groups or individuals." (Ex. H-27, p. 2.)

181. It was only after this presentation and comments on the Draft EIS that HECO undertook to commission the further, albeit limited, Cultural Impact Assessment Study. (See Ex. H-27, pp. 1-3.)

182. The State's Historic Preservation Division also noted that Dr. Rosendahl's study was not a detailed study. In commenting on HECO's Final Environmental Impact Statement, which included Dr. Rosendahl's Cultural Impact Assessment Study, the State's Historic Preservation Division stated:

The [Rosendahl] report is also limited in its level of study. . . . As a follow up to this "identification" study, the authors commit to conducting what they consider a "documentation" study which would hopefully gather more detailed information on any cultural practices and beliefs associated with the ridge. . . . Thus our final assessments on the presence of traditional cultural properties, their significance and their treatment will not be made until the "documentation" study and report are finished and we believe sufficient information is available to compete our review. For this reason, we feel it is important that the applicant commit to completing the "documentation" study within a time frame that coincides with a major, forthcoming step in the planning and permitting process.

(Don Hibbard memorandum to Dean Uchida, dated February 24, 1999, Ex. H-24, pp. 2-3.)

183. The Hearing Officer surmised the State Historic Preservation Division's comments on the study were made in connection with its review of the potential impact of the proposed project on the historic property, "Kauhi the Sleeping Giant," which assessment it is required to make under Chapter 6E, Haw. Rev. Stat., the State's Historic Preservation Program. (Hearing Officer's Report, FOF 199 at p. 43.)

184. The Hearing Officer noted although the "forthcoming step" referred to in the State Historic Preservation Division's letter (Ex. H-24, p. 3) is not defined, it apparently was a reference to HECO's application for a Conservation District Use Permit, the subject of this contested case hearing. (Hearing Officer Report, FOF 200 at p. 43.) In a subsequent letter to Holly McEldowney of the division, Dr. Rosendahl clarified that the further documentation study is to be completed "as a condition of the project's Conservation District Use Permit". (Ex. M-39, p. 2.)

185. The documentation study has not yet been completed.
(Rosendahl, Tr. 11/06/01 a.m., p. 784, lines 12-19.)

C. Traditional Cultural Property--"Kauhi the Sleeping Giant"

186. Dr. Rosendahl's Cultural Impact Assessment Study identified two cultural resources that could be affected by HECO's proposed installation of the transmission poles: (1) the traditional cultural property commonly referred to as "Kauhi, the Sleeping Giant," and (2) traditional cultural practices and beliefs that are associated with Wa'ahila Ridge. (See generally Exhibit H-27.)

1. Definition of a traditional cultural property

187. A traditional cultural property is a site, including a geographic site, that has significance derived from the culture of the place. Professor William R. Chapman, Director of the Graduate Certificate Program in Historic Preservation in the Department of American Studies at the University of Hawaii (Chapman, WDT, p. 1, lines 16-21), described traditional cultural properties as follows:

A traditional cultural property . . . is a property that derives its primary significance from an association with the culture of a specific place. It can take many forms and be understood from a number of points of view. In the case of a property such as the Wa'ahila Ridge, it conforms to an example given in National Register Bulletin 38 as "a location associated with the traditional beliefs of a Native American [in this case Native Hawaiian] group about its origins, its cultural history, or the nature of the world." (Page 1.) The National Register explains that a traditional cultural property, unlike an archaeological site or a historic building, may be more difficult to recognize due to the fact that its significance lies in intangible qualities that are, in a sense, located in the language and culture of the people, that give the site its significance. As a result, a traditional cultural property may look "like merely a mountaintop, a lake, or a stretch of river." (Page 2, NR Bulletin 38.) The existence of such historic properties, therefore, must be ascertained through other sources of information, including published sources and, more typically, interviews with "knowledgeable users of the area, or through other forms of ethnographic research."

(Chapman, WDT, p. 5, lines 20-38 (material in brackets and parentheses in original); see also, Chapman, Tr. 11/07/01 a.m., p. 1194, line 10 - p. 1195, line 2.)

188. Dr. Rosendahl similarly defines traditional cultural property claims as:

claims involving the traditional practices and beliefs of a local ethnic community or members of that community that (a) are associated with a definable physical property (an entity such as a site, building, structure, object, or district), (b) are founded in the history of the local community, (c) contribute to the maintenance of the cultural identity of the community, and (d) demonstrate a historical continuity of practice or belief up to the present--through either actual practice or historical documentation. Furthermore, to qualify as a legitimate traditional cultural property within the historic preservation context, a potential traditional cultural property must be able to demonstrate its historical significance in terms of established evaluation criteria, such as those of the National Register of Historic Places and/or the Hawaii Register of Historic Places.

(Ex. H-27, p. 4)

2. **"Kauhi the Sleeping Giant" and the Legend of Kahalaopuna**

189. The profile of "Kauhi the Sleeping Giant" has been identified as a traditional cultural property and is defined by the ridge line overlooking Manoa Valley. Dr. Rosendahl describes Kauhi as:

The crest of the ridge is a profile of Kauhi, who lies on his back, hands folded on his chest, facing up to the sky and to the gods; Kauhi's head is toward *mauka* (towards the mountains; inland), his legs are the base of Wa'ahila (by Dole Street) and his feet extend into Kanewai Field, where a legendary underground pool was believed to have healing qualities and, today, is part of the Center for Hawaiian Studies of the University of Hawaii at Manoa.

(Ex. H-27, p. 33.)

190. The profile of Kauhi derives from the "Legend of Kahalaopuna." Ms. Maelia Loebenstein-Carter, the Kumu Hula of Ka P~ Hula O Kauano O Wa'ahila and a Native Hawaiian and practitioner of traditional and customary rights within the meaning of the PASH⁹ Hawaii Supreme Court decision, summarized the legend as follows:

⁹ See Public Access Shoreline Hawai'i v. Hawai'i County Planning Comm'n, 79 Hawai'i 425, 903 P.2d 1246 (1995) (PASH).

A. Kahalaopuna was the goddess of Manoa and she was betrothed to a prince, Kauhi, from Waikiki. And she was the most -- as the legend goes, she was the most beautiful princess ever known.

And there were people, there were men who were jealous of her beauty because they couldn't have her. So they made up rumors that she was being unfaithful to Kauhi. Unbeknownst to her family, he had called her and he killed her.

Her guardian, which was the pueo, her aumakua, brought her back to life. He did it three times, he killed her.

On the third time, the elepaio, the little messenger bird, went and told her family what had happened. The more common legend would be that Kauhi was punished. And because he was from Waikiki, he was turned into mano, a shark.

The other version is he was punished by being encased in stone and always having to look up at Kahalaopuna, who was the rainbow, and that was his lifelong punishment.

Q. And being encased in stone meaning up on the ridge in Wa'ahila?

A. Up on the ridge, his profile is up there.

Q. Where did you hear that ending?

A. From my grandmother.

Q. Auntie Mae?

A. Auntie Mae.

Q. When was that? From small-kid time?

A. From small-kid time, yeah. You always hear different versions of stories. It's like anything. When you read Greek and Roman mythology, there's always different perspectives.

So I had heard that because I think people who live on the ridge and who live in Manoa are more familiar with that ending than just the regular storybook ending of him being turned into a shark.

(Loebenstein-Carter, Tr. 11/07/01 p.m., p. 1369, line 12 - p. 1373, line 23; see also Woodside, Tr. 11/08/01 a.m., p. 1440, line 25 - p. 1443, line 16; Ex. M-7, Chant to Kahalaopuna; and Ex. H-27, p. 33.)¹⁰

191. The legend of Kahalaopuna and the profile of Kauhi have contemporary meaning in the Hawaiian culture and contribute to the maintenance of cultural identity. As Ulalia Woodside, also a Native Hawaiian and traditional and cultural practitioner, testified:

As a young girl I grew up with the story of Kahalaopuna and Kauhi. In addition to teaching appropriate and inappropriate human behavior, these traditions of particular places, and the characteristics of the specific elements of those places, provide an insight to the phenomenal understanding that the Hawaiian had and continues to have of the 'aina.

(Woodside, WDT, p. 3, lines 18-22.) Dr. Rosendahl also indicated, in his Cultural Impact Assessment Study:

The profile is a physical reminder of Kauhi's punishment and teaches that the gods will punish you if you behave inappropriately. The profile also reminds future generations that the gods are greater than mortal humans and are not to be trifled with.

(Ex. H-27, p. 33.)

