HAWAII INTEGRATED ENERGY ASSESSMENT

VOLUME V

RULES, REGULATIONS, PERMITS AND POLICIES AFFECTING THE DEVELOPMENT OF ALTERNATE ENERGY SOURCES IN HAWAII

DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

LAWRENCE BERKELEY LABORATORY
U.S. DEPARTMENT OF ENERGY

DISCLAIMER

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Hawaii Integrated Energy Assessment

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DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT
STATE OF HAWAII
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PREFACE

The Hawaii Integrated Energy Assessment Project was undertaken to develop Hawaii-specific data and alternate plans for future energy use in Hawaii. It is a joint project of the State of Hawaii Department of Planning and Economic Development and the U. S. Department of Energy's Lawrence Berkeley Laboratory in California.

The HIEA Project has generated a number of technical reports. This is one of those reports. It is titled, Rules, Regulations, Permits, and Policies Affecting the Development of Alternate Energy Sources in Hawaii. It is part of the data-collection phase of the HIEA Project. It focuses on laws, rules, regulations and associated compliance processes affectng alternate energy. It also covers governmental policy-making relating to alternate energy development.

The research for this work was done by the Social Science Research Institute of the University of Hawaii for the DPED. Three DPED offices participated: the State Energy Office, the Research and Economic Analysis Division, and the Center for Science Policy and Technology Assessment. Staff for the study included John Morgan, Eugene Tierney, Karen Ah Mai, Nancy Fowler, and Andrea Gill.

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1. INTRODUCTION

1.1. OVERVIEW. This section presents a comprehensive presentation of the major permits, regulations, rules, and controls which are likely to affect the development of alternate energy sources in Hawaii.

Section 1 presents an overview of the permit process, showing the major categories and types of permits and controls for energy alternatives. This is followed by a brief resume of current and projected changes designed to streamline the permit process.

Section 2 describes the permits, laws, regulations, and controls that are applicable to the development of energy alternatives in Hawaii. The alternate energy technologies affected, a description of the permit or control, and the requirements for conformance are presented for each applicable permit. Federal, state, and county permits and controls are covered. Since only the the City and County of Honolulu and the County of Hawaii have prepared Central Coordinating Agency materials, county data is incomplete.

Section 3 focuses on the individual energy technologies being considered as alternatives to the State's present dependence on imported fossil fuels. The alternate energy sources covered are bioconversion, geothermal, ocean thermal, wind, solar(direct), and solid waste. For each energy alternative, the significant permits are summarized with a brief explanation of why they may be necessary. This section will be most useful to those seeking the answers to questions such as "Which permits are needed, possible, unlikely, or inapplicable to each energy alternative and why?".

Section 4 covers the framework of policy development at each of the levels of government with respect to the alternate energy sources.

1.2. REGULATORY PROCESS FOR ALTERNATIVE ENERGY DEVELOPMENT: SUMMARY. There is a growing feeling among those in government, as well as developers, and the general public that the maze of permits has grown too complex to efficiently undertake any development of significant scope. There is a long history of incremental developments and additions to the permit process, each of which was believed to meet a specific need. Like other developments, alternative energy projects and proposals must also run this maze. For any major project, the developers have to cope with approvals for land use, shoreline and coastal water protection, special districts, environmental impact, zoning and building codes, and other special permits.

1.2.1. Land Use. One of the major traditional avenues for government to control and direct the growth and activities is through designating permissible land use. At the State level in Hawaii, the general objectives of this designation pattern are set in the State General Plan. The classification of lands of the State in concert with the objectives of the General Plan is the work of the State Land Use Commission.

The new State Plan supports the development of energy alternatives. One of the objectives on energy is increased energy self-sufficiency and implementation of policies to achieve it including "accelerate research, development, use of new energy sources" and "promote the use of new energy sources".

The development of alternate energy sources may, however, be held back by the current State General Plan and the associated land use designations because provisions for the site-specific nature of potential alternate energy developments are not included.

The General Plan can be amended, but this action is complex and requires legislative approval. The possibility of "Petitions for District Boundary Amendments" to permit alternate energy development seems a more likely avenue of approach.

