

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Application of)
)
HAWAIIAN ELECTRIC)
)
for approval to commit funds in)
excess of \$500,000 for Item Y48500,)
East Oahu Transmission Project.)
_____)

PUC Docket 03-0417

PUBLIC UTILITIES
COMMISSION

AUG 25 11 17 AM '04

FILED

LIFE OF THE LAND'S
INFORMATION REQUESTS TO HAWAIIAN ELECTRIC
&
CERTIFICATE OF SERVICE

HENRY Q CURTIS
VICE PRESIDENT FOR CONSUMER ISSUES
LIFE OF THE LAND

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LOL-HECO-IR-1: Ref: "Phase 1, Distribution Substation Modifications. This item involves modifications at ... Kuhio Substation ... Waikiki Substation ... Ena Substation" (HECO Application, page 9) Hawaii Administrative Rules §11-200-6 "Applicant actions. (a) Chapter 343, HRS, shall apply to persons who are required to obtain an agency approval prior to proceeding with: (1) Implementing actions which are either located in certain specified areas ... (b) Chapter 343, HRS, establishes certain categories of action which require the agency processing an applicant's request for approval to prepare an environmental assessment. There are seven geographical categories and two administrative categories. (1) The seven geographical categories are: ... (E) Any use within the Waikiki area of Oahu, the boundaries of which are delineated in the land use ordinance as amended, establishing the "Waikiki Special District". Question(s): Doesn't the substation modifications trigger the requirement to conduct an Environmental Review?

LOL-HECO-IR-2: Ref: "Power to serve the Downtown area also comes from the Honolulu Power Plant (HPP), when it is on line." (HECO Application, page 18). Question(s): How many times in the past 10 years has HPP gone off-line for an unscheduled outage?

LOL-HECO-IR-3: Ref: "The Halawa-Iwilei, Halawa-School and the Makalapa-Airport-Iwilei 138kV transmission lines feeding the Downtown area 138kV substations do not have overcurrent protection schemes in place." (HECO Application, page 19) Question(s): Why?

LOL-HECO-IR-4: Ref: "catastrophic underground duct bank failure" (HECO Application, page 20) Question(s): (a) How often has a catastrophic underground duct bank failure occurred within the HECO system in the past 25 years? (b) What documents is HECO relying on in believing that this is a treat?

LOL-HECO-IR-5: Ref: "The major factors identified and considered to evaluate various alternatives and to compare them against each other were effectiveness, timeliness, cost, construction and other impacts, and public sentiment." (HECO Application, page 21). Question(s): (a) What were the non-major factors; (b) How were the following factors dealt with (major, minor, ignored): (1) island security; (2) economic independence; (3) promoting local businesses; (4) oil spills; (5) reduction in the demand for fossil fuel; and (6) minimizing the ratepayer / taxpayer funding of energy in Hawaii.

LOL-HECO-IR-6: Ref: "The load in certain segments of the Pukele service area could be manually switched to other 46 kV back up circuits" (HECO Application, page 16) Question(s): (a) How many locations does this involve? (b) What would be the average cost of providing EMS controlled automatic switching capabilities at a given location?

LOL-HECO-IR-7: Ref: "In general, the 1995 Alternatives Study, as updated in 2000, found that renewable resource generating plants were not a viable alternative due to the ... cost." (HECO Application, page 32) Question(s): (a) Were these life cycle costs? (b) Did the comparative costs include economic externalities? (c) Did the comparative costs include environmental externalities? (d) Did the cost analysis include the risk of a catastrophic outage due to a massive oil spill or some other disruption to the oil supply? (e) What was the estimated price of oil (\$/bbl) used in comparing the price of on-site renewables versus

central station fossil-fuel derived electricity? (f) Did the analysis include transmission line losses?

LOL-HECO-IR-8: Ref: "all 200 MW of DG would be required to prevent the Pukele customers from being blacked out" (HECO Application, pages 34-35) Question(s): (a) During the 3Point presentation, did many community members express the idea that they were satisfied with the current level of reliability? (b) Why would the amount of DG needed include the DG for customers who do not want higher levels of reliability?

LOL-HECO-IR-9: Ref: "The question is not really whether HECO should pursue cost effective DSM and CHP programs, or add cost effective renewable resources, or maintain and improve the reliability of our transmission system. HECO should pursue all of these objectives." (HECO Application, pages 40-41) Question(s): (a) Has HECO and its subsidiaries signed Power Purchase Agreements (PPAs) with real renewable energy producers (solar, wind, small hydroelectric, biomass)? (b) Have any of the contracts (excluding H-POWER) been at or above the utilities avoided costs?

LOL-HECO-IR-10: Ref: "HECO is paying 100% of the estimated cost to underground the 46 kV lines." (HECO Application, page 45) Question(s): (a) Is HECO and its stockholders or is it the ratepayers that will be paying for the undergrounding? (b) Is HECO advocating building the lines, while HECO is advocating that ratepayers pay for the lines?

LOL-HECO-IR-11: Ref: "Thus, this East Oahu Transmission Project is clearly consistent with HECO's first and second cycle IRP Plans, which implicitly assumed that the transmission requirements identified in the studies proceeding the plans would be implemented." (HECO Application, page 50). Question(s): (a) When earlier IRP plans explicitly cover an issue that later IRP plans are silent on, how do the earlier plans determine, guide, or otherwise affect the issue? (b) Do subsequent IRP Plans totally or partially replace earlier plans? (c) If IRP Plans are "guidelines" how can they implicitly assume a given transmission line will be built?