192. The profile of Kauhi the Sleeping Giant, meets the qualifications for being a traditional cultural property (Rosendahl, Tr. 11/06/01 a.m., p. 776, lines 6-15; p. 777, lines 8-11; p. 794, line 21 - p. 795, line 15; Chapman, Tr. 11/07/01 a.m., p. 1195, lines 3-8).

3. Adverse impact on the profile of Kauhi

193. Although agreeing that the profile of Kauhi qualified as a traditional cultural property, HECO's consultant Dr. Rosendahl did not believe that the proposed installation of the poles would have a substantial adverse impact on it. The bases for his conclusion were that the proposal involved only the pole for pole replacement of existing poles, the topography of the ridge would not be altered in that no bulldozing or terrain modification would occur, and the profile could continue to be used as a reference in telling the legend with which it is associated. (Rosendahl, Tr. 11/06/01 a.m., p. 780, lines 5-25.)

¹⁰ A version of the Legend of Kahalaopuna is recited in *The Legends and Myths of Hawaii*, by David Kalakaua (Charles L. Webster and Co., New York, 1888), at 509.

194. The Hearing Officer observed that Dr. Rosendahl, in coming to his conclusion, placed too much emphasis on his contention that there would be no bulldozing and terrain modification and therefore the ridge could still be used as a reference point for the legend. The Hearing Officer thought such emphasis ignores the impact that the significantly changed views of the ridge (see, section V, above), while not necessarily altering the geologic outline of Kauhi, would nevertheless have an impact on cultural practitioners and others viewing the ridge. (**Hearing Officer's Report, FOF 210 at p. 48.**) Indeed, Dr. Rosendahl agreed that measuring the impact of the poles on the profile of Kauhi also has a subjective component. (**Rosendahl, Tr. 11/06/01 a.m., p. 780, lines 5-14, and p. 821, line 24 - p. 822, line 17.**) The adverse impact of the poles, albeit subjective, is made clear by the testimony of Native Hawaiian cultural practitioners Loebenstein-Carter:

The poles will also affect the profile of Kauhi. I agree with Kimo Alama Keaulana when he says the taller poles are similar to modern graffiti [see Exhibit H-27 at page 34]. Never would it occur to anyone to place electric poles along the ridges of Mt. Rushmore, no matter how desperate the need for electrical power is. That would be defacing a "sacred monument". I feel the same way about Wa'ahila and her ridges . . . she is sacred to us as a people and should not be defaced any further.

(Loebenstein-Carter, WDT, p. 6, lines 5-10.)

195. The Hearing Officer surmised it does not appear that Dr. Rosendahl even considered the adverse visual impact the increased size of the proposed poles would have on the ridge as compared to the existing poles. (**Hearing Officer's Report, FOF 211 at p. 48.**) Dr. Rosendahl testified:

Q. My question again is: As I understand your testimony, one of the reasons you do not believe there's a substantial adverse impact is because there's a pole-for-pole replacement that is taking place?

* * *

A. Yes.

Q. But it really isn't a pole-for-pole replacement, is it? We're not talking about replacing 40-foot poles with 40-foot poles, are we?

A. No.

Q. We're talking about poles that are more than two times as big?

A. I believe in mine I said pole-for-pole replacement with taller poles.

Q. Which would be substantially more visible to those in the surrounding communities?

A. I don't believe I made that assessment.

Q. No, no. I'm asking you. Do you think they would be substantially more visible from surrounding communities?

A. To tell you the truth, I never thought of *whether* they would be substantially more visible.

(Rosendahl, Tr. 11/06/01 a.m., p. 829, line 11 - p. 830, line 9.)

196. As noted above, HECO's proposed poles and transmission lines will have a significant adverse visual impact on Wa'ahila Ridge and, thereby, on the profile of Kauhi. This will significantly and adversely affect this traditional cultural property. Although HECO's proposed poles may still allow the ridge to be referred to as the profile of Kauhi, they would still have a significant and adverse impact on the profile of Kauhi because of their size. xxx

D. Traditional Cultural Practices

1. Wa'ahila Ridge is an area for the active exercise of Native Hawaiian cultural practices

197. Wa'ahila Ridge is a popular area for the active exercise of Native Hawaiian cultural practices. Dr. Rosendahl's Cultural Impact Assessment Study describes these generally as follows:

Cultural practices and beliefs were, for the most part, associated with *hula*, *lei* making, experiential learning through the *'aina* (land) or environment, *Wahi pana* (celebrated places) as providing a sense of place-both spiritually and culturally, and the passing on of cultural knowledge through *mo'olelo* (stories), chants, *hula*, associated place names, and elements of nature, such as wind, rain, waterfalls, mountain ranges and peaks.

(Ex. H-27, p. 28.) The study goes on to describe 21 practices and beliefs associated with Wa'ahila Ridge, and identifies 22 plants used for *hula*, *lei* making, and related

activities, and 2 plants that are available for medicinal purposes. (Ex. H-27, pp. 28-32.) Its proximity to urban Honolulu makes it a popular area for the exercise of traditional cultural practices. (Rosendahl, Tr. 11/06/01 a.m., p. 775, line 24 - p. 776, lines 5; p. 803, lines 4 - 16; Ex. H-27, p. 32.)

198. While describing generally the nature of the traditional cultural practices, Dr. Rosendahl's report notes that, "[d]etailed and specific information regarding distribution of resources and exactly where cultural practitioners go to gather was not obtained due to time and privacy constraints." (Ex. H-27, p. 32.)

199. However the evidence disclosed at least one hula halau named in honor of Wa'ahila Ridge, Ka Pa Hula O Kauanoë O Wa'ahila. Founded by Aunty Mae Loebenstein, the halau and its haumana (students) frequent the ridge for educational and cultural purposes, including to gather for hula, lei making, oli (chant), and for other activities. The halau's current kumu hula, Ms. Loebenstein-Carter, described the activities of her halau on Wa'ahila Ridge:

Q. Now, does the movement -- do the movements of the plants and the rain up on Manoa, up on Wa'ahila Ridge affect your hula or does that have anything to do with your hula?

A. It does, because we try to take our haumana there. Being most of us are raised in a very Western world, it's hard to interpret a hula or a mele or a song based on just written words. You can't know what the wind feels like or what the rain feels like or how they play with each other unless you're actually in it.

Like our halau oli, our halau chant, it talks about Wa'ahila and how the wind and the rain and the elepaio and all of these elements are combined together.

And I can teach it to a student in a classroom and they can understand it in a Western mind-set, but until they actually go to Wa'ahila and chant and blend their voice with the wind, with the rain and with all of those elements, they'll never completely understand it.

Q. So do your haumana or students go up onto the ridge to do this?

A. Yes, we try to take them about three times a year at least as a group, but it's very difficult to take a big group hiking, to try to explain everything that you see along the hike.

And the other side, too, is the more people we take, the more damage can be caused. So we try to limit the group excursions, but our haumana are encouraged to go on an individual basis.

And, basically, it's to reconnect themselves, to get inspiration. Sometimes the silence of Wa'ahila, if you just sit there and you just feel that wind and that rain and you hear it, that is more powerful than sitting in a class and just drilling into them this is what you're supposed to sound like, this is what you're supposed to look like. It has more of a personal effect and more of a reconnection for them if they go up there.

* * *

A. Besides going up to oli and to dance, we often go up to gather, to gather flowers, anything that we would need, especially if it's something important as far as a performance or something that has -- we need to follow protocol or etiquette of hula, then we would go up to Wa'ahila to gather.

(Loebenstein-Carter, Tr. 11/07/01 p.m., p. 1358, line 2 - p. 1360, line 19 and p. 1363, line 2 - p. 1364, line 12; see also Woodside, Tr. 11/08/01 a.m., p. 1436, line 14 - p. 1437, line 3; and Ex. H-27, p. 32.)

200. Many of these practices occur in the area where the existing poles are.
(Loebenstein-Carter, Tr. 11/07/01 p.m., p. 1365, line 25 - p. 1368, line 7; Woodside, Tr. 11/08/01 a.m., p. 1439, line 9 - p. 1440, line 24.)

2. Adverse impact of steel transmission poles on the exercise of traditional cultural practices

201. The Executive Summary of HECO's Revised Final Environmental Impact Statement describes its consultant as having broadly concluded: "the construction of the proposed action, which consists of replacing existing subtransmission poles with taller poles within the same general area, should have no significant or adverse effect on any existing traditional and customary practices or on the potential traditional cultural property identified as currently associated with Wa'ahila Ridge, with the exception of short-term construction-related impacts such as noise, dust, and access limitations for safety reasons." (Revised Final EIS, p. ES-12.)