1.2.2. Shoreline Protection. Because of their ecological, economic, and recreation values, shoreline and coastal water areas have become a major focus of regulation. These areas may also become important for significant alternative energy developments in the future, including ocean thermal energy conversion and its associated shoreline facilities, marine biomass culture for energy such as giant kelp, and for other alternatives not presently actively being pursued in Hawaii, such as offshore coal fired generation plants, offshore windmills, and wave energy generation plants. Terrestrial aquaculture for energy crops may also be proposed for the coastal zone lands.

One requirement for project review along the shoreline is the "Special Management Permit" issued by the various counties. Counties also may be petitioned for a "Variance to their Shoreline Setback Regulations." For activities in shore waters, up to 3 miles offshore, three permits may be needed: a "Permit for Activities in State Waters" from the Department of Land and Natural Resources (DLNR), as State waters are classified as part of the conservation district administered by DLNR; approval from the Department of Transportation for "Activities in Shores and Shorewaters;" and shore water activities. All of these permit processes may be required on alternative energy projects within the coastal zones and waterways of the State.

1.2.3. Special Districts. A number of other regulations and permits are relevant to particular areas. The "Conservation District Use Permit" and the "Designated Groundwater Area Use

Permits" are significant to some energy alternatives. Large-scale wind generators, energy forestry, and geothermal projects in particular may often be proposed for areas which require one or both of these permits. Large scale energy alternatives such as megawatt scale wind generators may present a hazard to aircraft and may require an "Airport Hazard Permit". There is also a class of permits which are basically aesthetic controls on urban design. These include "Certificate of Appropriateness for Historic, Cultural, and Scenic Districts", "Development Conformance Certificates" for Special Design Districts and "Interim Development District Controls". These controls apply in urban areas.

Small-scale, decentralized energy alternatives (residential water heaters, home photovoltaic arrays, and family-scale wind generators) in the designated areas may require some of these permits.

1.2.4. Environmental Impact. In recent years, there has been a growth of regulation concerned with environmental protection.

The best known, most comprehensive and time-consuming requirement is the Environmental Impact Statement (EIS) which is administered by the State Office of Environmental Quality Control. Most large-scale alternate energy projects will require EIS preparation.

In addition, energy alternatives which involve combustion, such as burning of bagasse, field trash, wood chips, or municipal solid waste, will have to be reviewed for their impact on air quality. The Department of Health issues the "Authority to Construct/Permit to Operate" for air quality control.

Any energy alternatives which discharge pollutants to waterways, e.g., biocide runoffs from biomass plantations or runoff of working fluid from geothermal installations, would be subject to a "National Pollutant Discharge Elimination System Permit."

Solid wastes from energy alternatives, such as residue from waste incineration of sludge from geothermal plants, must be disposed in conformance with the "Solid Waste Disposal Permit."

If energy alternatives development involves temporary and local pollution in excess of standards for air, water or noise pollution, a "Variance on Pollution Controls" may be sought.

One special case permit, the Environmental Protection Agency permit for "Discharge of Industrial Waste to Aquaculture in Coastal Waters", is also considered among the environmental permits because of the effect that nutrient-rich deep ocean waters raised for Ocean Thermal Energy Conversion could have on aquaculture.

1.2.5. Zoning and Building Codes. Zoning controls are the most specific of the regulations and are binding for all land except conservation districts. These controls are administered by the counties.

Alternative energy projects may involve uses which are permitted in a zone under certain conditions. For example, large windmills for public utility generation in agricultural areas may require these "Conditional Use Permits".

In other uses, energy alternatives which require large land areas (such as biomass plantations) may require a "Zone Change". Occasionally, minimum conditions of the zoning code may be "waived" for public utility or public uses. Any of these mechanisms may be activated in the name of the public good to bring the zoning code and proposed alternative energy projects into conformance.

The building permits system and related permits and rules are action specific--not location specific. They are administered by county agencies and apply throughout the county. There are several which may be significant for specific energy alternatives.

Alternate energy development will also involve construction which must comply with building codes. Site development work must qualify for "Grubbing, Grading, and Stockpiling Permit" and for a "Building Permit to Construct, Reconstruct or Repair Sidewalks, Curbs, and Driveways" (includes access road not open to the public). The special technological requirements of some energy alternatives, such as those involved in pumped storage wind power systems, may require and qualify for "Variance from Building, Electrical, and Plumbing Codes".

