PETITIONER'S EXHIBIT #4

A97-722

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A97-722 - MAUI ELECTRIC CO., LTD.
(Waena Generating
Substation)

EXHIBITS D-1 through D-21

EXHIBIT D-1

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

MAUI ELECTRIC COMPANY, LIMITED'S

WAENA GENERATING STATION

DOCKET A97-722

EDWARD L. REINHARDT

LAND USE COMMISSION
STATE OF HAWAII
1996 FEB 10 P 1:45

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   My name is Edward L. Reinhardt and I am employed by Maui Electric Company, Limited (MECO). My business address is 210 W. Kamehameha Avenue, Kahului, Maui, Hawaii.

2. WHAT IS YOUR POSITION IN THIS FIRM?

   I am the Manager of the Engineering Department of MECO.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM.

   MECO is an Electric Utility company operating in the state of Hawaii, Maui County.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   My area of responsibility focuses in the area of Engineering Planning, Designing and Construction of Electrical facilities in the distribution, transmission and generation areas for MECO.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   I received my Bachelor of Science in Electronic Engineering from Northrop University in 1976. I attended the Public Utilities Executive Course at the University of Idaho in 1994.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

   My field of expertise is in the area of planning, design and construction of electric facilities.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

I've worked in the electrical field for approximately 22 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes. I've testified in several dockets before the Public Utilities Commission in the area of transmission line planning, design and construction (Waikapu Line Relocation, Maalaea to Lahaina Transmission line). And two other dockets relating to plant additions and revenue requirements for the construction of projects.

9. ARE YOU FAMILIAR WITH MECO'S PROPOSED WAENA GENERATING STATION?

Yes. I am familiar with MECO's proposed Waena Generating Station.

10. WHAT RESPONSIBILITIES DO YOU HAVE OR WHAT WORK DID YOU DO IN SUPPORT OF THE WAENA GENERATING STATION PROJECT?

I was the overall project manager for this project. From its initial planning stages in 1989 till where we are presently at today.

11. WHAT AREAS ARE YOU HERE TODAY TO TESTIFY AS AN EXPERT WITNESS IN?

The subject matter areas I am testifying today, are the project description, project siting and Community involvement.

12. COULD YOU BRIEFLY EXPLAIN WHAT WILL BE ISNTALLED AT THE WAENA GENERATING STATION?

The Waena facility is planned for 232 megawatts (MW) of power generation capacity to be constructed in four phases over a period of 20-30 years. Each phase is 58 MW , consisting of two 20-MW combustion turbines, two hear-recovery steam generators, an 18-MW steam turbine generator and supporting facilities. The first 20-MW combustion turbine is scheduled for operation by the year 2004.

13. SUMMARIZE THE ACTIVITIES INVOLVED WITH THE SELECTION SITE PROCESS AND HOW MECO INVOLVED THE COMMUNITY IN THIS PROCESS?

Since 1989, MECO and our consultants engaged in an exhaustive selection process to identify the best site for the proposed power plant. In 1994, Belt Collins Hawaii used

the information from previous studies to identify 10 candidate sites within the central Maui region for possible evaluation. Six of the 10 sites were determined to be viable and were evaluate for environmental factors. Three sites were identified as the most preferred sites. In April 1995, Dames and Moore completed an environmental study of these three sites. After considering environmental factors (except air quality), Dames and Moore concluded that the A-2 site (now known as the Waena Generating Station) was the best site. In November 1995, Stone & Webster Engineering Corporation completed the MECO Generation Siting Study and recommended the same A-2 site. This siting study considered air quality, environmental, engineering, infrastructure, and cost factors. After considering such factors as a) the concerns of the public, landowners and Maui County and other government agencies; 2) MECO's future generation needs and existing transmission system, 3) potential environmental and land use impacts, and 4) economic impacts on both MECO and its customers; and after extensive consultation with affected parties and county agencies, MECO adopted the recommendation of its consultants and selected the A-2 site.

14. SUMMARIZE YOUR ROLE IN THE COMMUNITY INVOLVEMENT?

Under my direction, MECO conducted Community involvement meetings throughout Kihei, Kahului, Makawao, Kula, and Paia. During the final site selection process in 1995, several community and agency meetings and presentations were held. These meetings were held to solicit comments on the three remaining alternative sites under consideration. Eleven meetings were held during this time, these meetings ranged from meeting with Community Associations to presentations to the Maui County Mayor and the Maui County Council. Three public scoping meetings were held in the Central Maui and Upcountry Maui areas during the scoping period for the purpose of soliciting documents and public input on items to be covered in the EIS.

15. SUMMARIZE YOUR ROLE IN THE PROJECT SITING FOR THIS SITE.

My role was to participate as the project manager, coordinating the overall process of this project.

16. WHAT IS YOUR OPINION WITH RESPECT TO THE WAENA GENERATING STATION?

This project is required to provide the County of Maui and all residents and businesses on Maui, a reliable source of electric power for the future of Maui.

EXHIBIT D-2

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

LESLIE V. MATHINE

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   Leslie Vernon Mathine
   Stone & Webster
   7677 East Berry Avenue
   Englewood, Colorado 80111

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

   Senior Lead Engineer

3. WHAT KIND OF BUISINESS IS CONDUCTED BY YOUR FIRM?

   Stone & Webster is primarily an Engineering and Construction firm in the Power, Industrial, Process and Petrochemical, and Environmental/Infrastructure fields.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   My responsibilities are the design and supervision of design for various projects within the Power Sector of Stone & Webster.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   Graduated with B.S.C.E. from the University of Nebraska in 1972.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOU RFIELD OF EXPERTISE?

   Civil/Structural Engineering.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

   25 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

   No.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

   Yes, I am.

10. WHAT WORK DID YOU DO IN CONNECTION WITH THE WAENA GENERATING STATION PROJECT?

    Stone & Webster performed the final Site Study for the project for which I was the Project Engineer.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

    The purpose of the work was to determine which of the three candidate site was highest ranked for Maui Electric Companies proposed expanded generation.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

    The purpose of the study was to determine the best generation site by evaluating the final three sites, A-2, D-1, and C-3, identified as the most preferred candidate sites through a series of previous siting studies. The study provides a comparative analysis of the final three candidate

sites relative to environmental issues, engineering and infrastructure considerations, and the concerns of the Maui community.

The study includes an evaluation of the nine environmental issues: groundwater, surface water, plants, wildlife, cultural resources, noise, hazardous materials/wastes, natural hazards, and traffic that were included in the *Environmental Screening and Siting Report for the Central Maui Generation Project* (Dames & Moore, 1995) (D&M) and *Central Maui Siting Study* (Belt Collins Hawaii, 1994) (BCH) studies. These environmental issues were identified as being important to a site selection process, and are also generally regarded as critical issues to be evaluated in the siting of electrical generation facilities. The results of the air quality analysis have been added to the environmental issues for the selection of the best site from the three candidate sites. The study also included a cost estimate and schedule for the candidate sites. A fuel oil delivery study was included to evaluate the cost of trucking and piping of fuel oil from the Kahului Harbor to each of the candidate sites.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

Overall, of the three sites evaluated, Site A-2 was ranked the highest and was considered as the best location for the Central Maui Generation Project. Next in order were Sites D-1 and C-3. Although ranked approximately the same, Site D-1 has fewer air quality constraints than Site C-3.

Depending on the requirements for the pipe (single vs. double wall), piping of fuel oil to the candidate sites may be economically feasible. However, due to the uncertainty of regulatory requirements for double wall pipes in the future, trucking of fuel oil was recommended for the initial units at any of the candidate sites. Permitting of the fuel oil line to the sites was considered to be difficult considering a nearby wildlife refuge.

The cost of constructing the first dual-train combined-cycle units and the infrastructure required was essentially the same for each of the candidate sites with Site A-2 having the lowest total cost for the first dual train combined cycle followed by Site C-3 and Site D-1, which are 0.5 % and 3.5 % higher in overall cost than Site A-2 respectively. The schedule represents the first combined-cycle generating unit and was essentially the same for each site.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH THE WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

Stone & Webster was asked to provide engineering support to the Environmental Impact Statement performed by CH2M Hill. Stone & Webster updated the fuel delivery study performed during the MECO Generation Siting Study and provided a study concerning the use of naphtha fuel.

The fuel study was updated to current installation and permitting costs and concluded that trucking of fuel was the best method of delivering fuel to the Waena Generating Station. The study for naphtha fuel concluded that while naphtha fuel is capable of being used in combustion turbine applications, the cost for using naphtha would be prohibitive.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The Waena Generating Station is the site best suited for Maui Electric Company to build its next generation plant.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOUR FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-3

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

EARLE H. IFUKU

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

My name is Earle H. Ifuku and my business address is 210 West Kamehameha Avenue, Kahului, Maui, Hawaii.

2. WHAT IS YOUR POSITION IN THIS FIRM?

I am the Manager of the Customer Service Department at Maui Electric Company, Limited ("MECO").

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

MECO is an operating public utility engaged in the production, purchase, transmission, distribution and sale of electricity on the islands of Maui, Lanai, and Molokai, State of Hawaii.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

As MECO's Manager of Customer Service, I am responsible for Customer Operations, Field Service, Integrated Resource Planning/Demand Side Management planning ("IRP/DSM"), and Forecasting.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

I have a Bachelors in Business Administration Degree from the University of Hawaii with a functional specialization in Management Information System. I've also taken several graduate level courses in telecommunications and Business Administration.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

I have been the Manager of MECO's Customer Service Department since May 1997. My prior relevant utility work experience at Hawaiian Electric Company ("HECO") includes: Director, IRP Division (1995-1997), Senior Planning Engineer (1995), IRP Analyst (1992-1995), Regulatory Analyst (1988-1992), End User Computing Specialist (1986-1988). My fields of expertise are Integrated Resource Planning, DSM planning, and forecasting.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

I've been employed in various positions and careers at MECO and HECO since 1986 (Refer to Exhibit B-3 for a copy of my resume.)

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

I am a witness in the Company's current rate proceeding (Docket No. 97-0346) and have subject matter responsibility for sales forecast, average number of customers, other operating revenues (MECO T-2) and customer accounts expense, customer deposits, interest on customer deposits and revenue lag days (MECO T-7).

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes, I am generally familiar with the project and its relationship to the integrated resource planning process that identified the need for future supply-side generation to meet current and future customers needs for electricity.

10. WHAT RESPONSIBILITIES DO YOU HAVE OR WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

While at HECO, I was responsible for coordinating the development of the Hawaiian Electric Companies (MECO, HECO and HELCO) IRP Plan filings and annual evaluation updates to the Hawaii Public Utilities Commission ("HPUC").

The proposed Waena Generating Station project is one of the supply-side action plan items resulting from the Company's approved IRP Plan.

11. WHAT HAVE YO DONE TO CARRY OUT THESE RESPONSIBILITIES OR WHATWAS THE PURPOSE OF THE WORK YOU PERFORMED?

In my present position as Manager of MECO's Customer Service Department, I am responsible for overseeing the work related to the development of the Company's sales forecast and the implementation of the Company's DSM programs.

The forecast is one of the input factors used in developing the Company's IRP Plan. Very simply, the sales forecast defines our expectation of our current and future customers demand for energy.

The Company's DSM programs represents one of the primary strategies for meeting our customers' future demand for energy. Through utility sponsored energy conservation, we are attempting to reduce our customers' demand now and in the future for energy and defer the need for future generation.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

First, the forecast is made by utilizing a variety of forecasting tools, the expertise of the staffs of both MECO and HECO, and the input of our customers and respected organizations in the community. The data is analyzed and tested from various perspectives before a final forecast is adopted by the Company's Forecast Planning committee. A detailed description of this process and methods used is provided as Exhibit C-15.

The forecasting process is defined by a combination of assumptions about estimated future sales and loads from new and existing customers, level of economic prosperity, and estimates of the impact of the Company's DSM programs.

There is an intrinsic level of uncertainty in any forecast. The relationship of leading indicators on electricity sales is not always clearly defined. However, historically, the primary drivers for sales growth on Maui has been linked to weather, outlook for visitor arrivals and general economic trends in the State and Maui County.

Our current forecast, as shown in Exhibit C-19, reflects the best collective thought of Company and advisory experts as to the impact of these factors on the Company's expectations of future sales growth.

As part of the forecast process, high and low forecast scenarios are also developed to define a "band of reasonableness" around which resource planning strategies and action plans are developed.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

The findings, conclusion and recommendations of MECO's IRP Plan was approved by the HPUC on May 29, 1996, in Decision and Order No. 14707, in Docket No. 7258. In the PUC's ultimate findings and conclusions, the HPUC stated that "MECO's IRP [Plan] is in the public interest, is consistent with the goals and objectives of integrated resource planning, and represents a reasonable course for meeting the energy needs of its customers. MECO's IRP takes into consideration its financial integrity, size, and physical capability. Additionally, MECO's IRP identifies the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost. Thus, we conclude that MECO's IRP and program implementation schedule [Action Plans] reasonably comply with the IRP framework, and should be approved,..." (See D&O No. 14707, page 33)

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

As part of the on-going nature of the integrated resource planning process, MECO recently evaluated the impact of its latest 1997 Forecast and DSM estimate on the Waena Generating Station. Taking into consideration forecast and planning assumptions and the uncertainty of the performance of the DSM programs additional generation will continue to be needed in the 2004 time frame.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The HPUC found in its D&O No. 14674 in Docket No. 96-0039 that the acquisition of the 67-acre central Maui power plant site (the Waena Generating Station) and related easements is reasonable and in the public interest. The proposed power plant and easements will enable MECO to meet the future electrical power needs of the island of Maui through the generation and transmission of power for the public. (Ref. HPUC D&O No. 14674, Docket No. 96-0039, at 4-5).

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

MECO bears a franchise obligation to serve its customers with reliable power at the lowest reasonable cost. To meet its franchise obligation MECO has aggressively pursued the implementation of its recently approved DSM programs[1]. These DSM programs were previously identified and approved by the HPUC as a cost-effective alternative to supply-side options (both conventional and renewable) and are an integral part of MECO's near and long term resource strategy. The array of DSM program offerings to both residential, large and small commercial markets represents the most cost-effective options for energy conservation and is consistent with the principles of integrated resource planning.

The lead time necessary to obtain supply-side resources, their acquisition, operating and maintenance costs are comparatively predictable. In contrast, DSM resources are fundamentally contingent upon factors either outside of utility control (i.e., customer acceptance and persistence). Clearly, MECO is now dependent upon specific actions by customers as an element of satisfying the obligation to provide reliable service. Given that requirement, it is reasonable to expect that current and future energy needs can be satisfied through a cost-effective mix of energy conservation and conventional supply-side resources. Whether the risks of DSM programs and renewable technologies are greater than those borne in pursuing supply-side strategy can be debated and has been litigated as part of regulatory process for reviewing and approving the Company's IRP Plan. Market forces have confirmed the need for an appropriate balance of both DSM and conventional supply-side resources for meeting the near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost. The PUC's approval of the Company's IRP Plan and its review of its most recent annual evaluation filing continues to support the near and long term resource strategy which includes supply-side actions for the development of a long term central station generation facility on the island of Maui.

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[1]On September 23, 1996, the HPUC issued its final D&O approving the three commercial and industrial programs (Docket Nos. 95-0140, 95-0141 and 95-0142). On July 26, 1996, the HPUC approved the Residential Efficient Water Heating program (Docket No. 95-0139).

EXHIBIT D-4

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

ARTHUR SEKI

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   Arthur Seki
   Hawaiian Electric Company, Inc. ("HECO")
   820 Ward Avenue
   Honolulu, Hawaii 96814.

LAND USE COMMISSION
STATE OF HAWAII
'98 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

   I am the Energy Specialist in the HECO Planning & Engineering Department.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

   HECO is an investor owned utility operating on the island of Oahu. HECO subsidiaries are Hawaii Electric Light Company, Inc. ("HELCO") serving the Big island and Maui Electric Company, Ltd. ("MECO") serving Maui, Molokai, and Lanai.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   The energy specialist responsibilities are to provide technical and project engineering for HECO alternate energy program and to evaluate and demonstrate renewable energy and non-oil fossil fuel projects for utility applicable electric generation for HECO, HELCO, and MECO systems.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   BS, 1974 from Arizona State University with a bachelor's degree in Chemical Engineering.

MS, 1976 from University of Hawaii at Manoa with a master's degree in Civil Engineering.

After graduating in 1976, I worked at the University of Hawaii as a research associate in the Hawaii Geothermal Project and later joined the Hawaii Natural Energy Institute. At this institute, I worked on various renewable energy research, development, and demonstration projects. The renewable resources examined include geothermal, solar thermal, photovoltaic, ocean energy, biomass, hydroelectric, and wind.

At HECO, I was also the project manager for the MECO Integrated Resource Planning ("IRP") supply-side resource options work effort.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

   My field of expertise is alternate energy, in particular, renewable energy.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

   I have spent about 21 years in the renewable energy field.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

   Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

   Yes.

10. WHAT RESPONSIBILITIES DO YOU HAVE OR WHAT WORK DID YOU DO IN SUPPORT OF THE WAENA GENERATING STATION PROJECT?

    I provided material in the Waena Generating Station Final Environmental Impact Statement report related to renewable energy.

11. WHAT HAVE YOU DONE TO CARRY OUT THESE RESPONSIBILITIES OR WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

Some of the information used for the Waena Generating Station Final Environmental Impact Statement was taken from the MECO IRP supply-side resource options report, which I helped develop.

The objective of the MECO IRP work was to identify and characterize supply-side resource options on a comparable basis, with public participation, for comparison and analysis with demand-side options in developing its IRP. MECO identified and assessed a wide range of commercial and developing resources appropriate for consideration as potential supply-side resource options. MECO is in the process of conducting their second IRP filing to the PUC.

Representatives from various organizations and groups participated as members of the MECO IRP Advisory Group to provide guidance to MECO in the supply-side resource options development. The Advisory Group representatives attended numerous meetings, participated in the resource option screening process, provided input into the report content, submitted review comments on the draft report, and discussed supply-side resource option issues. In addition, copies of the draft supply-side resource options portfolio development report were distributed to the public libraries, and public information meetings were held to review the report and to receive comments and input.

The approach used in the supply-side resource option assessment included the identification of a wide range of resources appropriate for consideration as potential supply-side resource options. These resources were then screened to eliminate resources not appropriate for Hawaii or the MECO system. The resources were further screened to develop a listing of commercially available and developing resources which would be evaluated in detail during the assessment process. The intent of the screening process was to place all resource options into three categories: commercial, developing, or others.

Some of the commercial technologies examined in the IRP include:

- Pulverized coal;
- Atmospheric fluidized bed combustion;
- Combined cycle combustion turbine (oil fired);
- Steam boiler (oil fired and diesel fired);
- Biomass combustion;
- Simple cycle combustion turbine (diesel fired);
- Diesel engine generator;
- Wind energy;
- Small-scale photovoltaic;

- Hydroelectric resources;
- Hybrid renewable resources;
- Battery energy storage; and
- Pumped storage hydroelectric.

Although not considered efficient or cost-effective at this time for use, several developing resource options were also examined. The resource options include:

- Pressurized fluidized bed combustion;
- Coal gasification combined cycle;
- Fuel cells;
- Advanced combustion turbines;
- Geothermal power;
- Ocean thermal energy conversion;
- Advanced biomass technologies;
- Ocean wave energy conversion;
- Photovoltaic power;
- Solar thermal power;
- Advanced battery energy storage; and
- Capacitance storage.

The report also presents information on fuel supply issues for low sulfur fuel oil, diesel oil, and coal. A fuel assessment was also conducted on the following fuels:

- Landfill gas and digester gas;
- Liquefied petroleum gas;
- Coal gas;
- Ethanol;
- Methanol;
- Orimulson;
- Coal slurries; and
- Biocrude oil production.

12. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH THE WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

Yes.

I also provided additional information on renewable energy in the development of the Waena Generating Station Facility Environmental Impact Statement report. Some of these resources include:

- Biomass;
- Geothermal power;
- Ocean thermal energy conversion;
- Fuel cell technology;
- Wind power;
- Solar power;
- Hydroelectric; and
- Liquid fuels.

When examining these resources, considerations must be given to the cost of the technology, site specific issues, land use issues, environmental concerns, stage of maturity issues, and whether the energy can be produced on demand.

The results of frequent monitoring and evaluation of these renewable technologies show that the technology proposed for the Waena Generating Station continues to be the most cost-effective and efficient means of generating baseload electricity on the island of Maui.

EXHIBIT D-5

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

STANLEY K. KIYONAGA

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   Stanley K. Kiyonaga
   Maui Electric Company
   200 Hobron Avenue
   Kahului, Hawaii 96732

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

   Production Department Manager

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

   Generation of Electric Energy

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   I am primarily responsible for the operation and maintenance of Maui Electric Company's generating stations on Maui, Lanai and Molokai.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   Maui Technical School
   (Architectural Drafting)
   Maui Community College
   Other Curriculum: Cleveland Institute of Electronics
   (Electronics Technology)
   International Correspondence Schools
   (Power plant operators curriculum)

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

   Operation and maintenance of electric generating stations.

7. LONG HAVE YOU WORKED IN THIS FIELD?

   25 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

   No.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

   Yes, I am.

10. WHAT RESPONSIBILITIES DO YOU HAVE OR WHAT WORK DID YOU DO IN SUPPORT OF THE WAENA GENERATING STATION PROJECT?

    I am responsible for representing the plant operations aspect during planning and design of the project.

11. WHAT HAVE YOU DONE TO CARRY OUT THESE RESPONSIBILITIES OR WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

    I provided review and feedback for conceptual plant design and layout, as well as input and review of other pertinent process document. I also provided input on MECO's spill prevention containment control plans and MECO's handling of hazardous wastes and materials generated by our power plants.

12. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOUR FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

    No.

EXHIBIT D-6

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

SCOTT W.H. SEU

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   My name is Scott W. H. Seu. My employer is Hawaiian Electric Company, Inc. My business address is P.O. Box 2750, Honolulu, HI 96840.

2. WHAT IS YOUR POSITION IN THIS FIRM?

   I am a Principal Environmental Scientist in the Hawaiian Electric Company Environmental Department.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

   Hawaiian Electric Company is an investor owned electric utility. Its subsidiaries include Maui Electric Company.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   I supervise the Air Quality and Emissions Division of the Environmental Department. I am responsible for overseeing all air permitting, compliance, and monitoring activities for Hawaiian Electric Company and its subsidiaries Maui Electric Company (MECO) and Hawaii Electric Light Company (HELCO).

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   I received Bachelors and Masters of Science degrees in mechanical engineering, both from Stanford University in California.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

I am knowledgeable principally in the areas of air permitting, compliance, and emission control technology. Additionally, I am a licensed mechanical engineer in the State of Hawaii.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

I've worked in the air pollution regulatory and emissions control field for six and a half years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes. I testified as an expert witness on air permitting matters at the State Board of Land and Natural Resources Contested Case Hearings concerning the Conservation District Use Application for HELCO's Keahole Generating Station Expansion. Those hearings were held November 20 through 29, 1995.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes I am.

10. WHAT RESPONSIBILITIES DO YOU HAVE OR WHAT WORK DID YOU DO IN SUPPORT OF THE WAENA GENERATING STATION PROJECT?

Beginning in August, 1993, I coordinated the air quality impact assessments for the Waena project. This includes consultant studies done for final site selection purposes, as well as studies for the EIS. I also participated in presentations to the public during the site selection process and in scoping meetings for the EIS. Ultimately, I or others under my direction, will also be responsible for applying for and obtaining all necessary air permits for the project.

11. WHAT HAVE YOU DONE TO CARRY OUT THESE RESPONSIBILITIES OR WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

The purpose of my work was to manage the air quality studies done in selecting the Waena project site and in preparing the EIS, and to serve as Maui Electric's liaison with the public and regulatory agencies on air quality matters.

12. IF YOU PERFORMED WORK, WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THAT WORK?

The site selected is the best of the candidate sites in terms of minimizing air quality impacts. Furthermore, the preliminary air quality impact studies indicate that it will be possible to eventually permit the full 262 MW Waena Generating Station at this site, in full compliance with all ambient air quality standards.

13. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOUR FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-7

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

Dr. THOMAS A. SCHROEDER

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Thomas A. Schroeder
University of Hawaii at Manoa
Department of Meteorolgoy
2525 Correa Road
Honolulu, Hawaii 96822

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

Associate Professor

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Teaching and research.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Teaching and research.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

BS Mathematics and Physics, Indiana Central, 1969
MS, Atmospheric Science, Purdue University, 1971
Ph.D., Atmospheric Science, Purdue University, 1974

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Meteorology.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

24 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

Under contract from Maui Electric Company, Limited, I worked with Jim Clary & Associates to prepare an air quality impact study factoring in the effects of the Maui Vortex.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To construct scenarios to evaluate impacts of effluent being accumulated by the Maui Vortex.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Published model simulations, observations, and local meteorological data were used to develop a worst case scenario concerning the Maui Vortex. Mr. Clary then used the characteristics of the Maui Vortex and worst case scenario to develop potential air quality impacts.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

The observations and the previously published model results describing the Maui Vortex (Ueyoshi, et al) are inconsistent.

The Maui Vortex occurs only when trade winds are blowing.

Mr. Clary will address the particular air quality impact results.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

Previously, I examined natural hazards in the area for the Dames & Moore site selection study.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The proposed project and the Maui Vortex will not interact to cause any significant level of emission concentrations in Upcountry areas.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-8

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

JAMES C. CLARY, JR.

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   James C. Clary, Jr.
   Jim Clary & Associates
   4835 LBJ Fwy # 660
   Dallas, TX 75244

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

   President.

3. WHAT KIND OF BUISINESS IS CONDUCTED BY YOUR FIRM?

   Air quality consulting.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   Management and technical review of all projects.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   1971 - received a BS degree in Meteorology from Florida State University
   1974 - received a MS degree in Meteorology from Florida State University

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOU RFIELD OF EXPERTISE?

   Applied meteorology, air quality dispersion modeling, and air regulatory interpretation.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

   23 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

   Yes

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

   Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH THE WAENA GENERATING STATION PROJECT?

- Performed air dispersion modeling studies, including the emissions from the Waena Generating Station, as part of the final site selection process.
- Studied the impact of the Maui vortex on the plume dispersion from the Waena Generating Station.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

    The purpose of my work was to:

- Evaluate the plume dispersion characteristics at the four final sites for the final site selection study
- Insure that the Waena Generating Station complies with all applicable ambient air quality standards, Prevention of Significant Deterioration Increments, and
- Assess the impact of the Maui vortex on plume dispersion from the Waena Generating Station.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

I employed standard U.S. Environmental Protection Agency air dispersion models and on-site meteorological data to evaluate the impact of the Waena Generation Station on air quality. For the Maui vortex work, I used widely-accepted dispersion model techniques.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

- One 58-MW unit will only have an insignificant air quality impact on NO_2, and PM_{10}.
- With four 58-MW units, the Waena Generating Station will consume no more than 79 percent of any applicable Prevention of Significant Deterioration Increment.
- The total plant impact of the Waena Generating Station and the existing sources is expected to be below all applicable State and federal ambient air quality standards.
- The impact of the Waena Generating Station at the Haleakala National Park are expected to be within the applicable Prevention of Significant Deterioration Class I increments and the Class I Screening Criteria for visibility.
- Because the Waena Generating Station will emit insignificant amounts of the constituents contributing to regional haze, the facility is not expected to have any significant additive impact on regional haze.
- The interaction of the Maui Vortex and the Waena Generating Station is not expected to result in significant concentrations of SO_2, NO_2, and PM_{10}.
- In the Maui Vortex, the Waena Generating Station ethylene emissions would require over 1,000,000 days of continuous vortex and plant emissions for ethylene concentrations to exceed 0.01 µl/l.
- Within the Maui Vortex, approximately 274 days of continuous vortex and plant emissions would be required for H_2SO_4 concentrations 0.01 ppm.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH THE WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

    Pre-construction air permit regulations require that the Waena Generating Station meet all State and federal air quality rules and standards. A minimum of one-year of post-construction air quality monitoring will evaluate the accuracy of the air dispersion model projections. I'm not aware of any factors that would require significant mitigation measures during the air permitting process.

16. CAN YOU COMMENT ON THE POTENTIAL IMPLICATIONS OF VOG AND CANE BURNING RELATEIVE TO THE WAENA GENERATING STATION?

    Yes. I can comment on VOG based on work I have done, and I can comment on the implications of cane burning based on the relevant technical issues.

17. ARE THERE ANY OTHER MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOUR FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

    No.

EXHIBIT D-9

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S

WAENA GENERATING STATION

DOCKET A97-722

DR. ROBERT E. PAULL

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   Robert E. Paull
   University of Hawaii at Manoa
   3190 Maile Way
   Honolulu, HI 96822

   In this matter , I have been engaged as an independent consultant and do not represent the University.

2. WHAT IS YOUR POSITION IN THIS FIRM?

   At the University, I am a Professor of Plant Physiology.

3. WHAT KIND OF BUISINESS IS CONDUCTED BY YOUR FIRM?

   The University carries out teaching, research and service to the State of Hawaii.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   As a Professor, I am a principal investigator on a number of plant physiology research projects. I have to secure funding, planning the research, carry out the research and provide the necessary reports.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   BS University of Sydney, Australia - Agronomy

Ph.D. University of California, Berkeley - Plant Physiology

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOU RFIELD OF EXPERTISE?

Plant Physiology, effect of environmental, nutritional and other stresses on plant growth and development.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

24 years

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes

10. WHAT WORK DID YOU DO IN CONNECTION WITH THE WAENA GENERATING STATION PROJECT?

Evaluated the impact of ethylene and sulfur dioxide (sulfate) on plant growth in the surrounding area.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To determine whether there would be any adverse impact on plant growth and development from these two emissions.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Review of the literature relating to ethylene and sulfate in the environment and their affect on plant growth. Calculation of the time necessary for threshold levels to be achieved using the models developed for emission dispersal.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

There would be no adverse impact from the proposed ethylene or sulfate emission on plant growth and development.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH THE WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

There would be no adverse impact from the proposed ethylene or sulfate emission on plant growth and development.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOUR FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

There are no additional matters.

EXHIBIT D-10

TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

MICHAEL YUEN

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

1. COULD YOU PLEASE STATE YOU NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

   My name is Michael Yuen. I work for the Hawaiian Electric Company whose business address is 820 Ward Avenue, Honolulu, Hawaii.

2. WHAT IS YOUR POSITION IN THIS FIRM?

   I am the Lead Mechanical Engineer with the Power Supply Planning and Engineering Department.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

   Hawaiian Electric Company is an investor owned electric utility engaged in the production and distribution of electricity. Its subsidiaries include Maui Electric Company.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

   I manage projects by coordinating work among the various engineering disciplines and/or consultants while monitoring costs and schedules. I also prepare plans, layouts, design calculations, designs and engineering studies to improve or expand power generation systems to meet regulatory requirements.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, STARTING FROM COLLEGE.

   I have a Bachelor of Science in Chemical Engineering from the Case Institute of Technology. I am also a licensed mechanical engineer in the State of Hawaii.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOU FIELD OF EXPERTISE?

   My field of expertise is power plant planning and operations.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

   I have worked in this field for ten years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

   No, I have not.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

   Yes, I am.

10. WHAT RESPONSIBILITIES DO YOU HAVE OR WHAT WORK DID YOU DO IN SUPPORT OF THE WAENA GENERATING STATION PROJECT?

    I am providing project management and project engineering support to Maui Electric Company for this project.

11. WHAT HAVE YOU DONE TO CARRY OUT THESE RESPONSIBILITIES OR WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

    I have been and am currently involved in the oversight of site selection studies, site procurement, land permitting activities, and conceptual engineering.

12. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH THE WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

    I helped prepare the conceptual plant design criteria for the Waena Generating Station. Included were the estimated process water qualities and flow requirements. The water process is based on a similar installation at the Maalaea Power Plant where the same

combustion turbine technology is used. Water quality data from wells at the near-by landfill was used as the basis for the Waena Generating Station supply water. This data was in turn used to predict the quality of the injection water presented in the EIS.
In addition, I am the project manager for the SCR Demonstration Project. The SCR Demonstration Project's objective is to determine the feasibility of SCR for use in the MECO and HELCO combustion turbine applications. The primary concern is the effect of fuel sulfur on catalyst performance. A pilot plant SCR unit was installed at the Maalaea Power Plant to collect long term operating data. The SCR catalysts used in the pilot plant were selected from a bench scale screening of different SCR supplier's catalysts. The pilot plant data collection phase has been completed. This data will be reviewed by an independent consultant under the direction of DOH who will then recommend a NOx control technology appropriate for the MECO and HELCO installations. This work is expected to be completed by the end of this year.

13. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOUR FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-11

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

GLEN LAU

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Glen Lau
Pacific Geotechnical Engineers, Inc.
429-B Waiakamilo Road
Honolulu, Hawaii 96817

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

President.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Geotechnical and geological consulting engineering.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Operating the business, project management, and marketing.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

BS Civil Engineering, University of Hawaii, 1979
MS Civil Engineering, University of California at Berkeley, 1980

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Geotechnical Engineering.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

18 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

No.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

Provided geotechnical and geological consulting services during the environmental impact statement phase of this project.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

The purpose of our work was to provide feedback regarding anticipated site soils and geological conditions, potential impacts of these conditions on the proposed construction including potential mitigation methods, and potential natural geologic hazards.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

The methodology used in our work included a review of available data, site reconnaissance, and reconnaissance, and engineering analysis.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

Subsurface conditions at the proposed generating station site and along its transmission corridors are anticipated to consist of a thin layer of overburden soils underlain by lava flow deposits. No

major geotechnical and geological concerns are anticipated at the station site and along its corridors based on these anticipated conditions. The station site is located in an area classified as having a low risk with respect to volcanic hazards form lava flows and ash-fall. Seismic hazard form liquefaction of the site soils was also found to be low.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

Based on these findings, it was concluded that it is geotechnically feasible to construct the generating station and its transmission corridor at the subject site.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-12

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

TED S. KAWAHIGASHI

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Ted S. Kawahigashi
Austin, Tsutsumi & Associates
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

President.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Consulting Engineers, Civil Engineers, and Surveyors.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Overall direction and fiscal viability of the firm.
Transportation and traffic engineering projects.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

BSCE University of Hawaii, 1957
MSCE University of Southern California, 1968
Short courses in Traffic Engineering and Design:
Northwestern University Traffic Institute
University of California at Berkeley Institute of Transportation

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Traffic engineering.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

Thirty (30) years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes, both for LUC and Planning Commission hearings.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes, to the extent of written material furnished by the client in the preparation of the traffic study.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

Preparation of the Traffic Impact Analysis Report (TIAR).

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

The TIAR is a part of the environmental impact statement for this project. The TIAR was prepared to identify and quantify any potential adverse impact(s) on traffic operations on the public roadways resulting from vehicular trips generated by the Waena Project and to recommend traffic mitigation measures(s) to reduce or eliminate any adverse impact(s) on traffic operations identified in the traffic study.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

The standard methodology, which is accepted by the State of Hawaii Department of Transportation (DOT), for the preparation of a TIAR was utilized as follows:

a. Consult with DOT and County of Maui Department of Public Works and Waste Management (DDPWWM) traffic engineers to obtain their concerns in regards to traffic operations on the project affected roadways.

b. Obtain available traffic volume count data on the affected roadways and nearby roadways.

c. Obtain and/or review available reports on future roadway improvements on the project affected roadways and proposed new roads in the vicinity of the project.

d. Obtain peak hours of traffic turning movement counts at key intersections on the project affected roadways.

e. Reduce and review all of the traffic data obtained for the project and establish the current existing traffic operations on the project affected roadways.

f. Project future traffic demands of de-facto and form known future developments for the future base year. The base year is generally derived from the project's implementation phases to full build-out.

g. Determine the quality of traffic operations on the affected roadways for the future base year, based upon the projected traffic demands without the traffic generated by the Waena Project. Generally, the quality of traffic operation for the base year without project generated traffic is performed for the existing roadways without the planned future roadway improvements or new road alignments, and also with all the planned future roadway improvements or new roads in place.

h. Compute the vehicular trips generated by the Waena Project and assign the trips to the road network. The trip generation computation is based upon specific information furnished by MECO relative to staffing and operations at the facility.

i. Determine the impact of the project generated traffic of the base year on the key intersections on the affected roadways. This computation is performed assuming no roadway improvements are implemented and, also, with all of the proposed roadway improvements implemented.

j. Recommend traffic mitigation measures to reduce or eliminate any adverse impact(s) on traffic operations resulting form project generated traffic, as appropriate.

k. Prepare the TIAR, documenting the methodology, findings, conclusions, and recommendations of the traffic study.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

a. The Hana Highway/Dairy Road intersection currently operates under congested conditions during the morning and evening peak hours of traffic.

b. The motorists on the side streets at the unsignalized intersections on Hana Highway generally experience long delays in order to enter the Hana Highway traffic stream. However, traffic observations indicate that there are adequate "gap's" in the traffic stream to permit the side traffic to cross or to enter the Hana Highway traffic stream. The gaps are caused by the traffic signals on the highway.

c. Future roadway improvements on Hana Highway at Hobron Avenue/Kamehameha Avenue and the proposed new airport access road/interchange will certainly improve traffic operations on Hana Highway in the study area. The Hana Highway/Hobron Avenue/Kamehameha Avenue intersection improvement will create a standard "4-legged" intersection, providing for all normal turning movements, supported by a traffic signal system

The proposed new airport access road and interchange with Hana Highway will divert traffic away form the Dairy Road intersection, and therefore; will improve traffic operations at the Hana Highway/Dairy Road intersection. In addition, Hansen Road and Pulehu Road will be realigned as part of the airport access road project to form a single intersection with Hana Highway at what is called the Airport Spine Road. This intersection will be a standard 4-legged, signalized intersection.

d. Assuming that all of the above mentioned roadway improvements are implemented before the Year 2016, traffic operations on Hana Highway with the Waena Project will be acceptable.

e. Adequate sight distance and auxiliary lanes must be provided on Pulehu Road at the driveway locations o the Waena Generating Station.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

From a traffic standpoint, with all of the proposed roadway improvements and new roads implemented and operational by the Year 2016, traffic generated by the project will not significantly impact traffic on Hana Highway.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

None from a traffic standpoint.

EXHIBIT D-13

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

AMY E. DUNN

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Amy E. Dunn
Scientific Consultant Services, Inc., Inc.
711 Kapiolani Blvd., Suite 777
Honolulu, HI 96813

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:45

2. WHAT IS YOUR POSITION IN THIS FIRM?

Archaeological Project Director.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Cultural resource management.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Direct archaeological field work and prepare written reports.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

Undergraduate studies in Anthropology.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Archaeology, specializing in Hawaiian archaeology.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

12 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

No.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Only in regards to the location of the proposed project.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

Conducted an Archaeological Inventory Survey.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To identify any significant archaeological sites within the project area.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Proposed transmission line routes on either side of existing, all weather roadways were surveyed. Those portions away form main roadways were surveyed from can haul roads, and on foot when roads were impassable or did not follow the proposed routes. The north and east sides of the generating station site were examined and the central portion was inspected form the can haul road that bisects the site northwest-southeast. Pedestrian sweeps were not made through the site because of the dense cane growth.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

No archaeological resources were identified in any of the proposed transmission line routes or the generating station site.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

There are no significant historic sites located on the subject property, and archaeologically speaking, there is no reason the project cannot proceed.

16. DID THE STATE'S HISTORIC PRESERVATION DIVISION CONCUR WITH THE FOREGOING CONCLUSION?

Yes. Exhibit C-62 is a copy of a letter dated August 29, 1997 from the State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division. The letter indicates that they concur with the foregoing finding.

17. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-14

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

EVANGELINE J. FUNK

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Evangeline J. Funk, Ph.D.
Botanical Consultants
PO Box 90765
Honolulu, Hawaii 96835

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

2. WHAT IS YOUR POSITION IN THIS FIRM?

Owner

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Biological field surveys, flora and fauna, wetland studies

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Oversee and conduct field surveys, literature searches, report writing

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

Ph.D. in Botany, University of Hawaii at Manoa
MS in Botany, University of Hawaii at Manoa
BS in Botany, University of Hawaii at Manoa
Professional Wetland Scientist Certification

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Plants, birds, wetlands.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

22 years

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

Reviewed literature and performed flora and fauna surveys. Prepared report.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

Assess impacts of the proposed project on flora and fauna.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Flora survey included inspection of the proposed site and the transmission line rights-of-way. Fauna survey included listening stations (day and night) at generating plant site and along transmission line rights-of-way.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

The proposed project would have no significant impact on flora or fauna.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

Construction and operation of the facility will have very little impact on the existing flora and fauna.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-15

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

DANIEL LUM

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Daniel Lum
Water Resources Associates
1188 Bishop Street, Suite 1708
Honolulu, Hawaii 96813

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

2. WHAT IS YOUR POSITION IN THIS FIRM?

President.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Water Resources Associates (WRA) provides a variety of consulting services including hydrologic studies and investigations, resource evaluations, environmental assessments, and groundwater monitoring. WRA conducts studies and prepares reports at a level that supports the preparation of environmental impact statements. WRA also provides geologic, hydrologic, and engineering services for exploratory well drilling, testing, and groundwater development.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

I serve as president and consultant on hydrogeologic investigations, groundwater exploration and development, well drilling, and environmental assessments.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

I graduated from Rice University in Houston, Texas with a BA degree in geology and form the University of Utah in Salt Lake City with a Masters degree in Geophysics.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Exploration, development, and environmental assessment of ground water resources throughout the State of Hawaii.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

Thirty-seven years. Twenty-nine years as a hydrologist/geologist with the State of Hawaii Department of Land and Natural Resources and eight years as a consulting hydrologist/geologist.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes. Most recently, I have testified at the Waiahole Ditch hearings of the Commission on Water Resource management as an expert in hydrogeology and water resources. I have testified at least six times as an expert witness in my field.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

I researched and analyzed pertinent data to prepare a report on regional geology, site-specific geology, and groundwater resources as they relate to the project.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To assess the potential impacts of the Waena project on groundwater resources.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

I performed four major tasks:

a. Researched applicable reports and analyzed pertinent groundwater data and regulations.

b. Assessed regional hydrogeology.

c. Analyzed geology and aquifer characteristics.

d. Reviewed allocation of water use and sustainable yield of the area.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

Foremost, we found that the disposal of wastewater from the project by means of onsite injections wells is feasible and indirectly will be suitable for irrigation purposed because of the wastewater's overall quality. Further, the nonpotable water required for this project is available by drilling and developing one or more wells on site.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

In my report, my conclusion was that no adverse impact on the basal groundwater aquifer would result from the Waena project.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-16

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

YOICHI EBISU

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

My name is Yoichi Ebisu, and I am self employed at Y. Ebisu & Associates.

My business address is 1126 12th Avenue, Room 305, Honolulu, Hawaii 96816

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

2. WHAT IS YOUR POSITION IN THIS FIRM?

I am the principal owner and engineer of the firm.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Acoustical engineering.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Mange, supervise, and perform all acoustical engineering work.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

Obtained B.S. and M.S. degrees in electrical engineering.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Acoustical engineering.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

Approximately 33 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

I evaluated potential noise impacts associated with the proposed project.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To evaluate possible adverse noise impacts associated with the MECO Waena Generating Facility.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Noise contours for the generating station were developed for the generating station.

Background ambient noise measurements at the nearest residential communities were obtained.

Long range sound propagation measurements were obtained to quantify sound amplification effects due to meteorological factors.

Predicted noise levels from the generating station were compared with current environmental noise criteria and standards as well as with measured background ambient noise levels.

Risks of adverse noise impacts from the generating station were evaluated and noise mitigation measures recommended.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

Existing background ambient noise levels in the residential communities closest to the generating station are very low (35 to 45 at night).

Compliance with the State Department of Health 70 dBA limit along the station's property lines should be possible with four DTCC units.

Generating station noise levels should not be audible at the closest communities (2 to 3 miles away), with or without sound amplification effects due to meteorological factors.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

Risks of adverse noise impacts were considered to be near zero at the closest residential communities.

Compliance with the State Department of Health 70 dBA limit should be possible with four DTCC units.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-17

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

J. MICHAEL SILVA

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

J. Michael Silva, Enertech Consultants, 300 Orchard City Dr., Campbell, California.

2. WHAT IS YOUR POSITION IN THIS FIRM?

President.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Enertech is a scientific research and engineering consulting firm that specializes in applied research projects, exposure assessment, and the development of electric and magnetic field (EMF) measurement instrumentation and computer modeling software. We have about 30 employees in our offices in California and Massachusetts. We perform a wide variety of projects for many clients throughout the United States and internationally. We have performed applied research on EMF for the US Department of Energy, Electric Power Research Institute, and California Dept. of Health services. Our instrumentation and software is used around the world in 35 countries.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

I am a research and consulting engineer and President of Enertech. I direct applied research projects, perform engineering studies, and serve as the President of the firm.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

I hold a B.S. and M.S. in Engineering from the University of Alabama and Auburn University, respectively. I have worked as a transmission and substation design engineer, research project engineer, and as a consultant. I was a Lloyd Hunt Distinguished Lecturer in Power Engineering at the University of Southern California. I was also on the distinguished lecture series at the University of Texas and Ohio State University. I am a licensed Professional Electrical Engineer in the state of California. I also hold Professional Engineering licenses in six other states and the

territory of Guam. I am a Senior Member of the Institute of Electrical and Electronics engineers. I have written numerous papers and articles related to electric power facilities and electric and magnetic fields.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Electric and magnetic fields, electric power engineering, power line and substation design, and related research.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

I have worked in this field for twenty-seven years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

I have been qualified as an expert before both the Public Utility Commission and Board of Land and Natural Resources here in Hawaii, and elsewhere.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

We gathered engineering data and performed computer modeling of the electric and magnetic fields that would be associated with operation of the existing 69 kV transmission lines and the proposed project, including Waena generating station, substation, and associated power lines.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

The purpose of our work was to quantify the electric and magnetic field levels associated with operation of the proposed project.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

We gathered engineering data, supplied by MECO, on the proposed design for the Waena generating station, substation, and power lines. These data included engineering design, geometry, physical dimensions, phasing, and future operational characteristics of the proposed facilities. We then used these data in the EMF computer workstation software to calculate electric and magnetic field levels.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

The results of the work we performed are tabular and graphical presentations of EMF levels that would be associated with operation of the proposed Waena project for the year 2020 peak loading conditions. Since the calculated EMF levels are for future peak loads, the values that follow would be higher than for normal or typical loading conditions. At the edge of the right-of-way for the transmission lines, the electric field ranged from 0.03- 0.19 kV/m and the magnetic field ranged from about 2-14 mG, depending on circuit design, location, and loading. For the generating station, the magnetic field would be about 1 mG, or less, at the perimeter fence, unless located near a transmission line.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

My opinions are as follows: 1) there is nothing unique or unusual about the proposed design- the proposed facilities are typical for projects of this type; 2) the calculated EMF levels are the same, or lower, than similar facilities already operating on Maui, the neighbor islands, and the mainland; 3) the project has design features that reduce EMF levels; 4) EMF levels are far below EMF standards that exist elsewhere.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-18

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

ALBERT LONO LYMAN, MBA

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Albert Lono Lyman
CH2M HILL, Inc.
1585 Kapiolani Blvd.
Suite 1420
Honolulu, Hawaii 96814

2. WHAT IS YOUR POSITION IN THIS FIRM?

I am a senior project manager, and a senior environmental planner, land use planner, management consultant, and economist.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Consulting Engineering and Planning.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

I manage the preparation of environmental impact studies including environmental impact statements (EIS) and environmental assessments (EA). I also manage work related to obtaining federal and state land use, development, and environmental permits and approvals. I also provide clients management consulting and strategic planning services.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

I have a Bachelor degree in Economics with an emphasis in Urban Economics and Public Policy from Syracuse University. I received from the University of Hawaii, a Masters of Business Administration with emphasis in Marketing, Business Economics, and Finance.

Since early-1989, I have been a senior project manager with CH2M HILL. Between late-1984 through late-1988, I served as Director of Planning for the County of Hawaii. I was a management consultant and senior

project manager with Peat Marwick Mitchell & Co. between 1973 and 1981, and principal of my management consulting and planning firm between 1981 and 1984.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Economics and socio-economics
Environmental impact assessment
Land use planning
Environmental permitting, documentation, and procedures
Strategic planning

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

Over twenty five (25) years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

I am the senior consultant for all of CH2M HILL's services to MECO, responsible for the overall quality of our work. I am also the economist for relevant portions of the environmental impact statement. Finally, I am the senior land use planner with CH2M HILL, assisting with the review of applicable public policy and relevant document preparation.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

The purpose of my role as economist, was to address a comment to the draft environmental impact statement concerning whether the proposed power plant will stimulate or encourage population growth.

The purpose of my role as a land use planner was to assist in the review of relevant public policy.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Economic principals as well as published economic multipliers and ratios derived from published sources were analyzed to assess the employment and potential population impact attributable to the construction and operation of the Waena project.

Applicable public policies, infrastructure consideration, and the economic impact of the project were considered to assess the potential for the Waena project becoming a generator of growth, either in the area immediately surrounding the project site or on the island of Maui.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

Construction employment and direct employment associated with the Waena Generating Station are discussed in Section 4 EIS. As indicated, during construction it is expected that there would be approximately 80 to 100 workers directly employed by the project. The direct employment anticipated at the Waena Generation Station upon completion is 46 new employees.

Revised statewide employment multipliers were published in September 1997 by the state (*The 1992 Hawaii State Input-Output Study*, State of Hawaii, Department of Business, Economic Development, and Tourism, Research and Economic Analysis Division, September 1997). Multipliers for Maui island or Maui County are not provided by the study or by the state, which requires us to use the statewide multipliers. Although use of these statewide multipliers overstates the multiplier effects for Maui island, they are the most authoritative multiplier of employment impacts. The average employment multiplier for the state (total jobs per job) is 2.12. Based on the average multiplier of 2.12, the total employment attributable to the Waena project when fully operational would be 98 jobs, of which 46 would be the jobs at the Waena Generating Station and the other 52 would be elsewhere in the state. During the construction phase, the total employment attributable to the Waena project would range between 170 and 212 jobs, of which 80 to 100 jobs would be construction jobs at the site, and the remaining 90 to 112 jobs would be elsewhere in the state. Since construction employment is short-term, the continued employment in this area following completion of the facility would be attributed to other projects.

While the foregoing calculation of total employment impacts use statewide multipliers that overstate the Island of Maui and Maui County employment impacts, they do provide a basis for estimating population impacts. This may be done by using the most recent ratio of population relative to civilian jobs for Maui County [State of Hawaii Data Book: 1996, as yet unpublished]. For the Island of Maui, this ratio would likely understate the employment to resident ratio, as Molokai and Lanai have significantly higher unemployment rates then the Island of Maui. Based on data for Maui County, there exists 0.54 civilian jobs per resident. Using this ratio indicates that the net population associated with the 98 jobs attributable to the Waena project would be about 181 residents. The same ratio indicates that the net population associated with the 170 to 212 construction jobs would be in the order of 315 to 393 residents. Since construction employment is short-term, were the population associated with construction employment attributable to the Waena project to remain on the Island of Maui, it would be attributable to other projects.

The foregoing estimates of residents based on the job to resident ratio may be evaluated with state projections of resident population for Maui County for the years 2000 and 2020 [Population and Economic Projections for the State of Hawaii to 2020: DBEDT 2020 Series, State of Hawaii, Department of Business, Economic Development, and Tourism, Research and Economic Analysis Division, May 1997]. Maui County's resident population is projected to increase from 117,100 in 1996 to 155,400 in

the year 2020. This represents an increase in the resident count of 38,300 between 1996 and 2020. In light of the projected population increases for Maui County between 1996 and 2020, the population that may be associated with the Waena Generating Station's employment, both operational and construction, is not considered to be significant.

14. DID YOU ANALIZE THE PROJECT'S IMPACT ON INDUCING INDUSTRIAL, URBAN OR RURAL GROWTH?

Yes. The analysis was based on the population impact analysis, public policy analyses performed for the EIS, and infrastructure needs addressed in the EIS. Based on these, I concluded that the Waena project will not induce industrial, urban or rural growth either in the immediate vicinity of the project site or elsewhere on Maui.

15. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

None, other then the overall quality control role I had.

16. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The MECO Waena project is not a primary economic activity, thus it is not expected to influence population growth on the Island of Maui. The generating station will meet the anticipated growth demands attributed to the island's primary economic activities and secondary and tertiary growth induced by the primary economic activities. The Waena project is not expected to have a significant impact on population growth on the island of Maui.

The Waena project will not be a generator of industrial, urban or rural growth in either the area immediately surrounding the project site or on the island of Maui.

17. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-19

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

CHRIS HART

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Chris Hart
Chris Hart & Partners
1955 Main Street, Suite 200
Wailuku, Hawaii 69793

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

2. WHAT IS YOUR POSITION IN THIS FIRM?

Senior Partner, Landscape Architect/Planner

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Multi-disciplinary design firm (landscape architecture and land use planning) specializing in landscape design, master planning, site analysis, environmental impact assessment and permit processing.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Senior partner responsible for overseeing the execution of landscape architectural and planning work and assistance on major planning assignments.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

BLA, Syracuse University 1964
US Army 1966-68
Licensed Landscape Architect, State of Hawaii, 1971
Director of Planning, County of Maui, 1986-1991

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Professional Landscape Architect and Land Use Planner

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

Thirty-three (33) years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

We prepared the Conceptual Landscape Plan and performed an assessment of the potential impact on Agriculture.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To support the environmental impact assessment process.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Landscape Plan

Our methodology involved identifying project objectives and designing a plan which would achieve these objectives. Plan objectives included:

1. Visual screening of the site from Pulehu Road
2. Use of Native or Polynesian-Introduced species
3. Use of plants adapted to the climate and conditions at the site
4. Use of plants which would not result in maintenance problems at the future generating station.

Agricultural Assessment

We first analyzed the direct and indirect impacts that construction of the plant would have agricultural operations in the area. We also examined the potential impact to agricultural resources on Maui.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

The landscape plan can be seen in Exhibits C-83 and C-84.

Agricultural impacts are summarized as follows:

1. The proposed use will not be incompatible with surrounding agricultural operations
2. The site will result in the removal of approximately 66 acres of prime agricultural lands form active production. However, this represents a small percentage of the over 36,000 acres of Hawaiian Commercial and Sugar Company, (HC&S) land in production. Overall agricultural production on the island of Maui is not anticipated to be impacted from the project as HC&S is actively expanding their production acreage in other areas of the island.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

Yes. Regional Planning Analyses. We identified existing and proposed uses within the immediate facility as well as surrounding communities. We also examined policies within the Wailuku-Kahului Community Plan, Maui County General Plan, and the State Land Use Law.

The proposed action is compatible with existing land uses in the area and will have no adverse impact upon residential or commercial areas. The proposed site is supported by adopted land sue policies and accepted principles of land use planning regarding the siting of Heavy Industrial uses.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The project is an appropriate land use for the site and is compatible with adjacent land uses.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-20

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

MARK R. WILLEY

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Mark R. Willey
CH2M HILL, Inc.
1585 Kapiolani Blvd.
Suite 1420
Honolulu, Hawaii 96814

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

2. WHAT IS YOUR POSITION IN THIS FIRM?

Project Manager and Environmental Planner.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Consulting Engineering and Planning.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

I manage environmental assessment and permitting projects.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

BA, Linfield College of McMinnville, Oregon
Masters in Urban and Regional Planning, emphasis on land use/transportation, University of Hawaii at Manoa

Project Administrator, State of Hawaii Rail Transit Oversight Committee
Environmental/Transportation Planner, Belt Collins & Associates
Environmental/Transportation Planner, CH2M HILL, Inc.
Project Manager, CH2M HILL, Inc.

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Environmental impact assessment
Visual impact assessment
Land use and transportation impact assessment
Environmental permitting, documentation, and procedures

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

12 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

I managed the preparation of the Land Use District Boundary Amendment Petition, the Environmental Impact Statement, and the Community Plan/Change-in-Zoning Requests

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

To support the land use permitting process.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

Visual Impact Analysis

The visual impact analysis was performed by conducting line of sight examinations from various public access points within the Central Maui region. From this examination, three views were selected as representative:

1. Haleakala Highway at a point closest to the project site
2. Pukalani Community Center, representing the closest Up-Country views
3. Honoapiilani Highway, representing views from Wailuku Heights

In addition, a birds-eye view was added to show the plant layout and landscaping plan. Photographs of these views were scanned into a computer and merged with a 3-D graphic model of the proposed generating station, adjusting for distance and angle from the site. These views are represented in applicants exhibits C-88 through C-91. Potential impacts from the project were based upon its dominance within the landscape as perceived from the viewpoint.

Environmental Impact Statement

The EIS was prepared in accordance with Chapter 343, Hawaii Revised Statutes and Hawaii Administrative Rules Title 11, Chapter 200. Public and agency consultation was conducted during the scoping period with three public meetings held on Maui. Following publication of the Draft EIS, two public comment meetings were held on Maui. The Final EIS was made available to the public on November 8, 1997. The County of Maui Department of Planning accepted the Final EIS on November 24, 1997.

State Land Use Commission Petition

The project petition for a change in the State Land Use designation for the site from agricultural to urban was prepared in accordance with Chapter 205, HRS and Hawaii Administrative Rules Title 15, Subtitle 3, Chapter 15. Under these rules, standards for determining urban district boundaries and certain decision-making criteria are used by the State Land Use Commission when considering boundary changes. The petition must also review the Hawaii State Plan, the Coastal Zone Management laws (Chapter 205A, HRS), and the applicable county general plans for applicability. The petition to amend the existing state land use designation for the Waena site was submitted to the LUC on October 24, 1997 and deemed a proper filing on November 7, 1997.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

Visual Impacts

Although the project will be visible from many points, the long distance from residential areas will make the project only a subordinate element within the landscape from locations along the slopes of Haleakala. The views from Haleakala and Hana Highways are intermittent, generally obstructed by foreground vegetation, and will not be impacted. Views of the project site from Pulehu Road immediately adjacent to the site do not exist due to the lower grade of the road. The proposed project is not anticipated to have any significant adverse impact on visual resources.

Environmental Impact Statement

The EIS process did not discover any significant adverse impacts resulting from the construction or operation of the project which could not be mitigated below the level of significance.

State Land Use Petition

The proposed project complies with the standards established for determining the boundaries of urban districts. The project also complies with decision-making criteria to be considered by the Commission. A review of land use plans and policies shows that the project generally conforms to the goals and objectives of the Hawaii State Plan and applicable functional plans. The project also conforms with the overall goals and objectives of the Maui County General Plan and the Wailuku-Kahului Community Plans. Appropriate Community Plan and zoning change requests have been submitted to the County of Maui.

The project site is near existing industrial uses and is compatible with adjacent agricultural activities. Also, it is in the public's best interest to locate such heavy industrial uses away from incompatible land uses. The site's central location and adjacent existing 69-kV transmission corridors facilitate connection to the electric grid to better provide service the urban communities. Necessary infrastructure will be provided through either existing systems and services or by alternative measures on site.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The project is not anticipated to produce any significant adverse environmental impacts which cannot be mitigated below the level of significance.

The proposed site and requested land use change are appropriate for the project.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

EXHIBIT D-21

SUMMARY TESTIMONY BEFORE THE STATE OF HAWAII LAND USE COMMISSION

REGARDING MAUI ELECTRIC COMPANY, LIMITED'S
WAENA GENERATING STATION

DOCKET A97-722

JAN R. MEDUSKY

1. COULD YOU PLEASE STATE YOUR NAME, THE NAME OF YOUR FIRM OR EMPLOYER, AND YOUR BUSINESS ADDRESS?

Jan R. Medusky
Medusky & Company, Inc.
311 Hawaii Building
745 Fort Street Mall
Honolulu, Hawaii 96813

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 10 P 1:46

2. WHAT IS YOUR POSITION IN THIS FIRM?

President.

3. WHAT KIND OF BUSINESS IS CONDUCTED BY YOUR FIRM?

Real estate appraisal and consulting.

4. WHAT ARE YOUR RESPONSIBILITIES WITHIN THIS FIRM?

Responsible for all aspects of running the business.

5. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND, AND WORK EXPERIENCE STARTING FROM COLLEGE.

BS (1972) United States Military Academy (West Point)
MBA (1981) Chaminade University of Honolulu

6. BASED ON YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE, WHAT IS YOUR FIELD OF EXPERTISE?

Real estate appraisal and consulting.

7. HOW LONG HAVE YOU WORKED IN THIS FIELD?

18 years.

8. HAVE YOU TESTIFIED IN ANY PRIOR ADMINISTRATIVE OR COURT PROCEEDING IN WHICH YOU HAVE BEEN QUALIFIED AS AN EXPERT?

Yes.

9. ARE YOU FAMILIAR WITH MAUI ELECTRIC COMPANY, LIMITED'S PROPOSED WAENA GENERATING STATION?

Yes.

10. WHAT WORK DID YOU DO IN CONNECTION WITH WAENA GENERATING STATION PROJECT?

Prepared a consulting report.

11. WHAT WAS THE PURPOSE OF THE WORK YOU PERFORMED?

The purpose of our work was to analyze the effect of the proposed project on property values.

12. COULD YOU DESCRIBE THE METHODOLOGY YOU USED TO PERFORM YOUR WORK?

The methodology is described within the report, listed as Applicant's Exhibit C-111.

13. WHAT WERE THE SPECIFIC FINDINGS OR RESULTS OF THE WORK YOU PERFORMED?

The project will have no negative affects on property values.

14. WERE YOU TASKED WITH LOOKING AT ANY OTHER ISSUES OR AREAS IN CONNECTION WITH WAENA GENERATING STATION? IF SO, WHAT WERE THEY? WHAT METHODOLOGIES DID YOU USE? WHAT WERE THE RESULTS?

No.

15. WHAT IS/ARE YOUR OPINION(S) THAT YOU RENDERED WITH RESPECT TO THE WAENA GENERATING STATION?

The project will have no negative affects on property values.

16. ARE THERE ANY MATTERS OF SIGNIFICANCE CONCERNING THE WAENA GENERATING STATION PROJECT BASED ON YOU FIRST HAND KNOWLEDGE OF THE WORK YOU PERFORMED?

No.

A97-722 - MAUI ELECTRIC CO., LTD. (Waena Gen. Substation)

EXHIBITS C-80 through C-118

Table 1. Summary of Transmission/Distribution Line Configurations			
Configuration Type	Powerline Name	69 kV	Underbuild 12 kV
Existing	Kanaha - Pukalani	Single Circuit Delta	None
Existing	Maalaea - Kealahou	Single Circuit Delta	None
Proposed	Pulehu Road- North Firebreak Road	Double Circuit Vertical	Double Circuit Vertical
Proposed	North Firebreak Road - Paia	Single Circuit Delta	None
Proposed	North Firebreak Road - Puunene	Double Circuit Vertical	Double Circuit Vertical

EXHIBIT C-80

1998 JAN 27 P 3:44
STATE OF HAWAII
LAND USE COMMISSION

Table 2.

Summary of Transmission/Distribution Line Projected 2020 Loading Conditions

Line Name	Direction	69 kV Load*	12 kV Load*
Kanaha - Pukalani	Toward North Firebreak Road	404 A	N/A
	Toward Waiko Road	463 A	N/A
Maalaea - Kealahou	Toward Spanish Road	375 A	N/A
	Toward Pulehu Road	354 A	N/A
Pulehu Road - North Firebreak Road	Toward North Firebreak Road	460/460 A	230/230 A
North Firebreak Road - Paia	Toward Paia	460 A	N/A
North Firebreak Road - Puunene	Toward Puunene	404/460 A	230/230 A

* - Note: The direction of current flow for each powerline was assumed for planning purposes to always be in the same direction.