LOL-HECO-IR-12: Ref: HECO Application. Question(s): (a) What non-EOTP upgrades are planned for the Pukele Service Area in the next 10 years? (b) Which HECO employees are representing the company in a door to door campaign to talk to residents about the EOTP?

LOL-HECO-IR-13: Ref: HECO Application. Question(s): (a) What is HECO's budget for expert witnesses and non-HECO exhibits? (b) How much did HECO pay for each non-HECO witnesses? Please break it down by witness, by Exhibit, and by testifier.

LOL-HECO-IR-14: Ref: Downtown Line Overload (HECO Application, page 18) Question(s): (a) Which downtown 46kV and 138kV transmission lines can be maintained through LW? (b) Can the Downtown Line Overload problem be averted, delayed and/or minimized through LW techniques on underground 46kV and 138kV transmission lines?

LOL-HECO-IR-15: Ref: (HECO Application) Question(s): Who should we ask questions about how this project will improve the "Mean Time Between Failures" (MTBF) and the "Mean Time to Repair" (MTTR) for each transmission line in the project area, in the Pukele Service Area, in the Downtown Service Area, and for the island as a whole?

LOL-HECO-IR-16: Ref: "an Executive Team of which I was designated to be the Chairperson was formed." (HECO T-1, page 11, lines 17-18) Question(s): (a) When was the Executive Team (ET) formed? (b) Who formed it? (c) Who does it report to? (d) How many meetings did Executive Team hold? (e) Please provide a copy of the Executive Team's agendas for each of its meetings. (f) What directives, work orders, etc., did the ET receive from upper management?

LOL-HECO-IR-17: Ref: "The Executive Team was given the responsibility to select the alternative that would be presented in this application." (HECO T-1, page 12, lines 11-12) Question(s): What was the voting method used to determine which selection was chosen by the ET?

LOL-HECO-IR-18: Ref: "In addition, the Executive Team attended a presentation by various subject matter experts." (HECO T-1, page 12, lines 14-15) Question(s): (a) Who were these subject matter experts? (b) Was the ET presented with any information on the present or future forecasted price of oil? (c) Who is HECO's overseer of LW work, and did they make a presentation to the ET?

LOL-HECO-IR-19: Ref: "Aesthetic impacts are considered minimum to none because the three alternatives propose all underground line construction." (HECO T-1, page 14, lines 6-8) Question(s): (a) How many parts of the Proposed Action involve above ground installations and/or modifications? (b) Has HECO changed its believe about aesthetic impacts? (c) Doesn't HECO think that an overhead 138-kV transmission line on Wa`ahila Ridge would have minimal aesthetic impacts?

LOL-HECO-IR-20: Ref: "All 46 kV transmission lines under the proposed project will be placed underground." (Exhibit T-1, page 8, lines 2-3) Question(s): Does this mean that if the Commission rules that undergrounding is inappropriate, then HECO will withdraw this proposed project?

LOL-HECO-IR-21: Ref: Kerstan Wong, HECO-200. Question(s): (a) What sources did you use in writing your testimony? (b) Who assisted you in writing your testimony? (c) How many drafts of your testimony did you write and/or did you submit? (d) Who reviewed your testimony? (e) Who approved your testimony? (f) Please provide copies of drafts, supporting materials.

LOL-HECO-IR-22: Ref: "I am the Principal Transmission Planning Engineer in the Transmission Planning Division in the Power Supply Department." (Exhibit T-4, page 11, lines 7-8) Question(s): (a) Please provide a chart showing the structure of the Transmission Planning Division and the Power Supply Department. (b) Who do you report to?

LOL-HECO-IR-23: Ref: "Table 2: HECO Load Distribution by Load Center: % of System Day Peak Load". (Exhibit T-4, page 17, line 16) Question(s): For each month in the past five years, for each of the four service areas (Downtown, Koolau/Pukele, Central, West) and for the system as a whole, (a) please state the monthly day peak load (MW, date, time) and (b) please state the monthly evening peak load (MW, date, time).

LOL-HECO-IR-24: Ref: "The March 3, 2004 Pukele outage incident has accentuated the need to proceed with the project." (Exhibit ST-4, page 12, lines 15-16) Question(s): (a) Please provide a copy of the HECO March 3, 2004 Pukele outage report filed with the PUC. (b) Please explain how the outage accentuates the need for the line.

LOL-HECO-IR-25: Ref: "Securing the reliability of the existing transmission lines requires regular maintenance." (Exhibit 5, page 43) Question(s): (a) Under normal routing maintenance procedure, are all 138kV transmission lines treated equally in terms of the frequency of monitoring for maintenance purposes? (b) If not, please elaborate on all the reasons certain lines and/or certain components of certain lines are checked more frequently. (c) Could sophisticated electronic and communication devices be used, regardless of cost, which could alert central command of potential problems on a real-time basis? (d) What is the average or normal life expectancy of a 46kV and a 138kV transmission line? (d) What is HECO's maintenance budget for each of the transmission and subtransmission systems for the past 5 years? (e) What is the reliability of each subtransmission line in the Pukele Service Area over the past 10 years?

LOL-HECO-IR-26: Ref: "Securing the reliability of the existing transmission lines requires regular maintenance." (Exhibit 5, page 43) Question(s): (a) Why isn't maintenance done in the early morning hours? (b) Why isn't maintenance done at night? (c) Why would the hours of maintaining a transmission system be different than the hours of maintaining roads?