Some alternatives such as biomass plantations or pumped storage wind energy conversion systems may also require a "Well Permit". Others may require a "Connection to Drainage System Approval". Many alternatives may involve stringing new power lines from the generation site to the existing electric grid. For this, a "Permit to Install Utilities within State Highway Rights of Way" may be required.

1.2.6. Other Special Permits. Any project for alternative energy development or any other purpose on a designated historic site must be reviewed by the State Department of Land and Natural Resources (DLNR). Since historic sites may be found in areas where many of the alternative energies are being considered, DLNR approval may be necessary.

The "Public Access Requirement" to recreational areas, e.g., beaches, mountain areas, etc., must be complied with by any proposed energy development. This may be especially pertinent for large-scale biomass plantations, such as forestry areas which may be located in or adjacent to recreation areas.

1.3. INTERGOVERNMENTAL COORDINATION AND COOPERATION. As mentioned above, there has been a growing concensus that the regulatory system is overly complex, overlapping, resource consuming and by its own complexity, hampering legitimate management efforts as well. The State Legislature has found the current regulatory system leaves Hawaii's environment "both undermanaged and overregulated". <Session Laws of Hawaii, 1977, Act 188>

Since that determination was made, several important steps have been taken to improve the situation and many further changes have been proposed.

1.3.1. Central Coordinating Agencies. The most significant change toward streamlining the regulatory process came with the passage of Act 74 by the 1977 State Legislature and its subsequent implementation. Under Act 74, each County in Hawaii was required to establish one agency to act as a "Central Coordinating Agency" (CCA) for land development laws and regulations.

The role of the CCA includes establishing a repository of the major permits. This is an up-to-date file of all laws, regulations, rules, procedures, permit requirements, and review criteria of all federal, state, and county agencies having any control or regulatory powers over land development. The CCA maintains a master file of active applications for land development permits. The CCA staff assists would-be permittees with the regulatory requirements.

In the future, the CCAs will consider the possibility of master application forms for certain kinds of development permits. CCAs already act where possible to coordinate public informational meetings and hearings among the several agencies which may be party to any particular permit applications.

The CCA in each county will deal with the permits required for alternate energy development processes. The creation of the CCAs and their growing capabilities and experience in coordinating the permits process will offer valuable potential in facilitating the permits process for alternate energy developments. In particular, CCAs may be central in developing and implementing any proposed streamlined permits procedures specifically tailored to energy alternative development.

A second step taken toward simplification and consolidation of the permits process has been passage of Ordinance No. 78-76 of the City and County of Honolulu, under which some 14 applications previously scattered through the Comprehensive Zoning Code have been reduced to 4.

This ordinance not only simplifies the permitting procedure, but moves toward the concept of a zoning administrator concept

wherein petitions which do not require a policy determination may be dealt with without undue delay.

Hawaii County has also produced CCA Repcsitory materials which include a synopsis of permits and identify overlaps. The Planning Department is the central agency for the handling of permits but approximately 50 different commissions and agencies are involved in the review process. Except for the close scheduling of hearings to facilitate the process for out-of-town developers, the county has no plans for the consclidation of permits.

Maui County has desiqnated the County Department of Public Works as a one-stop consolidated reviewing agency. There are no plans to publish the documents and procedures involved in the permit prccess.

The County of Kauai is awaiting the allocation of funds tefore beginning CCA activities.

1.3.2. Joint Hearings. Both government and private concern with the regulatory morass have created an environment in which inter-agency coordination in issuing permits and holding joint hearings and public information meetings on develcpment proposals have become increasingly common. For example, the Department of Land and Natural Resources (DLNR), the Army Corps of Engineers, and the Department of Land Utilization have been experimenting with joint hearings. DLNR has combined their requirements for a pier permit with those of the Department of Transportation.

1.3.3. Information Sources on Permits. One of the earliest and certainly the most dramatic of the compilations detailing the complexity of the present permit system was prepared by the legislative arm of the group most aggrieved by the permit maze. The Construction Industry Legislative Organization prepared a flow chart of the process of a typical land development permit process from start to finish. When the chart was unveiled at a legislative hearing on permits, it was 40 feet long!