202. However, as one other of HECO's witnesses acknowledged (see Luersen, Tr. 11/01/01, p. 209, lines 8-12, p. 210, lines 2-5), Dr. Rosendahl's conclusions were based on only one aspect of the traditional cultural practices exercised on the ridge.

203. In assessing the impact of the new steel poles, Dr. Rosendahl divided the traditional cultural practices into two categories. The first category was:

Practices with active behaviors involving both observable activities with material results and their inherent values or belief.

(Ex. H-27, p. 39; Rosendahl, WDT, p. 20 (bolded material in original)) Dr. Rosendahl described these practices as follows:

Active behaviors generally have associated beliefs and values with them, but the active behaviors generally involve gathering and collecting many different plants, plant materials for various purposes. Many of them are related to hula. Others are related to lei-making for other than hula activities, and some of them are for medicinal uses.

(Rosendahl, Tr. 11/06/01 a.m., p. 774, line 24 - p. 775, line 5.) The second category he identified was:

Practices with more passive behaviors which seek to produce nonmaterial results.

(Ex. H-27, p. 39; Rosendahl, WDT, p. 20 (bolded material in original)) These practices were described as follows:

The passive behaviors involved what I would call more experiential activities focusing on what, for lack of a better term, I referred to as communing with nature. By that I mean behaviors relating to spiritual actions, behaviors that reaffirm and reinforce family and kinship ties and relationships to various aspects of the natural environment.

(Rosendahl, Tr. 11/06/01 a.m., p. 775, lines 6-13.)

204. In concluding that the installation of the new steel poles will not have a significant adverse impact, Dr. Rosendahl made clear that this conclusion applied only to his first category of active traditional cultural practices; however, he further limited the reach of his conclusion with the qualifying language: "at least for the active behavior and material results." In thus qualifying his conclusion, he thereby excluded such active practices to the extent they have associated "inherent values or beliefs." (Ex. H-27, p. 41; Rosendahl, WDT, p. 27, lines 38-43.) Dr. Rosendahl's exclusion of the value or belief component of such active behaviors was made clear in his oral testimony:

Q. On the one hand you seem to say its physical [the active behavior], so, you know, if a pole is there you go around it, it's not going to interfere. Is that the sense in which you mean it?

A. Let me take a stab at answering it. In one sense I don't believe that practices would be adversely impacted in the sense that they still will be able to take place up there. The question of whether or not one perceives an adverse impact on one's values gets to be pretty subjective, and on the one hand I don't think it's possible to in any way quantify these kinds of effects. Individuals will assert that it is their perception that their value has been negatively impacted.

* * *

Q. To the extent that the active behaviors have some connection with cultural beliefs, wouldn't your inability to come to a conclusion as to the adverse impact apply to those active behaviors which are associated with certain beliefs even though you might have a leaning?

A. I see what you mean. I would allow it's possible.

Q. One follows from the other, wouldn't it?

A. Yes.

(Rosendahl, Tr. 11/06/01 a.m., p. 808, line 18 - p. 809, line 6; p. 815, line 19 - p. 816, line 3.)

205. Regarding the traditional cultural practices which are more passive and are related to spiritual actions, his second category of protected activities, Dr. Rosendahl testified that he could reach no conclusion on the impact of the project on these activities because of "the subjective nature of any adverse effects that might be perceived upon the practices, beliefs and values involved . . ." (**Ex. H-27, p. 28, lines 8-10.**) He testified:

With regard to the other kinds of behaviors and practices, the ones I referred to as ones with more passive behaviors, I would say to assess potential effects is a bit more difficult because of the subjective nature of any adverse effects that might be perceived on practices and beliefs and values. I don't think it's possible to assess or quantify in any objective manner the significance or the adverse effects that practitioners claim that they might experience.

(Rosendahl, Tr. 11/06/01 a.m., p. 779, lines 7-16; see also Rosendahl, Tr. 11/06/01 a.m., p. 811, lines 8-13.) Thus, Dr. Rosendahl was unable to objectively assess the impact of HECO's proposed project on the activities with a more spiritual nature.

206. Dr. Rosendahl acknowledged the active behaviors often have a spiritual aspect to them. (**Rosendahl, Tr. 11/06/01 a.m., p. 787, lines 17-20.**) This is aptly described by Native Hawaiian cultural practitioner Ulalia Woodside:

Q. As I understand your testimony, when you have your gathering activities and you're picking certain kinds of flowers for your lei, this is actually picking part of the deity?

A. Right. And there's prescribed behaviors and practices or protocol that you have to engage in. You need to ask permission of the plant. It's not like you just go in and, okay, I'm going to take everything.

Q. Would it be fair to say that there is a spiritual component to that activity?

A. Correct. And as a practitioner, if you're frequenting the area, you should observe the health of the area, to recognize whether your natural resources are healthy or not, and then you're able to ask permission to take these plants.

(Woodside, Tr. 11/08/01 a.m., p. 1437, line 10 - p. 1438, line 21; see also Loebenstein-Carter, Tr. 11/07/01 p.m., p. 1359, line 5 - p. 1360, line 19, quoted above at FOF ¶ 199 xxx) (explaining the special wind and rain of Wa'ahila Ridge and how her halau's students must go to the ridge to better understand them as they incorporate them in their hula and oli.)

207. Thus, since these "active" traditional cultural practices may have a spiritual or belief component to them, Dr. Rosendahl's conclusion that HECO's installation will have no impact may be erroneous. **(Rosendahl, Tr. 11/06/01 a.m., p. 808, line 18 - p. 809, line 6; p. 815, line 19 - p. 816, line 3.)**

208. In terms of the impact of the new taller poles on the exercise of their traditional cultural practices, Maelia Loebenstein Carter testified:

HECO's proposed taller poles and additional lines will have a significant impact on my and the halau's cultural practices on the ridge. The mana of Wa'ahila has already been compromised by the current poles, there is no doubt about that. However, adding taller poles with bigger bases and with additional transmission lines will, in my opinion, certainly add to the negative effects on the ridge. I cannot see how the whistling and singing of the Kahaukani wind will not be altered by the larger and higher poles with the additional cables. As I testified above, the winds at Wa'ahila are different from the winds in other valleys and areas of our Islands. If the effects on the winds are further affected by the new poles and lines, which I am certain will happen, the spirituality of Wa'ahila will be adversely changed. Moreover, just the visual impact of these larger poles and additional lines will affect the mana of Wa'ahila. As I and our haumana hike along Wa'ahila, we cannot avoid the greater intrusions now being proposed by HECO.

(Loebenstein-Carter, WDT, p. 5, line 35 - p. 6, line 3.) Ulalia Woodside similarly testified:

The increased size and heights of the proposed poles and lines will intensify the urban presence and impact on the domain of the gods. They will make worse the impact on the plants and kino lau and will impact the ability to fully experience and interact with Wa'ahila. As development continues, it becomes increasingly difficult on O'ahu to find those places that are untouched. Places where we are able to see the 'aina as our kupuna saw it.

(Woodside, WDT, p. 8, lines 16-21.)

VIII. FLORA AND FAUNA

A. Flora

209. Char & Associates was hired by HECO to investigate the flora in the project area of Wa'ahila Ridge. Char & Associates conducted a series of surveys and prepared reports from 1993 to 1999 regarding the flora in the project area of Wa'ahila Ridge. (Char WDT at 3, lines 16-35).

210. The first report was prepared in 1993 and contained a general survey of the project's corridor to assess the different vegetation types and threatened and endangered species that might be in the project area. There were no listed, proposed, or candidate threatened and endangered species along or near the corridor. The study concluded there would be no significant impact on botanical resources. (Char Tr. 11/2/01 at 334, lines 19-21; Char WDT at 4, lines 14-18; Exhibit H-2).

211. In October 1996, Char & Associates prepared a second report of the project's corridor to include an additional discussion of an underground alignment along Wa'ahila Ridge. The 1996 study concluded there were no listed, proposed or candidate threatened and endangered species or a species of concern along or near the corridor. However, construction of the underground alignment and the establishment of the 25-foot-wide grassed corridor over the line would have a considerable impact on the vegetation. (Char Tr. 11/2/01 at 335, lines 2-6; Char WDT at 4, lines 20-25; Exhibit H-3).

212. The third report, which involved a pole-to-pole study, was prepared in August, 1998. This report concluded that there were no listed, proposed or candidate threatened and endangered species or a species of concern along or near these pole sites. (Char Tr. 11/2/01 at 334, lines 21-22; Char WDT at 4, lines 27-31; Exhibit H-4).