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STATE OF HAWAII

Table 6. Summary of Transmission Line Magnetic Field Calculations			
Transmission Line Name	Load (Amps)	Calculated Magnetic Field - mG	
		Minimum	Maximum
Kanaha - Pukalani 69 kV Line	404 463	0.5 0.5	15.7 18.0
Maalaea - Kealahou 69 kV Line	375 354	0.8 0.7	11.0 10.4
Proposed Pulehu Road - North Firebreak Road 69/12 kV Line	460/460/230/230	0.1	3.5
Proposed North Firebreak Road - Paia 69 kV Line	460	0.9	13.5
Proposed North Firebreak Road - Puunene 69/12 kV Line	404/460/230/230	0.0	3.5

EXHIBIT C-82

1998 JAN 27 P 3:45
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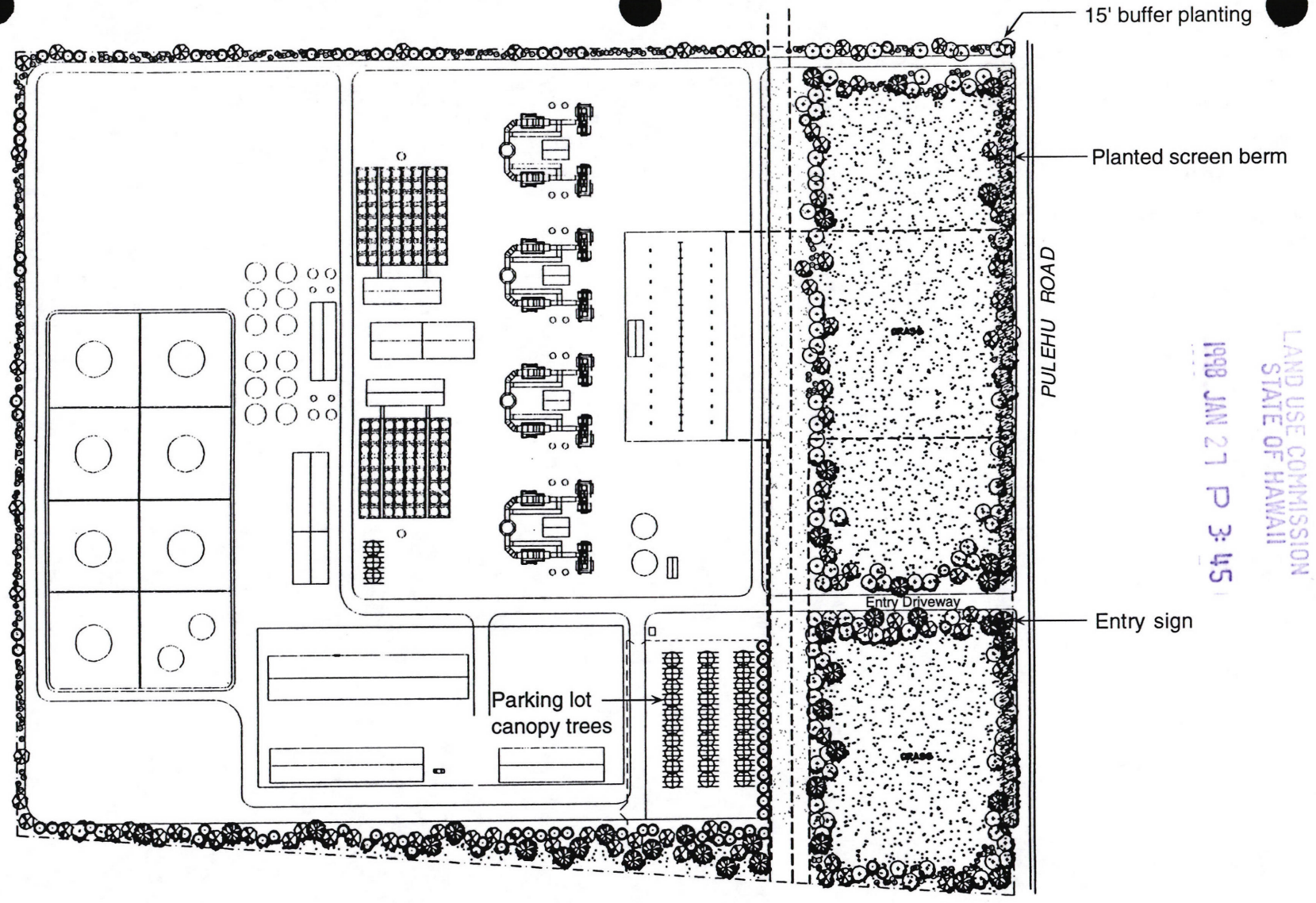
LAND USE COMMISSION



LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:45

LARGE TREES	MEDIUM TREES	SMALL TREES
Kukui	Alahe'e	Yew Pine
False Kamani	Hawaiian Kou	Geiger Tree
Tamarind	Milo	False Olive
Jacaranda	Beach Heliotrope	Be-Still
	Be-Still	

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 4-10

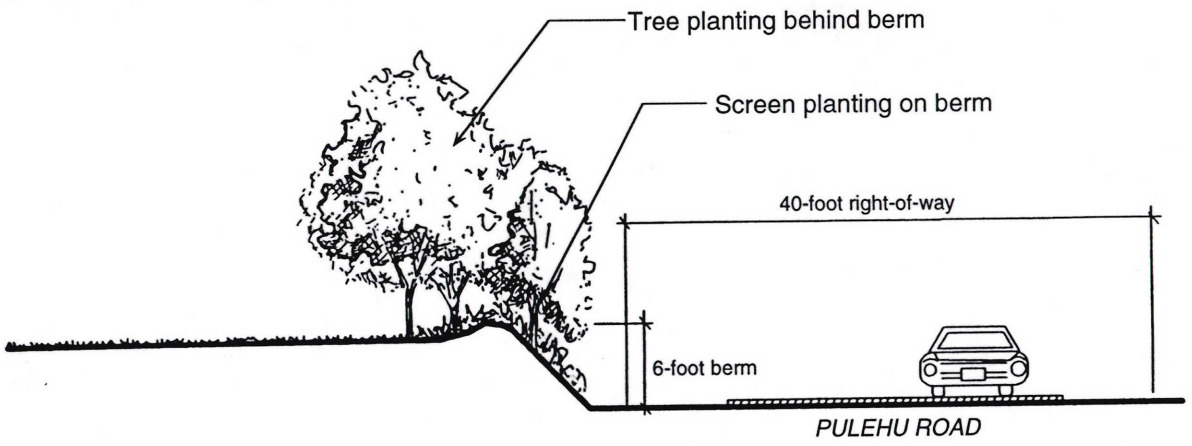
CONCEPTUAL LANDSCAPE PLAN

Not to scale

CH2M HILL

EXHIBIT C-83

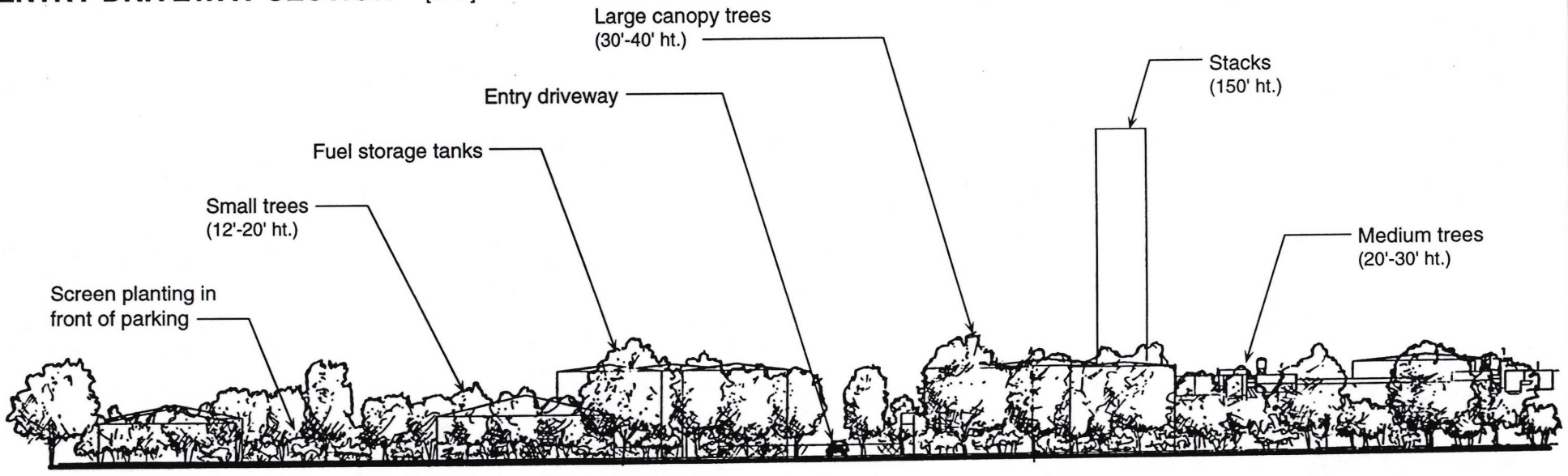
PULEHU ROAD SECTION



NATIVE AND POLYNESIAN-INTRODUCED PLANTING ALONG PULEHU ROAD:

- Milo
- Alahe'e
- Beach Heliotrope
- Kou

ENTRY DRIVEWAY SECTION – [B–B']



1998 JAN 27 P 3:45
STATE OF HAWAII
LAND USE COMMISSION

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 4-11

CONCEPTUAL LANDSCAPE SECTIONS

Not to Scale

CH2M HILL

EXHIBIT C-84

BENJAMIN J. CAYETANO
Governor

JAMES J. NAKATANI
Chairperson, Board of Agriculture

LETITIA N. UYEHARA
Deputy to the Chairperson

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96823-2159

FAX: (808) 973-9613

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

November 28, 1997

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:45

To: Rick Egged, Director
Office of Planning
Department of Business, Economic Development, and Tourism

From: James J. Nakatani, Chairperson
Board of Agriculture

Subject: Petition for Amendment to the State Land Use District Boundaries
Maui Electric Company, Inc. (A97-722)
Agricultural to Urban
Waena Generating Station
TMK: 3-8-03: 23 and 24
Area: approximately 65.7 acre

The Department of Agriculture has reviewed the subject petition and offers the following comments.

Background:

According to the petition, the subject property is fee-owned by the petitioner and is surrounded by Hawaiian Commercial and Sugar Company (HC&S) sugarcane fields. The site was selected after completion of seven reports, studies, and assessments over a six-year period. The subject site is cultivated in sugarcane and consideration was given to avoiding the use of agricultural lands in sugarcane cultivation. However, environmental factors (primarily air quality) favored a site within existing sugarcane fields (Final EIS, pages 3-38 to -39).

EXHIBIT C-85

Impact on HC&S:

The petitioner and HC&S have a "long-standing relationship" and the former states that the project will not negatively impact cultivation activities of surrounding properties (Ibid., page 4-68). Offsetting the loss of about 66 acres of sugarcane lands is the intention of HC&S to expand their sugarcane production acreage by about 1,400 acres on two sites near Kuihelani Highway and on vacant Wailuku Agribusiness lands.

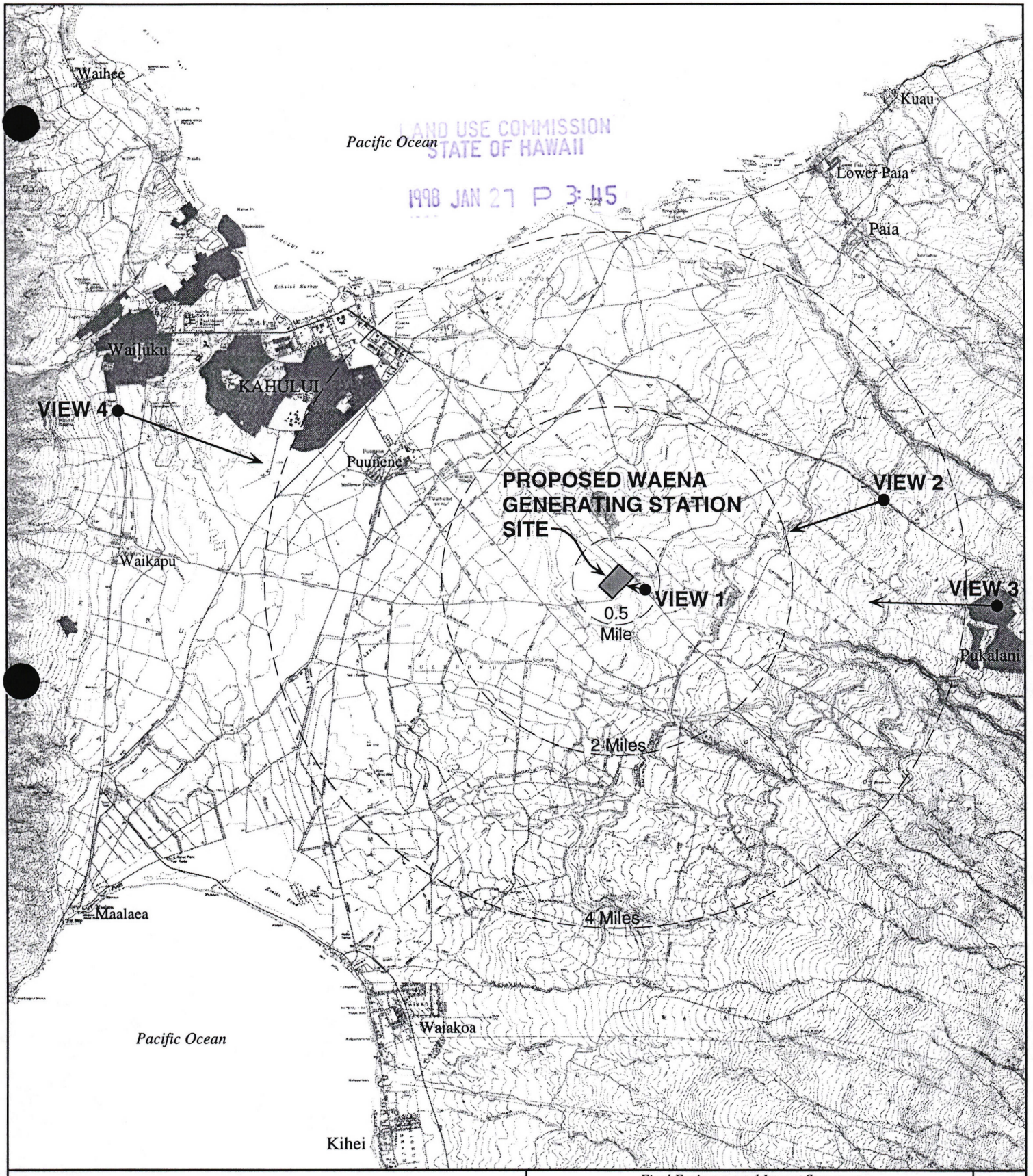
HC&S has expressed concern about mitigating potential impacts such as surface runoff into their irrigation ditch and impact on groundwater quality due to power plant wastewater injection (letter dated September 22, 1997; Final EIS, Section 7.4). Since groundwater downslope of the generating station is used by HC&S for irrigation and cooling water for their power plant, we believe that the petitioner should take every reasonable effort to monitor and, if necessary, mitigate any unanticipated adverse impact to this water source attributable to power plant wastewater injection.

Conclusion:

Based upon the information provided in the petition and the Final Environmental Impact Statement, the Department of Agriculture does not object to the petitioner's request, provided that the concern about the potential for adverse groundwater contamination is addressed in the manner described above.

Should you have any concerns, please call me at 973-9550, or Earl Yamamoto at 973-9466.

e97-722.e51



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STATE OF HAWAII
1998 JAN 27 P 3:45

LEGEND

- View Location and Number
- Direction of View

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

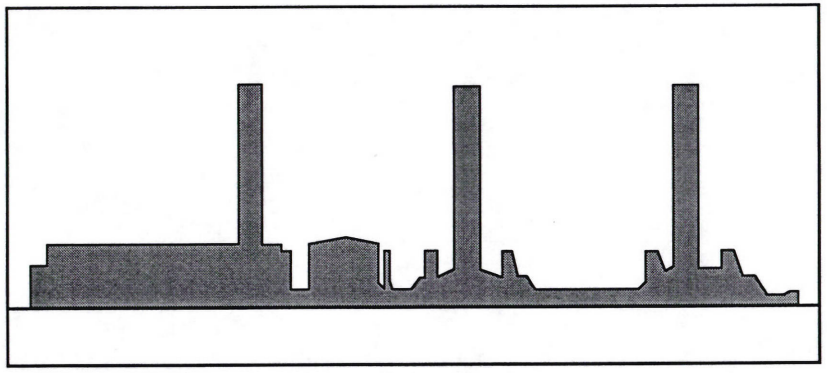
FIGURE 4-4

VIEW LOCATIONS

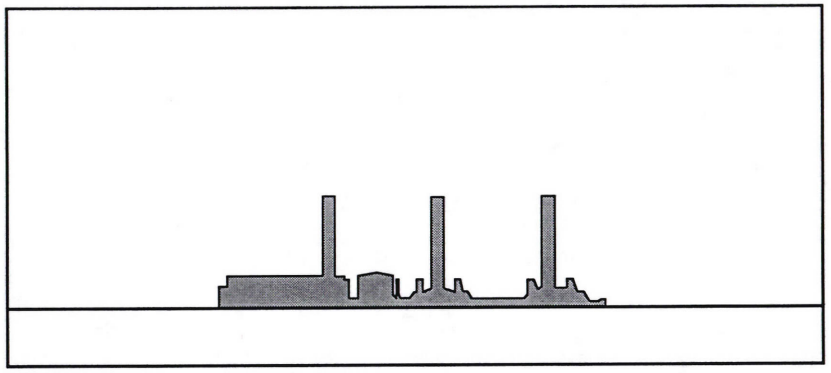
NORTH 0 1 2 3 4 MILES

CH2M HILL

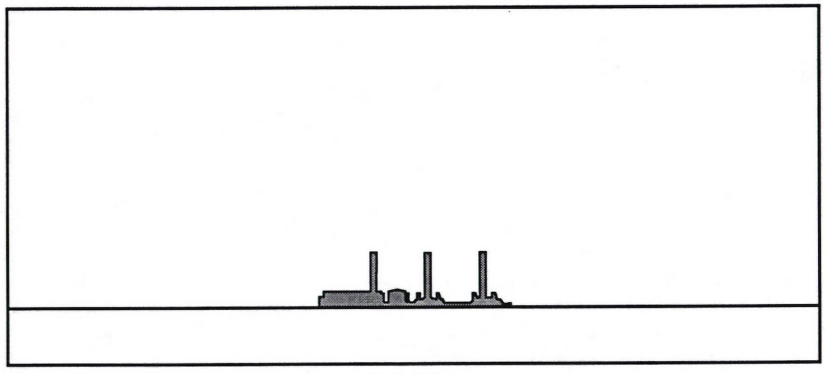
EXHIBIT C-86



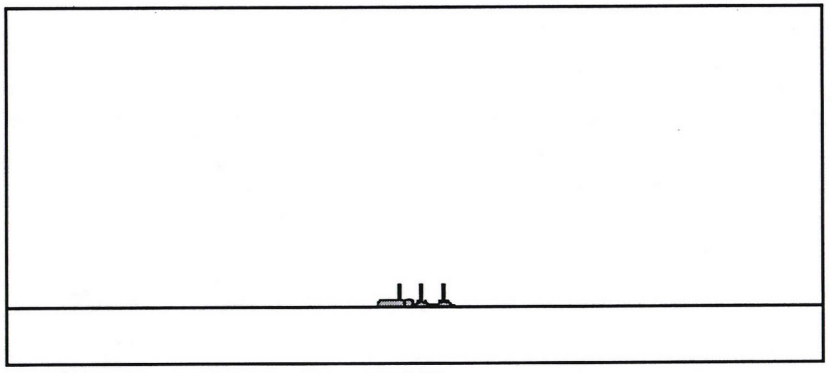
0.5 Mile



1 Mile



2 Miles



5 Miles

EXHIBIT C-87

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STATE OF HAWAII
LAND USE COMMISSION

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 4-5

EFFECT OF DISTANCE ON APPARENT FACILITY SIZE

CH2M HILL

Elevated View of Project Site from Pulehu Road—Existing Condition

LAND USE COMMISSION
STATE OF HAWAII
P 3:45

Elevated View of Project Site from Pulehu Road—Project Simulation

View of Project Site from Haleakala Highway— Existing Condition

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:45

View of Project Site from Haleakala Highway— Project Simulation

Key View 2

EXHIBIT C-89

View of Project Site from Pukalani Community Center—Existing Condition

USE COMMISSION
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View of Project Site from Pukalani Community Center—Project Simulation

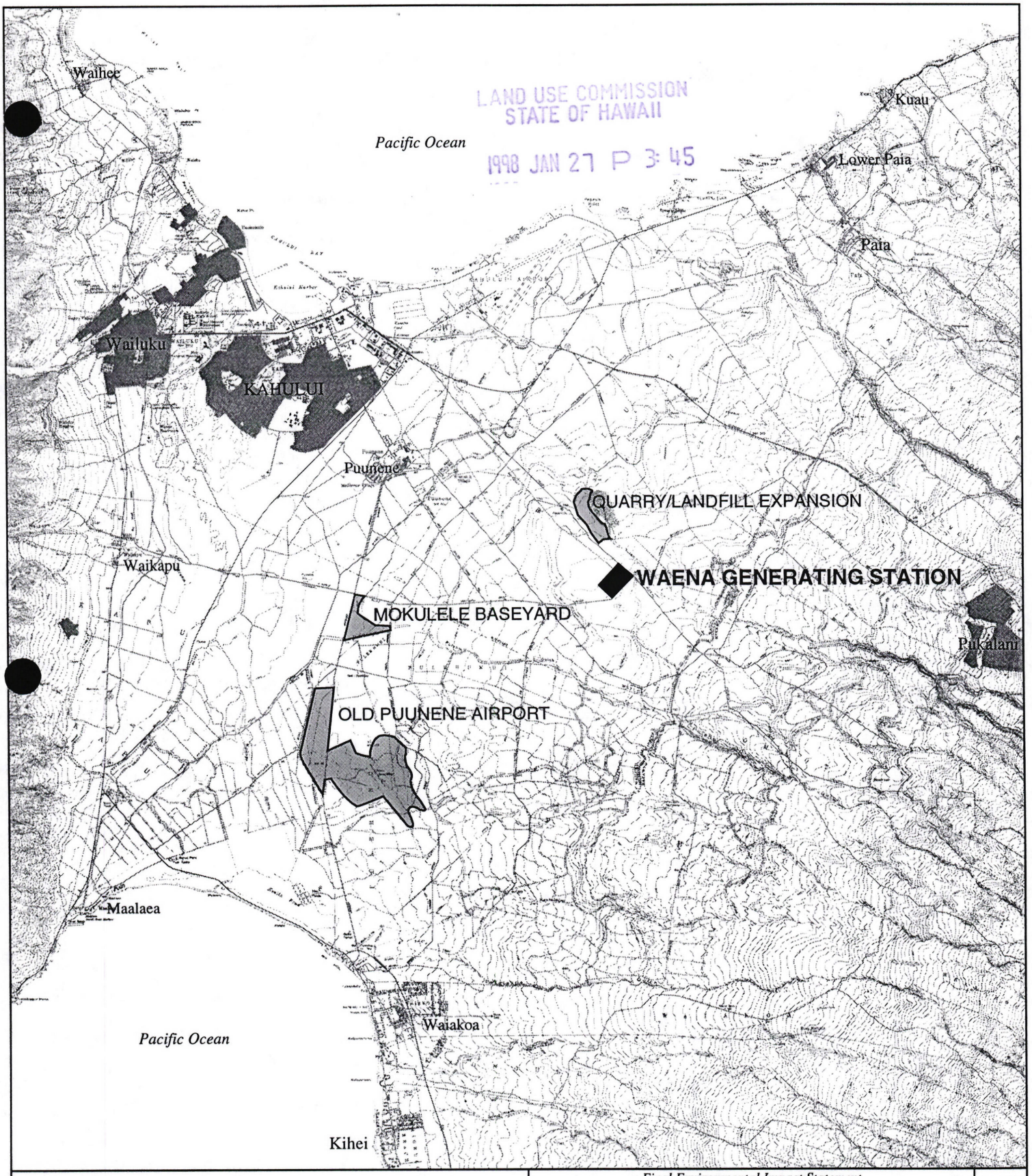
Key View 3

View of Project Site from Honoapiilani Highway near Wailuku—Existing Condition

View of Project Site from Honoapiilani Highway near Wailuku—Project Simulation

Key View 4

EXHIBIT C-91



LAND USE COMMISSION
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1998 JAN 27 P 3:45

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

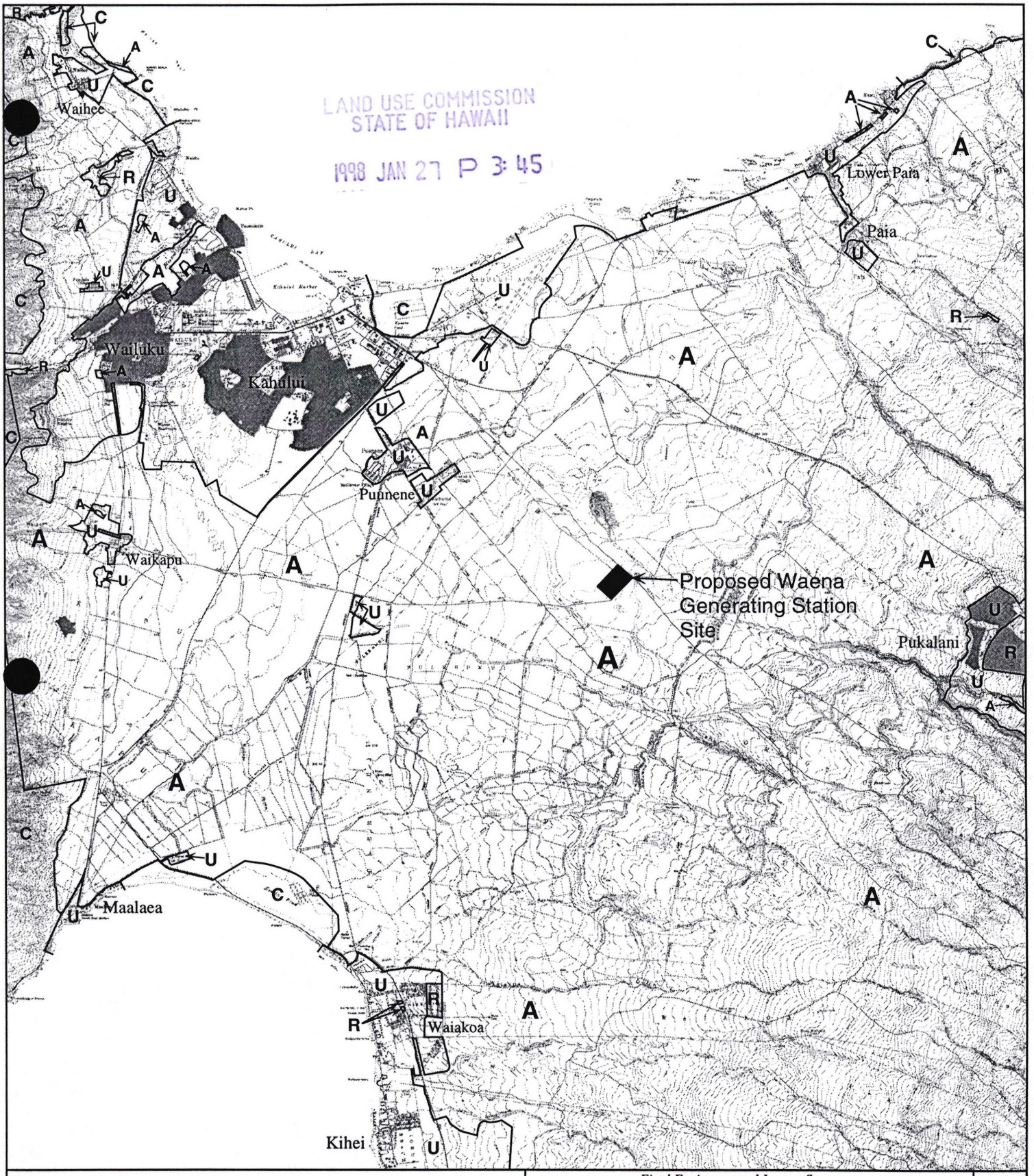
FIGURE 4-15

PROPOSED LAND USE CHANGES

NORTH 0 1 2 3 4 MILES

CH2M HILL

EXHIBIT C-92



STATE LAND USE DISTRICTS

- U Urban District
- R Rural District
- A Agricultural District
- C Conservation District

Source: Land Use Commission, State of Hawaii, 1997

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 4-16

STATE LAND USE DISTRICTS

NORTH 0 1 2 3 4 MILES

CH2M HILL

EXHIBIT C-93

LEGEND

Ag	Agriculture	SB/R	Service Business Residential	OS	Open Space
R	Rural	LI	Light Industrial	PD	Project District
SF	Single-Family Residential	HI	Heavy Industrial	A	Airport
MF	Multi-Family Residential	H	Hotel	C	Conservation
B	Business/Commercial	P	Public/Quasi-Public		
BR	Business/Multi-Family	Pk	Park		
BI	Business Industrial	OS	Open Space		

Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 4-17

WAILUKU–KAHULUI COMMUNITY PLAN

NORTH 0 1 2 MILES

CH2M HILL

EXHIBIT C-94

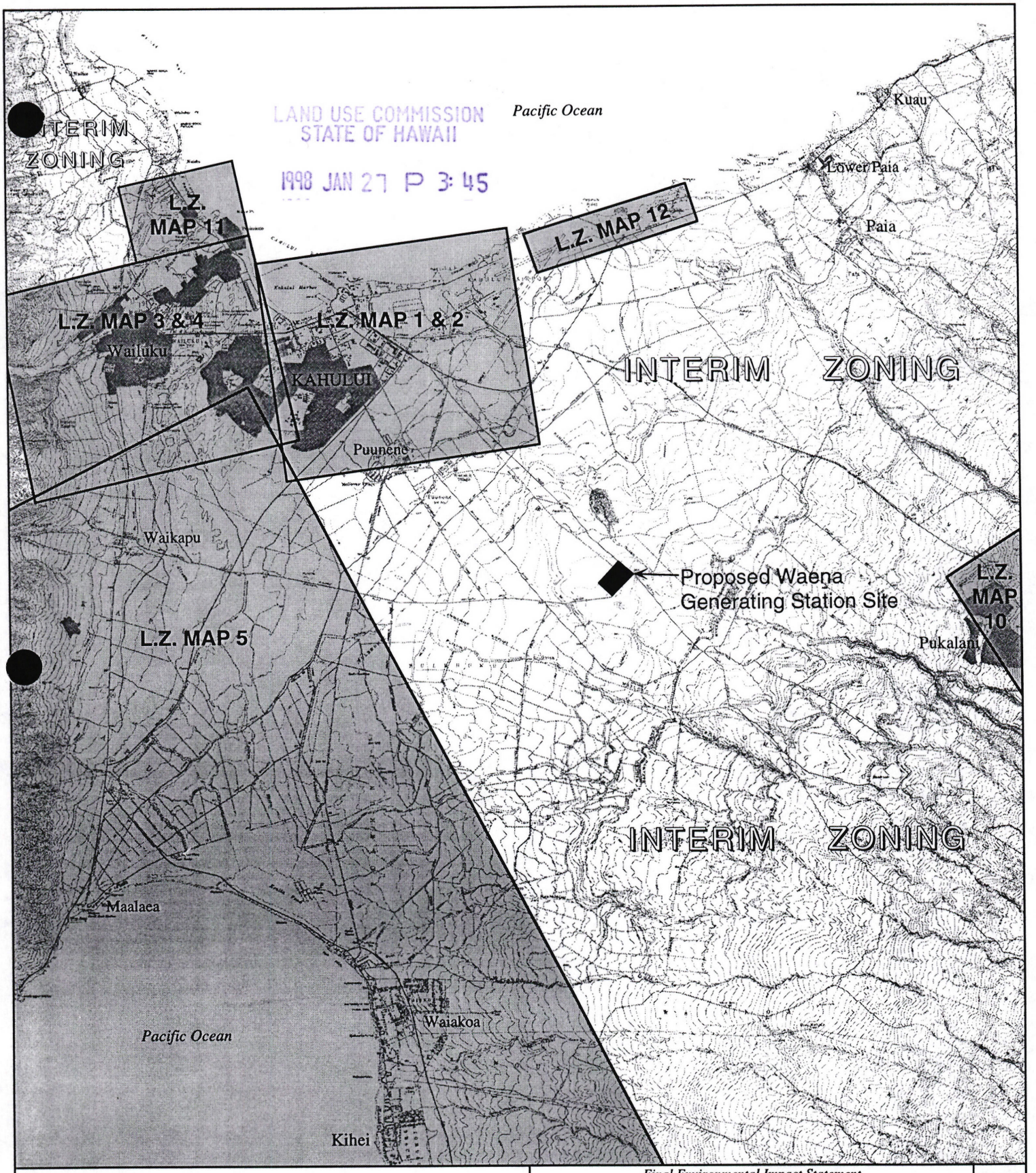

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:45
INTERIM ZONING
L.Z. MAP 11
L.Z. MAP 12
L.Z. MAP 3 & 4
L.Z. MAP 1 & 2
Wailuku
KAHULUI
Puunene
Pacific Ocean
Kuau
Lower Paia
Paia
INTERIM ZONING
Waikapu
Proposed Waena
Generating Station Site
L.Z. MAP 10
Pukalani
L.Z. MAP 5
INTERIM ZONING
Maalaea
Waiakoa
Pacific Ocean
Kihei
LEGEND
Area Coverage of County Zoning Maps
Area Under Interim Zoning
Source: County of Maui, Planning Department
Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited
FIGURE 4-18
COUNTY OF MAUI ZONING
NORTH
0 1 2 3 4 MILES
CH2M HILL

EXHIBIT C-95

OEQC Environmental Notice, March 8, 1997

New Power Station on Maui

Maui Electric Company plans to build a 232 megawatt electrical generation facility on approximately 67 acres of land located in central Maui. In addition, the electric company may locate its existing transmission and distribution base yard from its location in Kahului to the new facility.