Publication of the report Permits and Environmental Requirements for Aquaculture in Hawaii by the Aquaculture Planning Program of the Center for Science Policy and Technology Assessment at the State Department of Planning and Economic Development (DPED) was an early attempt at consolidation of information about permits requirements. The report reviews the permit process in general, provides the legal bases of existing permits and controls, and examines each significant permit in detail from the perspective of aquaculturalists.

This report was followed by A Register of Government Permits Required for Development prepared by the Hawaii Coastal Zone Management Program. This serves as an introduction to the permits and regulatory processes affecting land development and

reviews briefly the regulations on locations and activities related to land development, especially in the coastal zone. This Register also reprints a portion of The Environmental Activity Approval and Permit Index prepared by the Federal Executive Board. This is a 616-cell matrix which matches activities with locations and shows which regulatory agencies are likely to be involved in each case.

Meanwhile, with the implementation of Act 74 (1977) the county CCAs began establishing the mandated permit repositories. The guide to the CCA repository of materials at the City and County Honolulu's Department of Land Utilization provides a continuously updated source of information on 51 major permits involved in development, including applicability, permit requirements, procedures, and review criteria.

Hawaii County has produced a similar permit repository together with a consolidated permit chart.

These reports, which analyze, summarize, and describe permits in force, have helped to make the entire permit process more comprehensible, aiding both developers and interveners. It has also served to focus attention on duplications, failures in coordination, and other shortcomings of the permit process and thus to foster proposals for further improvements. All these effects can work to the benefit of alternate energy development projects.

1.3.4. Other Potential Improvements. There are, predictably, a great many proposals and counterproposals concerning the best means to further improve the permits process. A valuable distinction can be drawn concerning the terminology used in describing improvements in the permits situation. Three avenues of possible permits system change are:

"Simplification" . . . clarifying existing requirements and jurisdictional responsibilities thru improved communications to interested parties.

"Coordination" . . . calling for joint hearings, joint applications, and common information requirements.

"Streamlining" . . . restructuring the system through consolidation or elimination of redundant permits and approvals. <Red Tape vs. Green Light, 1978>

Other proposals have been put forward utilizing one or more of these strategies for improving the permits process. Among these are the concept of one staffer per project; time limits and implied approval; a master application; and joint hearings and publications. These are discussed below.

The Council of Housing and Construction Industry, created by the 1977 Legislature, has proposed that in each CCA, one staff member be assigned to monitor each development project through the permits process. Clearly, this pattern could be advantageously used for energy development projects since the expertise required to coordinate energy projects through the permits process may require more specialized knowledge than required for more traditional development projects.

The Council of Housing and Construction Industry has also proposed that time limits be set for each permit review step. If an agency fails to provide a ruling within the specified time, this would be considered grounds for implied approval.

There have been many requests for a master application, or at least progress towards this goal. Ordinance 78-65 of the City and County of Honolulu is a step in this direction. The County of Hawaii has also taken a step toward a master application with their Central Coordinating Agency checklist. A master application for alternative energy development would be a most desirable step in streamlining the permits process and assisting development projects.

To facilitate timely and useful public input into the policy deliberations in controversial development petitions, suggestions have been made for joint publication of joint proposals and joint public hearings at which representatives from all the involved agencies would be present to hear and react to public input.

Such a procedure would be useful in speeding implementation of energy alternatives, or at least in identifying projects for which there is considerable objection or support.

In conclusion, the recent trends in coordination between agencies and levels of government in the permits process indicates that the process is indeed complex and that there are many areas of needless complexity and seemingly arbitrary and capricious non-cooperation. These problems are occasionally linked to an overprotective attitude towards agency responsibilities or to the desire to slow the pace of permits to protect Hawaii from the consequences of too rapid development.

Against these significant problems is a growing list of studies, documents, and opinions spotlighting problems in detail and providing proposals for change. Significant steps, most notably the establishment of the Central Coordinating Agencies, have already occurred, and others are being considered. Overall, the prognosis is favorable for coordination and cooperation, especially as they affect renewable energy resource development projects.

2. PERMITS FOR ALTERNATE ENERGY DEVELOPMENT

2. PERMITS FOR ALTERNATE ENERGY DEVELOPMENT

This section presents a synopsis of the permits and development controls considered to be of major significance to one or more of the renewable energy alternatives for Hawaii.