LOL-HECO-IR-27: Ref: "Although there are no plans to retire the HPP, the two units have been in service for over 45 years. ... a future upgrade to the facility may be difficult to permit." (Exhibit 5, page 26) Question(s): (a) What upgrades have been done (1995-2004) to HPP? (b) What upgrades are currently being done to HPP? (c) What future upgrades will probably be done (2004-2020) to HPP?

LOL-HECO-IR-28: Ref: "The retirement of the Kalaeloa IPP plant is shown in 2016." (Exhibit 5, pages 26-27). Question(s): (a) What upgrades are currently being done at Kalaeloa? (b) What is the anticipated MW output of Kalaeloa following the upgrade? (c) Is H-POWER about to undergo an upgrade? (d) What is the expected new capacity at H-POWER? (e) Have these upgrades been calculated into HECO's analysis on new MW needed?

LOL-HECO-IR-29: Ref: "Only limited expansion of the Pukele site is possible." (Exhibit 5, page 40) Question(s): (a) What is the percentage that the Pukele Substation footprint could be increase by? (b) What types of expansions are possible at Pukele? (c) What upgrades to Pukele have been considered by HECO?

LOL-HECO-IR-30: Ref: "Several factors are considered when assessing the reliability of the Pukele Substation ... The probability of both lines on outage" (Exhibit 5, page 41) Question(s): What is the probability that both lines will be out?

LOL-HECO-IR-31: Ref: "since 1999, the Koolau-Pukele lines have been out of service for a total of 95 days" (Exhibit 5, page 41) Question(s): Since 1999, how many hours were the Koolau-Pukele lines out of service for?

LOL-HECO-IR-32: Ref: "While many parts of the two lines have been renewed and upgraded, the two Koolau-Pukele lines are substantially 40 years old." (Exhibit 5, page 44) Question(s): (a) Which parts of the Koolau-Pukele transmission system are 40 years old? (b) Which parts of the Koolau-Pukele transmission system have been replaced? (c) Which part of the Koolau-Pukele transmission system could not be replaced? (d) What is the current estimate of when the lines will need to be retired and/or replaced?

LOL-HECO-IR-33: Ref: "It was concluded that the flashovers occurred due to a build up of contaminants on the insulators due to extremely dry condition with little rain. This condition is not unique to the islands" (Exhibit 5, page 45). Question(s): (a) Is the dry weather conducive to Live Working? (b) Does buildup of contaminants on insulators affect the length of time before the next maintenance work on the line?

LOL-HECO-IR-34: Ref: "The purpose of these criteria is to establish guidelines for planning a reliable transmission system for the island of Oahu." (HECO -- Criteria for Transmission System Planning. Exhibit 5, page 105) Question(s): (a) Are guidelines requirements, minimum requirements, recommendations, general ballpark estimates, or what? Please provide any regulatory decision that backs up your answer.

LOL-HECO-IR-35: Ref: "Utilizing renewable energy such as wind and PV is not a feasible option" (Exhibit 6, page 8) Question(s): Has HECO or its affiliates conducted any type of study as to the PV MW potential of rooftops in the Pukele Service Area?

LOL-HECO-IR-36: Ref: "Prepared by: Andrew H. Stewart ... George Gela" (Exhibit 7, EDM Report, page 2) Question(s): (a) What part of researching the report, writing the draft report, writing the final report, editing the report, and formatting the report, etc. were the responsibilities of each author? (b) Please provide a copy of HECO's Original Work Order, and all EDM sub-work orders. (c) Please provide a list of all draft and final reports issued by the Project Team that are not provided in Exhibit 7. (d) Please provide an index on all documents provided by HECO to EDM, Andrew Stewart, and Dr. George Gela.

LOL-HECO-IR-37: Ref: "EDM assembled a highly qualified team" (Exhibit 7, EDM Report, page 3). Question(s): (a) Please identify any team member not listed on this page. (b) What was the role and area of responsibility of each team member? (c) Do any of the Project Team members have expertise in probability, statistics, confidence intervals, variance, covariance, and/or statistical robustness.

LOL-HECO-IR-38: Ref: "HECO has amassed significant files of information on LW. Hereinafter the file is referred to as HECO's LW file." (Exhibit 7, EDM Report, page B-1). Question(s): (a) Please provide a Table of Contents or other similar listing that includes the name of each document in HECO's LW file, its author(s) and its date. (b) Please include a copy of any document in HECO's file that deals with LW of substations.

LOL-HECO-IR-39: Ref: "HECO provided extensive records to the Project Team for review/reference" (Exhibit 7, EDM Report, page 14). Question(s): Please provide a list of documents that HECO provided to the Project Team.

LOL-HECO-IR-40: Ref: "the Project Team would request supplementary information or clarification" (Exhibit 7, EDM Report, page 14). Question(s): (a) Please provide a copy of these requests. (b) Please note any Project Team requests that HECO was unable to provide to the Project Team.

LOL-HECO-IR-41: Ref: "The Waiiau-CIP lines ... pressures during the design phase for the line resulted in a more compact structure configuration" (Exhibit 7, EDM Report, page 21). Question(s): (a) When did the design team operate (starting and ending dates)? (b) Who asked the design team for a more compact configuration?

LOL-HECO-IR-42: Ref: 'The Role of Live Working Procedures in the Improvement of Power Transmission System Availability in Spain'. ICoLIM2002. (Exhibit 7, EDM Report, page 35). Question(s): (a) Please provide a copy, preferably in an electronic format. (b) Do you agree with all of the conclusions of the report?