The site is located north of Waiko Road at its intersection with Pulehu Road. The site is owned by Maui Electric Company and is currently leased to Hawaiian Commercial & Sugar for sugarcane cultivation. Surrounding land uses include quarrying activities, a county landfill and sugar cultivation. The electric company will be requesting land use changes from agriculture to urban/heavy industrial to allow for the power generation project on the site.

The power generation station will include four diesel oil fired 58 megawatt power generation units, four steam turbines, water and wastewater facilities, injection wells, fuel storage tanks, related 69 kilovolt transmission lines, and other accessory facilities.

Maui Electric Company will be preparing an environmental impact statement to evaluate the project. Some of the impacts associated with the project that will be covered by the environmental impact statement include: air quality, land use, noise, visual, biological, and cultural resources.

The air quality study will analyze the dispersion patterns of particulates, sulfur dioxide, carbon monoxide, and nitrogen oxides from the power station to determine potential effects on ambient air quality. Visual simulations will be prepared to depict the project during its initial phase and after it is fully developed. For more information, please see page 8.

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:45

Environmental Impact Statement Preparation Notices

(6) Waena Power Generating Station

District: Wailuku
TMK: 3-8-03:por. 01
Applicant: Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96732
Contact: Ed Reinhardt (871-8461)

Accepting Authority: County of Maui
Planning Department
250 South High Street
Wailuku, Hawaii 96793
Contact: David Blane (243-7735)

Consultant: CH2M Hill
1585 Kapiolani Boulevard, Suite 1420
Honolulu, Hawaii 96814-4530
Contact: Mark Willey (943-1133)

Public Comment Deadline: April 7, 1997

Status: EISPN First Notice, pending public comment. Address comments to the applicant with copies to the accepting authority, the consultant and OEQC.

Maui Electric Company, Limited (MECO) is proposing to construct and operate a 232-MW power generation station on approximately 67 acres adjacent to Pulehu Road in central Maui. The Waena Power Generation Station would consist of four 58-MW dual-train combined cycle units which would be installed in phases, with the first phase scheduled for operation in the year 2004. The site of the project is owned in fee by MECO. The site is currently under sugarcane cultivation. The purpose of the project is to increase MECO's capacity to meet future energy demands on the island of Maui.

The power station will include a generating plant area, switching yard, administration buildings, fuel storage tanks, warehouses, and possible transmission and distribution facilities. Portions of the site have the potential to be made available for private sector-sponsored small-scale energy-related projects on an interim or long-term basis.

MECO will be requesting a change in the Maui County Community Plan and Zoning designations for the site to allow for heavy industrial use. In addition, a request will be made to the State Land Use Commission to redesignate the parcel from the Agriculture District to the Urban District. In preparation of these applications, MECO will be preparing an environmental impact statement. Some of the impacts associated with the project that the EIS will cover include: air quality, traffic, noise, land use, biological resources, cultural resources, visual resources, water resources, and geophysical resources.

EXHIBIT C-96

Notice of Public Scoping Meetings For Proposed MECO Waena Generating Station

Maui Electric Company, Limited (MECO) will hold a series of Public Scoping Meetings to receive public comments and concerns to be addressed in a project assessment of environmental issues for the proposed 232-megawatt (MW) Waena Generating Station located in Central Maui along Pulehu and Waiko Roads near the Maui County Landfill. The dates and location of the three scoping meetings are:

March 18 - Upcountry Swimming Complex Multi-Purpose Room (Pukalani)
March 19 - Kihei Elementary School Cafeteria
March 20 - Maui Arts and Cultural Center HEI Meeting Room

The new generating station, scheduled to begin operation of the first 20MW combustion turbine in the year 2004, is necessary to provide adequate electrical power generation capacity to meet Maui's needs as it begins the next century. The generating station will be located on 67 acres of land owned by MECO and will consist of power generating equipment, warehouses, fuel storage tanks, and related transmission lines. As part of the project, MECO will request a change in the Wailuku-Kahului Community Plan designation for the site from "Agricultural" to "Heavy Industrial". Environmental impacts will be assessed to support this request either through a Project Assessment or an Environmental Impact Statement (EIS).

The public meetings will begin at 7:00 p.m. with a presentation of the project, followed by time for the public to provide comments and input on what the Project Assessment or EIS should address and an open discussion period. A record of the meetings will be incorporated into the Project Assessment or EIS. Throughout the process, MECO will continue to meet with the interested parties and will hold additional meetings to gather public input.

For further information concerning this project please contact either MECO's project coordinator or MECO's consultant:

Mr. Neal Shinyama
MECO
P.O. Box 398
Kahului, HI 96733-6898
Phone: 871-2341

Mr. Mark Willey
CH2M HILL, Inc.
1585 Kapiolani Blvd., Ste. 1420
Honolulu, HI 96814
Phone: 943-1133

(MN: Mar. 13, 15, 1997)

MN (MAR. 13)

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:46

LAND USE COMMISSION
STATE OF HAWAII

1998 JAN 27 P 3:46

Haleakala Times
March 19, 1997

Tuesday & Thursday morning classes. Call 572-9362 for info.

Audio & VCR Repair

HI FI HOSPITAL, 877-2555. Repairs most brands of home and professional audio equipment & VCRs. Average repairs $65 to $85. 250 Alamaha St. N6, Kahului.

Automotive

DON'T BE A DRIP! Please recycle used motor oil. For locations call 243-7880.

NELDON'S DRAPERIES & BLINDS
VERTICAL, MINI & WOOD BLINDS
Best prices, quality & service
20 years Maui-Mobile Showroom
Free Estimates -572-6548.

Bookkeeping

Bookkeeping/Secretarial Services. Fast, efficient, reliable, convenient. Call Gerri at 878-6303. FAX 878-6709.

Business Opportunities

Used car rental business for sale. Immediate cash flow. 30 cars. Excellent growth potential. Turnkey $139k/obo. 573-1322.

Notice of Public Scoping Meetings For Proposed MECO Waena Generating Station

Maui Electric Company, Limited (MECO) will hold a series of Public Scoping Meetings to receive public comments and concerns to be addressed in a project assessment of environmental issues for the proposed 232-megawatt (MW) Waena Generating Station located in Central Maui along Pulehu and Waiko Roads near the Maui County Landfill. The dates and location of the three scoping meetings are:

March 18 - Upcountry Swimming Complex Multi-Purpose Room (Pukalani)
March 19 - Kihei Elementary School Cafeteria
March 20 - Maui Arts and Cultural Center HEI Meeting Room

The new generating station, scheduled to begin operation of the first 20MW combustion turbine in the year 2004, is necessary to provide adequate electrical power generation capacity to meet Maui's needs as it begins the next century. The generating station will be located on 67 acres of land owned by MECO and will consist of power generating equipment, warehouses, fuel storage tanks, and related transmission lines. As part of the project, MECO will request a change in the Wailuku-Kahului Community Plan designation for the site from "Agricultural" to "Heavy Industrial". Environmental impacts will be assessed to support this request either through a Project Assessment or an Environmental Impact Statement (EIS).

The public meetings will begin at 7:00 p.m. with a presentation of the project, followed by time for the public to provide comments and input on what the Project Assessment or EIS should address and an open discussion period. A record of the meetings will be incorporated into the Project Assessment or EIS. Throughout the process, MECO will continue to meet with the interested parties and will hold additional meetings to gather public input.

For further information concerning this project please contact either MECO's project coordinator or MECO's consultant:

Mr. Neal Shinyama
MECO
P.O. Box 398
Kahului, HI 96733-6898
Phone: 871-2341

Mr. Mark Willey
CH2M HILL, Inc.
1585 Kapiolani Blvd., Ste. 1420
Honolulu, HI 96814
Phone: 943-1133

EXHIBIT C-98

The Environmental Notice

A Semi-Monthly Bulletin of the Office of Environmental Quality Control

August 8, 1997

LAND USE COMMISSION
STATE OF HAWAII
JAN

Benjamin J. Cayetano
Governor

Office of
Environmental
Quality Control
Gary Gill
Director

The Environmental Notice reviews the environmental impacts of projects proposed in Hawaii

Other Resources available at OEQC . . .

- *Guidebook for Hawaii's Environmental Review Process*
- *Environmental Impact Study Resource Library*
- *Environmental Education Database*
- *Environmental Council Annual Reports*
- *Rules and Policies*
- *"How to Plant a Native Hawaiian Garden"*

OEQC
235 S. Beretania St.
State Office Tower
Suite 702
Honolulu, HI 96813

Tel. (808) 586-4185
Fax. (808) 586-4186

Molokai & Lanai: 1-800-468-4644 ext.64185
Kauai: 274-3141 ext. 64185
Maui: 984-2400 ext. 64185
Hawaii: 974-4000 ext. 64185

Maui Waena Power Plant DEIS

Maui Electric Company proposes to build a new 232-megawatt (MW) power plant on 67 acres of land along Pulehu and Waiko Roads in Central Maui. The company will also construct 69-kilovolt transmissions lines from the new plant to substations at the Paia and Puunene sugar mills. The project is needed to maintain reserve capacity, increase system reliability, replace older generation facilities and provide additional capacity to meet projected demand.

Presently, Maui Electric Company has a generation capacity of 212 MW. Peak power demand by the company's customers in 1996 was 177 MW. Maui Electric Company predicts that peak power demand will increase to 299 MW (without demand side management) or 273 MW (with demand side management) in 2016. The first 20-MW combustion turbine is scheduled for operation by the year 2004.

The combustion turbines will be fueled by No. 2 diesel fuel. The fuel will be transported by tanker trucks from Kahului Harbor over Hobron Avenue, Hana Highway, and Pulehu Road to the project site. At full build-out approximately 44 fuel tanker truck trips per day would be required to provide fuel to the power plant. Brackish groundwater supply wells will be developed within the project site to meet water requirements for operation of the combustion turbines and related facilities. Total water consumption at full build-out would be 0.9 million gallons of water per day. Deep injection wells will be used to dispose the process wastewater.

The project may impact air quality, prime agricultural lands, visual resources and traffic. Potential air pollutants include nitrogen oxide, sulfur dioxide, carbon monoxide, volatile organic compounds, particulate matter and sulfuric acid mist. The facility will be visible from areas located on the slopes of Haleakala. For more information on the Draft EIS for this project, please see page 11.

Hazardous Waste Disposal in Campbell Industrial Park

The U.S. Department of Justice is soliciting public comment on a proposed consent decree (in United States vs. Hawaiian Western Steel) to resolve penalty and corrective action claims against Cominco, Inc. under the Resource Conservation and Recovery Act.

Among other things, hazardous waste was disposed of at two sites within Campbell Industrial Park on Oahu. Corrective action at one site is ongoing. The proposed consent decree may be examined in Room 6100 at the Prince Kuhio Federal Building on Ala Moana Boulevard. The deadline for comments is August 20, 1997. Please see page 17.

Coastal Erosion Management Plan Presentations by DLNR

The Land Division of the Department of Land and Natural Resources and Dr. Chip Fletcher of the University of Hawaii School of Ocean, Earth Science & Technology will be making presentations of the Department of Land and Natural Resources' draft Coastal Erosion Management Plan at various Neighborhood Board meetings.

The DLNR feels that it is imperative for communities most interested and affected by the management plan of our shoreline resources to learn about and provide comments on this plan. For a schedule of upcoming draft Coastal Erosion Management Plan presentations, please see page 15.

EXHIBIT C-99

Family Residential, Single-Family Residential, Park, and Public/Quasi-Public. The project involves revising the community plan designation of the halau from Park to Public/Quasi-Public. Other proposed community plan amendments involve revising the locations of the proposed land uses without increasing the acreages within each individual land use designation. To implement the project, appropriate zoning is also being sought in conformance with the community plan designations.

Draft Environmental Impact Statements

(4) Waena Power Generating Station

District: Wailuku
TMK: 3-8-03:por. 01
Applicant: Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96732
Contact: Ed Reinhardt (871-8461)
Approving Agency/Accepting Authority: County of Maui
Planning Department
250 South High Street
Wailuku, Hawaii 96793
Contact: David Blane (243-7735)
Consultant: CH2M Hill
1585 Kapiolani Boulevard, Suite 1420
Honolulu, Hawaii 96814-4530
Contact: Mark Willey (943-1133)
Public Comment Deadline: September 22, 1997
Status: DEIS First Notice, pending public comment. Address comments to the applicant with copies to the approving agency or accepting authority, the consultant and OEQC.

Maui Electric Company, Limited (MECO) is proposing to construct and operate a 232-MW power generation station on approximately 67 acres adjacent to Pulehu and Waiko Roads in central Maui. The site of the project is owned in fee by MECO. The site is currently under sugarcane cultivation. The purpose of the project is to increase MECO's capacity to meet future energy demands on the island of Maui.

The Waena Generating Station will consist of four 58-MW dual-train combined cycle units which would be installed in four phases. Installation of the first 20-MW combustion turbine will be in the year 2004, with the completion of Phase I scheduled for 2006. Future phases will be implemented at later dates; the timing of the subsequent phases will depend on future load growth, power availability through independent purchase agreements, unit retirements, and environmental considerations.

The power station will include a generating plant area, switching yard, administration buildings, fuel storage tanks, warehouses, and related facilities. Two 69-kilovolt (kV) transmission lines from the site to substations at the Paia Sugar Mill and Puunene Sugar Mill are also proposed as a part of this project. Distribution lines (12 kV) may also lead to the proposed generating station to Puunene. In addition, MECO may relocate its existing transmission and distribution base yard from its location in Kahului to the new facility. Usable portions of the site may be available for future plant expansion or be made available on an interim or long-term basis for energy-related activities until needed by MECO. Although MECO is developing the project in four phases, the entire site will be prepared for subsequent unit installation during the initial Phase I construction.

MECO will be requesting a change in the Maui County Community Plan and Zoning designations for the site to allow for heavy industrial use. In addition, a request will be made to the State Land Use Commission to redesignate the parcel from the Agricultural District to the Urban District.

COUNTY / IN BRIEF

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pulled him out of the water and were able to revive him and put him on oxygen before a 24-foot Coast Guard rescue boat arrived at the scene.

Crewmen aboard the faster Coast Guard vessel took the man on board, gave him oxygen and rushed him to the Kihei Small Boat Ramp where an ambulance was waiting. He was taken to Maui Memorial Hospital and later released.

Haleakala admission to be waived Monday

HALEAKALA NATIONAL PARK — Haleakala National Park will waive entrance fees to the park Monday in celebration of the National Park Service's 81st birthday.

The Parks Service was established Aug. 25, 1916, to promote and regulate the use of federal parks whose purpose is "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such means as will leave them unimpaired for the enjoyment of future generations."

The annual "free fee" day was authorized in 1987 when Congress passed legislation allowing the National Park Service to designate one day each year visitors would be ad-

Hearings scheduled concerning MECO station

KAHULUI — Two public hearings have been scheduled to discuss the draft environmental impact statement for the Maui Electric Co. Waena Generating Station.

The station, on about 60 acres across from the Central Maui landfill, will be the location for MECO's expansion for many years in the future. The land is now in sugar cane.

The meetings will start at 6:30 p.m. with an open house where participants can review the plans for the station. That will be followed by a presentation by the company and its consultants, testimony from the public and a question-and-answer period, ending about 9 p.m.

The meeting will be Tuesday at the Maui Arts & Cultural Center and Thursday at the Upcountry Swimming Complex in Pukalani.

A-Plus registration under way for Lihikai, Kula students

Lihikai and Kula Elementary A-Plus after-school programs are registering students for the fall.

At Lihikai, parents may sign up and pay for the program weekdays through Friday, Aug. 29, from 9 a.m. to 2 p.m. at the school office. Checks are payable to Lihikai A+.

For more information, contact Bonnie Cobb at 873-3033 from 9 a.m. to 2 p.m. weekdays.

The Kula registration and payment is set for 4:30 to 6 p.m. Monday. Forms are available in the school office.

For more information, contact the school at 878-6316.

Both A-Plus programs begin Sept. 2, the first day of school.

Hearing today for two accused of accepting drugs

HONOLULU — A detention hearing is scheduled today in U.S. District Court on Oahu for two Maui men arrested this week after accepting delivery of a package containing heroin.

Makawao resident David Demet, 34, and Geoffrey Walsh, 42, who gave police no local address, were arrested Tuesday afternoon after they picked up a package at the Makawao Post Office containing more than 10 ounces of black tar heroin. (An initial police report that the package was picked up at a business was incorrect.)

They have been charged with knowingly possessing with intent to distribute more than 100 grams of heroin. They are in custody on Oahu, and bail will be addressed at the detention hearing.

Federal drug agents had learned that the shipment was being made and executed a search warrant on the package after a specially trained dog alerted them to the presence of drugs.

Maui vice officers, a postal inspector and two Drug Enforcement Administration agents participated in the arrest after the package was picked up. A third man escaped and is still being sought.

1998 JAN 27 P 3:46
STATE OF HAWAII
LAND USE COMMISSION

formula

Gov. Ben Cayetano last year
and other top officials of Hawaii's pr
health-care organizations were appointe
directors of the quasi-public corporation

"They're our competitors and th
making our policies," said Sakak
Thursday.

Moser agreed that Ushijima should
the board.

"It's a real conflict of interest," he
"Of course, he's going to know our
nesses . . . I feel the community shou
upset by this and not fall in line."

Wells, too, hopes that the public put
hue and cry.

"Any surgery center on this island
be a joint venture (with Maui Memor
otherwise you might as well start tal
brick out of this hospital every tim
drive by," he said. "The community
to debate what it is that they want."

Maui Memorial has been embroi
controversy since late May when HHS
accused of resorting to heavy-handed
when it took over the hospital's finan
fairs from the state Department of
Bad feelings only increased a cou
months later with the sudden resigna
Kula Hospital Administrator Michael
who said he could no longer "look at
in the mirror" if he continued to w
HHSC.

But, since then, things have started
tle down at Maui Memorial, and P
newcomer to the hospital who was ap
administrator amid the chaos, has
early high marks for his leadership
difficult time. He was the admins
Kona Community Hospital for two
fore coming to Maui.

The Queen's announcement came
Memorial itself was making plans
vate its dated facility and include
vices to better care for the the island
ing population. Over the last few ye
sion Committee has met with co
groups to develop a long-range
and, more recently, a master plan
taking shape.

Patton said the plan includes su
as a Women's Center, improved
way to tie together the myriad outp

EXHIBIT C-100

Haleakala Times : August 20, 1997

Notice of Public DEIS Comment Meetings For Proposed MECO Waena Generating Station

Maui Electric Company, Limited (MECO) will hold two Public Meetings to receive comments on its Draft Environmental Impact Statement (DEIS) for the proposed 232-megawatt (MW) Waena Generating Station located in Central Maui along Pulehu and Waiko Roads near the Maui County Landfill. The dates and location of the comment meetings are:

Tuesday, August 26 -	Maui Arts and Cultural Center Visual Arts Classroom (Kahului)
Thursday, August 28 -	Upcountry Swimming Complex Multi- Purpose Room (Pukalani)

The new generating station, scheduled to begin operation of the first 20MW combustion turbine in the year 2004, is necessary to provide adequate electrical power generation capacity to meet Maui's needs for the next 25-30 years. The generating station will be located on 67 acres of land owned by MECO and will consist of power generating equipment, warehouses, fuel storage tanks, and related transmission lines. As part of the project, MECO will request a change in the Wailuku-Kahului Community Plan designation for the site from "Agricultural" to "Heavy Industrial." No significant adverse environmental impacts have been identified through preparation of the DEIS.

The public meetings will begin at 6:30 p.m. with an open house followed by a presentation of the project, time for the public to provide comments on the DEIS and an open discussion period. A record of the meetings will be incorporated into the Final EIS. Throughout the process, MECO will continue to meet with interested parties upon request.

For further information concerning this project please contact either MECO's project coordinator or MECO's consultant:

Mr. Neal Shinyama
MECO
P.O. Box 398
Kahului HI 96733-6898
Phone: 871-2341

Mr. Mark Willey
CH2M HILL, INC.
1585 Kapiolani Blvd.,Ste.1420
Honolulu, HI 96814
Phone: 943-1133

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:46

EXHIBIT C-101

Final Environmental Impact Statements

(4) Waena Power Generating Station

District: Wailuku
TMK: 3-8-03:23 and 24
Applicant: Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733-6898
Contact: Ed Reinhardt (871-8461)
Approving Agency/Accepting Authority: County of Maui
Planning Department
250 South High Street
Wailuku, Hawaii 96793
Contact: David Blane (243-7735)
Consultant: CH2M Hill
1585 Kapiolani Boulevard, Suite 1420
Honolulu, Hawaii 96814-4530
Contact: Mark Willey (943-1133)
Status: FEIS currently being reviewed by the County of Maui, Planning Department.
Permits Required: Community Plan Amendment, PSD Air Permit, NPDES Permit, UIC Permit

Maui Electric Company, Limited (MECO) is proposing to construct and operate a 232-MW power generation station on 65.7 acres adjacent to Pulehu and Waiko Roads in central Maui. The site of the project is owned in fee by MECO. The site is currently under sugarcane cultivation. The purpose of the project is to increase MECO's capacity to meet future energy demands on the island of Maui.

The Waena Generating Station will consist of four 58-MW dual-train combined cycle (DTCC) units which would be installed over the next 20-30 years. Installation of the first 20-MW combustion turbine will be in the year 2004, with the completion of the first DTCC scheduled for 2006. Future DTCC units will be implemented at later dates; the timing of the subsequent phases will depend on future load growth, power availability through independent purchase agreements, unit retirements, and environmental considerations.

The generating station will include a generating plant area, switching yard, administration buildings, fuel storage tanks, warehouses, and related facilities. Two 69-kilovolt (kV) transmission lines from the site to substations at the Paia Sugar Mill and Puunene Sugar Mill are also proposed as a part of this project. Distribution lines (12 kV) may also lead to the proposed generating station to Puunene. In addition, MECO may relocate its existing transmission and distribution base yard from its location in Kahului to the new facility. The entire 65.7-acre site will be developed for the installation of the first unit of generation. This will include full grading of the site and installation of necessary infrastructure, such as drainage improvements, domestic wastewater systems, and roads, to support all four DTCC units.

Two public comment meetings were held on Maui to solicit public input on the Draft EIS. In addition, public comment letters on the Draft EIS were received from 28 agencies, organizations, and individuals. Issues raised during the public comment period included air quality, groundwater, and traffic impacts. Analyses performed for the Final EIS concluded that no significant adverse impacts to resources on the island of Maui would occur as a result of construction and operation of the proposed facility.

MECO will be requesting a change in the Maui County Community Plan and Zoning designations for the site to allow for heavy industrial use. In addition, a request has been made to the State Land Use Commission to redesignate the parcel from the Agricultural District to the Urban District.

Previously Published Projects Pending Public Comments

Draft Environmental Assessments

A.C. Partnership Construction Related Baseyard & Office Project

Applicant: A.C. Partnership
P.O. Box 1038
Haiku, Hawaii 96708
Contact: Nelson Armitage/Karl Calleon (877-8012)

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:40

EXHIBIT C-102

LINDA CROCKETT LINGLE
Mayor

DAVID W. BLANE
Director

LISA M. NUYEN
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING
250 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 24, 1997

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:46

VIA FACSIMILE: 586-4186

Mr. Gary Gill, Director
Office of Environmental Quality Control
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813-2437

Dear Mr. Gill:

RE: Final Environmental Impact Statement (EIS) for Maui Electric Company, Ltd., Waena Power Generation Station at TMK 3-8-003:001, Pulehu, Island of Maui, Hawaii (EIS 970001)

The Maui Planning Department has reviewed the Final Environmental Impact Statement for the above-referenced matter and hereby accepts the final document which was transmitted to your office on November 7, 1997 for publication in the Office of Environmental Quality Control (OEQC) Bulletin.

If you have any questions, please contact Ms. Colleen Suyama, Staff Planner, of this office at 243-7735.

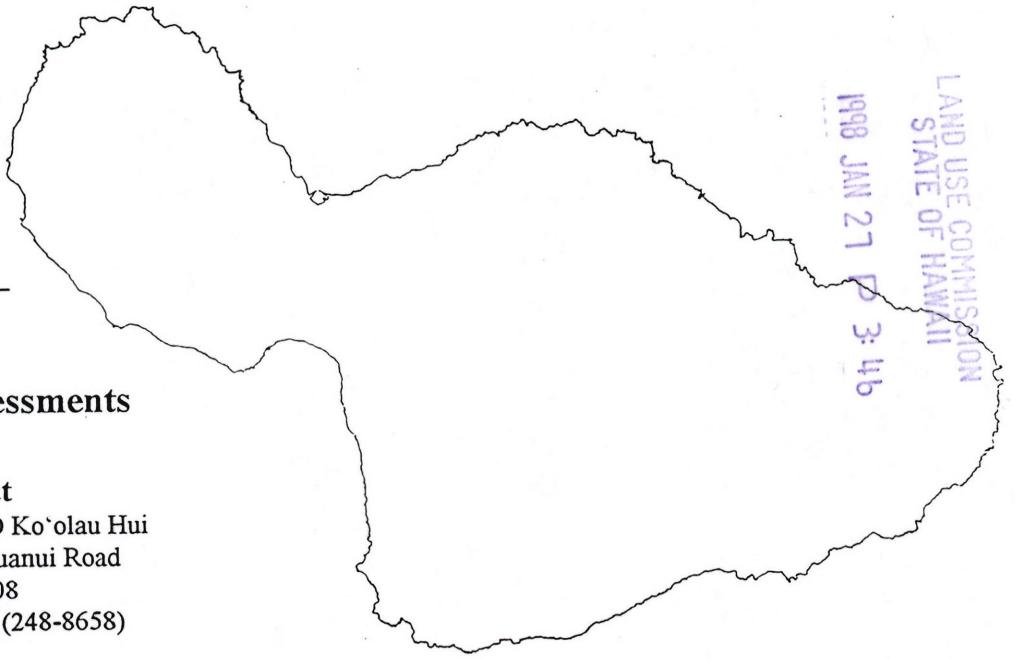
Very truly yours,

Lisa M. Nuyen

DAVID W. BLANE
Director of Planning

DWB:CMS:jso
c: Lisa M. Nuyen, Deputy Director of Planning
Clayton Yoshida, AICP, Planning Program Administrator
Colleen Suyama, Planner
Mark Willey, CH2M Hill
Ed Reinhardt, Maui Electric Company, Ltd.
Project File
General File

EXHIBIT C-103



LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:46

Previously Published Projects Pending Public Comments

Draft Environmental Assessments

Hawaiian Escargot Project

Applicant: Na Moku Aupuni O Ko`olau Hui
HC1, Box 62, Wailuanui Road
Haiku, Hawaii 96708
Contact: Ed Wendt (248-8658)

Approving Agency/Accepting Authority: Department of Land and Natural Resources
Land Division
54 South High Street, Room 101
Wailuku, Hawaii 96793-2198
Contact: Philip Ohta (984-8100)

Public Comment Deadline: December 23, 1997

Final Environmental Impact Statements

Kahului Airport Improvements

Applicant: Department of Transportation, Airports Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880
Contact: Jerry Matsuda (838-8600)

Approving Agency/Accepting Authority: Governor, State of Hawaii
c/o Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813
and
Federal Aviation Administration (FAA)
800 Independence Avenue, SW
Washington, D.C. 20591
Contact: FAA Assistant Administrator
(202-267-8938)

Status: FEIS currently being reviewed by the Office of Environmental Quality Control.

Final Environmental Impact Statement Acceptance Notices

Waena Power Generating Station

Applicant: Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733-6898
Contact: Ed Reinhardt (871-8461)

Approving Agency/Accepting Authority: County of Maui
Planning Department
250 South High Street
Wailuku, Hawaii 96793
Contact: David Blane (243-7735)

Status: FEIS accepted on November 24, 1997 by the County of Maui, Planning Department.

EXHIBIT C-104

RECEIVED
SEP 2 4 1997
CH2MHILL - HNL

MAUI TOMORROW
P.O. Box 429, Makawao, HI 96768
808-877-AINA • Fax: 248-7761
aina@maui-tomorrow.org
http://maui-tomorrow.org

1998 JAN 27 P 3:46
LAND USE COMMISSION
STATE OF HAWAII

September 22, 1997

Mr. Mark R. Willey
Project Manager
CH2M Hill
1585 Kapiolani Blvd., Suite 1420
Honolulu, Hawaii 96814

Dear Mr. Willey,

Subject: Maui Electric Company, Ltd. (MECO)
Proposed Waena Power Generating Station DEIS

Thank you for the opportunity to review the Draft Environmental Impact Statement for the proposed Waena Generating Station project.

Maui Tomorrow would like to offer the following comments:

1. The overall approach to planning Maui's energy future must be focused on self-sufficiency and efficiency, as stated in the County's General Plan. We are presently extremely over reliant on the importation of fossil fuels for our electrical and transportation needs, adding uncounted economic and environmental costs, and creating a situation of great insecurity. Maui's future energy system eventually must be based on a highly efficient renewable solar-hydrogen economy derived from our local resources. This is entirely possible, and it is in the context of envisioning this transition that we need to make our choices about our energy path today.