213. The fourth report dated July 1999 surveyed the project area based on a proposed realignment (Adjustment 1). None of the plants found at the five new pole locations were listed, proposed or candidate threatened and endangered species or a species of concern. (Char Tr. 11/2/01 at 334, lines 22-24; Char WDT at 4, lines 33-36; Exhibit H-5).

214. The fifth report also dated July 1999 looked specifically at the *Acacia koai'a* on Wa'ahila Ridge. *Acacia koai'a*, a species of concern, is located adjacent to the existing

HECO easement between poles P10 and P9. There are three trees, ranging in height from thirteen (13) to sixteen and a half (16.5) feet. The trunks of the trees are located outside the easement, but a portion of the branches extends into the easement. The trunk of the largest tree is located five (5) feet away from the easement, while the trunks of the other two smaller trees are located at a distance of eleven (11) feet and three (3) feet, respectively, away from the easement. (Char Tr. 11/2/01 at 334, line 25; at 335, line 1; at 226, lines 6-12; at 341, lines 21-25; at 342, line 1; Char WDT at 4, lines 33-41; Exhibit H-6).

215. Field studies were conducted at various times. In most cases, new poles would be placed on or next to the existing pole locations. Pole transport and installation will involve use of a helicopter in most circumstances, so field studies focused on the areas around and adjacent to the poles as the vegetation in these areas will be directly impacted by the project. (Char Tr. 11/2/01 at 335, lines 10-17).

216. Vegetation around the poles and along the power lines, is dominated by introduced species, such as koa haole and guinea grass on the lower elevation areas. (Char Tr. 11/2/01 at 335; lines 17-22). In fact, eighty (80) percent of the flora in the lower area of the ridge (below one thousand feet) consists of alien species with isolated individuals of native plants here and there. (Woodcock Tr. 11/1/01 at 189, lines 7-17).

217. In the upper elevation areas, there are strawberry guava, fiddlewood, and forestry plants. Twenty-four native species were found during the surveys: sixteen are indigenous (are native to the Hawaiian islands and elsewhere) and eight are endemic (native only to the Hawaiian islands). The native species, which occur around the pole sites, also occur throughout the surrounding area and in similar habitats throughout the islands. Endemic species include koa, koaia, ohia lehua, and akia. (Char Tr. 11/2/01 at 335, lines 17-25; at 336, lines 1-5; Char WDT at 6, lines 24-27).

218. In summary, disturbance of the vegetation is expected to take place primarily at each of the new pole locations. The proposed project is not expected to have an effect on the *Acacia koai* 'a if care is taken not to disturb the plants during the construction phase. (Char Tr. 11/2/01 at 336, lines 13-17).

B. Fauna

219. On Wa'ahila Ridge there are a large variety of introduced species of no biological importance, and approximately four species of snails that are native to Hawai'i, including three unidentified species of the genus *Tornatellides* and *Succinea caduca*. (Hadfield WDT at 4, lines 23-25; Exhibit H-8).

220. None of the anthropod species found on Wa'ahila Ridge during surveys are considered sensitive by the U.S. Fish and Wildlife Service. (Revised Final EIS at 4-41).

221. One anthropod species, the Blackburn's butterfly, that was formerly a species of concern was also found in the project area. (Revised Final EIS at 36).

222. Although the activities necessary to construct the proposed project would lead to the deaths of some non-native and native Hawaiian snails, none of the species found in the malacological survey is in immediate danger of extinction. (Hadfield WDT at 6, lines 19-21).

223. The *Tornatellides* species are usually fairly widespread and seem to have adapted to the disturbed habitat and exotic vegetation surrounding the existing power poles. (Hadfield Testimony at 6, lines 25-26).

224. More specifically, none of the snails found are currently listed on or are candidates for the federal or state endangered or threatened species lists. (Hadfield WDT at 5, lines 9-12). However, the *Succinea caduca* snail is listed as a species of concern. (Hadfield WDT at 5, lines 19-28; Exhibit H-8).

225. While the *Succinea caduca* is widely, though sporadically, distributed in lowland and coastal areas, these snails were found near most of the pole sites for the project. Shells of *Succinea caduca* were particularly abundant at the lowest elevation sites near Dole Street (below 600 feet elevation). (Hadfield WDT at 4, lines 23-31; Exhibit H-8).

226. The most numerous population of the *Succinea caduca* was found at pole P26. (Exhibit H-8).

227. The Project will not cause endangerment to the *Succinea caduca* species. (Hadfield WDT at 6, lines 30-31).

228. Surveys were conducted in the project area, which resulted in two reports being prepared for the Project. The first report was prepared in February 1993 by Mr. Phillip Bruner, while the second follow-up report was prepared in August 1999 by Rana Productions. (Exhibits H-10 and H-11).

229. For the bat survey, two broadband bat detectors were deployed for two nights. In addition, visual scans during twilight hours on two mornings and two evenings were made to look for bats and night flying birds. During the course of avian sampling, there were 27 count stations on Wa'ahila Ridge. In addition, 12 count stations along roadways and in developed areas along the project corridor were duplicated. At each station, an eight-minute unlimited distance variable circular plot count of avian species was conducted, which is a commonly accepted technique for censusing forest birds in Hawai'i. (David WDT at 4, lines 25-31, 40-42).

230. There were 22 species of birds recorded in the project area. Of the 22 species, 19 are alien species, one is an indigenous seabird, and one is a native migratory species, and one species, the O'ahu 'Amakihi, is an O'ahu endemic species. In addition, a bat survey was conducted. (David WDT at 4, lines 12-27).

231. During the surveys, O'ahu 'Elepaio, Newell's Shearwater, Pueo or the Hawaiian hoary bat were not detected within the project area. (David WDT at 5, lines 6-9).

232. The fact that the studies by Mr. Bruner and Rana Productions did not detect the O'ahu 'Elepaio is not surprising given the historical data as to where the O'ahu 'Elepaio are now found. (David WDT at 5, lines 16-18). All published and commissioned data indicates that there is no current use of the habitat within the proposed corridor by the O'ahu 'Elepaio and there has not been any usage for many years. (David Tr. 11/5/01 at 465, lines 7-9; Exhibit H-72).

233. While the best chance to find the O'ahu 'Elepaio would be before its nesting season which runs between February and May, the O'ahu 'Elepaio is not a difficult species for a field ornithologist to find at any time of the year. (David Tr. 11/5/01 at 469, lines 4-8; at 475, lines 12-16).

234. The O'ahu 'Elepaio was listed as endangered on April 18, 2000 by the U.S. Fish and Wildlife Service. In June 2001, the U.S. Fish and Wildlife Service published a proposed critical habitat rule in the Federal Register. (David WDT at 3, lines 37-40). That rule is now final.

235. The U.S. Fish and Wildlife Service's critical habitat designation is consistent with the spirit of critical habitat. The critical habitat designation not only takes into account where the O'ahu 'Elepaio is currently located but also the locations to where the species might expand, and which is sufficient to recover the species. (Conant Tr. 11/8/01 at 1395, lines 9-21).

236. The proposed critical habitat does not encompass the proposed project area. While the critical habitat is in the vicinity of the project area (upslope), it is not within the project area. (David WDT at 6, lines 8-22; Exhibits H-12 and H-71; Exhibit T-4).

237. Assuming that the O'ahu 'Elepaio is found within the project area, there may be individual displacement due to construction activity. Following completion of the construction phase, impacts would be tied to vegetation management; however, the herbicides that HECO utilizes have been approved by the EPA for use in watershed areas. (David WDT at 5, lines 37-40).

238. Based on an examination of the Project's impacts on flora and fauna, the Project will not cause substantial adverse impact to these resources within the surrounding area, community or region except during the construction phase.

IX. PRACTICABLE ALTERNATIVES

A. An All Underground Route Outside the Conservation District is a Practicable Alternative

239. The Revised Final EIS analyzed 11 different alternative transmission lines to connect Kamoku substation and Pukele substation. (See, e.g., Revised Final EIS, p. ES-6 - ES-7; Luersen, Tr. 11/01/01, p. 199, lines 1-2.)

240. Two of the 11 alternatives identified in the Revised Final EIS are entirely underground and go through Palolo Valley rather than over Wa`ahila Ridge. These routes do not require the use of Conservation District land. (Revised Final EIS p. 3-1 - 3-2, 3-27; Luersen, Tr. 11/02/01, p. 286, line 21 - p. 287, line 12.)

241. The two underground alternatives up Palolo Valley follow the same route, but use different technologies; one uses solid dielectric cross-linked polyethylene construction ("XLPE"), and the other uses high pressure fluid filled pipe construction ("HPFF"). (Revised Final EIS, pp. 3-1, 3-14.)