LOL-HECO-IR-43: Ref: 'Live Working Profitability -- Methodology & Results'. ICoLIM98 (Exhibit 7, EDM Report, page 37). Question(s): (a) Please provide a copy, preferable in electronic format. (b) Do you agree with all of the all of the conclusions of the report?

LOL-HECO-IR-44: Ref: "A survey was developed and distributed to several IBEW line contractors" (Exhibit 7, EDM Report, page 38). Question(s): (a) Please provide a copy of the survey. (b) How were the line contractors chosen? (c) How was it determined which group (one, two, or three) that they belonged in? (d) "the third group is the most reliable source" (Exhibit 7, EDM Report, page 39). What is the basis for that statement? (e) What were the survey results for that group favoring LW?

LOL-HECO-IR-45: Ref: "1987 Survey and 1988 Visits" (Exhibit 7, EDM Report, pages A-12, 13) "1994 Survey" (Exhibit 7, EDM Report, page A-15). Question(s): (a) Did HECO inquire from, survey, or consult with utilities that operate small stand-alone systems? (b) Are the LW experiences of large interconnected mainland utilities relevant to Hawaii?

LOL-HECO-IR-46: Ref: "In 1987 HECO stated in an Interoffice Communication" (Exhibit 7, EDM Report, page B-2). Please provide a copy.

LOL-HECO-IR-47: Ref: "HECO's 1988 -- Twenty Year Transmission Study" (Exhibit 7, EDM Report, page B-5). Please provide a copy of the report.

LOL-HECO-IR-48: Ref: "SEI's report entitled 'Transmission Live Line Maintenance Assessment Report'" (Exhibit 7, EDM Report, page B-5). Please provide a copy of the final report and all draft reports.

LOL-HECO-IR-49: Ref: "circuit configurations were compacted to reduce pole heights for aesthetic configurations" (Exhibit 7, EDM Report, page B-10). Question(s): Are shorter poles more aesthetic?

LOL-HECO-IR-50: Ref: "For example, the LW crews were actively involved in the

construction of the Waiau-CIP line." (Exhibit 7, EDM Report, page B-10). Question(s): (a) Please elaborate on their involvement. (b) Please list specific examples of the LW crews recommendations that were adopted. (c) Were LW crew assigned to the Waiau-CIP line able to qualify for overtime pay?

LOL-HECO-IR-51: Ref: "HECO made a concerted effort to staff the LLM Division." (Exhibit 7, EDM Report, page B-10). Question(s): (a) Please provide chart(s) of the corporate structure of the LLM Division, its sub-divisions, who the Division reports to, who that entity reports to, all the way up the corporate ladder. (b) What percentage of all transmission line maintenance work done by LW for the period 1990-96? (e) Can LW be done in the early morning? (f) Can LW be done at night?

LOL-HECO-IR-52: Ref: "The 1997 lesson plan for Energized Line Maintenance" (Exhibit 7, DM Report, page B-11). Please provide a copy of the plan.

LOL-HECO-IR-53: Ref: "PTI's development of the draft version of its report ... HECO took exception ... [PTI] final report ... This elicited a need for HECO to formulate a written response to the LW sections of PTI's report for consideration by the PUC." Question(s): (a) Please provide a copy of the section of PTI's draft and final reports which focused on live line maintenance. (b) Please provide a copy of any correspondence between HECO and PTI with regard to the LW section of the draft report. (c) Please include copies of HECO's yearly filings with the PUC re implementation of PTI's recommendations. (d) Please provide a copy of HECO's written response to the PUC. For (a), (b), (c), and (d) if it is too difficult to separate out the LW section from the full reports, you can send the full reports.

LOL-HECO-IR-54: Ref: Expert Qualifications of HECO Witness Kerstan Wong, HECO-200 Question(s): (a) In which subject matter fields does HECO plan to have the witness be qualified as an expert witness? (b) In which subject matter fields does HECO plan to have the witness testify as a lay witness? (c) For the witness, in their area of expertise, please provide answers to items (c)1-6, as listed below. Wherever possible, please provide the answer either in electronic format or by providing a web address where the document(s) can be down-loaded.

- (1) All articles, books, chapters, or other documents written in whole or in part by the witness. Please provide the date of publication or release, the agency it was submitted to, the docket and/or file number that contains the document. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).
- (2) All courses taken, degrees given, courses/classes taught by the witness. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).
- (3) All presentations, testimonies, talks made and exhibits submitted by the witness to regulatory agencies. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).
- (4) All projects overseen by the witness. Please include the dates of participation and any identifying characteristics of the project necessary to track down information about it. Please provide electronic copies of all documents if they exist. Please provide the location of

hard copies (source, cost, docket number, file number, or other identification).

(5) All correspondence between the witness and HECO with regard to their testimony. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(6) All reports, draft or otherwise, submitted by the witness to the utility. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(d) Who does the witness's boss at HECO?

LOL-HECO-IR-55: Ref: Expert Qualifications of HECO Witness Randy Pollock, HECO-300

Question(s): (a) In which subject matter fields does HECO plan to have the witness be qualified as an expert witness? (b) In which subject matter fields does HECO plan to have the witness testify as a lay witness?

(c) For the witness, in their area of expertise, please provide answers to items (c)1-6, as listed below. Wherever possible, please provide the answer either in electronic format or by providing a web address where the document(s) can be down-loaded.