Many permits were excluded from consideration in this section for one reason or another. Some do not apply to alternate energy development. For example, some environmental controls for private sewage disposal do not apply. Many of the building and zoning permits have no relevance to alternate energy development. These permits are concerned with zoning, subdivisions, housing development, sewers, construction, operations, etc.

Several controls appear to be significant but probably are not. A General Plan amendment or a Boundary amendment would not be needed for energy development because utility developments are permissible in all districts but are subject to other controls. The Special Use Permit for Agricultural lands applies to very specific uses but not energy development. Instead, energy developments would require a Conditional Use Permit or fall under regular Agricultural land uses that do not require permits per se.

There are several temporary permits required for some phases of development of some of the energy alternatives. These standard permits are familiar to any qualified engineering or planning firm. The Street Usage Permit, Construction Dewatering Permit, and the Permit to Disturb a State Highway are a few examples. The need for these permits would depend on the nature of the activities to be engaged in.

The information on permit procedures in this section was derived primarily from the City and County of Honolulu's Department of Land Utilization "Guide to Central Coordinating Agency Repository Materials."

Material from "Permit Register, Control Coordinating Agency, County of Hawaii", published by the Planning Department, County of Hawaii, was also included. The counties of Maui and Kauai have no published information. Maui County, however, has centralized the filing for all required permits at its Planning Department. The County of Kauai is awaiting state funds for the implementing of its CCA program.

In addition to these land use and activity permits, which refer to any development, there is also a class of permits which have been developed for particular energy alternatives. The first such specialized permits is the Department of Land and Natural Resources' (DLNR) for geothermal developments. (See DLNR Regulation 8 on Geothermal). As other energy alternatives become more significant and closer to large-scale implementation, other specialized regulations will probably be developed for them.

There is also need and use for compilations of permit materials directed at each energy alternative. The treatment in this report has been restricted to an overview of permits to cover a multitude of possible energy developments. The range covers installing a residential solar water heater to the massive ocean engineering of an OTEC plant.

Currently, the available compilations of resource-specific data are limited to the register of Permits and Controls for Aquaculture Development, which provides the description of permits necessary for marine biomass plantations. A Wind Energy Atlas is being developed by the Hawaii Natural Energy Institute for Wind Energy Conversion Systems.

This section outlines the major permits and how they can affect the development of alternate energy sources in Hawaii. For each permit, the alternate energy developments, the conditions under which the permits apply, the filing requirements, the procedure and review criteria, the legal foundation, the relevant rules and regulations, and the responsible agencies are given.

The classes of permits covered are:

1) Shoreline and Coastal Waters Permits;
2) Other Special District Permits and Controls;
3) Environmental Permits;
4) Zoning and Building Permits and Controls;
5) Other Special Permits and Controls.

The process for the county permits are similar. The procedures have been written using the departments of the City and County of Honolulu. For the County of Hawaii, the responsible agency listed at the end of the description of the permit should be substituted. For the Counties of Maui and Kauai, contact the respective Planning Departments for information. Not all permits listed for the City and County of Honolulu apply to other counties.

2.1. SHORELINE AND COASTAL WATERS PERMITS

2.1.1. PERMIT FOR WORK IN SHORES AND SHOREWATERS, NAVIGABLE WATERS

1. Significance for Energy Alternatives.

This permit applies to projects involving permanent or temporary construction in shorewaters including navigable portions of streams and certain shores.

The energy alternatives affected include:

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Ocean Thermal Energy Conversion (OTEC)

Small-Scale Water Pumping Wind Energy Conversion Systems

2. Permit Requirements.

The application (form available at the State Department of Transportation) requires a description of the shoreline, nature and extent of proposed work (dredging, disposition of dredged material, etc.), reference to public access, effects on adjacent property owners, and other information pertinent to the proposed work.

A $50.00 fee must accompany the application to cover the cost of engineering investigations.

Under a new procedure, the Department of Transportation acts only in the capacity of a review agency in the process. The proposal is processed as a CONSERVATION DISTRICT USE APPLICATION and is approved or denied by the Board of Land and Natural Resources. This relieves the applicant of the necessity of obtaining two separate permit approvals for the same work.