242. According to the cost estimates in the Revised Final EIS, which are in 1999 dollars, the cost of the Palolo XLPE alternative is \$39,369,084; this is approximately \$8.6 million, or 28%, more than the cost of HECO's preferred alternative over Wa`ahila Ridge, which would cost \$30,751,476. (Ex. M-82; Revised Final EIS, p. 3-10, Table 3-2; Luersen, Tr. 11/02/01, p. 239, lines 10-25.)

243. The estimated cost of the Palolo HPFF alternative is \$46,402,903, approximately \$15.7 million, or 51%, more than HECO's preferred alternative. Revised Final EIS, Table ES-1 (Ex. M-82); id., p. 3-10, Table 3-2

244. Although HECO stated at the public hearing that the Palolo underground alternative would cost \$15 million more than going overhead over Wa`ahila Ridge (Morikami Tr. 03/22/01, p. 40, lines 13-15), that cost differential is for the Palolo HPFF alternative. HECO's preferred underground technology is XLPE. The underground portion of HECO's preferred alternative is XLPE and there appears to be no reason that HECO would not also select XLPE if it were to route the line underground up Palolo Avenue. (Luersen, Tr. 11/06/01 p.m., p. 926, line 25 - p. 927, line 6; Shirai, Tr. 11/07/01 a.m., p. 1089, line 18 - p. 1090, line 20.)

245. According to HECO's calculations, its preferred alternative would cost the average residential ratepayer \$.55/month. If the line were built up Palolo Avenue using XLPE construction, the average residential ratepayer's bill would increase by \$.71/month, a difference of only \$.16/month to underground the line. (Luersen, Tr. 11/06/01 p.m., p. 925, line 11 - p. 926, line 14; Ex. H-43, Table 12.) Whether an actual rate increase would be necessary at all will of course be determined by the PUC based on HECO's revenue requirement for all approved operations and expenses.

246. HECO acknowledges that the underground alternatives through Palolo Avenue are viable alternatives which may be pursued in the event that the CDUA is denied. (Revised Final EIS, p. 3-27; Luersen, Tr. 11/02/01, p. 247, line 9 - p. 248, line 1.)

247. To date, HECO appears to have spent at least as much on this project to address the massive community opposition than the additional \$8.6 million it would cost to place the line underground in Palolo. The multiple versions of the EIS alone cost approximately \$5 million (see Shirai, Tr. 11/06/01 p.m., p. 1069, lines 1-7). HECO's 1999 Capital Expenditures Budget indicates that \$4.7 million was spent before December 1998, and \$3.5 million was budgeted for 1999. An estimated \$2-3 million was budgeted for 2001 for such things as interest

and legal expenses, and the amount spent in 2000 is unknown. (Ex. L-529, p. 4; Shirai, Tr. 11/07/01 a.m., p. 1099, line 25 - p. 1101, line 4; id., p. 1082, line 13 - p. 1083, line 10.)

248. HECO recognizes the benefits of the Palolo underground route, particularly the aesthetic benefits, but appears to be operating under the assumption that in order to obtain PUC approval for that route, the Board must first deny the CDUA, leaving the Palolo underground route as the only available alternative. Mr. Shirai testified, for example, that the reason HECO had undertaken such a massive effort promoting its preferred route, at a cost (close to) the cost differential between its preferred route and the Palolo XPLE underground route, was that "ultimately the regulators [at the PUC] are going to say is that a justifiable cost and we would have to say we're at Palolo because we had no other alternative." (Shirai, Tr. 11/06/01 p.m., p. 1073, lines 11-13. See also e.g., Morikami, Tr. 03/22/01, p. 46, line 16 - p. 47, line 8; id., p. 48, lines 4-11; Luersen, Tr. 11/02/01, p. 243, lines 1-10; id., p. 244, lines 1-5.)

249. HECO apparently believes that the PUC would not approve an underground route "unilaterally" proposed by HECO for aesthetic reasons because prior PUC decisions established the precedent that aesthetics is not a compelling reason to put transmission lines underground at additional cost to the ratepayers. (Luersen, Tr. 11/02/01, p. 203, lines 13-18; id., p. 242, line 21 - p. 243, line 10; id., p. 244, lines 1-5.) However, Hawai'i Revised Statutes ("HAW. REV. STAT.") Section 269-27.6, the statute governing the PUC's determination of whether transmission lines should be overhead or underground, was subsequently amended by Act 95 of the 1997 Legislature. The amendments broaden the criteria which the PUC must consider in making that determination. (See Ex. M-83.) The PUC may now consider any relevant factors including proximity to natural resources and public sentiment.

250. Other than HECO's assumption that the PUC would not approve an underground route unless the CDUA were first denied, the only other reason HECO offered for pursuing the overhead alternative on Wa'ahila Ridge in the face of costs that at least approach the incremental cost to put the line underground, is that obtaining permits for an underground route up Palolo Valley would present "significant challenges." (Shirai, Tr. 11/07/01 a.m., p. 1101, lines 5-15.) However, Mr. Shirai was unable to articulate any additional permits that would be required for the Palolo underground alternative and the Revised Final EIS indicates HECO's belief that the underground alternative would not require an EIS, a CDUP, or construction plan approval from DLNR, all of which are required for its preferred route. (Revised Final EIS, Table 5-1, p. 5-31.)

251. It appears that HECO's concern was not with permitting challenges presented by the Palolo underground route, but rather with the fact that key legislators have voiced opposition to the Palolo route. (Hearing Officer's Report, FOF 270 at p. 61.) Mr. Shirai testified, for example, that one of the things HECO took into consideration was that "[w]e were going to face strong opposition to [the underground Palolo alternative], and as we mentioned before, the Speaker of the House, Calvin Say, lives in that district." (Shirai, Tr. 11/07/01 a.m., p. 1087, lines 14-19.) Later, Mr. Shirai testified that Speaker Say "is a very influential person in this state. We have to deal with the Speaker," and that "[Speaker Say] has said that he does not support a Palolo alignment." (Id., p. 1158, lines 3-4, 23-24.)

B. Live Line Maintenance Would Substantially Satisfy the Purported Need for the Proposed Line

252. Under either the "Pukele reliability" or "Koolau overloading" scenarios, the potential outages HECO seeks to prevent can occur only when a 138 kV line is out of service for maintenance. (Wong, Tr. 11/01/01, p. 112, lines 1-11.)

253. Thus, reducing the amount of time that the 138 kV lines are out of service for maintenance would reduce the probability of the blackouts that the line is intended to prevent. (Wong, Tr. 11/01/01, p. 114, lines 12-19.) The Hearing Officer surmised HECO has still not fully implemented the recommendations of the consultants who investigated the Island-wide blackouts that it adopt live-line maintenance procedures. (Hearing Officer's Report, FOF 272 at p. 61.)

254. The Stone & Webster report recommended in 1984 that HECO adopt live-line maintenance procedures so that some maintenance could be conducted on the 138 kV lines without having to remove the lines from service. (Ex. M-31 (Stone & Webster report), pp. 9, 81, 144.)

255. Almost ten years later, PTI, in its 1993 report of its investigation of the 1991 Island-wide outage, found that HECO's failure to effectively implement live-line maintenance was a direct contributing factor in the 1991 blackout. (Ex. M-35 (PTI report), p. 3.) The PTI report stated that the fact that HECO has not updated itself in transmission maintenance and operational practices, particularly in the areas of vegetation and live-line management, "has unnecessarily prolonged transmission line outages and has increased the exposure of the 138 kV system to risk." It went on:

[T]here should be a concerted effort aimed at minimizing the number of hours each year that 138 kV transmission circuit or lines are removed from service for any work or maintenance activity. . . . [138 kV] is HECO's backbone system; backbone transmission circuits and lines should not be "routinely" taken out of service for maintenance.

HECO must seriously consider safe, proven, line maintenance practices other than de-energizing (e.g., live-line work, or the more common term used to work on facilities when energized: "live working"). It would appear that HECO has remained wedded to line work practices that do not give ample consideration to economics and contingency analysis HECO should take advantage of live working practices which have been proven and implemented by utilities on the mainland and around the world

(Ex. M-35 (PTI report), p. IV-1).

The PTI report continued:

[B]y increasing the level of training at HECO to the advanced stage, experience has demonstrated in like situations at other utilities (e.g., Virginia Power, Public Service and Gas, Philadelphia Electric) that most work, including entire structure replacement, can be safely performed with little or no increase in dollar cost using the procedures. The number of required interruptions (outages) to circuits/lines were then found to be about 1/3 or less of those before the active implementation of a live-line work enhancement program.

(Ex. M-35 (PTI report), p. IX-4.)