(1) All articles, books, chapters, or other documents written in whole or in part by the witness. Please provide the date of publication or release, the agency it was submitted to, the docket and/or file number that contains the document. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(2) All courses taken, degrees given, courses/classes taught by the witness. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(3) All presentations, testimonies, talks made and exhibits submitted by the witness to regulatory agencies. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(4) All projects overseen by the witness. Please include the dates of participation and any identifying characteristics of the project necessary to track down information about it. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(5) All correspondence between the witness and HECO with regard to their testimony. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(6) All reports, draft or otherwise, submitted by the witness to the utility. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

LOL-HECO-IR-56: Ref: "Q. Do you agree with the conclusions in the study regarding the need for and objectives of the East Oahu Transmission Project? A. Yes." (HECO Exhibit T-3, page 21, lines 12-14; & Expert Qualifications of HECO Witness Randy Pollock, HECO-300) (a) Over the course of your career, how many utility operations have you analyzed? (b) How many times did you find that the approach by the utility was incorrect? (c) How many of those analyses did you find that the utility had done something significantly wrong? (d) Please provide copies of the three reports you wrote that are the strongest cases for the fact that you can look at your employer from an objective viewpoint.

LOL-HECO-IR-57: Ref: Expert Qualifications of HECO Witness Ishikawa, HECO-400

Question(s): (a) In which subject matter fields does HECO plan to have the witness be qualified as an expert witness? (b) In which subject matter fields does HECO plan to have the witness testify as a lay witness?

(c) For the expert witness, in their area of expertise, please provide the following (and where the answer or document is available on the web, please provide the web address):

(1) All articles, books, chapters, or other documents written in whole or in part by the witness. Please provide the date of publication or release, the agency it was submitted to, the docket and/or file number that contains the document. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(2) All courses taken, degrees given, courses/classes taught by the witness. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(3) All presentations, testimonies, talks made and exhibits submitted by the witness to regulatory agencies. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(4) All projects overseen by the witness. Please include the dates of participation and any identifying characteristics of the project necessary to track down information about it. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(5) All correspondence between the witness and HECO with regard to their testimony. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(6) All reports, draft or otherwise, submitted by the witness to the utility. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

LOL-HECO-IR-58: Ref: Expert Qualifications of HECO Witness Stewart, HECO-500

Question(s): (a) In which subject matter fields does HECO plan to have the witness be qualified as an expert witness? (b) In which subject matter fields does HECO plan to have the witness testify as a lay witness?

(c) For the expert witness, in their area of expertise, please provide answers to items (c)1-6, as listed below. Wherever possible, please provide the answer either in electronic format or by providing a web address where the document(s) can be down-loaded.

(1) All articles, books, chapters, or other documents written in whole or in part by the witness. Please provide the date of publication or release, the agency it was submitted to, the docket and/or file number that contains the document. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(2) All courses taken, degrees given, courses/classes taught by the witness. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(3) All presentations, testimonies, talks made and exhibits submitted by the witness to

regulatory agencies. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(4) All projects overseen by the witness. Please include the dates of participation and any identifying characteristics of the project necessary to track down information about it. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(5) All correspondence between the witness and HECO with regard to their testimony. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(6) All reports, draft or otherwise, submitted by the witness to the utility. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

LOL-HECO-IR-59: Ref: Expert Qualifications of HECO Witness Stewart, (HECO-500)

Question(s): (a) Over the course of your career, how many utility operations have you analyzed? (b) How many times did you find that the approach by the utility was incorrect? (c) How many of those analyses did you find that the utility had done something significantly wrong? (d) Please provide copies of the three reports you wrote that are the strongest cases for the fact that you can look at your employer from an objective viewpoint.

LOL-HECO-IR-60: Ref: Expert Qualifications of HECO Thomas L. Harrington, re: "To supplement the capabilities of EDM's staff, EDM brought three subcontractors onto its Project Team. The subcontractors are ... Mr. Thomas L. Harrington and Mr. Louis Benedict of TLH Management Services Inc." (T-5, page 5, lines 10-13) Question(s): (a) In which subject matter fields does HECO plan to have the witness be qualified as an expert witness?

(b) In which subject matter fields does HECO plan to have the witness testify as a lay witness?

(c) For each expert witness, in their area of expertise, please provide answers to items (c)1-6, as listed below. Wherever possible, please provide the answer either in electronic format or by providing a web address where the document(s) can be down-loaded.

(1) All articles, books, chapters, or other documents written in whole or in part by the witness. Please provide the date of publication or release, the agency it was submitted to, the docket and/or file number that contains the document. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(2) All courses taken, degrees given, courses/classes taught by the witness. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(3) All presentations, testimonies, talks made and exhibits submitted by the witness to regulatory agencies. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(4) All projects overseen by the witness. Please include the dates of participation and any identifying characteristics of the project necessary to track down information about it. Please provide electronic copies of all documents if they exist. Please provide the location of

hard copies (source, cost, docket number, file number, or other identification).

(5) All correspondence between the witness and HECO with regard to their testimony. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

(6) All reports, draft or otherwise, submitted by the witness to the utility. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification).

LOL-HECO-IR-61: Ref: "All 46 kV transmission lines under the proposed project will be placed underground." (T-1, page 8, lines 2-3) Question(s): Does this mean that if the Commission rules that undergrounding is inappropriate, then HECO will withdraw this proposed project?

LOL-HECO-IR-62: Ref: HECO-200. Question(s): (a) Please enclose copies of the witnesses public pronouncements re live working. (b) Please include a copy of the witnesses letter dated January 3, 2001 to Ms. Kai Andrade, President, Engineers & Architects of Hawaii re: Kamoku-Pukele 138-kV Line Alternatives.