2. We concur with the comments of Mr. James V. Williamson (Aug. 28, 1997), and wish to emphasize the following points:

   a. Regarding the ISP process and DSM, despite the fact that MECO "considers its DSM program one of the most aggressive and dynamic in the United States" (Section 3.2.2) it seems that much more could be done in this area. In the EIS itself, the success and projections of various current DSM programs should be quantified to give some meaningful basis for comparison. The commitment must be to DSM as the single most important focus for MECO and our community as a whole to pursue for our energy future. There are gross

inefficiencies existing on many levels in our energy use on Maui, and creativity is needed to plug these leaks and benefit from the negawatts generated. The recent experience of the Grand Wailea Resort with the Rocky Mountain Institute's eco-audit and retrofitting efforts (see attached article excerpts) provides a good model that should be pursued in all resorts, and which could apply to many other sectors of our economy. An even greater commitment must be established to facilitate this information and transition.

b. The Peak Demand (Section 2.2.2) growth rate is assumed to be approximately 2.6 percent per year, but no supporting data is given as to how this number was derived. This assumption underlies the entire argument of the need for this generating capacity. Many factors could effect this and it could easily be too high.

c. The .4% or .05% sulfur content of the fuel oil is critical. Along with the many points raised by Mr. Williamson which must be addressed, costs such as health are externalized and must be accounted for in the EIS.

d. The fuel delivery via pipeline should be revisited, with more quantified details available to assess this option, and the reduced costs of combining the infrastructural development with a waste water delivery system for the cooling system.

2. DEIS mentions solar thermal under Solar Power (Section 3.2.4.6) only for use as solar water heaters and heat pump heaters. The fact that Hawaii has "the highest per capita installation" of these technologies in the US indicates their viability, but the DEIS does not address solar thermal as a large scale generation option. Sunlight rather than fuel oil can be used to boil water to turn turbines. According to a recent Home Power magazine solar thermal is the most cost efficient generation source available today. This technology must be considered, at least in a complementary manner to the present planned options.

3. The DEIS states that wind power would require 1600 acres and is not feasible for various reasons, but residents may be willing to make temporary sacrifices in areas such as visual intrusiveness, for air quality and self-sufficiency benefits associated, and there could be creative ways to find the necessary land in a transition to other technologies for our energy and to diversified uses and reforestation for the lands.

4. Will the injection of water of highly increased brackishness back into the groundwater have any detrimental impact? A closed loop cooling system should be considered, and the use of waste water, delivered via pipeline, the cost of which would be reduced if installed together with fuel delivery systems, as mentioned above.

In general, the flexibility apparently designed into the phased build-out of the station, as well as the possibility of converting the generators to alternative fuels, is positive. This underlines

the reality that technology is advancing extremely rapidly, and we can expect 3 or 4 generations of improvement over the time period to pay off the investment into this plant. We almost certainly won't be burning oil 30 years from now. Next phases must be alternative sources, and MECO must invest in this direction - it is truly the future. A recent Science Magazine discusses very small (the size of a little finger nail) 50 watt generators running on pure hydrogen. This is just one example to encourage you to approach Maui's future energy needs from an open, imaginative and creative perspective, and to make Maui's energy self-sufficiency your first priority, through efficiency and clean renewable alternative technologies.

Thank you for your consideration of these concerns. If there are any questions, please contact me at 877-2462.

Sincerely,

Scott Crawford
Program Director

enc.

Excerpted from The Haleakala Times, April 16, 1997

By Dan Grantham

Ray Anderson's strategy of hope includes working with the Grand Wailea, the Dream Team, and the 1100 Interface associates who met here from all over the world to celebrate their interconnection while they engaged in a week long exercise to measure the differences sustainable practices can make in resource use at the hotel.

Amory Lovins, Research Director of the Rocky Mountain Institute and a world renowned leader in energy solutions, seemed to be enjoying himself: after mentioning that Hawaii imports almost all of its energy, including 200 million dollars a year just for power plants, said he finds "mineable inefficiencies" or negawatts here:

"I walk around looking at lights and motors, seeing them as little cash cows, plaintively mooing, wanting to milked, giving off flows of invisible dollars. A big motor (of which there are many at the resort) eats its own capital cost worth of electricity every few weeks...money that is flowing out of the island's economy."

Using the example of a leaking bathtub, Amory said you can either get a bigger water heater or plug the leaks. With electric rates here running about 15.7¢ a kilowatt-hour, equivalent to $253 for a barrel of oil, or 13 times the world oil price, those are expensive leaks.

Osage, Iowa, a town of 4000 people with a municipal utility, decided to reduce electricity waste by helping people with insulation, caulking, efficient showerheads, better lamps, etc. After several years the town saved so much they prepaid their bond debts, built up a $2.5 million surplus, cut rates 5 times in 5 years, for a total of about one third. The lower rates kept local businesses competitive and attracted two new factories.

Best of all, in Lovins' view, they kept over $1000 per household per year in town that had previously gone out of state to buy utility inputs - money that now stayed to support local jobs and create prosperity.

Lovins highly recommends solar water heating, saying they can save 70% of the energy use and the state actually makes money on the tax credit.

Lovins urged that one of the most useful things PUC's can do here is to reward utilities for cutting your bill; first by decoupling profits from the amount of power they sell, then allowing them to keep some of the savings from lower bills. In 1992 Pacific Gas and Electric invested $170 million in helping customers save power; of the 3 to 4 hundred million $ in savings, PG&E got to keep 15% - $40 million - their second biggest source of profit for the year.

CH2M HILL
1585 Kapiolani Blvd
Suite 1420
Honolulu, HI
96814-4530
Tel 808.943.1133
Fax 808.941.8225

CH2MHILL

Celebrating 50 Years

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:46

November 3, 1997

139792.EI.04

Mr. Scott Crawford
Maui Tomorrow
PO Box 429
Makawao, HI 96768

Dear Mr. Crawford:

Subject: Maui Electric Company, Limited's Waena Generating Station Draft EIS Comments

Thank you for your September 22, 1997 letter and your testimony at our public comment meeting concerning the Waena Draft Environmental Impact statement. Our responses to your individual comments follow.

Pukalani Public Meeting

1. *Maui should develop a long-term plan to move away from the use of fossil fuels.*

MECO has extensively evaluated numerous supply-side resource alternatives in developing its Integrated Resource Plan (IRP). The selection of resource options for MECO's IRP is based on a screening process wherein a large number of potential supply-side options are considered. The screening process is a detailed process with significant input from MECO's public advisory group, which was convened to ensure maximum participation from all stakeholders in the overall IRP process.

MECO did evaluate the use of intermittent energy sources, such as solar, hydropower, and wind energy, as well as alternative fuels, such as methanol and ethanol, as a part of the IRP process. However, for capacity planning purposes, MECO is unable to include such intermittent or non-dispatchable sources of energy production as assured system generating capacity. MECO does use electricity from alternative energy sources when it is available. To the extent that electricity is available from these sources, MECO will avoid burning fossil fuels.

MECO also evaluated the use of firm, dispatchable energy from renewable sources, such as biomass technologies. However, the high fuel costs and low power plant efficiencies

associated with biomass energy production do not make it a cost-effective option at this time.

Before MECO undertook its IRP process, the Public Utilities Commission (PUC) issued a framework for the planning process. One of the governing principles stated in the framework is the consideration of a plan's impact on the utility consumer, environment, culture, community lifestyles, State's economy, and society. The framework stated that, to the extent possible and feasible, the external costs and benefits should be quantified and expressed in dollar terms. When it is neither possible nor feasible to quantify any cost or benefit, such cost or benefit should be qualitatively measured.

MECO followed the PUC framework in preparing its IRP and considered externality costs as part of resource evaluation. Proxy monetized externalities were used to assess air emission impacts, and other externalities were assessed qualitatively. Even considering externality costs, the combustion turbine technology was the most cost-effective resource that could provide the needed amount of generation capacity within the required time frame.

In its IRP, MECO selected a resource plan within the context of short- and long-term resource strategies. For the short term, MECO is implementing aggressive demand-side management programs and conventional oil-based technologies because of the costs and uncertainties associated with renewable energies and alternative fuel sources. The Draft EIS includes a discussion of both alternative energy and alternative fuel sources and outlines the reasons they are not considered feasible for use within the short term. The short-term role for renewable/alternative energy resources; therefore, will continue to be in power purchased from independent power producers.

For its long-term strategy, MECO will continue to evaluate the technical and economic feasibility of using more alternative energy sources. As a part of the Waena project, the combustion turbines proposed can accommodate by-products of coal gasification rather than diesel. In addition, the overall project implementation over 20-30 years is designed to allow for the easy replacement of the proposed combustion-turbine technology with other energy generating alternatives when they become technically and economically feasible.

2. *The ability to convert to another type of fuel is important. Could an oil generating crop that produces vegetable oil be used to power the machines. This would provide a replacement crop to sugar cane.*

While there have been tests on the use of vegetable-based fuels in internal combustion engines, such use within combustion turbines has not been shown to be practical at this time. Fuel production costs, thermal efficiencies, emission levels, and overall impacts on the generating units need to be examined in greater detail before such fuels can be realistically considered.

The combustion turbines proposed for the Waena project can accommodate by-products of coal gasification rather than diesel. In addition, the overall project implementation over 20-30 years is designed to allow for the easy replacement of the proposed combustion-turbine technology with other energy generating alternatives when they become technically and economically feasible. At this time; however, there has been no interest indicated from large landowners to replace their existing acreage from sugarcane cultivation to crops whose only use would be as a fuel supply for electrical generation.

3. *MECO should more aggressively pursue demand-side management and conservation programs. More information on these programs should be made available to the public.*

MECO does aggressively pursue demand-side management (DSM) programs. As of September 30, 1997, and since the beginning of its DSM programs one year ago, MECO, with the help of its customers, has succeeded in saving approximately 1.1 megawatts (MW) and approximately 6,467,800 kilowatt-hours (kWh) of electricity. This represents 64 percent and 68 percent of the first year's demand and energy goals, respectively, as presented in the PUC application for its DSM programs.

MECO started the implementation of its DSM programs in the later part of 1996, shortly after receiving approval from the PUC. These programs cover all customer segments throughout the entire County of Maui. These programs were the result of an extensive development process within the 1993 Integrated Resource planning process. The DSM programs were shown to be cost effective and feature a combination of end uses and market segments that have the highest potential for reducing load and saving energy. Such high savings have been accomplished by developing a comprehensive sales profile. The market sectors were based on the three major customer classes: residential, commercial and industrial. Energy devices (e.g., water heating, lighting, and cooling) were identified for each market segment to determine the most efficient DSM technologies and programs that could be applied to have the greatest impact on reducing demand and increasing energy savings.

Since the beginning of these programs, MECO also has conducted an aggressive advertising campaign to promote greater energy conservation. One-on-one contacts by MECO's Energy Services Representatives have been coupled with seminars, bill inserts, and newspaper, magazine, radio and television ads. MECO is making extensive use of testimonial advertising for both residential and commercial programs. In addition, MECO developed the "Efficient Times" newsletter, which is sent to all commercial customers. This newsletter provides retrofit examples, more testimonials, and simple calculation sheets. To reach the smaller commercial customers who do not normally participate, MECO has recently implemented a lighting promotion whereby it provides these customers, free of charge, half of the equipment needed to upgrade their lighting to more efficient standards. MECO feels that all of these elements, when considered together, make their DSM program one of the most aggressive in the country.

Comment Letter

1. *In the EIS itself, the success and projections of various current DSM programs should be quantified to give some meaningful basis for comparison.*

As of September 30, 1997, and since the beginning of its DSM programs one year ago, MECO, with the help of its customers, has succeeded in saving approximately 1.1 megawatts (MW) and approximately 6,467,800 kilowatt-hours (kWh) of electricity. This represents 64 percent and 68 percent of the first year's demand and energy goals, respectively, as presented in the PUC application for its demand-side management (DSM) programs.

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2. *The Peak Demand growth rate is assumed to be approximately 2.6 percent per year, but no supporting data is given as to how this number was derived...Many factors could affect this and it could easily be too high.*

The sales and peak forecast is made by utilizing a variety of forecasting tools, the expertise of the staffs of both MECO and HECO, and the input of our customers and respected organizations in the community. All data is analyzed and tested from various perspectives before a final forecast is adopted by the Forecast Planning Committee. The potential effects of energy efficiency and Demand Side Management (DSM) programs are also incorporated into the sales and peak forecast.

Historically, the adopted forecast has been reasonably close to recorded numbers. MECO believes that the small variances indicate the reasonableness of the forecasts.

MECO prepares near-term 5-year sales and peak forecasts annually using the latest available economic, historical sales and peak load data, as well as customer contact for existing projects and customer requests for future projects. Once every three years a long-term 20-year forecast is generated to examine the facilities needed to serve the power growth. The preparation of the sales and peak forecast is part of the comprehensive Integrated Resource Planning (IRP) process.

The primary advantage of the IRP forecasting process is to ensure that the forecast receives maximum exposure and evaluation through multiple levels of review. Overall, there are approximately 40 individuals on the MECO IRP Advisory Group (AG), the MECO Forecast Planning Subcommittee (FPSC), and the Forecast Planning Committee (FPC) who contribute their diverse expertise, knowledge and experience to the forecasting process. The use of the

MECO IRP AG provides a mechanism for members to provide feedback and input to the process.

The MECO IRP AG is comprised of members from the Department of Commerce and Consumer Affairs – Consumer Advocacy Division; Department of Business, Economic Development and Tourism – Energy Division; County of Maui Planning Department; County Office of Economic Development; Maui Chamber of Commerce; Maui Hotel Association; Maui Visitor's Bureau; Molokai Task Force; Lanai Resort Partners; island residents; and other businesses. The FPSC and FPC are made up of MECO staff in the Customer Service, Engineering, Production, Transmission and Distribution Departments and HECO staff in the Forecast, Generation Planning, and Integrated Resource Planning Divisions.

The general philosophy MECO follows in preparing its kilowatt-hour (kWh) sales and peak forecast is to place emphasis on consideration of estimated future sales and loads from as many different "viewpoints" or perspectives as possible.

The final forecasts selected by the FPC can be corroborated by more than one analytical method or source of information. Although mathematical trending of historical kWh sales data is one form of analysis used in our forecasting process, MECO does not depend solely on mathematical trending to forecast. Such an approach may fail to recognize and take into consideration important economic and demographic changes that are taking place in various districts of the three islands (divisions). The following is a description of the kWh sales and peak forecasting methodologies from which the final forecast is chosen.

The methods considered in the preparation of the kWh sales and peak forecast are the rate schedule analyses, market analyses, economic analyses, and customer service analyses. The methods are described as follows:

- **The Rate Schedule Analyses methodology considers a spectrum of mathematical analyses of the patterns and trends in the number of customers, kWh sales, and average use per customer to the individual rate schedules using time series, econometric, and end-use methods.**

  Generally, these mathematical modeling and trending techniques use mathematical relationships based on historical data and other related information to develop projections of future kWh sales and customers. These techniques vary in degree of sophistication and can be applied to a variety of load demand parameters for which historical and near-term future data are available.

- **The Market Analyses are based on analyses of the market conditions influencing the different customer classes with special emphasis on customer-by-customer accounting of loads of our large power users. Also considered are influences on the residential class, including new construction outlook, resort development, private residential development, and government supported or sponsored housing.**

  Market analyses is the primary forecasting method accepted for the large power users because the relatively small number customers allows for in-depth customer-by-customer analysis. Market analyses for this class consist of identification of known or expected changes in each customer's consumption attributable to factors

such as adjustments in a customer's demand load or operating characteristics, energy efficiency, added load and new construction.

- **The Economic Analyses include judgmental analyses and considerations of the potential for future economic growth in the MECO service areas, based on broad economic indicators and opinions of economists and others prominent in the economic arena as presented in various periodicals, as well as contacts in the marketplace.**

- **The Customer Service Analyses are based on judgmental analyses and considerations of area growth based on day-to-day working knowledge of customers, customer billing data, and other customer-related factors that affect kWh sales and the customer count from month to month. The techniques employed in the Customer Service forecasting processes take into account changing conditions in the marketplace which may either explain the reasons for certain recorded values or which may influence kWh sales in the near future.**

  Customer Service analyses consider load and customer growth for each of the customer class for each of the three service areas – Maui, Lanai, and Molokai. Although judgmental, this type of analyses addresses the factors that affect smaller segments of the service areas, thereby minimizing the margin of error in short-term forecasting.

Because of the detailed nature and the close customer contact included in these analyses, the results carry a high degree of validity for the short term. However, because of uncertainty on the part of customers' plans for significant changes in their energy usage patterns and the marketplace, Market and Customer Service analyses of the individual rate schedules are considered applicable for only about three years into the future. Mathematical analysis is used to project the forecast beyond that point.

In addition to the sales and peak forecasting methodology described above, MECO uses the Electric Power Research Institute's (EPRI) profile aggregation program, HELM (Hourly Electric Load Model) to forecast Maui island's evening and day peaks and minimum loads. HELM takes reference customer class load profiles and adjusts them to levels of the approved sales forecast. The average monthly weekday and weekend reference customer class load profiles were developed in the 1995 MECO Class Load Study. The resulting sales load factor (ratio of the average hours of operation to the total annual hours available) and peak month are analyzed against recorded data to assure reasonableness. Maui island's sales load factor and peak month have been stable over the past five years.

3. *The 0.4 percent or 0.05 percent sulfur content of the fuel oil is critical. Costs such as health are externalized and must be accounted for in the EIS.*

Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) is directed to identify pollutants which "may reasonably be anticipated to endanger public health and welfare" and to issue air quality criteria for them. These air quality criteria are intended to accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of a pollutant in the ambient air. The National Ambient Air Quality Standards (NAAQS) are established based on these criteria and are designed to protect human health with an

adequate margin of safety. By selecting standards that provide an adequate margin of safety, the EPA is seeking not only to prevent pollution levels that have been demonstrated to be harmful but also to prevent lower pollutant levels that they find may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Waena Generating Station emissions which would result from the use of diesel fuel containing 0.40 percent sulfur by weight will be in compliance with the NAAQS.

In addition, when following the Public Utilities Commission framework for developing the Integrated Resource Plan, MECO was required to consider externality costs as part of its resource evaluation. Monetized externalities were used to assess air emission impacts, and other externalities were assessed qualitatively. Even considering externality costs, the combustion turbine technology was the most cost-effective resource that could provide the needed amount of generation capacity within the required time frame.

Current data indicates that the use of diesel fuel containing 0.05 percent sulfur by weight would result in significantly increased fuel costs. In order to supply MECO, the local refineries would need to import 0.05 percent sulfur diesel from the West Coast, as they do not have the ability to manufacture this type of diesel fuel in amounts necessary for the Waena Generating Station. The product cost difference and importation costs alone would result in an estimated 20 percent increase in fuel costs. Additional increases would be realized with the need for MECO to build new storage and distribution facilities at Kahului Harbor in order to segregate the 0.05 percent sulfur diesel from diesel fuel that contains a higher amount of sulfur. A detailed review of control technologies for emissions associated with the Waena Generating Station will be conducted as part of the PSD permitting process and will be updated to include fuel cost considerations based on the Waena Generating Station operation date of 2004.

4. *The fuel delivery via pipeline should be revisited, with more quantified details available to assess this option, and the reduced costs of combining the infrastructural development with a wastewater delivery system for the cooling system.*

We have attached the full fuel haul/pipeline analysis and relevant data prepared by Stone & Webster Engineering Corporation and will include the full report in the Final EIS. Preliminary economic analyses conducted for the fuel pipeline study indicated that costs for construction of a pipeline from the Kahului Harbor area (location of the Kahului Wastewater Treatment Plant) to the site of the proposed Waena Generating Station could run in excess of $16.5 million, assuming a 6-inch carbon steel single-containment pipe. Preliminary hydrogeologic analyses of the underlying brackish groundwater aquifer do not indicate that the withdrawal of water due to the proposed generating station will be costly or have any adverse impact upon aquifer levels or groundwater quality. Because of this, there is no justification for the large expenditures associated with pipeline construction to the site for the joint delivery of fuel and wastewater.

5. *The DEIS does not address solar thermal as a large scale generation option. Sunlight rather than fuel oil can be used to boil water to turn turbines.*

Section 3.2.4.6 of the Draft EIS discussed solar power as an alternative to the Waena project, and includes a discussion of photovoltaic or solar thermal electric systems as well as other alternative generating technologies. MECO has operated and maintained the 20-kW Photovoltaic for Utility Scale Applications (PVUSA) since October 1989. During this period, MECO has gained valuable experience in this photovoltaic demonstration project. In addition, MECO recently installed a 1-kW photovoltaic system at Baldwin High School as part of its Sun Power for Schools pilot project. MECO intends to install additional photovoltaic systems by the end of 1998. High installation costs, large land requirements for central facilities, and other factors prevent widespread use of this technology at this time.

MECO also reviewed a solar dish-engine renewable energy demonstration project in 1997. However, MECO decided to defer a commitment on this project because of Hawaii's low insolation, lack of interest for liquid fuel/hybrid demonstration, and project resource requirements. The results of a 1992 assessment of solar electric generating systems for Hawaii conducted by the Department of Business and Economic Development also revealed that Hawaii's direct insolation is lower than anticipated, thus making solar use less productive.

MECO continues to track the development and progress of photovoltaic and other emerging technologies by participating in studies, communicating with Electric Power Research Institute, U.S. Department of Energy and its National Laboratories, attending conferences and workshops, visiting project and manufacturing sites and reviewing journal and reports. Although large-scale, solar-powered energy production has been shown to be technically feasible in some areas of the mainland southwest, the lack of sufficient and dependable insolation within the Central Maui region make development of a commercially-sized photovoltaic system unfeasible. However, residents who want to install small-scale individual solar units may pursue doing so.

6. *The DEIS states that wind power would require 1600 acres and is not feasible for various reasons, but residents may be willing to make temporary sacrifices in areas such as visual intrusiveness, for air quality and self-sufficiency benefits associated.*

As a part of the IRP process, MECO fully evaluated the use of wind power within the Central Maui region. However, wind energy depends upon an intermittent resource, which at some times may not blow sufficiently to power the turbines. Because of this, wind cannot be depended upon to provide baseload generation, that is, energy available when it is demanded. While wind energy may be desirable from the community standpoint, it can be considered only supplemental to the overall generation system and is not feasible for large-scale baseload generation application. However, residents who want to install individual wind generator units may pursue doing so.

7. *Will the injection of water of highly increased brackishness back in to the groundwater have any detrimental impact?*

Section 4.6.1.2 of the EIS document discusses the potential impact of wastewater reinjection. The potential impacts from wastewater injection depend on the characteristics and composition of the effluent to be injected and the quality of the existing groundwater in the

target injection zone. A rate of 110 gpm of wastewater per well will be injected in the saline aquifer beneath the site. A worst-case scenario for modeling purposes was developed with the following assumptions:

- **Total amount of 0.44 mgd injected from beginning of plant operation over 30 years**
- **Aquifer transmissivity of 192,700 square feet/day, aquifer thickness of 193 feet, aquifer porosity of 0.1**
- **A hydraulic gradient of 0.45 feet/mile based on monitoring well heads at the Central Maui Landfill**
- **No mixing of effluent with aquifer groundwater**
- **The groundwater at the target depth for wastewater reinjection is expected to be saline**
- **The wastewater composition as presented in Table 4-10**

Using these assumptions, the modeled plume of wastewater, as shown in Figure 4-2, will extend downgradient of the project site, a distance of 0.8 miles after 10 years, 1.5 miles after 20 years, and 2.1 miles after 30 years of steady injection. No significant changes in groundwater levels are expected.

Although a worst-case scenario of no dispersion of the plume was assumed, in reality, as the wastewater plume migrates downgradient from the injection well, it will be affected by dispersion. Dispersion is the process by which a plume tends to spread by mechanical mixing and molecular (chemical) diffusion. The width of the plume will increase by dispersion, although the concentration within the plume will decrease until it eventually reaches that of the ambient groundwater.

Currently, no information on the dispersive properties of the aquifer at the project site is available. However, because the estimated wastewater chloride concentrations injected into the underlying aquifer are approximately the same as concentrations recorded from water withdrawn from the nearest irrigation well, the injected wastewater will certainly reach ambient groundwater concentrations before reaching the nearest existing irrigation well. Therefore, the potential impact of the wastewater plume on general downgradient groundwater quality is not expected to be significant.

No significant changes to downgradient groundwater levels, groundwater quality, or irrigation wells are expected from the injection of treated wastewater.

8. *A closed loop cooling system should be considered, and the use of waste water, delivered via pipeline, the cost of which would be reduced if installed together with fuel delivery systems.*

Cooling of the generating units will be accomplished through use of air-cooled condensers, not though an open (or closed) loop water cooling system. Water usage at the plant will be primarily for emissions control purposes. Preliminary hydrogeologic analyses of the underlying brackish groundwater aquifer do not indicate that the withdrawal of water due to the proposed generating station will be costly or have any adverse impact upon aquifer levels or groundwater quality. Because of this, there is no justification for the large expenditures associated with pipeline construction to the site for the delivery of wastewater.

Thank you for taking the time to review the Draft EIS. Please feel free to contact me if you have any further questions or comments regarding this project.

Sincerely,

CH2M HILL

Mark R. Willey
Project Manager

enc.

c: Mr. Neal Shinyama, MECO
Mr. Mike Yuen, HECO
Ms. Colleen Suyama, Maui County Planning
Mr. Gary Gill, OEQC

Table ES-2
List of Potential Permits and Approvals
for the Proposed Waena Generating Station and Transmission Lines

Permit/Approval	Agency	Timeframe	
		Application	Approval
County of Maui			
Environmental Impact Statement Acceptance	Planning Department/Mayor	3/97	12/97
Community Plan Amendment	Planning Commission/Council/Mayor	12/97	7/98
Change in Zoning	Planning Commission/Council/Mayor	12/97	12/98
Height Variance	Board of Variance & Appeals	3/02	7/02
Combustible and Flammable Liquid Tank Installation*	Public Works	3/02	7/02
Driveway Permit/Work in County Road ROW	Public Works	3/02	7/02
Flood Hazard Certification or Determination	Public Works	3/02	7/02
Building, Grading and Stormwater Management Permits	Public Works	3/02	7/02
State of Hawaii			
Land Use District Designation Reclassification	Land Use Commission	10/97	5/98
Noise Variance for Construction*	Department of Health	3/02	7/02
Prevention of Significant Deterioration/Covered Source Air Permit*	Department of Health	1/99	12/01
Test/Supply Well	Commission on Water Resource Management/Department of Land & Natural Resources		
Well Construction Permit*		6/00	12/00
Pump Installation Permit*		9/00	1/01
Underground Injection Control	Department of Health		
Permit to Construct*		3/02	6/02
Permit to Operate*		6/03	9/03
Approval for Domestic Wastewater Treatment*	Department of Health	6/03	9/03
NPDES	Department of Health		
Construction Dewatering*		3/02	7/02
Facility Stormwater Discharge		3/02	7/02
Authority to Perform Work on State Highway ROW	Department of Transportation	3/02	7/02
Public Utilities Commission General Order 7 Approval*	Public Utilities Commission	1/99	12/99
Federal			
Determination of No Significant Hazard to Air Navigation	Federal Aviation Administration	6/97	6/97
Prevention of Significant Deterioration*	Environmental Protection Agency	1/99	12/01

* Time frame indicated is for installation of the first DTCC unit. Each subsequent DTCC unit may/will require additional permits.