A rare exception would occur only during those infrequent times when the Board approves a proposal over the objections of the Department of Transportation. In these cases, the applicant will be required to obtain a shorewaters construction permit from the Department of Transportation.

Refer also to SPECIAL MANAGEMENT AREA PERMIT, SHORELINE SETBACK VARIANCE, ENVIRONMENTAL IMPACT STATEMENT, CONSERVATION DISTRICT USE APPLICATION, AND DEPARTMENT OF THE ARMY PERMIT FOR ACTIVITIES IN WATERWAYS.

2.1.1. PERMIT FOR WORK IN SHORES AND SHOREWATERS, NAVIGABLE WATERS, continued

3. Procedures and Review Criteria.

A public hearing, while not mandatory, may be required if sufficient concern is expressed.

4. Law(s).

Chapter 266, Hawaii Revised Statutes

5. Rules and Regulations.

Department of Transportation's Rules and Regulations and Tariff No. 4

6. Responsible Agency(ies).

Issued by: Department of Transportation
State of Hawaii
79 S. Nimitz Highway
Honolulu, Hawaii 96813

2.1.2. SPECIAL MANAGEMENT AREA (SMA) PERMIT

1. Significance for Energy Alternatives.

An SMA permit is required for any "development," as defined by statute, within designated SMA boundaries. Maps identifying the SMA are located at City Council or Department of Land Utilization offices.

Exemptions are contained in City and County of Honolulu Ordinance No. 4529, and County of Hawaii Planning Commission Rule 9.

Issuance of SMA permit must, by statute, precede any other necessary land use approval. If, however, a shoreline setback variance is required in addition to an SMA permit, it will be processed concurrently. (See SHORELINE SETBACK VARIANCE.)

Seaward of the shoreline is classified Conservation by the State. A CONSERVATION DISTRICT USE APPLICATION may be required.

Refer also to PERMIT FOR WORK IN SHORES AND SHOREWATERS AND WATERS OF THE U.S.

The energy alternatives affected include:

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems (off-shore "wind farms")

Small-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

2. Permit Requirements.

The two-step process is:

(a) The applicant files a "Request for Assessment"(Honolulu) or "Special Management Area Use Permit Assessment Form"(Hawaii). Forms for this purpose are available at the responsible department. The applicant is encouraged to submit sufficiently detailed data on the project and its environmental setting to allow the Department to assess the environmental effects of the proposal

accurately. The applicant must also disclose the estimated cost of the project.

(b) After the assessment is complete, the applicant files an "Application for Shoreline Management Permit"(Honolulu) or "Special Management Area Use Permit Application"(Hawaii), with a $100.00 application fee.

3. Procedures and Review Criteria.

In reviewing the "Request for Assessment," the Department is guided by the policies and objectives of Chapter 205, HRS, and the guidelines of Section 4, Ordinance 4529.

The object is to determine if the proposal will have "significant environmental effects" on the SMA. This review must be accomplished within thirty (30) days of the request for assessment.

If the cost of the proposed land development project is less than $25,000 and it has no significant effects on the SMA, the Department will issue a Minor Permit. No public hearing is required.

If the cost of the proposed land development is more than $25,000 and it has no significant environmental effects on the SMA, the Department will file a Negative Declaration and accept the "Application for Special Management Permit."

If, regardless of its cost, the proposed land development project is found to have a significant environmental effect on SMA, the Department will require an EIS.

This document will be processed in accordance with the State EIS law (Chapter 343, HRS: Environmental Impact Statements). The EIS is prepared by the applicant and must be accepted by the Department before the "Application for Special Management Permit" can be accepted.

On acceptance of an "Application for Special Management Permit," a public hearing is held by the Department between twenty-one (21) and ninety (90) days. Advance notice is given to adjacent property owners and published in newspapers of general circulation. The City Council must act on an application within thirty (30) days after this hearing, unless an extension is agreed to by the applicant.