LOL-HECO-IR-63: Ref: "There are many lessons to be learned from every outage." (T-3, page 9, lines 11-12). November 9-10, 1965 -- Northeast Blackout; July 13-14, 1977 -- New York City Blackout; December 14, 1994 -- Western States Cascading Outage; August 10, 1996 -- Western State Outage; August 14, 2003 -- Northeast/Midwest US Blackout. (T-3, pages 9-11) Question(s): (a) Are these five mainland outages more relevant to Oahu than the three island-wide blackouts (1983, 1988, 1991) and the three regional (Pukele Service Station) blackouts (1987, 1988, 2004)? (b) How familiar are you with these 6 Oahu disturbances? (c) Which Hawaii and mainland reports on outages are you read and are familiar with?

LOL-HECO-IR-64: Ref: "In addition to studying the more probable single contingency outage scenarios, multiple contingencies (outages of more than one system element) must be included in system planning studies, recognizing that while they may have a low probability of occurrence they still can and do happen. (T-3, page 12, line 23 through page 13, line 1) Question(s): (a) Does HECO use probability analysis in transmission planning? (b) How do you determine which outage scenarios are 'more probable'?

LOL-HECO-IR-65: Ref: "Lessons Learned -- The system must be designed to withstand the more probable outages so that the power system remains stable." (T-3, page 9, lines 22-23) Question(s): (a) What outages are more probable and why? (b) Do historic outage reports support this answer?

LOL-HECO-IR-66: Ref: "LW is normally not performed in inclement weather conditions, such as: high humidity ... rain or drizzle ... strong winds ... fog ... thunder ... very hot days ... high air-condition loads ... In addition ... lines traversing agricultural lands ... fertilizers, pesticides ... lines in coastal plains ... salt laden air ... salt fog ... salt spray" (T-5, page 10, line 21 through page 11, line 24) "the unpredictability nature of the winds in mountains" (T-3, page 12, line 25) Question(s): (a) If Oahu has so many impossible conditions that hinder LW, why did HECO initiate LW in the first place? (b) If Oahu has so many impossible conditions that hinder LW why is HECO seeking to revive LW? (c) Please provide the documentation

(both guidelines and firm rules) that HECO reviewed in determining LW climatic restrictions. (d) Is HECO aware of utilities that use LW under climatic challenging conditions? (e) What climatic restrictions on LW have been imposed by any state regulators in the US?

LOL-HECO-IR-67: Ref: "Rather, these 'less probable' outages must be addressed in planning studies." (T-3, page 14, line 7) "To optimize the performance of the electrical system, some entities are beginning to consider the probabilistic methods to transmission system planning in order to examine the likelihood of certain possible events and combination of events based on real world historic outage performance. However, at the present time, a deterministic approach to planning continues to be the primary approach." (T-3, page 15, lines 12-17) Question(s): (a) How does a utility that uses deterministic planning handle calculate which types of outages have higher probabilities of occurring? (b) How can the correct probability prioritization occur if the probability of different outage scenarios are unknown? (c) Doesn't deterministic planning result in the overbuilding of redundancies, that is, in the gold-plating of the system? (d) What is the minimum size system load for which you have any hands-on experience in probabilistic transmission planning?

LOL-HECO-IR-68: Ref: "Stated another way, the historical data will represent yesterday's transmission system, rather than the present and future transmission system. The usefulness of probabilistic based approaches is therefore limited to one degree or another because of this, and while the use of probabilistic based planning is likely to increase in the future, the deterministic approach to system remains the best method of identifying needed system improvements." (T-3, page 19, line 20 through page 20, line 1) Question(s): (a) Please state all course work, articles written, talks given, testimony given and all other expertise that witness T-3 has in probabilistic based approaches, probability, statistics, confidence intervals, variance, covariance, and statistical robustness. (b) Since all probabilities are based on historic data, do you believe that probability analysis is inherently weaker than non-probabilistic analysis? (c) Are you familiar with any studies that analyze the cost/benefit of using deterministic vs. probabilistic analysis?

LOL-HECO-IR-69: Ref: "transmission systems should be designed to withstand the most probable outages in order to remain stable" (T-4, page 23, lines 20-21) Question(s): (a) How does HECO determine the probability of different types of outages? (b) Please state all course work, articles written, talks given, testimony given and all other expertise that witness T-4 has in probability, statistics, confidence intervals, variance, covariance, and statistical robustness. (c) Should the utility rely on the most probable outages based on historic data or the experiential background and history of transmission and distribution engineers? (d) Do you believe hat transmission engineers trained in deterministic approaches would be able to fairly evaluate probability analysis?