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STATE OF HAWAII
LAND USE COMMISSION

EXHIBIT C-107

Summary of Project's Relationship With Urban District Criteria

1. ***It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level of services and other related land uses.***

   - Near other related land uses; the Ameron Quarry and Maui County Landfill
   - Project is compatible with other industrial uses in the area and adjacent agricultural lands

2. ***It shall take into consideration the following specific factors:***

   A. ***Proximity to centers of trading and employment except where the development would generate new centers of trading and employment***

      - Project's industrial nature would not represent a compatible adjacent land use to commercial or trading centers
      - Heavy industrial uses are best separated from commercial and residential areas
      - Project will create employment on site and allow for long-term economic growth on the Island of Maui

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STATE OF HAWAII
LAND USE COMMISSION

Summary of Project's Relationship With Urban District Criteria

B. Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, and police and fire protection

- The local transportation network will adequately accommodate the project
- Project will develop its own sewage, drainage, and wastewater systems
- Project will include fire protection systems
- Project will not require additional school or police services

C. Sufficient reserve areas for foreseeable urban growth

- Site is in close proximity to other related land uses
- Site is separated from other sensitive urban uses such as residential and commercial areas
- Centralized location allows project to provide reliable power for long-term growth and development
- Site will not impact areas currently designated for foreseeable urban growth
- The project will support foreseeable urban growth

Summary of Project's Relationship With Urban District Criteria

3. ***It shall include lands with satisfactory topography and drainage and reasonably free from the danger of floods tsunami unstable soil conditions, and other adverse environmental effects.***

    - Slopes on the project site are minimal
    - Site does not lie in any flood or tsunami zones
    - Soil conditions on site are appropriate and stable
    - Project will be designed to appropriate standards for natural hazards

4. ***Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans***

    - Existing industrially-zoned sites within urban areas eliminated due to constrained lands, air quality concerns or incompatible adjacent land uses
    - Waena site is not affected by constrained lands, air quality concerns, or incompatible adjacent land uses
    - Waena site is approximately 3 miles from nearest urbanized area
    - Site does not significantly diminish the available supply of land used for agricultural activities
    - Project will not impact adjacent agricultural uses
    - Site will not impact areas designated for future urban use

Summary of Project's Relationship With Urban District Criteria

5. ***It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans.***

    - Site is near other compatible land uses; the Ameron Quarry and Maui County Landfill, which have received use permits from the LUC
    - Site is compatible with adjacent agricultural uses
    - Sites within areas indicated for urban growth would represent incompatible land uses

7. ***It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.***

    - The project will not require extension of existing County or State infrastructure to the site
    - The project will not have a direct impact requiring the expenditure of public funds for infrastructure
    - The project will not require an expansion of police or fire services
    - Uses surrounding the project other than agriculture must receive LUC and County approvals

8. ***It may include lands with a general slope of twenty percent or more if.....***

    - The project site does not contain slopes of 20 percent or more

Summary of Project's Relationship With Decision-Making Criteria

1. ***The extent to which the proposed reclassification conforms to the goals, objectives, and policies of the Hawaii State Plan and relates to the applicable priority guidelines of the Hawaii State Plan and the adopted functional plans***

   - Complies with State Plan guidelines for provision of dependable, efficient, and economical energy systems
   - Development over long period allows for maximum flexibility to adopt to new technologies, resources
   - MECO actively encourages and develops energy conservation programs
   - MECO actively supports education and research programs to further develop alternative fuels and technologies

2. ***The extent to which the proposed reclassification conforms to the applicable district standards.***

   - Project is an appropriate use within the Urban District
   - Project conforms with Urban District standards and is compatible with adjacent land uses

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STATE OF HAWAII
LAND USE COMMISSION

Summary of Project's Relationship With Decision-Making Criteria

3. The impact of the proposed reclassification on the following areas of state concern

A. Preservation or maintenance of important natural systems or habitats

- Surveys discovered no endangered species or critical habitats
- Project will have no adverse impact on biological resources

B. Maintenance of valued cultural, historical, or natural resources

- Surveys discovered no cultural or historic resources at the project site or along transmission line corridors
- State Historic Preservation Division has concurred that the project will have "no effect" on cultural or historic resources

Summary of Project's Relationship With Decision-Making Criteria

C. Maintenance of other natural resources relevant to Hawaii's economy, including, but not limited to agricultural resources

- Project will have no impact on Haleakala National Park
- Project is not near tourist areas
- Project will not impact shoreline or marine resources
- Site does not significantly diminish the available supply of land used for agricultural activities
- Project will not impact adjacent agricultural uses
- Project support further expansion and diversification of agriculture

D. Commitment of state funds and resources

- Project does not require commitment of state funds or resources

E. Provision for employment opportunities and economic development

- Project will support continued economic expansion

F. Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups

- Project will support development of affordable housing programs

Summary of Project's Relationship With Decision-Making Criteria

4. ***In establishing the boundaries of the districts in each county, the commission shall give consideration to the general plan of the county in which the land is located.***

   - No vacant lands designated "Heavy Industrial" exist in any of the Community Plans
   - Site selection eliminated lands within urban areas due to air quality concerns and incompatible land uses
   - MECO has requested appropriate changes to Community Plan and Zoning
   - County of Maui supports reclassification to Urban District

5. ***The representations and commitments made by the petitioner in securing a boundary change, including a finding that the petitioner has the necessary economic ability to carry out the representations and commitments related to the proposed use or development***

   - Maui Electric Company, Limited is a subsidiary of a publicly traded company with access to sufficient economic resources to complete the project

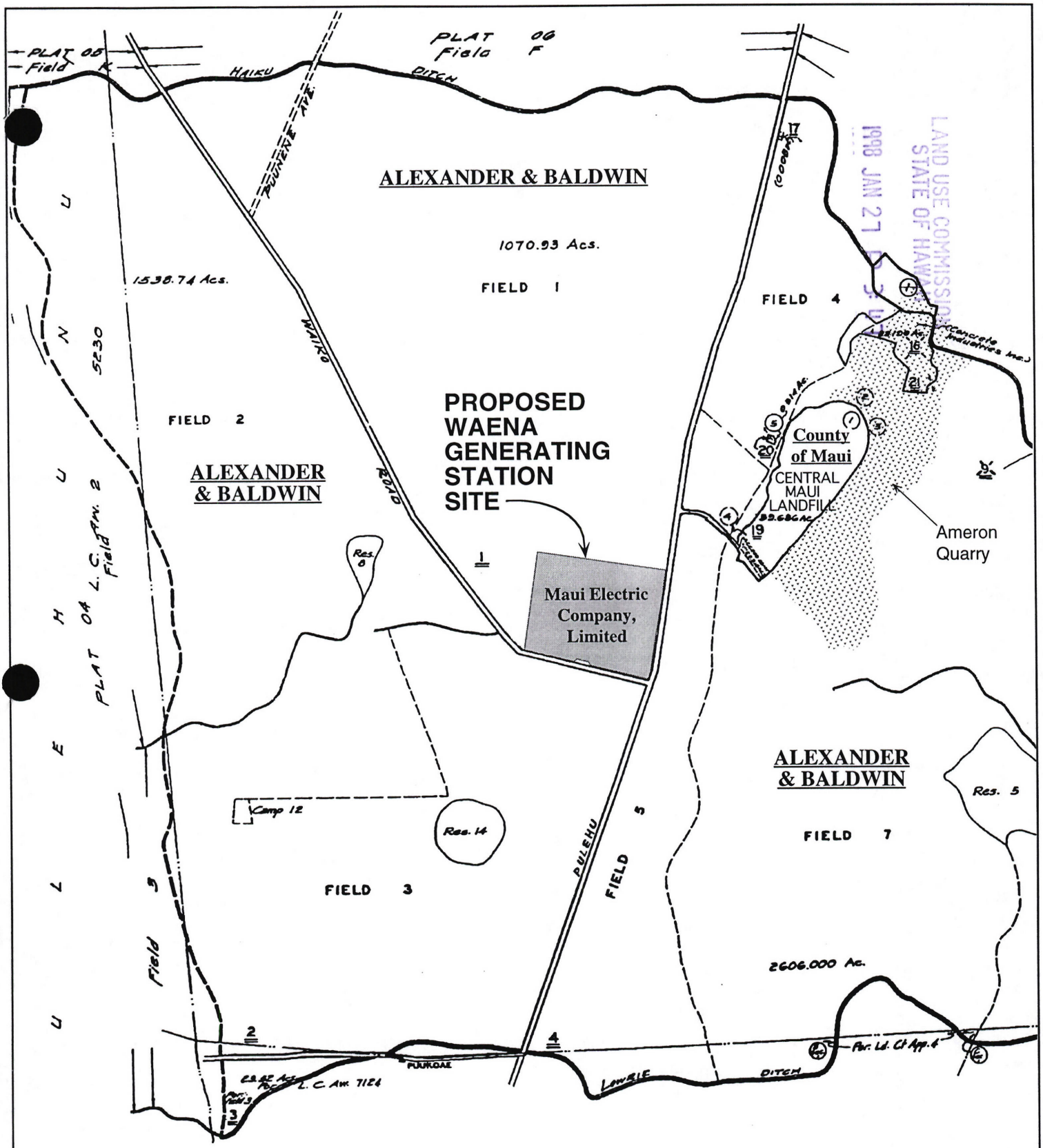
Summary of Project's Relationship With Decision-Making Criteria

6. ***Land in intensive agricultural use for two years prior to date of filing of a petition or lands within a high capacity for intensive agricultural use shall not be taken out of the agricultural district unless the commission finds either that the action:***

   A. Will not substantially impair actual or potential agricultural production in the vicinity of the subject property or in the county or State; or

   B. Is reasonably necessary for urban growth.

- Project site (65.7 acres) represents only 0.02 percent of Maui County's total farmland; 0.004 percent of State farmland
- Over 1,300 acres of additional agricultural lands are planned for Maui County
- Project use is compatible with adjacent agricultural uses and will not impair these uses
- Existing agricultural uses will not impact project use
- Project represents a public use, necessary to provide for reliable and efficient energy for urban growth
- State of Hawaii Department of Agriculture does not object to the petitioners request



	Final Environmental Impact Statement *Proposed Waena Generating Station* Maui Electric Company, Limited	FIGURE 3-2

SURROUNDING LAND OWNERSHIP

Source: Tax Map Key 3-8-03: portion of 01

NORTH 0 2000 4000 FEET

CH2M HILL

EXHIBIT C-110

Medusky&Co., Inc.
REAL ESTATE CONSULTANTS
311 HAWAII BUILDING • 745 FORT STREET • HONOLULU, HAWAII 96813-3803
PHONE (808) 531-2765 • FAX (808) 599-3736

Jan R. Medusky, MAI, CRE
W. Nicholas Captain
Serge M. Krivatsy
Edward W. Becker

January 26, 1998

LAND USE COMMISSION
STATE OF HAWAII
1998 JAN 27 P 3:47

B. Martin Luna, Esq.
Carlsmith Ball Wichman Case & Ichiki
One Main Plaza, Suite 400
Wailuku, Maui, Hawaii 96793-2225

Dear Mr. Luna:

Subject: Consulting Report Regarding Effect on Property Values of Proposed Waena Generating Station, Wailuku and Makawao Districts, Maui, Hawaii

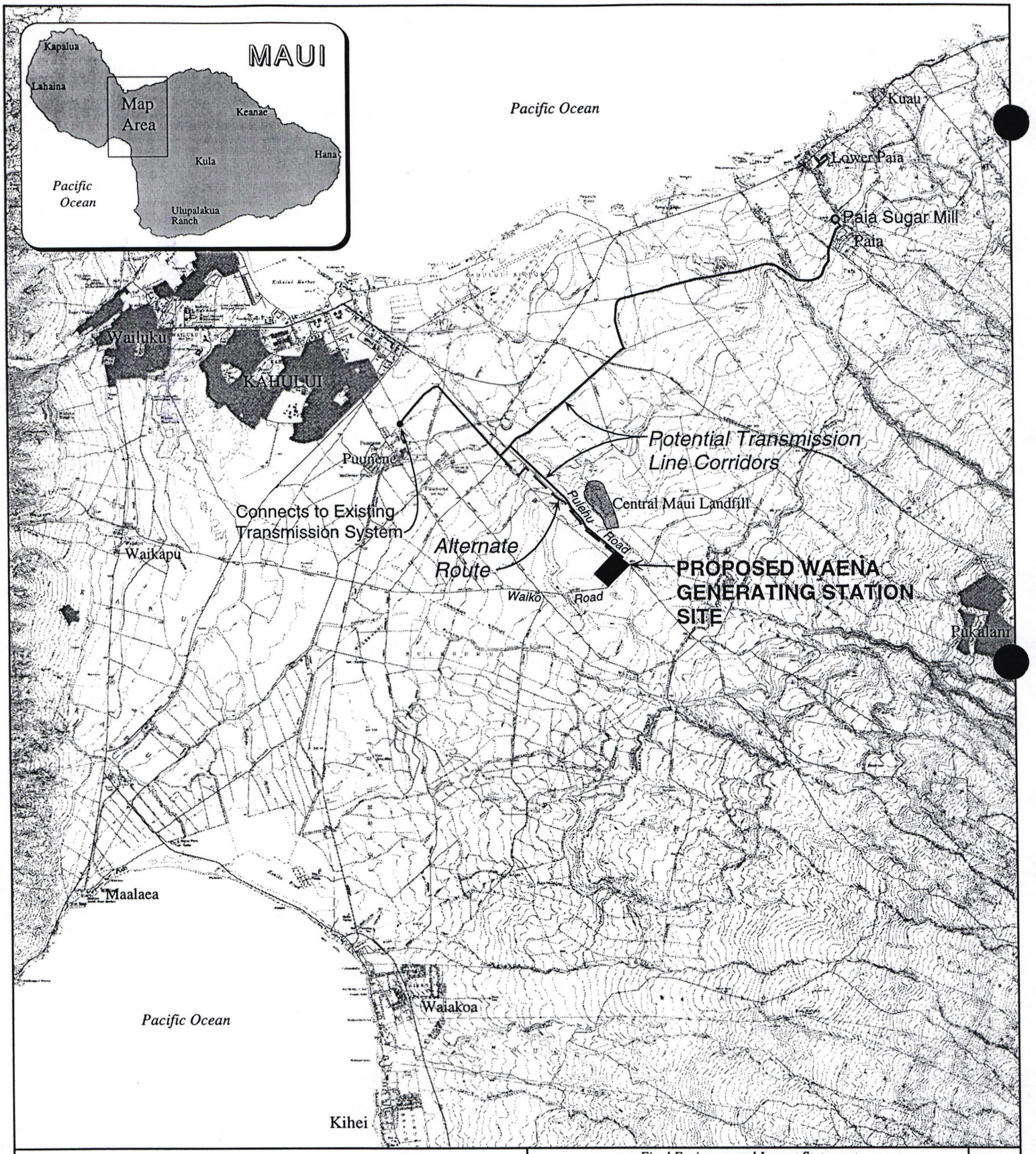
In response to your request, we have completed this Consulting Report regarding the effect on property values of the proposed Waena Generating Station to be located at Wailuku and Makawao Districts, Island of Maui, State of Hawaii. Maui Electric Company, Ltd. (MECO) proposes to design, construct and operate a 232-megawatt (MW) electrical generating station on 65.7 acres of land located along Pulehu and Waiko Roads in central Maui. Related transmission lines and other facilities are also proposed. A Final Environmental Impact Statement (November 1997) has been completed regarding the project and submitted to the Maui County Department of Planning. MECO has submitted an application for a District Boundary Amendment to the Land Use Commission in order to obtain reclassification of the property from Agriculture to Urban. A hearing is scheduled before the Land Use Commission on February 26 and 27, 1998. In addition, MECO has submitted to Maui County separate applications for a Community Plan amendment and a rezoning of the site. On behalf of MECO, you have requested that we complete this Consulting Report regarding the effect of the proposed Waena Generating Station on the market value of property in the vicinity of the project.

ASSIGNMENT

Our assignment has been to complete a Consulting Report analyzing the effect of the proposed Waena Generating Station on the market value of property in the project's vicinity. We understand that our research, analyses and conclusions may be used in the process to obtain certain permits and approvals in order to construct the Waena Generating Station. This Consulting Report is subject to the Limiting Conditions and Assumptions included as Exhibit 1. The effective date of this report is January 26, 1998.

DESCRIPTION OF PROPOSED WAENA GENERATING STATION

MECO proposes to design, construct and operate a 232-megawatt (MW) electrical generating station on 65.7 acres of land located at Pulehu and Waiko Roads in central Maui. Related 69-kilovolt (kV) transmission lines from the site to substations at the Paia Sugar Mill and Puunene Sugar Mill are also planned by MECO. Distribution lines (12 kV) may also lead from the proposed generating station to Puunene. In addition, MECO may relocate its existing transmission and distribution base from its location in Kahului to the new facility. Useable portions of the site may be available for future planned expansion or may be available on an interim or long-term basis for energy-related activities until needed by MECO.



Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 3-1

PROPOSED WAENA GENERATING STATION SITE AND POTENTIAL TRANSMISSION LINE CORRIDORS

NORTH

0 1 2 3 4 MILES

Source: Maui Electric Company, Limited

CH2M HILL

This facility is planned for 232-MW of power generation capacity to be constructed in four phases. The initial phase of the plan will develop a 58-MW generating capacity, consisting of two 20-MW combustion turbines (CTs), two heat-recovery steam generators (HRSGs), and an 18-MW steam turbine generator. The initial 20-MW CT is planned to be operational by the year 2004 with the first 58-MW units scheduled for completion by the year 2006.

Future phases will be implemented at later dates; the exact timing of the subsequent units will depend on future load growth, power availability through independent power purchase agreements, and unit retirements. Site preparation for the subsequent phases will be performed during the initial Phase I construction.

STUDY METHODOLOGY

During the course of this study, the consultant completed the following:

1. Reviewed an Appraisal Report previously completed by the consultant for MECO regarding the project site.

2. Reviewed the Final Environmental Impact Statement (November 1997) regarding Waena Generating Station.

3. Reinspected the project site and its environs.

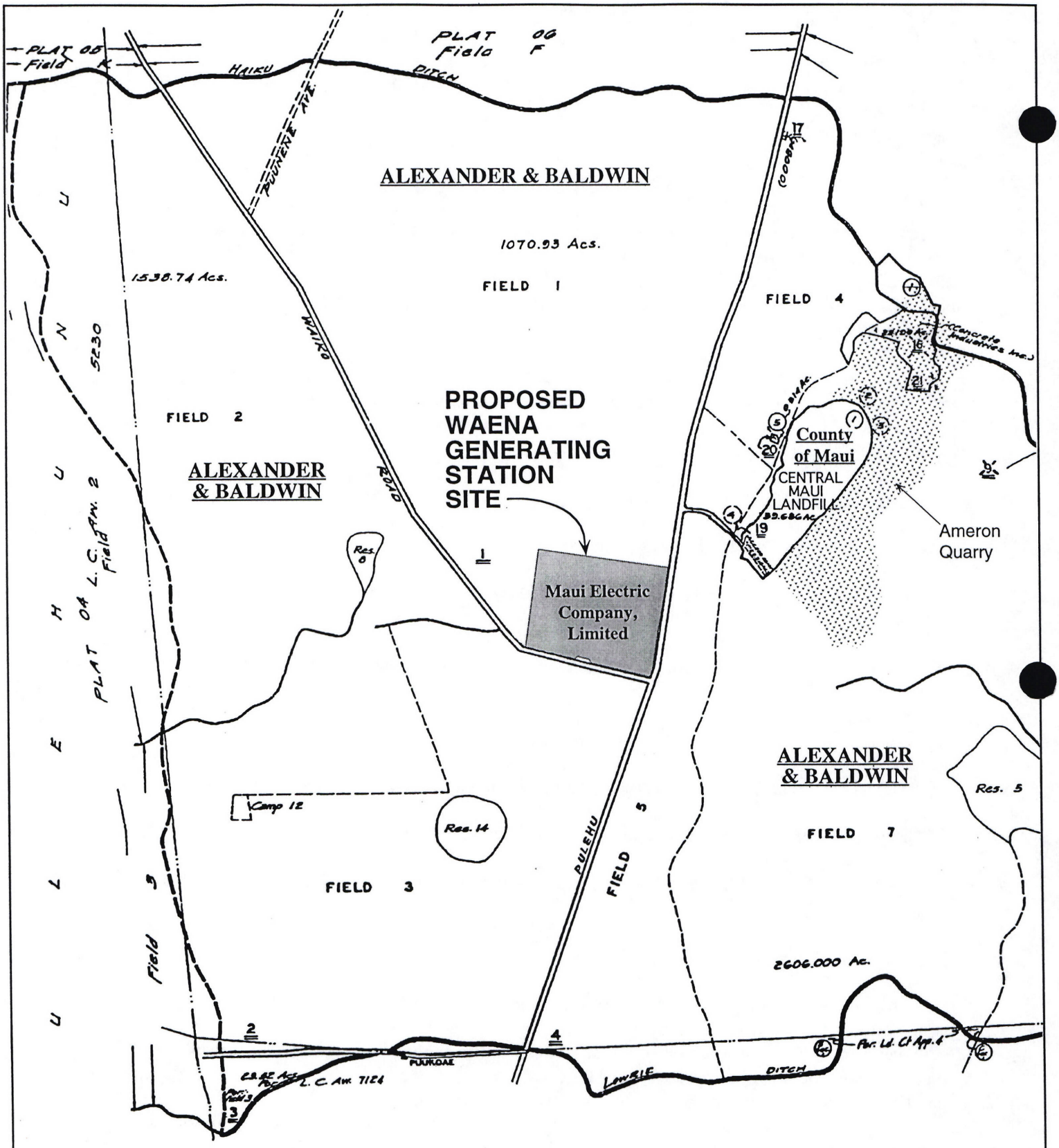
4. Interviewed representatives of Alexander and Baldwin, Inc. (owner of adjacent land).

5. Reviewed previous studies completed by the consultant pertinent to this study.

6. Analyzed effect of Waena Generating Station on property values and reached conclusions.

REVIEW OF PREVIOUS APPRAISAL REPORT

By report dated August 16, 1995, Medusky & Co., Inc. completed a Self-Contained Appraisal Report regarding three proposed central Maui power plant sites and associated easements for MECO. At that time, MECO was considering construction of a new power plant in central Maui and three sites (including the Waena Generating Station site) were proposed for consideration. Our assignment was to estimate the market value of the unencumbered fee simple interest in the three proposed sites and the value of the associated easements. The purpose of the appraisal was to provide the client with factual real property information and real estate market data, in addition to providing informed market value conclusions upon which corporate decisions regarding potential acquisition of one of the sites and associated easements may be based. During the conduct of that appraisal report, the consultant studied the subject property, its environs and land values in the area. That appraisal report has provided a basis for understanding property values in the vicinity of the project site.



Final Environmental Impact Statement
Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE 3-2

SURROUNDING LAND OWNERSHIP

Source: Tax Map Key 3-8-03: portion of 01

NORTH

0 2000 4000 FEET

CH2M HILL

REVIEW OF FINAL ENVIRONMENTAL IMPACT STATEMENT

The consultant reviewed the Final Environmental Impact Statement, Maui Electric Company, Ltd's. Waena Generating Station (November 1997). The consultant has reviewed this study focusing on those sections that would most likely impact property values including noise, visual and air quality factors. That report indicates that action will be taken to mitigate the negative effects associated with the project.

REINSPECTED PROJECT SITE AND ENVIRONS

During the course of the August 1995 appraisal assignment, the consultant inspected the subject property on various occasions. For purposes of this Consulting Report, the subject property and environs were recently reinspected. No significant changes were noted between the date of the appraisal report and the most recent reinspection.

The project site is located in central Maui along Pulehu Road and adjacent to Waiko Road. Kahului is located approximately 3.5± miles to the northwest and the communities of Pukalani and Makawao of Upcountry Maui are located approximately 4± and 6± miles to the southeast. Puunene, a small plantation town that is the center of operations for Hawaiian Commercial and Sugar Company (HC&S), is located approximately 2.5± to the northwest of the subject. Kihei is located approximately 5± miles to the southwest. The main thoroughfare in the vicinity is Pulehu Road, bordering the subject to the northeast. Pulehu Road provides for two lanes of traffic flowing generally in the northwesterly/southeasterly directions between Kahului/Wailuku and parts of Upcountry Maui. Haleakala Highway is approximately 2.5± miles north of the subject and Mokulele Highway is approximately 4.0± miles west. Land in the vicinity of the project is generally used for agricultural purposes and is planted with sugarcane. A landfill operated by the County of Maui is located just off Pulehu Road a short distance north of the subject property. Adjacent to the landfill is a quarry operated by Ameron.

The general character of the immediate vicinity of the subject property is agriculture with some nearby industrial uses including the landfill and quarry operation. Further outlying industrial uses including Paia Sugar Mill and Puunene Sugar Mill. The closest residential development is located approximately 2.5± miles northwest at Puunene, 3.5± miles further northwest at Kahului and 4± miles southeast at Pukalani.

INTERVIEWS WITH REPRESENTATIVES OF ALEXANDER & BALDWIN, INC.

Alexander & Baldwin, Inc., through its subsidiary A&B-Hawaii, Inc., previously owned the subject project site before it was sold to MECO. Alexander & Baldwin, Inc. owns vast agricultural landholdings that abut the subject property and are used for primarily sugarcane production. The consultant interviewed Stan Kuriyama, attorney with Alexander & Baldwin, Inc., regarding the proposed power plant facility and the effect of the power plant on the value of adjacent lands. According to Mr. Kuriyama, the project will not have a negative effect on the market value of adjacent and nearby lands owned by A&B-Hawaii, Inc. Given the location of the site, surrounded by sugarcane lands, it may effect the sugarcane operations of HC&S. According to Randall Moore, Manager, Land and Project Engineering Department of HC&S, the Waena project will effect the operations of HC&S. Mr. Moore was interviewed when we completed our August 1995 appraisal report and again for purposes of this report. Aerial application of ripeners will be hindered

as the airplane that applies the ripener prior to harvesting will require a setback of 40 to 120 feet wide. Drip irrigation systems currently in place will have to be relocated. The utility line easements may impact the cost of HC&S field operations in the area under and near the lines. These factors were taken into consideration when we completed our August 1995 appraisal and were included in our market value estimate and the compensation paid to the landowner for the project site, including easements. Mr. Moore further indicated that HC&S would work closely with MECO to mitigate smoke and dust impacts on the project from agricultural operations. We also reviewed correspondence from HC&S to MECO dated September 22, 1997, included in the Final Environmental Impact Statement regarding the project. HC&S raised concerns regarding water resources and surface water. Review of the response from MECO indicates that these issues will be adequately addressed so as not to effect property values.

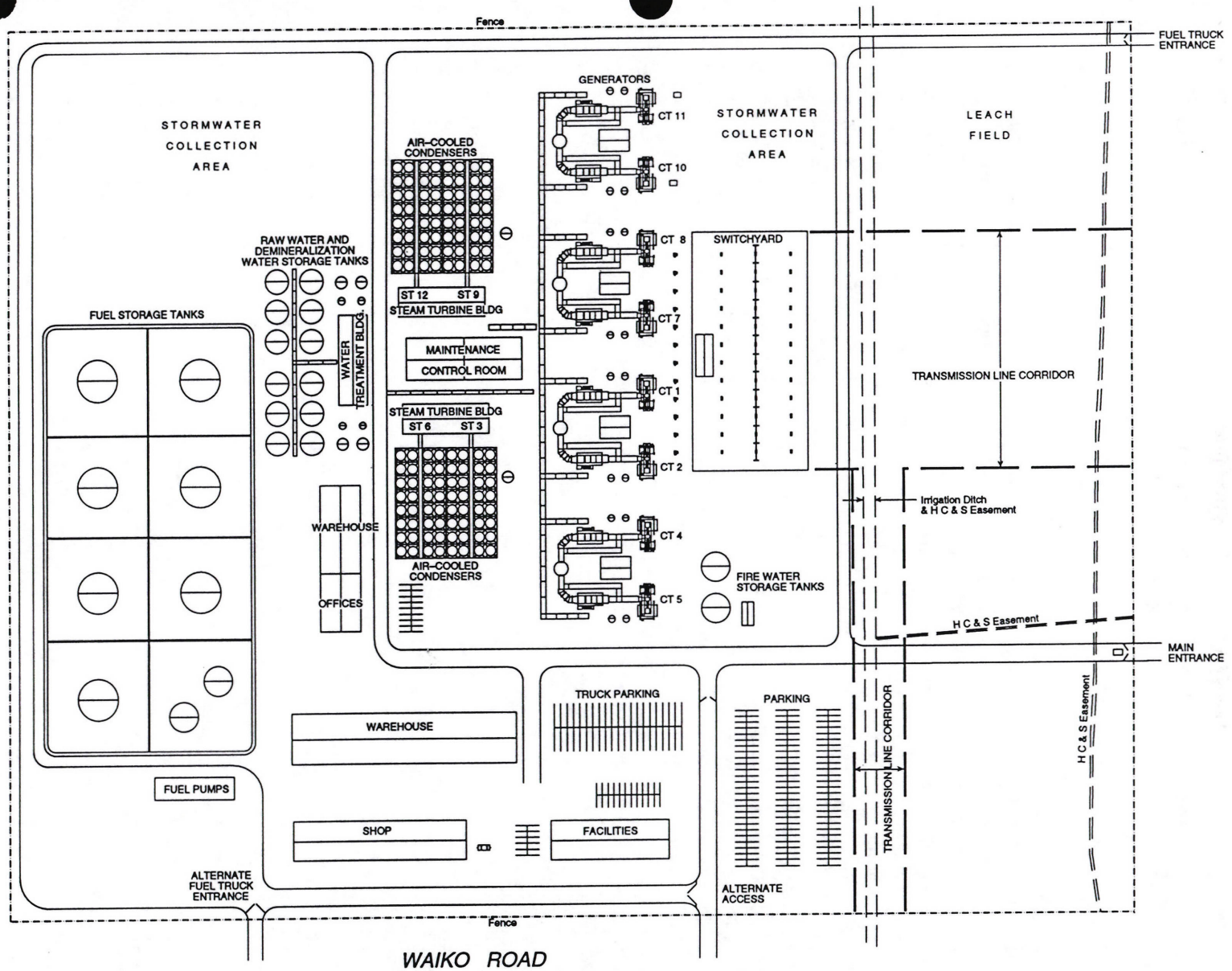
REVIEW OF PREVIOUS PERTINENT STUDIES COMPLETED BY THE CONSULTANT

Counseling Letter regarding Maalaea Power Plant Facility - By Counseling Letter dated December 2, 1992, Cowell & Co., Inc. (name subsequently changed to Medusky & Co., Inc.) completed research and analysis regarding the existing Maalaea Power Plant facility (Maui) to determine the effect of the power plant on the value of nearby properties. That report was completed for CH2MHill regarding the processing of approvals for the Puu Anahulu Power Plant facility on the Island of Hawaii. In completing that study, we researched and analyzed sales that occurred involving properties in close proximity to the Maalaea Power Plant facility. We interviewed buyers, realtors and developers. We also interviewed owners of adjacent land. After review of the data collected, we reached general conclusions regarding the effect of the Maalaea Power Plant facility on the value of nearby properties. This study indicated that the existing Maalaea Power Plant facility had no significant effect on value of nearby properties except for potential adverse effects on the master planned residential project proposed for development over the next few decades on contiguous land owned by Alexander & Baldwin, Inc. It is noted that Alexander & Baldwin, Inc. also owns land adjacent to the proposed Waena project, however, no residential development is planned for land adjacent to this site.

Counseling Study Regarding Proposed Keahole Generating Station Unit Addition - By report dated May 27, 1993, Cowell & Co., Inc. (name subsequently changed to Medusky & Co., Inc.) completed a Counseling Study regarding the anticipated effects of the proposed Keahole Generating Station Unit Addition (Big Island of Hawaii) on the market value of Keahole Agricultural Park lots adjacent to the project site. That report concluded that construction of just about any type of large industrial improvements typically has an adverse effect on residential development in close proximity. However, there did not appear to be any negative effect on agricultural property values. It is noted that the closest residential development to the Waena project site is Puunene located approximately 2.5± miles from the subject.

EFFECT OF WAENA GENERATING STATION ON PROPERTY VALUES

The proposed Waena Generating Station site is located among agricultural lands, primarily planted with sugarcane. There is no indication that the proposed Waena Generating Station would adversely effect the value of these agricultural lands. Similarly, there is no indication that the project would adversely effect the value of the nearby county landfill or Ameron Quarry sites. The closest residential development to the subject property is approximately 2.5± miles to the northwest. There is no indication that development of the subject property, as proposed, would adversely effect property values in this or any other residential area.



Note: DTCC = Dual-Train Combined-Cycle Combustion Turbine
Source: Maui Electric Company, Limited, 1997

Proposed Waena Generating Station
Maui Electric Company, Limited

FIGURE

CONCEPTUAL SITE LAYOUT

NORTH

NOT TO SCALE

CH2M HILL

In conclusion, the consultant found no evidence to indicate that there will be an adverse or positive impact on property values due to the proposed Waena Generating Station facility.

CERTIFICATION

The undersigned hereby certify that, to the best of our knowledge and belief, the statements of fact contained in this report are true and correct; the reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, unbiased professional analyses, opinions and conclusions; we have no present or prospective, direct or indirect, interest in the property that is the subject of this report, and we have no personal interest or bias with respect to the parties involved; our compensation is not contingent on an action or event resulting from the analyses, opinions, or conclusions in or use of, this report; our analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and the Standards of Professional Appraisal Practice of the Appraisal Institute and the Uniform Standards of Professional Appraisal Practice; the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives. As of the date of this report, Jan R. Medusky, MAI, CRE has completed the requirements of the continuing education program of the Appraisal Institute. No one provided assistance to the consultant in completing this report.

Thank you for selecting Medusky & Co., Inc. for this consultation assignment.

Sincerely,

MEDUSKY & CO., INC.

JR Medusky

Jan R. Medusky, MAI, CRE
President

Hawaii State Certified General Appraiser
CGA-17
Certificate Expires 12/31/99

JRM:jbf

STANDARD LIMITING CONDITIONS AND ASSUMPTIONS

1. The conclusions and opinions are based upon the purchasing power of the dollar and economic conditions as of the effective date of analysis. This study expresses the opinion of the appraisers as of January 26, 1998, with an effective date of January 26, 1998, and in no way was contingent upon the reporting of specified conclusions.

2. Relied Upon Information - Information provided by informed local sources such as governmental agencies, financial institutions, Realtors, buyers, sellers, property owners and others, was weighed in the light in which it was supplied and checked by secondary means when feasible. It is believed that the information obtained from these and other sources is true and correct.

3. Maps - Any maps or plans reproduced and included in this report are intended only for the purpose of showing spatial relationships. They are not necessarily measured surveys or measured maps and we are not responsible for cartographic or surveying errors.

4. Land Area - Land areas contained herein were based upon data provided by the client and are assumed to be accurate for purposes of this study.

5. Possession of this report, or a copy thereof, does not carry with it the right of publication, and the report may not be used by any person or organization except the client without the previous written consent of the appraisers, and then only in its entirety.

6. The report does not imply the right of court testimony on the part of the appraisers, without additional arrangements.

7. Disclosure of the contents of this report is governed by the By-Laws and Regulations of the Appraisal Institute. Neither all nor any part of the contents of this report (especially any conclusions, the identity of the appraisers or the firm with which they are connected, or any reference to the Appraisal Institute or to the MAI designation) shall be disseminated to the public through advertising media, public relations media, news media, sales media or any other public means of communication, without the prior consent and approval of the appraisers.

8. Disclosure to Institute - The contents of this report are subject to the review, upon request of the Appraisal Institute, by duly constituted committees of the Institute or individual members thereof when such committees or members are acting within the scope of their authority under the By-Laws and Regulations of the Institute. This requirement was adopted by the Institute to facilitate the Institute's efforts to maintain the high standards of professional practice and ethical conduct that have been the hallmark of the Institute since its creation.

SPECIAL LIMITING CONDITION AND ASSUMPTION

9. Final Environmental Impact Statement (FEIS) - The consultant has reviewed the FEIS (November 1997) for the Waena Generating Station project and has relied on that study in completing this Consulting Report. This report assumes that the FEIS is reasonably accurate.