256. HECO apparently justified its failure to adopt live-line maintenance on advice it received that major modifications had to be done to HECO's transmission structures in order to accommodate live-line maintenance. (See Ex. M-35 (PTI report), p. IX-3.)

257. PTI, however, pointed out that "overall structural loads during live-line work do not compare with those found during a high wind-loading condition" (Ex. M-35 (PTI report), p. IX-13), and reported that "[w]ith a review by engineering of the loads imparted, along with the discussion of different methods available to handle insulator changes using live-line work practices with experienced live-line work technical people, this 'concern' [about the ability of HECO's structures to handle the loads imparted by live-line work] should be eliminated." (Id., p. IX-3.)

258. PTI further determined that modification of HECO's techniques, as opposed to modification of the structures, would allow live-line maintenance work, and gave as an example a field evaluation technique that "would probably greatly reduce the number of lattice structures, if any, that will require a retrofit before hot line work can be accomplished." (Ex. M-35 (PTI report), p. IX-6.)

259. HECO has made little demonstrable progress in implementing live-line maintenance procedures and now appears poised to abandon the concept altogether. Although it reported to the PUC in 1999 that it had hired three additional field personnel for its live-line section, and thus had moved 60% of the way to PTI's priority recommendation to increase the live-line section from 15 to 20 personnel, HECO also stated that unspecified changes in its practices along with technological advances may modify resource requirements and that it may find, following a reevaluation of manning levels, that the completion of the Waiau-CIP lines diminished the need for an increased staffing in the live-line section. (Ex. M-44 (PUC D&O No. 17099), p. 9.)

260. Today, there are only seven qualified linemen in the live-line section. HECO believes this is adequate for the current system configuration because, with the completion of the southern corridor, "the need to continue live-line maintenance was substantially reduced." (Shirai, Tr. 11/06/01 p.m., p. 1010, lines 1-8.)

261. The live-line section is ultimately under Mr. Shirai's supervision (Wong, Tr. 11/01/01, p. 160, lines 14-19), and Mr. Shirai was responsible for overseeing the engineering

and design of the upgrades to the Koolau-Pukele transmission structures. However Mr. Shirai does not know whether, when the aluminum towers on the Koolau-Pukele lines were upgraded in 1998, the upgrade was completed to live-line maintenance standards. Mr. Shirai counted on the project manager to have that detail, but does not recall who the project manager was on the structure upgrade project. (Shirai, Tr. 11/07/01 a.m., p. 1101, line 20 - p. 1103, line 8.)

262. Mr. Wong testified that, whenever routine or emergency maintenance work is done on the Koolau-Pukele lines, the lines have to be taken out of service, which happened more than twenty times last year. (Wong, Tr. 11/01/01, p. 50, lines 19-25; p. 64, lines 10-16.) Mr. Wong also testified that he "does not know what the latest is on the live-line maintenance[.]" (Id., p. 118, lines 6-7.) Mr. Wong's testimony that live-line maintenance could not be done on the Koolau-Pukele transmission structures (Wong, Tr. 11/01/01, p. 121, lines 1-25) was based on his assumption that the live-line maintenance group looked at the entire transmission system to determine where live-line maintenance could be applied; he is unfamiliar with any such studies and does not know that they were done. (Wong, Tr. 11/01/01, p. 160, lines 1-13.)

263. On the evidence presented in the contested case, the Hearing Officer found Live-line maintenance could substantially reduce the probability of outages at the Koolau and Pukele Substations by reducing the amount of time the lines are out of service for maintenance. (Hearing Officer's Report, FOF 282 at pp. 63-64.) As PTI pointed out, among the costs of planned maintenance outages is the system-wide cost of requiring multiple lines or circuits to ensure a backup when lines are de-energized for maintenance. (Ex. M-35 (PTI report), p. IV-13.)

CONCLUSIONS OF LAW

I. JURISDICTION AND PARTIES

1. The Board of Land and Natural Resources has jurisdiction over HECO's Conservation District Use Application for a Conservation District Use Permit pursuant to section 183C-6, Hawai'i Revised Statutes ("HAW. REV. STAT."). This application is for a CDUP to install a new 138kV transmission line on eight new steel poles to be erected within existing easements in the Conservation District atop Wa'ahila Ridge.

2. HECO is the applicant herein and a "public utility" subject to the general supervision of the Public Utilities Commission pursuant to HAW. REV. STAT. §269-6.

3. HECO, Malama, TOC and LOL all have standing to appear in this contested case hearing as parties and are properly before the Board pursuant to section 13-1-31, Hawai'i Administrative Rules ("HAW. ADMIN. RULES").

II. CONSTITUTIONAL AND STATUTORY PROVISIONS AND ADMINISTRATIVE RULES

4. The Board manages the Conservation District consistent with Article XI, Section 1 of the Hawai'i Constitution and HAW. REV. STAT. chapter 183C. Article XI, Section 1 provides:

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, water, air, minerals and energy sources, 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.

All public natural resources are held in trust by the State for the benefit of the people.

The Board and the Department of Land and Natural Resources ("DLNR") administer lands within the Conservation District pursuant to HAW. REV. STAT. Ch. 183C. That chapter makes the following statement of public policy:

[t]he legislature finds that lands within the state land use conservation district contain important natural resources essential to the preservation of the State's fragile natural ecosystems and the sustainability of the State's water supply. It is therefore, the intent of the legislature to conserve, protect, and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare.

HAW. REV. STAT. §183C-1.

5. Article XII, Section 7 of the State Constitution provides:

The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.

In Public Access Shoreline Hawaii v. Hawaii County Planning Commission, 79 Hawaii 425, 903 P.2d 1246 (1995), the Hawaii Supreme Court stated:

The State's power to regulate the exercise of customarily and traditionally exercised Hawaiian rights, necessarily allows the State to permit development that interferes with such rights in certain circumstances . . . Nevertheless, the State is obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Hawaiians to the extent feasible.

Id. at fn. 43 (citation omitted). To preserve and protect traditional and customary native Hawaiian rights, the Board examines the following factors:

- a. The identity and scope of cultural, historical, and natural resources in the application area, including the extent to which traditional and customary native Hawaiian rights are or have been exercised in the application area;
- b. The extent to which those resources, including traditional and customary native Hawaiian rights, will be affected or impaired by the proposed action; and
- c. The feasible action, if any, to be taken to reasonably protect native Hawaiian rights if they are found to exist.

See Ka Pa'akai O Ka 'Aina v. Land Use Commission, 94 Hawaii 31, 47, 7 P.3d 1068, 1084(2000).

6. The Conservation District is the most restrictive of the four land use classifications authorized under Hawaii's Land Use Law, HAW. REV. STAT. Chapter 205. The Conservation District is defined to include:

areas necessary for protecting watersheds and water sources; preserving scenic and historic areas; providing park lands, wilderness, and beach reserves; conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; preventing floods and soil erosion; forestry; open space areas whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; other related activities; and other permitted uses not detrimental to a multiple use conservation concept.

HAW. REV. STAT. § 205-2(e).

7. HAW. REV. STAT. section 6E-1 provides:

The Constitution of the State of Hawaii recognizes the value of conserving and developing the historic and cultural property within the State for the public good. The legislature declares that the historic and cultural heritage of the State is among its important assets and that the rapid social and economic developments of contemporary society threaten to destroy the remaining vestiges of this heritage. The legislature further declares that it is in the public interest to engage in a comprehensive program of historic preservation at all levels of government to promote the use and conservation of such property for the education, inspiration, pleasure, and enrichment of its citizens. The legislature further declares that it shall be the public policy of this State to provide leadership in preserving, restoring, and maintaining historic and cultural property, to ensure the administration of such historic and cultural property in a spirit of stewardship and

trusteeship for further generations, and to conduct activities, plans, and programs in a manner consistent with the preservation and enhancement of historic and cultural property.

8. In evaluating the merits of a proposed use in the conservation district, the Board evaluates eight criteria found in HAW. ADMIN. RULES §13-5-30(c). The eight criteria are:

- 1) The proposed land use is consistent with the purpose of the conservation district;
- 2) The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;
- 3) The proposed land use complies with provisions and guidelines contained in chapter 205A, HAW. REV. STAT., entitled "Coastal Zone Management," where applicable;
- 4) The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region;
- 5) The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels;
- 6) The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable;
- 7) Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district; and
- 8) The proposed land use will not be materially detrimental to the public health, safety and welfare.