LOL-HECO-IR-70: Ref: "A blackout of Waikiki would be reported around the world creating a 'third world' image for our main resort area" (T-4, page 39, lines 2-4) (a) Please list all documents that are in your position that suggest that the ... resulted in that area of the nation being described as 'Third World' or having a 'Third World' image. Question(s): (a) Please list all documents that are in your position that suggest that the August 2003 Northeast blackout resulted in that area of the nation being described as 'Third World' or having a 'Third World' image. (b) Please list all documents that are in your position that

suggest that the 1965 NYC outage resulted in that area of the nation being described as 'Third World' or having a 'Third World' image. (c) Please list all documents that are in your position that suggest that the July 13-14, 1977 New York City Blackout resulted in that area of the nation being described as 'Third World' or having a 'Third World' image. (d) Please list all documents that are in your position that suggest that the December 14, 1994 Western States Cascading Outage resulted in that area of the nation being described as 'Third World' or having a 'Third World' image. (e) Please list all documents that are in your position that suggest that the August 10, 1996 Western State Outage; August 14, 2003 resulted in that area of the nation being described as 'Third World' or having a 'Third World' image. (f) Please list all documents that are in your position that suggest that the 1983 Oahu island-wide blackout resulted in Oahu being described as 'Third World' or having a 'Third World' image. (g) Please list all documents that are in your position that suggest that the 1988 Oahu island-wide blackout resulted in Oahu being described as 'Third World' or having a 'Third World' image. (h) Please list all documents that are in your position that suggest that the 1991 Oahu island-wide blackout resulted in Oahu being described as 'Third World' or having a 'Third World' image. (i) Are these five mainland outages more relevant to Oahu than the three island-wide blackouts (1983, 1988, 1991) and the three regional (Pukele Service Station) blackouts (1987, 1988, 2004)? (j) How familiar are you with these 6 Oahu disturbances? (k) Which Hawaii and mainland reports on outages are you read and are familiar with? (l) Did the press state anything about Oahu having 'Third World' image following the disturbance on March 3, 2004? (m) Following Hurricane Charlie's devastating run through Florida, and the subsequent blacking out of an area of Florida, did the national press identify Florida as having a 'Third World' image?

LOL-HECO-IR-71: Ref: "A blackout that incapacitates the Hawaii National Guard and Civil Defense Facilities at Diamond Head could have a serious effect on Hawaii's safety and security." (T-4, page 39, lines 9-11) Question(s): (a) Please provide copies of any documentation, that you have reviewed, which states that critical loads in the Pukele Service Area lack back-up generators. (b) What is the MW of critical loads handled by each subtransmission line in the Pukele Service Area? (c) What is the MW of non-backed-up critical loads (critical loads without backup generators) for each subtransmission line in the Pukele Service Area? (d) Should civil defense facilities have backup generators? (e) Can the grid ever provide six nines of reliability? (f) Should civil defense facilities have six nines level of reliability?

LOL-HECO-IR-72: Question(s): How does HECO define "critical facility"?

LOL-HECO-IR-73: Question(s): Please provide and index and copies of all correspondence over the past 10 years between the Oahu Civil Defense Agency and Hawaiian Electric Company with regard to upgrading transmission, subtransmission lines and substations within the Pukele Service Area.

LOL-HECO-IR-74: Question(s): How many outages has (a) Waikiki and (b) Civil Defense experienced in the past 15 years? How many of them were caused by (1) Distribution Lines; (2) Distribution Substations; (3) Subtransmission lines; (4) the Pukele Transmission Substation; and (5) the two 138-kV transmission lines bringing electricity to the Pukele Substation?

LOL-HECO-IR-75: Question(s): Please provide copies of (a) Generator Requirements of Essential Service Facilities not Supported by Emergency Standby. HECO & KEMA-XENERGY, Inc. February 5, 2003; (b) Commercial and Industrial Stand-by Generation and Interruptible Load. Market Research & Evaluation Division -- Energy Services Department HECO. July 8, 2003. HECO Response to CA-SOP-IR-12. Docket 03-0371 and (c) Survey of Emergency Generators at Emergency and Essential Service Locations -- State of Hawaii. HECO & XENERGY, Inc. February 9, 2001.

LOL-HECO-IR-76: Ref: "realistically we need to be especially cautious about Waikiki, our state's main economic engine." (T-4, page 39, lines 1-2) Question(s): (a) HECO maintains two types of distribution grids (radial grid: customers can get their power from one substation; network grid: customers get their power from two substations). Only Downtown Honolulu has the stronger, more robust, grid distribution system. Since most outages occur on the distribution system, if the goal was to prevent outages in Waikiki, shouldn't Waikiki's distribution system be upgraded from a radial system to a grid system, so that all customers could get electricity from more than one distribution substation? (b) Shouldn't a central generator be built near Waikiki so that in the event of a major system-wide disturbance, Waikiki could be islanded? (c) Since 1966, has Waikiki relied on electricity from only two transmission lines from the Pukele Substation? (d) Has the maximum load at the Pukele Substation decreased from 250 MW in 1986 to less than 200 MW in 2003? (e) In what year did HECO decide that Waikiki needed electricity from a third transmission line? (f) What subtransmission lines provide electricity to Waikiki?

LOL-HECO-IR-77: Ref: (T-4, various sections) Question(s): (a) How would each proposed segment of the Proposed Option impact (1) critical loads; (2) Waikiki; and (3) those who are satisfied with the current level of reliability? (b) How would each proposed segment of the Proposed Option impact each of the four concerns (two overload situations; two reliability concerns)? (c) What is the cost/benefit of installing each component? (d) Which segments of the Proposed Option are more critical to (1) Waikiki; (2) civil defense; and (3) critical loads?

LOL-HECO-IR-78: Ref: "The sustained outage would have been prevented if the East Oahu Transmission Project had been completed. Many of the customers affected on March 3, 2004 would not have seen any interruption in service" (ST-4, page 12, lines 3-5) Question(s): Could the March 3, 2004 outage occur today?