QUALIFICATIONS OF JAN R. MEDUSKY, MAI, CRE

President, Medusky & Co., Inc., Real Estate Consultants
311 Hawaii Building, 745 Fort Street, Honolulu, Hawaii

President (1990-1994), Cowell & Co., Inc.

Licensed Real Estate Broker, State of Hawaii
(License No. RB-16915)

Member, Appraisal Institute (MAI), Hawaii Chapter
(Certificate No. 7313)

Past President, American Institute of Real Estate Appraisers (MAI)
Honolulu Chapter No. 15

Member, The Counselors of Real Estate (CRE)
(Certificate No. 2560)

Hawaii State Certified General Appraiser (CGA-17)

Territory of Guam Certified General Appraiser
(License No. CA-92-006)

EDUCATION

Culver Military Academy, Culver, Indiana. Graduated with honors, 1964-1968.

Bachelor of Science Degree, U.S. Military Academy, West Point, New York, 1968-1972.

University of Hawaii, Graduate courses in Business and Economics, 1975-1976.

Master of Business Administration Degree, Chaminade University of Honolulu, 1980.

SPECIAL COURSES

Graduate Real Estate Institute, Courses I and II, Honolulu, 1979.

Stapleton School of Real Estate, Sales Licensing Course, Honolulu, 1979.

Credit for the various American Institute of Real Estate Appraisal Courses.

Instructor for various seminars/classes regarding real estate valuation.

MILITARY

Captain, U.S. Army, 1972-1978. Held various positions including Commander, Air Defense Artillery Battery and Special Staff Officer, 25th Infantry Division General Staff, Schofield Barracks, Hawaii.

EXPERIENCE

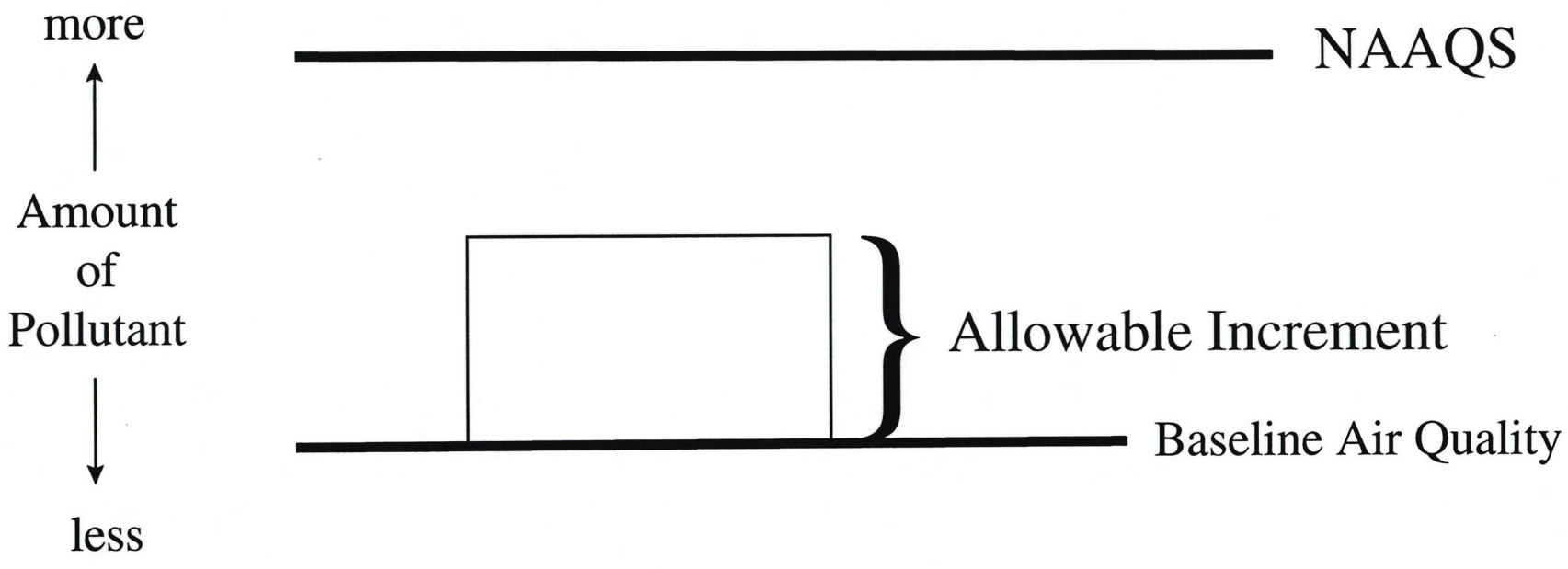
Engaged in real estate consultation and valuation throughout the Pacific Basin since 1979. Geographical areas covered include the four counties of the State of Hawaii, the Territory of Guam, the Federated States of Micronesia, Republic of the Marshall Islands, Republic of Palau, Saipan, American Samoa and selected locations on the West Coast of the United States Mainland.

Specializes in valuation for litigation purposes, tax appeals, leased fee conversions, arbitrations and rent renegotiations.

"PSD Increment"

- Only an incremental amount of degradation allowed for particulate matter, nitrogen dioxide, and sulfur dioxide
- Result: air quality in very clean areas will remain well within the AAQS

1998 FEB 10 P 1:46
LAND USE COMMISSION
STATE OF HAWAII



LAND USE COMMISSION
STATE OF HAWAII
1996 FEB 10 P 1:46

September 28, 1995

RESPONSE TO COMMENTS FROM THE SEPTEMBER 12, 1994 AND APRIL 10, 1995 PUBLIC HEARINGS ON THE DRAFT PERMIT FOR HAWAI`I ELECTRIC LIGHT COMPANY, INC.

1996 FEB 10 P 1:46
LAND USE COMMISSION
STATE OF HAWAII

1. BACKGROUND

Pursuant to Hawai`i Administrative Rules, Chapter 11.60-1 and 40 CFR Part 52.21, a public hearing was held on September 12, 1994 at Konawaena High School, Kealakekua, island of Hawai`i, to receive oral and written testimonies on the draft Prevention of Significant Deterioration (PSD)/Covered Source Permit (CSP). Approval and issuance of the integrated air permit would allow Hawai`i Electric Light Company, Inc. (hereinafter referred to as "HELCO"), to construct two 20 megawatt (MW) combustion turbine and heat recovery steam generator (HRSG) trains (i.e. units CT-4 and CT-5) that are coupled to a single 16 MW steam turbine generator (STG). The air permit is only one of several permits and approvals needed by HELCO to construct the facility at the Keahole Generating Station.

Prior to receiving oral and written testimonies, the State of Hawai`i Department of Health (hereinafter referred to as the "Department") informed the attendees at the beginning of the public hearing that it had received a PSD/CSP application for the CT-2 unit, also at the Keahole Generating Station. Cursory review of the CT-2 application indicated that the results from the ambient air quality analyses were relevant and should be made part of the CT-4/CT-5 public record. Consequently, the Department notified the attendees that: (a) the September 12, 1994 public hearing would continue, and testimony would be received based on the information in the current public record, and (b) a second public hearing will be held at a later date to receive testimony on the new information as well as all information in the public record relating to the CT-4/CT-5 air permit.

The first public comment period and public hearing received testimonies from 33 commenters. Of these, 15 written testimonies were admitted during the public comment period, while 29 oral testimonies were presented during the public hearing.

The Department noticed the second public hearing for April 10, 1995 to receive oral and written testimonies on a revised draft CT-4/CT-5 PSD/Covered Source Permit. Testimonies were received on all the information in the public record including the ambient air quality analyses contained in the CT-2 PSD/CSP application. The public hearing was held at Kealakehe Elementary School, Kailua-Kona, island of Hawai`i.

The second public comment period and public hearing received testimonies from 81 commenters. During the 30-day public comment period, 60 written testimonies were admitted, while during the public hearing, 38 oral testimonies were presented.

Finally, the Department received numerous testimonies on non air quality permit issues during the two 30-day public comment periods and during both public hearings. Since the objective of the public hearing and public comment periods were to receive testimony on the draft air permit, testimonies on other issues were not addressed. All testimonies received were entered into the record.

Section 2 details the changes made to the draft air permit and ambient air quality impact report based on the comments received. Section 3 presents the public testimonies and the Department response. All public testimonies were reviewed, interpreted, consolidated and categorized. The testimonies were categorized as follows: (1) air quality engineering, (2) meteorology, (3) air quality impact, (4) health, and (5) administrative.

D. Health Related Comments

1. There were numerous comments related to the emissions, ambient air quality impacts, and health effects of VOG. The comments included the following:

(a) Two commenters asked for a detailed, scientific study that would examine the synergistic effects of vog and power plant emissions.

(b) Several commenters requested a study be conducted based on power plant and vog emissions. The studies included a health risk assessment, an epidemiological study, and an ecological risk assessment.

(c) Numerous commenters objected to the issuance of an air permit because of a) health concerns, b) existing poor air quality, and c) minimal air dispersion in the Kona area.

(d) Some commenters attributed existing health problems in the area to the vog.

(e) A commenter asked the Department to address any individual organic compounds which, in parts per billion, can become extremely dangerous as individual agents.

(f) Several commenters pointed out that Kona has the worst air quality and the most cases of respiratory diseases in the state. They discussed synergistic effects, and insisted that HELCO's expansion would pose a threat to their health.

Response:

The Department of Health acknowledges the concerns raised on the existing VOG conditions in the Kona area. The Department agrees that both the volcanic emissions and the health impacts of VOG need to be better defined and addressed. The Department, as a first step to address these issues, has recently hosted a VOG symposium and an informational meeting with presentations from local and national experts in the field. The purpose of the symposium and informational meeting was to establish a foundation by acquiring a better understanding of current issues and available information, and to identify the needs and where future resources should be focused to address the concerns related to VOG. The Department will continue its efforts in better defining the VOG emissions and health impacts, and developing accommodating solutions to mitigate these problems and concerns.

In regards to the proposed project and its contributions to the regional VOG conditions, these contributions are minimal and will not significantly affect existing VOG conditions. An assessment was submitted by HELCO

which indicated that the estimated maximum predicted increase in VOG due to the proposed project is approximately 1.7 percent (0.08 micrograms/m^3) as measured as SO_4 concentrations. This maximum impact occurred over the ocean with all other impacts being less. The maximum predicted increase in VOG over land is estimated to be generally less than one percent. As such, the Department has determined that the proposed project will not result in any significant impact to the existing VOG conditions.

2. One commenter pointed out that the new proposed HELCO facility will produce 22.5 tons of pollution in one day, which is as much pollution, as defined by the Department, as an air toxic source in one year.

Response:

It was not clear how the 22.5 tons per day of pollution was derived. Based on the Covered Source Permit Application, the total amount of air toxic emissions (hazardous air pollutants) from the proposed project is estimated to be 9.7 tons per year. Pursuant to Hawaii Administrative Rules, Chapter 11-60.1 and 40 CFR 70, a major source of hazardous air pollutants is defined as a source that emits or has the potential to emit more than 10 tons per year of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants. As such, the proposed project is not considered a major source of hazardous air pollutants.

Table ES-1
Summary of Potential Impacts

RESOURCE	IMPACT
Air Quality	
Soils and Geology	
Natural Hazards	
Groundwater Resources	
Surface Water Resources	
Biological Resources, Flora	
Biological Resources, Fauna	
Archaeological and Cultural Resources	
Land Use and Ownership	
Prime Agricultural Land	
Population and Employment	
Visual Resources	
Noise	
Infrastructure, Traffic	
Infrastructure, Electrical System	
Infrastructure, Other	
Public Safety and Community Services	

Legend:

- Beneficial Impact (significant)
- Beneficial Impact (not significant)
- No Impact
- Adverse Impact (not significant)
- Adverse Impact (significant)

LAND USE COMMISSION
STATE OF HAWAII
1988 FEB 10 P 1:46

RECORD COPY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Application of MAUI ELECTRIC COMPANY, LIMITED For Approval to Commit Funds in Excess of $500,000 for Item L3-3064, Acquisition of Central Maui Power Plant Site and 69 KV Transmission Line Easements and for Approval to Exercise Power of Eminent Domain to Acquire Central Maui Power Plant Site and 69 KV Easements.	DOCKET NO. 96-0039

LAND USE COMMISSION
STATE OF HAWAII
1996 FEB 11 P 12:47

DECISION AND ORDER NO. 14674

Filed May 10, 1996

At 2:00 o'clock P.M.

Leatrice G. Asahi

Chief Clerk of the Commission

ATTEST: A True Copy
LEATRICE G. ASAHI
Clerk, Public Utilities
Commission, State of Hawaii.

Leatrice G. Asahi

C-115

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Application of)) MAUI ELECTRIC COMPANY, LIMITED)) For Approval to Commit Funds in) Excess of $500,000 for Item) L3-3064, Acquisition of Central) Maui Power Plant Site and 69 KV) Transmission Line Easements and for) Approval to Exercise Power of) Eminent Domain to Acquire Central) Maui Power Plant Site and 69 KV) Easements.))	Docket No. 96-0039 Decision and Order No. 14674

DECISION AND ORDER

I.

By an application filed on February 9, 1996, MAUI ELECTRIC COMPANY, LIMITED (MECO) requests approval (1) to commit $2,068,133 to acquire a new central Maui power plant site and related 69 kilovolt (kV) transmission line perpetual easements; and (2) to exercise the power of eminent domain to acquire the land for the power plant site and related easements. MECO's request is made pursuant to Section 101-4, Hawaii Revised Statutes; Section 14 of Act 12, Session Laws of Hawaii, 1991; and paragraph 2.3.g.2 of General Order No. 7, Standards for Electric Utility Service in the State of Hawaii.

MECO served copies of the application on the Division of Consumer Advocacy, Department of Commerce and Consumer Affairs (Consumer Advocate). The Consumer Advocate has not responded to MECO's application.

II.

MECO proposes to acquire by condemnation and hold in fee simple approximately 67 acres of sugar cane land in central Maui for a new 232 megawatt (MW) generation facility to meet the future electric power needs of the island of Maui. The proposed site for the power plant is situated adjacent to the intersection of Pulehu and Waikapu Roads in the district of Wailuku.

Additionally, MECO proposes to acquire by condemnation from A&B-Hawaii, Inc. (ABHI) approximately 39.17 acres (6.47 miles) of 69 kV transmission line perpetual easements 3 to 8, which are needed to connect the proposed power plant to MECO's existing transmission system in Wailuku. Two overhead double circuit 69 kV transmission lines will be constructed at the power plant site, using easement 8 to connect the transmission lines with the existing Kanaha-Pukalani 69 kV and Maalaea-Kealahou 69 kV lines.

As additional generating units are installed, an additional double circuit overhead 69 kV line will be constructed in a northwesterly direction running parallel to Pulehu Road. Near the intersection of Pulehu Road and North Firebreak Road, the double circuit line will split into two single circuit 69 kV lines. One circuit will run to the Paia Mill and the other to the Puunene Mill. Easements 3 through 7 are needed for these lines.

III.

MECO requires a new power plant site for future generating facilities. The existing Kahului power plant is currently built to land capacity and has very limited space for additional generation. And the existing Maalaea power plant will

expanded to full land capacity after the completion of Maalaea units 17, 18, and 19. Replacing or repowering existing units at Kahului and Maalaea power plants is not feasible.

During the past four years, MECO and its consultants engaged in an exhaustive selection process to identify the best site for the proposed power plant. In 1994, Belt Collins Hawaii used information from previous studies to identify 10 candidate sites within the central Maui region for possible evaluation. Six of the 10 sites were determined to be viable and were evaluated for environmental factors. Three sites, located in the vicinity of Pulehu Road mauka of the Maui county landfill, were subsequently identified as the most preferred sites. In April 1995, Dames & Moore completed an environmental study of the three sites, and after considering environmental factors except air quality, concluded that the site proposed in this docket is the best site. In November 1995, Stone & Webster Engineering Corporation completed its MECO Generation Siting Study and also recommended the same site, after considering air quality, environmental, engineering, infrastructure, and cost factors. After considering such factors as (1) the concerns of the public, the landowners, and Maui county and other government agencies; (2) MECO's future generation needs and existing transmission system; (3) potential environmental and land use impacts; and (4) economic impacts on both MECO and its customers; and after extensive consultation with affected parties and county agencies, MECO adopted the recommendations of its consultants.

The estimated cost to acquire the 67-acre central Maui power plant site is $1,613,866, and the estimated cost to acquire

the ABHI easements is $217,555. The additional $236,712 includes legal fees and other costs incurred in acquiring title through condemnation.

The commission finds that the proposed acquisition of the 67-acre central Maui power plant site and related easements is reasonable and in the public interest. Accordingly, the commission concludes that MECO's application to commit $2,068,133 for the acquisition should be approved.

III.

MECO states that the proposed condemnation of the power plant site and related easements is necessary for the following reasons:

1. Because of an estimated five-year lead time necessary for MECO to meet projected service dates of new generating units, it is desirable to acquire the property by the end of 1996;

2. ABHI has agreed to the price and terms of sale provided the transaction closes by the end of 1996;

3. MECO and ABHI have agreed that condemnation would be the best means of closing the transaction; and

4. Acquisition of the power plant site under this schedule will prevent an escalation of the compensation for the site and easements, and provide MECO sufficient time to pursue and obtain on a timely basis all of the necessary land designations and government permits and approvals needed to start construction of the first phase of the proposed 232 MW electrical generating facility.

The commission finds that the proposed condemnation is necessary and in the public interest, and that MECO will use the property condemned and acquired for its operations as a public utility. The proposed power plant and easements will enable MECO to meet the future electrical power needs of the island of Maui through the generation and transmission of power for the public.

IV.

THE COMMISSION ORDERS:

1. MECO's request to commit $2,068,133 for the acquisition of a central Maui power plant site and related easements on the island of Maui is approved.

2. MECO may exercise the power of eminent domain to acquire the proposed central Maui power plant site and related easements.

3. MECO shall submit an accounting report within 60 days of the commercial operation of the project, with an explanation of any amount that deviates from the estimated project cost by 10 per cent or more.

4. Failure to submit the report as required by this order constitutes cause to limit the total project cost, for ratemaking purposes, to the original estimate submitted in this application.

DONE at Honolulu, Hawaii this 10th day of May, 1996.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By _____
Yukio Naito, Chairman

By _____
Dennis R. Yamada, Commissioner

By _____
John P. Spierling, Commissioner

APPROVED AS TO FORM:

_____
Lawrence K. Kamakawiwoole
Commission Counsel

96-0039.vn

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Decision and Order No. 14674 upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS
DIVISION OF CONSUMER ADVOCACY
P. O. Box 541
Honolulu, HI 96809

THOMAS J. JEZIERNY, PRESIDENT
MAUI ELECTRIC COMPANY, LTD.
P. O. BOX 398
Kahului, Maui, HI 96732

EDWARD Y. HIRATA, VICE PRESIDENT
REGULATORY AFFAIRS
HAWAIIAN ELECTRIC COMPANY, INC.
P. O. Box 2750
Honolulu, HI 96840-0001

Bertha F. Kurosawa
Chief Clerk

DATED: May 10, 1996

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

------ In the Matter of ------ MAUI ELECTRIC COMPANY, LIMITED Regarding Integrated Resource Planning.	DOCKET NO. 7258

LAND USE COMMISSION
STATE OF HAWAII
1998 FEB 11 P 2:49

DECISION AND ORDER NO. 14707

Filed May 29, 1996

At 11:45 o'clock A .M.

Bertha F. Kurosawa

Chief Clerk of the Commission

ATTEST: A True Copy
BERTHA F. KUROSAWA
Chief Clerk, Public Utilities
Commission, State of Hawaii.

Bertha F. Kurosawa

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

------ In the Matter of ------)	
)	
MAUI ELECTRIC COMPANY, LIMITED)	Docket No. 7258
)	
Regarding Integrated Resource)	Decision and Order No. 14707
Planning.)	
)	

DECISION AND ORDER

I.

DOCKET FILINGS

By Decision and Order No. 11523, filed on March 12, 1992, in Docket No. 6617, (the generic integrated resource planning docket), the commission (1) established a framework for integrated resource planning (framework), and (2) ordered MAUI ELECTRIC COMPANY, LIMITED (MECO), among other electric utilities, to develop an integrated resource plan (IRP) in accordance with the framework. By Order No. 11525, filed on March 13, 1992, the commission opened this docket to examine integrated resource planning by MECO. On May 22, 1992, the commission filed Decision and Order No. 11630, in Docket No. 6617, which amended the framework, and among other things, established November 1, 1993, as the submission date for MECO's IRP. The submission deadline was extended to December 15, 1993, by Order No. 12785, filed on October 28, 1993.

On May 1, 1992, the Department of Business, Economic Development & Tourism (DBEDT) filed a motion to intervene. By

Order No. 11624, filed on May 14, 1992, the commission granted DBEDT's motion.

On December 15, 1993, MECO filed its IRP[1] with the commission. On December 17, 1993, MECO published notice of its IRP filing in The Honolulu Advertiser and The Maui News.

On January 5, 1994, Waimana Enterprises, Inc. (Waimana) filed a motion to intervene in this docket. On January 14, 1994, MECO filed a memorandum opposing intervention by Waimana, and on January 21, 1994, Waimana filed a response to MECO's opposition. By Order No. 13119, filed on February 3, 1994, the commission granted Waimana's motion to intervene.

On January 18, 1994, the commission granted a motion filed by Gasco to extend time to file a motion to intervene. On January 26, 1994, Gasco filed its motion to intervene. The commission granted Gasco's motion to intervene by Order No. 13129, filed on February 14, 1994.

By Order No. 13119 and Order No. 13129, the commission directed the parties in this docket, i.e., MECO, the Division of Consumer Advocacy of the Department of Commerce and Consumer Affairs (Consumer Advocate),[2] DBEDT, Waimana, and Gasco to meet informally to formulate a stipulated prehearing order for submission to the commission by March 3, 1994. By Prehearing Order

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[1]MECO's IRP filing consisted of seven volumes: Summary Report (Volume 1), Integration Report (Volume 2), Integration Technical Reference Report (Volume 3), Forecast Planning Report (Volume 4), Demand-Side Management Report (Volume 5), Supply-Side Report (Volume 6), and Advisory Group Reference Materials (Volume 7).

[2]Section II.E.2 of the IRP framework made the Consumer Advocate a party to each utility's IRP docket.

No. 13171, filed on March 9, 1994, the commission established the issues, schedule of proceedings, and procedures for this docket.

MECO filed its direct testimonies on March 24, 1994. Following an initial round of discovery, DBEDT, the Consumer Advocate, and Gasco filed their direct testimonies on July 14, 1994. Waimana did not file any direct testimony.

By letter dated August 2, 1994, MECO modified its demand-side management (DSM) action plan, to update program costs and impacts. Subsequently, by letter dated August 15, 1994, MECO provided information regarding the possible impact of its May 24, 1994, sales and peak forecast.

MECO filed its rebuttal testimony on September 8, 1994. By letters filed on the same date, the Consumer Advocate, Gasco, and Waimana[3] informed the commission that they would not be filing rebuttal testimonies.

The evidentiary hearing was held on September 19 and 20, 1994. MECO, the Consumer Advocate, Gasco, and DBEDT filed opening briefs on November 14, 1994. Gasco filed a reply brief on December 19, 1994, and MECO, the Consumer Advocate, and DBEDT filed reply briefs on December 21, 1994.

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[3]By Order No. 13552, filed on September 16, 1994, the commission dismissed Waimana as a party in this proceeding, since the commission found that Waimana's decision not to file any testimony effectively negated Waimana's status as an intervenor in this docket.

II.

ISSUES

The major issue in this docket, as set forth in Prehearing Order No. 13171, is whether MECO's IRP and program implementation schedule comply with the commission's framework. Included in this issue are the following subissues:

1. Whether MECO's proposed IRP represents a reasonable course for meeting the energy needs of its customers.

2. Whether MECO's proposed IRP is in the public interest and consistent with the goals and objectives of integrated resource planning.

3. Whether MECO's proposed IRP identifies the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost.

4. Whether MECO's proposed IRP comports with State and county environmental, health, and safety laws, and formally adopted State and county plans.

5. Whether MECO's proposed IRP appropriately considers and analyzes the cost-effectiveness and benefits of all appropriate, available, and feasible supply-side and demand-side options.

6. Whether MECO's proposed IRP considers the plan's impacts upon the utility's consumers, the environment, culture, community lifestyles, the State's economy, and society.

7. Whether MECO's proposed IRP takes into consideration the utility's financial integrity, size, and physical capability.

8. Whether MECO's proposed integrated resource planning process provided an opportunity for participation by the public and governmental agencies in the development of its IRP.

9. Whether the proposed IRP provides for the recovery of all appropriate and reasonable IRP and implementation costs.

III.

THE SUBMISSIONS

A. Framework Requirements

Section II.A of the framework provides that "[t]he goal of integrated resource planning is the identification of the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost." The framework requires MECO to develop and submit a long-range, 20-year IRP to accomplish the above-stated goal of meeting the long term energy needs of its customers, and a medium-range, five-year program implementation schedule (action plan) setting forth a detailed year-to-year schedule of activities and programs for implementing the IRP in the near term. We discuss MECO's IRP and program implementation schedule below.

B. The IRP

1. Public Participation

Section III.E of the framework recognizes that integrated resource planning is a new process to public energy utilities in the State, and thus, directs the utilities to maximize public participation in the integrated resource planning process and to seek advice in the development of their IRPs. In developing its IRP, MECO actively solicited public participation and input by conducting public hearings, advisory group meetings, telephone and

mail surveys, and numerous workshops and seminars on various IRP topics.[4]

MECO's advisory group was comprised of representatives from the State and county governments, community associations, environmental, business, and community groups, and interested individuals. The advisory group was encouraged to use a collaborative process to arrive at a consensus on the issues. This collaborative process took well over one year from start to finish.

MECO conducted the advisory group meetings in an exemplary manner and provided ample opportunity for the advisory group members to participate and advise MECO in the development of its IRP. MECO was open to comments and suggestions by its advisory group members and was responsive to those comments. While the participants were not able to agree on all issues, significant agreement was reached on most issues during this collaborative process. We commend MECO for its encouragement of public participation and cooperation with the various parties during the integrated resource planning process.

2. IRP Requirements

Pursuant to section III.D.1 of the framework, MECO's IRP must include a full and detailed description of: (1) the needs identified; (2) the forecasts made; (3) the assumptions underlying the forecasts; (4) the objectives to be attained by the plan; (5) the measures by which achievement of the objectives is to be

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[4]The commission and DBEDT also sponsored IRP workshops and seminars.

assessed; (6) the resource options or mix of options included in the plan; (7) the assumptions and the basis of the assumptions underlying the plan; (8) the risks and uncertainties associated with the plan; (9) the revenue requirements on a present value basis and on an annual basis; (10) the expected impact of the plan on demand; (11) the expected achievement of objectives; (12) the potential impact of the plan on rates, consumer bills, and consumer energy use; (13) the plan's external costs and benefits; and (14) the relative sensitivity of the plan to changes in assumptions and other conditions.

MECO's IRP consists of MECO's IRP filing of December 15, 1993, as modified (1) by MECO's letter of August 2, 1994, which updated DSM program costs and impacts, and (2) by supply-side schedule changes generated by MECO's May 24, 1994, sales and peak forecast (May 1994 forecast). With the modifications, MECO's IRP contains the following demand-side and supply-side resource additions: (1) four energy efficiency DSM programs to start in 1995; (2) general capacity on the island of Maui consisting of a 58 megawatt (MW) (gross) dual-train combined cycle (DTCC) unit in 1996, 1999, and 2000, a 63.6 MW (gross) DTCC unit in 1996, 1999, and 2000, a 26.9 MW diesel generator in 2009, a five MW battery energy storage system in 2010, and 20 MW combustion turbines (CTs) in 2010 and 2013; (3) generating capacity on the island of Lanai consisting of two 2.2 MW diesel generators in 1996[5] and two 2.2 MW diesel generators in 2000 and 2001; and (4) generating capacity on

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[5]The commission approved the commitment of funds for the two Miki Basin diesel generators by Decision and Order No. 13614, filed on October 31, 1994, in Docket No. 94-0106.

the island of Molokai consisting of six 2.2 diesel generators in 1995 (two units), 1996, 2002,[6] and 2013 (two units).

MECO's IRP also includes provisions for the recovery of DSM program costs, lost margins, and shareholder incentives. In this regard, MECO adopted the programs and recovery mechanisms proposed in HECO's IRP,[7] and included an identical proposal as part of its IRP.

It is clear that MECO has made every effort to comply with each of the requirements set forth in section III.D.1 of the framework. The result is a commendable first IRP, which we will approve subject to certain conditions.

We discuss below particular aspects of MECO's IRP.

4. Forecast

Section IV.A of the framework requires that MECO develop a range of forecasts of the amount of energy its consumers will need over the 20-year planning horizon.

MECO developed two forecasts that formed the basis of its IRP: (1) a May 26, 1993, system peak forecast; and (2) a May 26, 1993, fuel price forecast. MECO also developed a May 24, 1994, sales and peak forecast for the period 1994-2014. However, MECO found that the May 1994 forecast was not significantly different from the May 1993 forecast, and fell within a reasonable range of

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[6]The commission approved the commitment of funds for four Palaau diesel generators by Decision and Order No. 12913, filed on December 8, 1993, in Docket No. 7710.

[7]The commission approved HECO's proposed DSM program costs, lost margin, and shareholder incentive recovery mechanisms, with conditions, in Decision and Order No. 13839, filed on March 31, 1995, in Docket No. 7257. See ordering paragraph 2, on page 47.

the May 1993 forecast. Thus, the May 1993 forecast continues to serve as the basis of MECO's IRP. None of the parties has taken issue with the May 1993 or the May 1994 forecasts.

MECO's IRP is also based on (1) cost and performance data and assumptions for demand-side and supply-side options; (2) performance data for existing MECO-owned and non-utility generator (NUG) units; (3) cost of capital and tax rate estimates; (4) the operation and maintenance escalation forecast; and (5) resource planning assumptions, including MECO's capacity planning criteria and considerations.

MECO's forecasts identify and describe the major forecast considerations that provide a reasonable basis for MECO's estimates of future energy demand, including (1) the significant demand and use determinants; (2) the sources of the data; (3) the assumptions about fuel prices, energy prices, economic conditions, demographics, population growth, technological improvements, and end-uses, and the relative sensitivity of the forecast results to changes in assumptions and varying conditions; (4) the analysis upon which the forecasts were based; and (5) the procedures, methodologies, and models used in the forecasts, together with the rationale underlying the use of such procedures, methodologies, and models.

5. DSM Programs

a. Maui

MECO's IRP includes the following four DSM programs to be implemented on the island of Maui: (1) a commercial and industrial (C&I) energy efficiency program, (2) a C&I custom rebate program,

(3) a C&I new construction program, and (4) a residential efficient water heating (REWH) program.

The C&I energy efficiency program will provide existing C&I customers with a strategy to pursue a wide range of energy conservation opportunities, including incentives on prescribed technologies. The program covers lighting, cooling, ventilation, refrigeration, and industrial motors. To be eligible for a rebate, the customer must install a measure specifically identified in the program and meet the efficiency specifications. The program, based on input from focus groups, provides for (1) a ballast rebate based on the number of lamps powered, and a rebate that varies by size of the lamp; (2) increased rebate levels to encourage early retirement and replacement of cooling equipment using chlorofluorocarbons; and (3) educational literature for both trade allies and customers that clearly define standard and high efficiency rating factors and enable the customer (or trade ally) to calculate the energy savings.