9. HAW. ADMIN. RULES §13-5-22 (P-6) (D-2) permits transmission facilities for public utilities "... which benefit the public and are consistent with the purpose of the conservation district." These projects must satisfy the criteria set out in HAW. ADMIN. RULES §13-5-30(c).¹¹

¹¹ Additionally, the Board may impose conditions and require mitigation of any impacts to conservation district values. See Stop H-3 Ass'n v. State Dept. of Transportation, 68 Haw. 154, 157-58, 706 P.2d 446, 449 (1985).

10. The Conservation District lands are categorized into subzones. The subzones through which HECO's proposed 138 kV transmission lines would run are the Limited and Resource subzones. The Limited subzone encompasses lands which are susceptible to, among other things, soil erosion and which have a slope of forty percent or more. (HAW. ADMIN. RULES § 13-5-12.) Resource subzones include lands necessary to ensure the sustained use of natural resources and include lands suitable for parks, outdoor recreational uses, and the like. (HAW. ADMIN. RULES § 13-5-13.)

11. In assessing the CDUA, HECO has the burden of proving that it meets the requirements for the granting of the application. (HAW. ADMIN. RULES §13-5-30(c).)

III. DISCUSSION AND CONCLUSIONS

12. Public purpose uses of lands in the conservation district obviously have been and may be permitted where the circumstances and legal criteria have been met. As HECO points out, communications systems, water supply facilities, telecommunications facilities, freeways and other transmission lines have been among the public purposes permitted in the Conservation District.

13. It is not correct, however, to conclude that every project, which benefits the public to any degree, should be approved.¹² A thorough evaluation and weighing of project

¹² Based on the presentations by the parties in the contested case, the Hearing Officer recommended that the public benefit for this project has been substantially overstated by HECO and is speculative, based on his evaluation of the evidence and testimony. Briefly summarized, in the Hearing Officer's view, the evidence establishing such overstatement and speculation is: (a) the fact that in 1986 HECO determined the Halawa-Pukele-Koolau line was quite reliable; (b) in percentage terms the load of the Pukele Substation then constituted approximately 25% of the entire system as opposed to approximately 17% today; (c) the Koolau Substation bus has been modified to a breaker-and-a-half system which greatly reduces the probability of an outage at Pukele (the 1987 Super Bowl Sunday Blackout used as justification for this project would not have occurred had this work been done in 1987 and would not occur today if identical circumstances were repeated); (d) HECO again concluded in 1991 that "the incremental improvement in reliability gained from a third line [to Pukele] does not justify the substantial additional cost"; (e) also in 1991 HECO again merely recommended the modification of the Koolau bus which is now completed; (f) even in the event of an outage at Pukele 20% of that load can now be switched to other substations; (g) the completion of the southern transmission corridor to the Kamoku Substation will enable that substation to serve loads in Waikiki, particularly commercial customers; (h) HECO has made improvements to its vegetative management and tree trimming procedures to lessen the risk of trees touching the lines; (i) no outages at Pukele have occurred since the modification at Koolau Substation that resulted from the loss of a transmission line; and (j) HECO's system reliability is 99.98%. (See FOFs 27, 51, 54, 67, 73, 74, 79, 80, 81) (Hearing Officer's Report, COL 17 at pp. 67-68.)

alternatives must be presented to consider if the impact to conservation lands can be mitigated or avoided altogether.¹³

14. HECO asserts that the PUC has exclusive jurisdiction to determine the issue of "need" for the project under HAW. REV. STAT. chapter 269. However, HECO's reliance on the contention that therefore the Board lacks jurisdiction to determine "need" is misplaced.¹⁴ Of primary concern to the Board are the conservation values that are impacted, the degree to which such impacts can be mitigated, as well as what other viable alternatives may be

¹³ The Board may approve a project despite environmental impacts to the Conservation District area with appropriate mitigation and conditions. See Stop H-3 Ass'n v. State Dept. of Transportation, 68 Haw. at 163, 706 P.2d at 451. Structures and land uses which impact a public viewplane of a significant natural feature like a puu or ridge should propose adequate mitigation or make some showing of the lack of reasonable and practicable alternatives.

¹⁴ The DLNR staff previously has suggested to the Board that it defers to the PUC experience in determining "need" for these type of projects. (**HECO Objections, p. 11 (citing Staff Report from In the Matter Regarding the Conservation District Use Application to Construct a 46-kV Electrical Subtransmission Line from Waialua to Kuilima, North Shore, Oahu (File No. OA-2807), at 22 (August 23, 1996).**) The issue here is whether the impacts of the proposed use in the Conservation District can be mitigated.

As observed above, the Hearing Officer chose to analyze the public purpose. See fn. 12. The Hearing Officer also looked at whether practicable alternatives exist, as discussed in the environmental disclosure documents for this project, including: (a) pursuing an underground alternative up Palolo Avenue at a cost of about \$8.6 million or 28% more than the amount proposed for Wa'ahila Ridge; and (b) fully implementing live-line maintenance which has been recommended since 1984 and would greatly reduce the risk of an outage. (**See FOFs 243, 247, 264 (Hearing Officer's Report, COL 18 at p. 68.)**)

The Hearing Officer also concluded that HECO's reliance on pre-1997 PUC decisions for the proposition that aesthetic concerns do not justify the cost to place the line underground is largely misplaced. He notes that economic considerations were considerably different in the cases HECO relies on; in this case, the Hearing Officer found the cost differential between the overhead and one of the underground alternative is \$8.6 million, and the benefit of placing the line underground -- the protection of natural beauty and other public trust resources -- clearly outweighs that cost. The Hearing Officer also observed that the pre-1997 PUC decisions with respect to undergrounding no longer reflect current law. Following the enactment of Act 95 in 1997, the PUC is expressly directed to consider factors other than cost in determining whether 138 kV transmission lines should be overhead or underground. Those factors include "[t]he proximity and visibility of an above-ground system to . . . [h]igh density population areas[, and c]onservation and other valuable natural resource and public recreation areas," and "the breadth and depth of public sentiment with respect to an above-ground versus underground system." (**HAW. REV. STAT. § 269-27.6(b)(6), (8).**) (**Hearing Officer's Report, COL 30 at pp. 69-70.**)

pursued that further mitigate or avoid impacts to these conservation values. The Board is guided by HAW. ADMIN. RULES §13-5-30(c).

15. It is not disputed that the project's most significant adverse impact is visual.¹⁵ The proposed line will be clearly visible to tens of thousands of residents and visitors from a wide area of Honolulu from Round Top and Mt. Tantalus to Mauumae and the top of Waialae Ridge.¹⁶ The new poles will approximately double the height of the existing wooden poles, are up to five feet in diameter at the base and simply have a significant visual effect in comparison to the existing poles. HECO's proposed use of vegetation and paint cannot effectively mitigate this visual impact due to the size of the poles. For these reasons the project does not comply with the provisions of HAW. REV. STAT. §205-2(e) and HAW. ADMIN. RULES §13-5-30(c)(3), (4), (5), (6), and (8). (see, e.g., FOF 115)

16. HECO's proposed use is inconsistent with HAW. ADMIN. RULES § 13-5-30(c)(4) because, by significantly impairing the views of Wa'ahila Ridge from the surrounding communities, the proposed transmission line will "cause substantial adverse impact to existing natural resources within the surrounding area, community or region." This impact cannot be adequately mitigated. (see FOFs 86-95)

17. HECO's proposed use is incompatible with HAW. ADMIN. RULES §13-5-30(c)(5) in that the height and size of the new poles are from a visual perspective incompatible with surrounding areas.¹⁷

¹⁵ The Hearing Officer recommends that the project is inconsistent with the resource subzone's objective to protect lands necessary to ensure the sustained use of natural resources, including lands suitable for parks and outdoor recreational uses, and the like. HAW. ADMIN. RULES 13-5-30(c)(2). Although the project will not physically preclude the recreational use of Wa'ahila Ridge and the Wa'ahila Ridge State Recreation Area by hikers, mountain bikers, park visitors, picnickers and others, except during the construction phase, the Hearing Officer suggests that the visual impact will be so detrimental as to deter use of the ridge. (**Hearing Officer's Report, COL 20 at p. 68.**)

¹⁶ The Hearing Officer observes that the existing poles and lines predate the applicable constitutional, statutory and regulatory standards. (**Hearing Officer's Report, at FOF 25 at p. 6.**)

¹⁷ The visual or other impacts of any proposed project are site specific. The Board has allowed, under HAW. ADMIN. RULES chapter 13-5, transmission lines in the conservation district in less urbanized areas and off ridgelines where the visual impacts were either not as great or where the impacts could be more easily mitigated. (See HECO Objection, Attachment H-A (Staff Report from In the Matter Regarding the Conservation District Use Application to Construct a 46-kV Electrical Subtransmission Line from Waialua to Kuilima, North Shore, Oahu (File No. OA-2807), at 14-15, 17-18, 25-27 (August 23, 1996).) Nor does the Board ignore any preexisting conditions in the area proposed for a use, regardless of whether those

18. HECO's proposed use is inconsistent with HAW. ADMIN. RULES § 13-5-30(c)(6) because the proposed Kamoku-Pukele line would neither preserve nor improve upon the natural beauty and open space characteristics of the conservation district land it proposes to use.