LOL-HECO-IR-79: Ref: "HECO has been involved in demand-side management ('DSM') and load management ("LM") programs for some time." (Exhibit 6, page 32) "The current MECO (and HECO and HELCO) rate design is flawed, in that the declining block load-factor blocks provide an incentive to remain on the system during peak periods for any customer whose non-coincident peak demand occurs at a different time than the system coincident peak demand." (PUC DN 03-0371. COM Response to LOL-WDT-IR-28, page 92) Question(s): Has HECO evaluated, analyzed, and/or considered switching to a load management that rewards night-time use instead of one that rewards constant (high power factor) use?

LOL-HECO-IR-80: Ref: Photovoltaic (PV) generators require an extensive land area to achieve the capacity required for the Koolau/Pukele area transmission line overload

problem." (Exhibit 6, page 53) Question(s): (a) What is the area (in square miles) in the urban district in the Koolau/Pukele service area? (b) What percentage of the land would have to be covered to provide sufficient photovoltaic systems to generate 200 MW?

LOL-HECO-IR-81: Ref: "The photovoltaic generation will not be dispatchable for the Koolau/Pukele area transmission line overload problem." (Exhibit 6, page 53) (a) If photovoltaic generation were connected at the subtransmission or distribution level, would it be dispatchable during Koolau/Pukele area transmission line overload conditions?

LOL-HECO-IR-82: Ref: "If there is no sun at the time of a potential overload condition on the 138kV transmission lines supplying the Koolau/Pukele area, there will be no possibility of reducing the overload on the Koolau/Pukele area transmission lines with PV-based generation." (Exhibit 6, page 53) Question(s): (a) During the time of day that HECO schedules maintenance work, i.e., between 9 am and the early afternoon, will photovoltaic generators provide reliable electricity? (b) If the photovoltaic generation is discounted to reflect cloudy conditions, couldn't it still be quantified at a greater than zero value?

LOL-HECO-IR-83: Ref: "The lowest cost DG option ... at an estimated cost of \$51 million." (Exhibit 6, page 56) Question(s): (a) How much did it cost ratepayers to install the 39 MW of back-up generators in the Pukele Service Area? (b) When (what year) did HECO estimate that the amount of backup generation is 39 MW? (c) Has that estimate been updated?

LOL-HECO-IR-84: Ref: Exhibit 7, EDM Report. The report was co-authored by Dr. George Gela. Please provide the following information on the author. Please provide the answer either in electronic format or by providing a web address where the document(s) can be down-loaded from. Question(s): (a) All articles, books, chapters, or other documents written in whole or in part by the Dr. Gela. Please provide the date of publication or release, the agency it was submitted to, the docket and/or file number that contains the document. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification). (b) All courses taken, degrees given, courses/classes taught by the witness. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification). (c) All presentations, testimonies, talks made and exhibits submitted by the witness to regulatory agencies. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification). (d) All projects overseen by the witness. Please include the dates of participation and any identifying characteristics of the project necessary to track down information about it. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification). (e) All correspondence between the witness and HECO with regard to their testimony. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification). (f) All reports, draft or otherwise, submitted by the witness to the utility. Please provide electronic copies of all documents if they exist. Please provide the location of hard copies (source, cost, docket number, file number, or other identification). (g) Please provide the work order for Dr. Gela regardless of whether he was employed by HECO, one of HECO's contractors, or a HECO

subcontractor. (h) Which documents written by Dr. George Gela are in the possession of HECO?

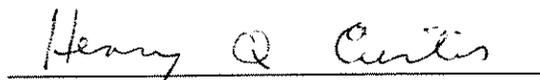
LOL-HECO-IR-85: Ken T. Morikami (T-7) Question(s): Does HECO have any official or unofficial guide and/or restriction on the minimum distances between HECO's placement of 46kV lines and existing residential buildings? Please elaborate.

LOL-HECO-IR-86: Ref: T-9 & Net Present Value (NPV) can be used to measure costs over time. Question(s): Does HECO use NPV for (1) construction of new generators; (2) construction of electric lines and substations; (3) estimated fuel costs? Does HECO uses NPV for construction and not fuel? Can a real comparison be made between central generation/transmission lines and renewable energy/distributed energy is the NPV of fuels is not used? Changes assumptions by small amounts, such as the price of oil will be between \$20-26/barrel from 2000 to 2020, can have major implications, and can change the optimal solution. How has HECO analyzed the risk of a sharp rise in the price of oil. How has HECO evaluated at what oil price or oil volatility level does the optimal solution stop being optimal?

LOL-HECO-IR-87: William A. Bonnet (T-11) Question(s): Does HECO have any official or unofficial guide and/or restriction on the minimum distances between HECO's placement of 46kV lines and existing residential buildings? Please elaborate.

LOL-HECO-IR-88: Ref: Cultural Impact Analysis for the Hawaiian Electric Company, Inc.: East O`ahu Transmission Project -- 46kV Phased Project. Question(s): (a) Which Hawaiian Civic Clubs were contacted? (b) Was `Ilio`ulaokalani Coalition contacted? (c) Was Hui O Malama contacted? (d) Was the Native Hawaiian Legal Corp., contacted?

Dated August 25, 2004



Henry Q Curtis
VICE PRESIDENT FOR CONSUMER ISSUES
LIFE OF THE LAND

Certificate of Service

I hereby certify that I have this date served a copy of the foregoing Information Requests by Life of the Land, Docket Number 03-417, upon the following parties. The original and 8 copies to the PUC. Two copies to the Consumer Advocate. Three copies to HECO. In addition, electronic copies have been sent to all parties.

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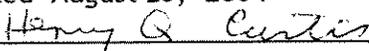
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Dated August 25, 2004



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