The C&I custom rebate program is designed for larger, more sophisticated C&I customers. The program will allow customers to submit proposals based on needs specific to their industries or companies. As an added benefit, the program will promote the installation of technologies with limited markets, without the administration and marketing costs of addressing each technology and target market individually. The program will require the customer to submit a project proposal detailing the estimated energy and demand savings for pre-approval. Before approving the project, MECO will verify that the project meets the program criteria, that the project is cost-effective, and that it will have

a payback of two years or less. Under the proposed rebate schedule, the customer will receive a rebate of $125 per kilowatt and $0.05 per kilowatthour for the first year of savings. The rebate cannot exceed 50 per cent of the project's capital cost, and MECO will pay the rebate over five years for projects where there is a high likelihood that the savings may not persist.

The C&I new construction program seeks to capture energy savings resources that would be lost in buildings constructed to current code or construction practice. MECO will offer incentives on prescribed technologies as well as qualifying custom technologies, and provide design assistance to encourage builders to exceed standard design and construction conventions. Custom measures in this program will be subject to the incentive structure and approval process used in the C&I custom rebate program. MECO will also offer training on building energy simulation models to help formalize the process by which builders and developers consider energy efficiency.

The REWH program involves the installation of solar water heaters, heat pump water heaters, high efficiency electric water heaters, and low flow shower heads. MECO proposes to market this program by issuing rebate vouchers to customers, to be honored by their contractors as a direct deduction from the equipment bill (for solar water heaters and heat pump water heaters). MECO proposes flexibility in setting incentive levels to allow for better control of program costs and participation. To ensure equitable participation by low-income customers, MECO proposes to partner with the United States Department of Energy's weatherization program and leverage federal weatherization funds

with utility funds to pay all or most of the cost of installing energy efficient water heating systems in low-income residences. MECO will also include customer education and specialized marketing techniques within its DSM programs to increase participation by low-income customers.

b. Lanai and Molokai

MECO proposes to implement the C&I energy efficiency, C&I custom rebate, C&I new construction, and REWH programs on Lanai and Molokai with the following provisions: (1) energy and demand savings goals will be set by adjusting the savings goals for Maui to obtain proportional allocation ratios for Lanai and Molokai; (2) a separate budget will be developed based on the same market acceptance as on Maui; (3) incentives determined cost-effective for Maui will be provided to participants on Lanai and Molokai; (4) lost margins will be forecasted based on the participation goals set forth in the application; (5) lost margins will be collected on a prospective basis with over- or under-collection being factored into the following year's lost margin recovery factor; (6) MECO will seek shareholder incentives equal to five per cent of the approved program expenses per given year, i.e., on a service program basis; and (7) costs for implementing the programs on Lanai and Molokai will be consolidated with costs incurred on Maui and recovered from all customers within the eligible rate class.

The proposed DSM programs will replace the following "interim" DSM programs for Lanai and Molokai that MECO proposed in applications filed on April 30, 1993, in Docket No. 7689 (solar and

heat pump water heater DSM program), Docket No. 7690 (commercial lighting DSM program), and Docket No. 7691 (residential retrofit DSM program). However, MECO also proposes to implement a pilot residential retrofit program for Lanai and Molokai based on the DSM program plan submitted in Docket No. 7691.

c. DSM applications filed

The commission notes that on June 2, 1995, HECO filed its four full-scale energy efficiency DSM programs as Docket No. 95-0139 (REWH program), Docket No. 95-0140 (C&I energy efficiency program), Docket No. 95-0141 (C&I new construction program), and Docket No. 95-0142 (C&I custom rebate program). The details of these DSM programs and the underlying assumptions of each will be fully examined and analyzed by the commission in its consideration of each docket.

d. DSM screening methods

Section IV.D.1 of the IRP framework requires MECO to initially identify all feasible DSM resource options appropriate to Hawaii and available within the 20-year planning horizon. MECO and its DSM advisory group screened 266 end-use options to identify the most promising DSM technologies for the market segments and resources needs of the utility. The screening process produced 30 DSM technologies with significant potential savings.

The 30 technologies that passed initial screening were further analyzed using a DSM planning model developed by Synergic Resources Corporation. In order to use the model, MECO developed

equipment costs, load shapes, unit energy consumptions, energy use indices, and eligibility assumptions for each end-use technology. DSM program concepts were developed for the DSM technologies, based on a combination of qualitative and quantitative methodologies.

In developing the four DSM programs that are included in its IRP, MECO identified the technologies that are likely to have the most impact and greatest potential. Thus, MECO rejected a residential refrigeration program because it offered small energy and capacity savings, and it was not cost-effective, due to stringent federal energy efficiency standards and landfill disposal problems. MECO also rejected load management DSM programs because (1) the benefits of water heater cycling are constrained by the typical small size of customers' hot water storage tanks and the timing of peak water use with the system load peak; and (2) the existence of a significant amount of load on MECO's system already under an interruptible contract service rider. MECO, however, plans to explore these and other options during its next integrated resource planning cycle.

We accept the screening methodology used by MECO in selecting the DSM programs for inclusion in its initial IRP, and commend MECO and its DSM advisory group for the time and effort they expended to identify, evaluate, and select the various DSM options. We find that MECO has reasonably complied with the requirements of the IRP framework regarding the screening of DSM resources.

e. Separate DSM applications

DBEDT contends that the filing of DSM applications separately from the IRP application and the filing of a separate application for each DSM program (1) make it difficult for parties to understand the programs and the utility's overall DSM strategies, (2) increase the cost of intervention, and (3) impose an unreasonable burden on the commission and the intervenors. DBEDT recommends that the commission address this issue in its orders opening the dockets for the next IRP cycle. DBEDT further recommends that, in these orders, the commission require each utility either to file its DSM applications with its IRP application or to include all of its DSM proposals in a consolidated DSM application to be filed independently of its IRP application.

Other than reducing the cost of intervention, we discern no real benefit of combining the DSM program applications with the IRP application, or of having the utility combine all of its DMS programs in a single application. Such alternatives were considered by the commission in developing the IRP framework, and rejected because they would unduly prolong an already lengthy integrated resource planning process and delay the implementation of specific DSM programs. Reducing the cost of intervention, by itself, would not justify consolidating the DSM program applications with the IRP application, or consolidating all of the DSM program applications in a single application.

f. Fuel substitution

Gasco contends that MECO should have considered gas as a DSM option pursuant to section IV.D.3 of the IRP framework. Gasco earlier made this argument with respect to HECO in Docket No. 7257 (HECO's IRP docket). For the reasons we stated in Decision and Order No. 13868, filed on May 1, 1995, in Docket No. 7257, we also reject Gasco's argument in this docket.

g. Commission's findings

The commission finds that MECO considered and analyzed the cost-effectiveness and benefits of all appropriate, available, and feasible DSM options in developing its first IRP. The commission also finds from the representations made by MECO in this docket that the DSM measures will be increased and expanded in its following integrated resource planning cycles.

6. Supply-Side Programs

a. Maui

For the island of Maui, MECO proposes to install (1) a DTCC facility at Maalaea Power Plant, consisting of nominal 20 MW CTs in 1996 and 1999, combined with a nominal 18 MW steam turbine generator (STG) in the year 2000; (2) a DTCC facility at a new central Maui site, consisting of nominal 22.6 MW and 22.8 MW CTs in 2004 and 2005, combined with a nominal 18.2 MW STG in 2006; (3) a nominal 26.9 MW diesel generator at a new site in 2009; (4) a nominal five MW battery energy storage system in 2010; and (5) nominal 20 MW CTs at a new site in 2010 and 2013, for combination with a future STG beyond the 20-year planning period.

b. Lanai and Molokai

For Lanai, MECO plans to install two nominal 2.2 MW diesel generators in 1996, and two nominal 2.2 diesel generators, one each in 2000 and 2001. For Molokai, MECO plans to install a total of six nominal 2.2 MW diesel generators, two in 1995, one each in 1996 and 2002, and two in 2013.

c. MECO's consideration of non-utility generation

The Consumer Advocate believes that MECO's IRP should address issues associated with the evaluation of NUGs, although it recognizes that there are certain difficulties in the explicit inclusion of non-utility owned generation in the IRP process. The Consumer Advocate recommends that the commission open a competitive bidding docket or some other docket to address this matter. DBEDT supports the Consumer Advocate's recommendation.

As indicated in Decision and Order No. 13839, in Docket No. 7257 (HECO's IRP docket), the commission will open an investigation into electric utility regulation in a competitive environment. In that docket, the commission will address more specifically the role of NUGs in a utility's IRP. Among other things, the issue of competitive bidding as a mechanism for the acquisition of the resources specified in a utility's IRP will be considered in that docket.

d. Wind energy

DBEDT argues that MECO's current IRP should be modified to include wind and biomass resources. MECO states that it does not oppose the addition of wind resources, but has no plans to

build or own these resources because of the risks and uncertainties involved. MECO considers it more appropriate that wind developers undertake the risks of wind projects. Accordingly, MECO is engaged in discussions with wind developers of two separate 10 MW wind farms on Maui for the purchase of wind generated energy.

While MECO's IRP does not include wind or any other renewable resources, the commission does not believe that MECO's IRP needs to be modified at this time to include such resources. The commission accepts MECO's assurance that MECO will purchase energy from wind farms at avoided cost when such energy becomes available on a regular basis. For the present, the commission agrees with MECO that wind energy is as yet a supplemental resource providing intermittent, as available energy.

e. Commission's findings

The commission finds that MECO considered and analyzed the cost-effectiveness and benefits of all appropriate, available, and feasible supply-side options. The commission also finds that MECO's selection of supply-side programs for its initial IRP is reasonable, and that MECO's IRP has reasonably identified MECO's generation needs for the 20-year planning horizon.

7. Externalities

Section II.B.4 of the IRP framework requires each utility, in doing integrated resources planning, to consider not only the resource costs and benefits to the utility, but also the resource costs and benefits to the utility's customers, the environment, culture, community lifestyles, the State's economy,

and society as a whole. Such impacts are generally outside of (and external to) the traditional resource planning activities of the utility, and are commonly referred to as "externalities." Thus, for example, a utility must consider the effects of pollutants emitted into the air by fossil fuel generation units.

Pursuant to section IV.E.3 of the IRP framework, externalities should, to the extent possible and feasible, be quantified and expressed in dollar terms. When it is neither possible nor feasible to quantify externalities, a utility may make qualitative assessments under the IRP framework.

MECO considered externalities throughout its IRP process. However, due to time constraints, MECO did not monetize externalities in this IRP cycle. MECO used, instead, the qualitative assessment methodology, which allowed for qualitative assessments based on Hawaii values, ecosystems, and impacts. MECO concedes that the qualitative approach has its limitations; however, MECO believes that the approach's completeness in considering all of the major externalities associated with resource development is superior to the use of theoretical estimates of monetized externalities that are not properly established and may not be appropriate to Hawaii.

In subsequent IRP cycles, MECO intends to quantify externalities, where feasible. MECO will also attempt to quantify more localized, island-specific impacts, where appropriate.

We find that MECO's qualitative approach in its initial IRP cycle is reasonable. Thus, we conclude that MECO adequately considered the external impacts of IRP. However, we will expect

HECO to quantify externalities, whenever possible, in its future IRP cycles.

8. Contingency Options

MECO has identified contingency options, as part of its IRP. On the demand-side, MECO's proposed energy efficiency DSM programs include the flexibility to modify the programs as part of the annual evaluation process to address changes in circumstances. On the supply-side, MECO has included funds in its proposed program implementation schedule to continue planning for (1) a 29 MW nominal single train combined cycle (STCC) unit for phased installation at its Maalaea power plant, and (2) a 58 nominal DTCC unit for phased installation at a new central Maui site.

The commission will take no action in this docket on MECO's contingency options. Rather, the commission will reserve to a future proceeding that may be opened to consider one or more of MECO's contingency options any evaluation and assessment of the appropriateness of activating such contingency options as substitutes for programs identified in MECO's IRP.

C. Program Implementation Schedule

1. The Action Plans

As part of its IRP filing, MECO submitted a five-year program implementation schedule. MECO's program implementation schedule describes how the programs in MECO's IRP will be implemented over the period 1994 through 1998. The schedule consists of four action plans and a proposal addressing MECO's DSM costs: (1) a forecasting action plan; (2) a DSM action plan; (3) a

supply-side action plan; (4) an externalities action plan; and (5) a proposal for recovery of DSM costs, net lost revenues, and shareholder incentives.

The action plans generally describe the studies to be conducted, the data to be collected, the resource implementation schedules, and the expenditures required. We discuss these action plans below.

2. Forecasting Action Plan

MECO's forecasting action plan includes tasks designed to enhance or implement forecasting methods and models, collect and develop end-use model data, and integrate public input in the forecast process. It was developed with the assistance of HECO's forecasting division, which established forecasting models and procedures to forecast electric sales and peak demand.

The forecasting action plan includes activities to (1) assess forecasting methods and models, (2) develop a regional economic model, (3) develop residential models, (4) develop commercial models, (5) develop industrial models, (6) enhance the peak forecasting model, (7) develop forecast scenarios, (8) continue to evaluate weather normalization models, and (9) review semi-annually MECO's sales and peak forecasts.

The activities and tasks relating to data collection include (1) developing an extensive database, (2) reviewing and refining historical and projected customer data, (3) implementing a residential end-use technology database, (4) developing a commercial end-use technology database, (5) developing estimates of

load shapes by end-use, and (6) reviewing and analyzing DSM measurement and evaluation data.

MECO plans to integrate public input in the forecasting process by (1) involving the MECO IRP advisory group in all phases of the forecast process, (2) reviewing preliminary forecasts with internal forecast planning committees, (3) soliciting opinions and comments from the general public during public forums and informational meetings, and (4) participating in HECO methods training sessions.

3. DSM Action Plan

The purpose of MECO's DSM action plan is to identify specific DSM program activities and tasks, and to design a schedule for their implementation over the five-year period from 1994 to 1998.

Specific activities and tasks associated with the DSM action plan include (1) preparing the DSM program applications; (2) filing the DSM applications; (3) developing an organizational plan; (4) staffing and developing final program implementation procedures; (5) launching the programs; (6) initiating measurement and evaluation activities to monitor DSM programs; (7) preparing annual reports; and (8) preparing the next IRP. The DSM action plan also extends Maui's DSM programs to Lanai and Molokai, where the small size and isolation of each system makes it impractical to pursue separate DSM planning.

4. Supply-Side Action Plan

The purpose of MECO's supply-side action plan is to identify specific supply-side resource program activities and tasks, and design a schedule for their implementation over the five-year period from 1994 to 1998. MECO's supply-side action plan sets forth the schedule of major milestones for the plant addition planning.

The supply-side options and activities are grouped into seven categories: (1) planning and contracting for construction of a DTCC facility for phased installation at the Maalaea power plant; (2) planning for a subsequent DTCC for phased installation at a new central Maui site; (3) alternate planning (in case of a contingency affecting the Maalaea DTCC) for an STCC facility for phased installation at the Maalaea power plant; (4) alternate planning (second contingency option) for a DTCC facility for phased installation at a new central Maui site; (5) planning and contracting for three diesel generator units at the Palaau power plant on Molokai; (6) planning and contracting for two diesel generator units at the Miki Basin power plant on Lanai; and (7) system improvements and generation resource studies.

To improve transmission/distribution system efficiency MECO plans to install capacitors at or near load centers that are away from generating sites. MECO is also planning a number of transmission line projects. These include the Maalaea-Lahaina and Waiinu-Kanaha 69 kV lines to relieve overloaded transmission lines and reduce impedance. MECO also plans to study transmission line reconductoring projects.

7. Integration Externalities Action Plan

The purpose of the integration externalities action plan is to identify the impact of MECO's IRP on its customers, and the State's environment, culture, community, economy, and society as a whole.

MECO states that it will participate in HECO's planned activities to quantify externalities. The plan consists of three phases: (1) development of a prioritized list of externalities, development of guidelines for monetization, and determination of how externalities will be used in the decision-making process; (2) involvement of expert working groups to quantify costs for four to six categories of externalities selected by the externalities advisory group; and (3) incorporation of external costs and benefits in the integration process.

MECO intends to work in parallel with HECO and Hawaii Electric Light Company, Inc. as these utilities proceed to quantify externalities. MECO believes that this will enable MECO to quantify externalities based on common statewide impacts. MECO plans to adjust these externalities, where appropriate, for any more localized, island-specific impacts, with the participation of its advisory groups.

8. Commission's Findings

MECO's DSM and supply-side actions plans are consistent with section III.D.2.a of the IRP framework, and adequately provide a full and detailed description of the programs to be implemented during the five years of MECO's IRP. We also find MECO's forecasting and integration externalities action plans to be

reasonable. We conclude that these action plans will improve MECO's planning process and result in a more integrated approach to meeting the energy needs of MECO's customers.

IV.

INTEGRATION

MECO, like HECO in Docket No. 7257, used the integration phase of the IRP process (1) to configure various plans containing different mixes of potential supply-side and DSM resource options, and (2) to evaluate these candidate plans to determine their likelihood of success in attaining MECO's planning goals and objectives. MECO's analysis and review of these plans ultimately resulted in its selection of a preferred plan and a planning strategy.

MECO used the "Proview" computer model[8] to configure various plans containing different mixes of resources. MECO also used the Proview model to rank the plans based on different costs and rates. In this way, plans exhibiting different qualities and attributes, each satisfying the planning objectives to varying degrees, were configured for MECO's evaluation.

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[8]The Proview computer model is a computer program specifically designed to assist in integrated resource planning. After inputting different resources into the Proview computer model, Proview will produce and rank a number of different IRPs from that set of resources. The Proview computer model was developed by Energy Management Associates.

MECO used the multi-attribute analysis (MAA) system[9] to evaluate these plans to determine their likelihood of success in attaining certain planning goals and objectives. The MAA system also was used to identify alternate plans that promote different perspectives. This was accomplished by altering the weighing factors to emphasize the objectives that correlate with the various perspectives. The results of the MAA analysis were considered in the selection of the final preferred plan, but were not the only factors considered by MECO.

MECO selected 20 candidate plans with a diverse mix of resources and timing variations and evaluated the costs and benefits associated with the plans. The candidate plans were selected to include: (1) the least-cost plan from each Proview optimization run; (2) the least-cost plan for each type of technology selected; (3) plans with diverse mixes of resources; and (4) several plans where the timing and resource mixes were altered by use of externality adders to nominate plans favoring environmentally benign resources.

From this list of 20 candidate plans, MECO selected seven plans, two of which appeared in the upper tier of the ranking across a range of weighing factors, and five other plans, identified by MECO's advisory group, for evaluation. The seven final candidate plans were selected by a series of screening evaluations using weighing factors used by HECO in its IRP. From

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[9]MAA is a procedure or tool that is used to define objectives and attributes, identify preferences, assign weights, and examine the impacts of resource planning options. The MAA system was used as a screening tool to allow MECO to review the trade-offs and competing objectives involved in resource planning, and facilitated MECO's evaluation of the attributes of each candidate plan.

this list of seven plans, MECO evaluated all of the results provided by all of the analytical techniques and models used in the integration process,[10] and selected a plan named "SUP-1" as its preferred plan. MECO submitted its preferred IRP to the commission for review and approval on December 15, 1993.

MECO's integration process, including its use of the Proview computer model and the MAA, are consistent with the IRP framework. Gasco questions the use of scaling in scoring the various plans and the counting of attributes, and DBEDT expresses concern over the weighing of attributes. However, neither suggests an alternative to the MAA. We note, in this regard, that MECO only used the MAA as a screening tool to compare and narrow the number of candidate plans for further evaluation, and not to select the preferred IRP.

We find that the MAA is an acceptable method to review the competing objectives involved in resource planning and to evaluate the attributes of each candidate plan. We expect, however, that its use will be further refined by MECO in future IRP cycles.

We also find that MECO reasonably performed the following tasks during the integration process: (1) explicitly considered alternative mixes of options; (2) conducted cost-benefit and cost-effectiveness analyses from varying perspectives; (3) analyzed options on a consistent and comparable basis; (4) developed a number of alternative plans, each representing optimization from a differing perspective, including the perspective of the utility,

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[10]This included the Proview results, the MAA analysis results, the qualitative and risk assessments, and the sensitivity analyses.

the ratepayers, the non-participant, and society; (5) described the risks and uncertainties associated with its IRP; (6) ranked the various candidate plans; and (7) subjected its selection of resource options to sensitivity analysis by altering assumptions and other parameters. Thus, we conclude that MECO configured and evaluated candidate plans in a rigorous, methodical, and reasonable manner.

V.

RECOVERY OF DSM COSTS, LOST MARGINS, AND SHAREHOLDER INCENTIVES

MECO requests commission approval of its proposals for the recovery of DSM program costs, lost margins, and shareholder incentives, including the factors to be used in the recovery methodologies. Approval of how the factors (or components) will actually be computed will be requested in the DSM program dockets. MECO views the recovery proposals as integral components of the DSM programs included in MECO's IRP, and MECO considered the cost of its proposals in evaluating the cost-effectiveness of the DSM programs. MECO's proposals for the recovery of DSM program costs, lost margins, and shareholder incentives are detailed in Appendix B to its Summary Report.[11]

MECO proposes that DSM program expenditures, lost margins, and shareholder incentives be recovered through a surcharge adjusting base rates. The level of the surcharge would

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[11]MECO's proposals are identical to those that were presented by HECO in its IRP docket. See Appendix I to HECO's IRP Summary Report.

be established in the DSM application docket for the first year of program operation, and would be adjusted annually thereafter. The DSM surcharge amount will not be itemized as a separate item on a customer's bill. HECO proposes that the DSM program costs be allocated and collected from the rate classes eligible to participate in the programs, although it seeks some flexibility in allocation. For Lanai and Molokai, MECO proposes to recover DSM program expenses from its customers on a participating customer class basis.

Revenues generated through the DSM cost adjustment factor will be reconciled annually with the actual costs incurred. To facilitate review, MECO will file an annual program accomplishments and surcharge report. The report will delineate the costs incurred by cost categories and programs, the benefits and cost-effectiveness of the programs, and the activities and accomplishments in the prior year. MECO will also file an annual program modification and evaluation report, which will establish goals for the coming year, describe changes in the program design, forecast costs by cost categories and programs, and provide the result of program evaluation efforts over the past year.

Lost margins and shareholder incentives will be calculated on the basis of the per unit energy and demand reductions. MECO's proposed shareholder incentive for its energy efficiency and load management DSM programs is a "shared savings" approach. For the DSM service programs, such as the proposed low-income program, MECO's shareholder incentive proposal is the "mark-up" approach. Both the shared savings and the mark-up approaches are among the shareholder incentive mechanisms

recognized by the IRP framework. Costs of DSM program evaluation will be excluded from the costs of the DSM programs for the purposes of calculating the shareholder incentives. Shareholder incentives are 10 per cent (after taxes) of the net benefits of the DSM resource programs, and a five per cent (after taxes) mark-up on equity and service programs.

The Consumer Advocate generally supports MECO's proposals on the recovery of DSM programs costs and lost margins. However, it is concerned about the shareholder incentives and suggests that the matter of shareholder incentives should be decided in the respective DSM program dockets.

Section III.F.1 of the IRP framework provides for the recovery by a utility of the integrated resource planning and implementation costs that are reasonably incurred. Section III.F.2 of the IRP framework provides that under appropriate circumstances the utility may recover the net loss in revenues sustained by the utility as a result of a successful implementation of full-scale DSM programs sponsored or instituted by the utility. Finally, section III.F.3 the IRP framework allows, under appropriate circumstances, for the recovery of shareholder incentives to encourage participation in and promotion of full-scale DSM programs by the utility. In all cases, the IRP framework provides that cost recovery, lost margin recovery, and shareholder incentives will be determined when specific DSM programs are submitted to the commission for approval.

Our approval of the DSM programs in this docket carries with it our approval of the program cost recovery, lost margin, and shareholder incentive mechanisms as proposed by MECO, including the

factors to be used in the recovery methodologies. We find the proposed mechanisms to be in conformance with the IRP framework. MECO's proposals are reasonable and appropriate to move MECO to undertake meaningful and cost-effective DSM programs. Our approval, however, is with respect to the mechanisms proposed. The application of the mechanisms to specific DSM programs and the calculations of the program costs, lost margins, and shareholder incentives are subject to review in the respective DSM program dockets.

As in Docket No. 7257, the Consumer Advocate recommends that the commission consider opening a generic docket to consider the issue of decoupling net revenues from sales and demand levels for Hawaii's utilities. The commission has taken the Consumer Advocate's recommendation under advisement and will indicate in the near future whether such a docket will be opened.

VI.

REPORTING REQUIREMENTS

Pursuant to section III.D.3 of the IRP framework, MECO is required to file an evaluation report each year. In this report, MECO will (1) assess the continuing validity of the forecasts and assumptions upon which its IRP and program implementation schedule were fashioned; and (2) compare the anticipated plan objectives, effects, expenditures, target groups, and level of penetration anticipated for each DSM program, with the measures actually attained.

Together with its annual evaluation report, MECO will submit a revised program implementation schedule by dropping the

immediately preceding year from the schedule and including a new year. By doing so, the program implementation schedule will always reflect a five-year time span. As a result of this annual evaluation, MECO may also revise or amend its IRP. MECO's first annual evaluation after plan approval will be due on June 1, 1997.

VII.

ULTIMATE FINDINGS AND CONCLUSIONS

A. Compliance with IRP Framework

MECO's IRP is a good first effort of the utility in integrated resource planning. While there are deficiencies in the IRP, none is substantial enough to warrant disapproval of the IRP. As in HECO's case, we believe that MECO should be granted flexibility in its first attempt at integrated resource planning. With more experience and through such IRP framework mechanisms as the annual evaluation report and the three-year planning cycle, MECO should be able to address any deficiencies in its IRP on a timely basis and develop better IRPs in future planning cycles.

Pursuant to section III.B.2 of the IRP framework, MECO must conduct a major review of its IRP every three years. During this review, a new 20-year time horizon must be adopted by MECO, the planning process repeated, and MECO's resource programs re-analyzed fully. Although section III.B.2.e of the IRP framework establishes October 1, 1996, as the deadline for MECO's submission of a new (second) IRP and implementation schedule, we will revise this deadline to June 1, 1998, in light of the date of this decision and order. Pursuant to section III.C.1 of the IRP framework, after issuance of this decision and order, the

commission will follow-up with an order opening a docket for IRP, thus commencing MECO's next planning cycle.

MECO's IRP is in the public interest, is consistent with the goals and objectives of integrated resource planning, and represents a reasonable course for meeting the energy needs of its customers. MECO's IRP takes into consideration its financial integrity, size, and physical capability. Additionally, MECO's IRP identifies the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost. Thus, we conclude that MECO's IRP and program implementation schedule reasonably comply with the IRP framework, and should be approved, subject to the conditions provided in part VIII below.

B. Planning and Implementation Cost Recovery

MECO seeks confirmation that the commission's approval of its IRP will enable MECO to recover from its ratepayers all reasonable costs incurred in planning and implementing the action plans. We give that confirmation. However, the specific amounts that may be recovered by MECO are subject to future review and approval by the commission. For our approval here of MECO's IRP means only that we have found the plan to be consistent with the IRP framework, and that MECO may recover reasonable planning and resource costs related to the IRP. It does not include a presumption that the specific costs noted in the IRP or in the implementation schedule are approved for recovery from ratepayers. The commission will review the more detailed cost estimates in MECO's applications for approval to commit for expenditure funds in

excess of $500,000 (pursuant to paragraph 2.3.g.2 of General Order No.7), specific DSM program applications, and budget reviews under the IRP clause.

By Decision and Order No. 13704, filed on December 28, 1994, in Docket No. 7700, the commission allowed HECO to recover general integrated resource planning costs through base rates and to use the IRP clause[12] to recover non-recurring integrated resource general planning costs (and non-recurring DSM costs), together with interest on the deferred costs. Similarly, MECO may recover its general integrated resource planning costs through base rates and its non-recurring integrated resource general planning costs through the IRP clause.

C. Comporting with the State Energy Functional Plan

Section II.B.2 of the IRP framework provides that "[i]ntegrated resource plans shall comport with state and county environmental, health, and safety laws and formally adopted state and county plans."

DBEDT argues that MECO's IRP does not comply with the IRP framework because it does not comport with the State Energy Functional Plan. DBEDT claims that MECO's IRP is contrary to the State Energy Functional Plan because it does not include renewable

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[12]HECO's use of the IRP clause was approved by the commission in Decision and Order No. 11317, filed on October 17, 1991, in Docket No. 6531. HECO (together with MECO and HELCO) applied for approval of recovery of their 1992 integrated resource planning costs in Docket No. 7536, 1993 integrated resource planning costs in Docket No. 7721, 1994 integrated resource planning costs in Docket No. 7931, 1995 integrated resource planning costs in Docket No. 94-0316, and 1996 integrated resource planning costs in Docket No. 95-0362.

energy and non-fossil fuel resources. DBEDT contends that commercially viable renewable resource plants are available and any reliability risks can be managed by purchasing the power from a NUG. Without the inclusion of such renewable resources, DBEDT concludes that MECO's IRP does not comport with the objectives of the State Energy Functional Plan.

As we stated in Decision and Order No. 13839, in Docket No. 7257 (HECO's IRP), the provisions of the State Energy Functional Plan are simply goals or objectives, and are not statutory mandates. Thus, MECO's failure to include renewable energy and non-fossil resources in its IRP does not violate the State Energy Functional Plan. We are satisfied that MECO did consider renewable energy resources in its integration process, and find that MECO has made a good faith effort in addressing and considering the provisions of the State Energy Functional Plan. We, thus, conclude that MECO's IRP comports with state and county environmental, health, and safety laws, and formally adopted state and county plans.

VIII.

ORDER

1. MECO's IRP and action plans are approved.

2. MECO's proposed DSM program costs, lost margin, and shareholder incentive recovery mechanisms are approved, provided that the specific amounts to be recovered and the calculations of the amounts and the allocation of the amounts to be recovered among ratepayers are subject to commission review and approval in the context of specific DSM applications filed by MECO.

3. MECO shall recover general planning costs through base rates and shall use the IRP clause to recover non-recurring integrated resource general planning costs (and non-recurring DSM costs), together with interest on the deferred costs.

4. Pursuant to section III.D.3 of the IRP framework, MECO shall submit its first annual evaluation report of its IRP and program implementation schedule no later than June 1, 1997.

5. Pursuant to section III.B.2 of the IRP framework, MECO shall conduct a major review of its IRP by adopting a new 20-year planning horizon, repeating the planning process, and fully re-analyzing its resource programs. The submission date of MECO's revised IRP is changed to June 1, 1998.

6. MECO shall submit its findings and recommendations, regarding identification, quantification, and utilization of externalities, no later than May 1, 1997, for commission approval. No values derived for externalities shall be used without prior commission approval.

DONE at Honolulu, Hawaii this 29th day of May, 1996.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By _____
Yukio Naito, Chairman

By _____
Dennis R. Yamada, Commissioner

APPROVED AS TO FORM:

By _____
John P. Spierling, Commissioner

_____
Lawrence K. Kamakawiwoole
Commission Counsel

7258IRP.vn

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Decision and Order No. 14707 upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

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Bertha F. Kurosawa

Bertha F. Kurosawa
Chief Clerk

DATED: May 29, 1996

Comparable Electrical Generation Cost Ranges for Energy Sources for Maui*

On-Demand Energy Resources	cents/kWh
Coal	20-21
Oil	14-17
Biomass	17-21

As-Available Energy Resources	
Wind	11-13
Photovoltaic	40-70

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*figures based on Integrated Resource Planning and internal estimates

Maui Land Requirements for Various Electrical Generating Systems

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On-Demand Energy Resources	Acres/MW	MW	Acres
Coal	0.17	30	5
Oil	0.03	30	1
Biomass	280.0	25	7000
As-Available Energy Resources			
Wind	7-40	10	70-400
Photovoltaic	5-15	4	20-60

Source: Figures based on Integrated Resource Planning and internal estimates wind-based on Gipe, Paul (1995). *Wind Energy-Comes of Age,* John Wiley & Sons, Inc., New York.