19. Pursuant to HAW. ADMIN. RULES §13-5-30(c)(7), the project will not be utilized to increase the intensity of land uses in the conservation district.

20. With regard to HAW. ADMIN. RULES §13-5-30(c)(8), HECO's proposed project will not be materially detrimental to the public health, safety and welfare except to the extent its serious visual impact on the users of Wa'ahila Ridge and on surrounding communities constitutes a detrimental effect on the public welfare.

21. The traditional and cultural practices by native Hawaiians on Wa'ahila Ridge include gathering plants used for hula, lei making and medicinal purposes. Such active practices can take place notwithstanding the project. The traditional and cultural practices will not be impaired and will continue as presently existing because the project will not be built.

22. The profile of "Kauhi the Sleeping Giant" on Wa'ahila Ridge is a traditional cultural property protected by Article XII, Section 7 of the Hawaii Constitution. The size of the poles called for by the project will adversely impair the profile, which is an obvious visual resource, and which can not be adequately mitigated. The profile will be protected as presently existing because the project will not be built.

23. The Board does not have before it a proposal to consider the "swale" or "McCrorry" alternative represented by Exhibit H-111. According to the Hearing Officer, under this proposal five poles, P8, P9, P10, P1/10 and P11 would be moved east off the ridge line into a swale area. He concludes the adverse visual impact from the Manoa perspective will be lessened as poles P9, P10 and P1/10 will no longer be visible from Manoa. The Hearing Officer found, however, the evidence is unclear how this alignment would mitigate the visual impact from St. Louis Heights. Further, there has been no attempt to assess the recreational, cultural, environmental or geologic impacts of this alternative.¹⁸ (see FOFs 121-132)

existing land uses predated the current regulatory scheme. In addition, the Board takes into consideration whether limited alternatives may outweigh the obvious visual or other impacts. For example, at oral argument, one of the parties suggested that in the case of the Zond windpower project, the current application could be distinguished by the greater value placed on open spaces on Oahu as opposed to less-urbanized Maui. The Board would note that the parties fail to recognize that in the Zond situation, the alternative sites for the project necessarily were limited by its nature as a wind generated energy facility – the location was dictated by the wind. This present application is not similarly constrained even in the vicinity of the proposed preferred alignment.

¹⁸ While the Board has authority to impose mitigation measures or condition its approval of a CDUP, it cannot approve an alternative (or impose it as mitigation or as a condition) that has not

24. What is before the Board is HECO's preferred alignment to install a new 138kV transmission line on eight new steel poles to be erected within existing easements in the Conservation District atop Wa'ahila Ridge and not a decision on or a preference for which previously identified alternative, if any, HECO will pursue next if this application for use of State conservation district land is denied.

25. Prehearing Orders 1, 2 and 3 are hereby incorporated by reference herein as if fully set forth.

26. Any conclusion of law improperly designated as a finding of fact shall be deemed or construed as a conclusion of law. Any findings of fact improperly designated as a conclusion of law shall be deemed or constituted as a finding of fact.

27. Pursuant to HAW. REV. STAT. section 91-12, any of the proposed findings of fact submitted by HECO, MOM, LOL, and TOC not already ruled upon by the Board by adoption herein, or rejected by clearly contrary findings of fact herein, are hereby denied and rejected.

28. HECO has not met its burden of proving by a preponderance of the Evidence that its project is consistent with the statutory criteria of HAW. REV. STAT. Chapters 205 and 183C and the administrative rules, HAW. ADMIN. RULES chapter 13-5.

29. This project has significant impacts which cannot be sufficiently mitigated.¹⁹

complied with the environmental disclosure laws or been considered in the very public and lengthy process for this application. The Board could well decide differently on an alignment that removed the existing poles and lines and did not include new poles above the ridgeline. Moreover, the Board's authority in this application is triggered by the use of the conservation district. The new alignment could well take the entire project out of the conservation district.

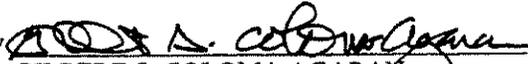
¹⁹ The parties briefed the application of the public trust doctrine on this project. While the Board embraces the public trust doctrine and its application in appropriate circumstances, this decision does not require reaching that issue.

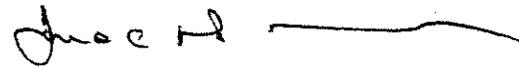
DECISION AND ORDER

IT IS HEREBY ORDERED that the Conservation District Use Application, dated November 16, 1995, for Hawaiian Electric Company, Inc., to Construct a 138-kV Transmission Line at Wa'ahila Ridge, Honolulu, Hawai'i, DLNR File No. OA-2801, is hereby DENIED.

DATED: HONOLULU, Hawai'i, JUNE 28, 2002. *5th*

BOARD OF LAND AND NATURAL RESOURCES

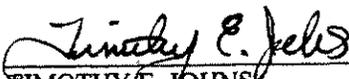
By 
GILBERT S. COLOMA-AGARAN
Chairperson

By 
FRED C. HOLSCHUH

By _____
TED K. YAMAMURA

By _____
KATHRYN W. INOUE

By _____
LYNN P. McCRORY

By 
TIMOTHY E. JOHNS

DECISION AND ORDER

IT IS HEREBY ORDERED that the Conservation District Use Application, dated November 16, 1995, for Hawaiian Electric Company, Inc., to Construct a 138-kV Transmission Line at Wa'ahila Ridge, Honolulu, Hawai'i, DLNR File No. OA-2801, is hereby DENIED.

DATED: HONOLULU, Hawai'i, JUNE 28, 2002. *jth*

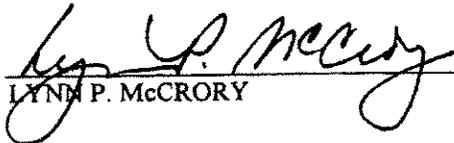
BOARD OF LAND AND NATURAL RESOURCES

By _____
GILBERT S. COLOMA-AGARAN
Chairperson

By _____
FRED C. HOLSCHUH

By _____
TED K. YAMAMURA

By _____
KATHRYN W. INOUE

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By _____
TIMOTHY E. JOHNS

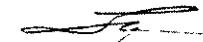
While I agree with findings of fact in this matter, I dissent from the conclusions of law denying the Conservation District Use Application, dated November 16, 1995, for Hawaiian Electric Company, Inc., to Construct a 138-kV Transmission Line at Wa'ahila Ridge, Honolulu, Hawai'i, DLNR File No. OA-2801. I would grant the permit with appropriate mitigation of the visual and other impacts as proposed in the revised environmental impact statement and consistent with the applicable laws and regulations.

DATED: HONOLULU, Hawai'i, JUNE 28, 2002. *jth*

BOARD OF LAND AND NATURAL RESOURCES

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By _____
LYNN P. McCRORY

By _____
TIMOTHY E. JOHNS

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this date 2 copies of the foregoing Motion to Intervene were served by hand delivery upon:

Cheryl Kikuta, Acting Consumer Advocate
Office of the Consumer Advocate
Division of Consumer Advocacy, DCCA
King Kalakaua Building
335 Merchant Street
Honolulu, HI 96813

The undersigned hereby certifies that on this date a copy of the foregoing Motion to Intervene was served by hand delivery upon:

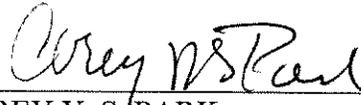
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Peter Y. Kikuta, Esq.
Goodsill Anderson Quinn & Stifel
Alii Place, Suite 1800
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Honolulu, HI 96813

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Vice President – Government and Community Affairs
Hawaiian Electric Company
900 Richards Street
Honolulu, HI 96813

Patsy H. Nambu
Director – Regulatory Affairs
Hawaiian Electric Company
900 Richards Street
Honolulu, HI 96813

Henry Q. Curtis
Vice President for Consumer Issues
Life of the Land
76 N. King Street, Suite 203
Honolulu, HI 96817

DATED: Honolulu, Hawaii, January 7, 2004.



COREY Y. S. PARK
PAMELA W. BUNN

Attorneys for MĀLAMA O MĀNOA