2.1.2. SPECIAL MANAGEMENT AREA (SMA) PERMIT, continued

4. Law(s).

Chapter 205A, Hawaii Revised Statutes
City Ordinance No. 4529(76), City and County of Honolulu
Rule 9, Planning Commission, County of Hawaii

5. Rules and Regulations.

Refer to City Ordinance No. 4529(Honolulu) and
Rule 9, Planning Commission(Hawaii)

6. Responsible Agency(ies).

Issued by: Department of Land Utilization
City and County of Honolulu
650 South King Street (7th floor)
Honolulu, Hawaii 96813

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Reviewed by: Honolulu City Council
City Hall
Honolulu, Hawaii 96813

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

2.1.3. DEPARTMENT OF THE ARMY PERMIT FOR ACTIVITIES IN WATERWAYS

1. Significance for Energy Alternatives.

Any person, firm, or agency (including Federal, State, and local governmental agencies) who plans to do work in the waters of the United States must obtain a permit from the U. S. Army Corps of Engineers. Waters of the United States include ocean waters; coastal, inland and tidal waters, tidal ponds, fishponds, rivers, streams, and adjacent wetlands; impoundments, perched wetlands, and intermittent streams.

The following types of activities in waters of the U. S. and wetlands will require a permit: construction of piers, wharves, bulkheads, pilings, marinas, docks, ramps, floats, mooring buoys and like structures; construction of wires, cables or other structures over the water, and pipes, cables, or tunnels under the water; dredging and excavation; depositing fill and dredged material; filling of wetlands; construction of riprap, revetments, groins, breakwaters and levees; and transportation of dredged material for dumping into ocean waters.

The energy alternatives affected include:

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems (off-shore "wind farms")

Small-Scale Water Pumping Wind Energy Conversion Systems

2. Permit Requirements.

The permit request must be filed with the U. S. Army Corps of Engineers. Application forms for this purpose and other information are available at the Honolulu District Office.

The permit application form must be accompanied by the plans of the proposed activity drawn on 8 by 10-1/2 inch sheets and a complete description of the existing conditions at the project site, discussion of alternatives to the proposal, and other pertinent information so that the environmental impacts of the proposal can be fully evaluated.

2.1.3. DEPARTMENT OF THE ARMY PERMIT FOR ACTIVITIES IN WATERWAYS, continued

There is a $100.00 permit fee for commercial or industrial uses and a $10.00 fee for non-commercial uses. Permit fees should not be submitted with the application, but will be collected prior to issuance of the permit.

3. Procedure and Review Criteria.

After the District Engineer determines that the permit request is complete, a public notice, usually providing a 30-day comment period, is issued to all known interested individuals, groups, adjoining property owners, and governmental agencies. Substantive comments received in response to the public notice are furnished the applicant to give him an opportunity to resolve or rebut the comments or objections.

The District Engineer may hold a public hearing to afford interested parties full opportunity to express their views and to develop pertinent data to evaluate the permit application, where warranted. In addition, the District Engineer must hold a public hearing when requested by any person if the proposed activity involves the discharge of dredged or fill material. In such cases, arrangements are coordinated with the applicant and a 30-day advance notice issued to the public.

The District Engineer prepares an Environmental Assessment for all applications. In those cases where the proposed activity would significantly affect the quality of the human environment, the District Engineer must prepare an Environmental Impact Statement (EIS).

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered: among those are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use, navigation, recreation, water supply, water quality, energy needs, safety, food production, and, in general, the needs and welfare of the people.

If there are no substantive objections to the proposed activity and the necessary State and local approvals are obtained, a permit can usually be issued within 90 to 120

2.1.3. DEPARTMENT OF THE ARMY PERMIT FOR ACTIVITIES IN WATERWAYS, continued

days after receipt of a completed application. However, if the application becomes controversial and a public hearing or an EIS is necessary, the processing of the application could take a year or more.

4. Law(s).

Section 10 of the River and Harbor Act, approved March 3, 1899 (33 USC 403)

Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 USC 1344).

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 USC 1413)

5. Rules and Regulations.

Regulatory Programs of the Corps of Engineers, as published in the Federal Register, July 19, 1977 (33 CFR Parts 320-329)

6. Responsible Agency(ies).

Issued by: U. S. Army Corps of Engineers,
Honolulu District
Building 230
Fort Shafter, Hawaii 96858

2.1.4. SHORELINE SETBACK VARIANCE

1. Significance for Energy Alternatives.

A variance is required for all proposed construction in the shoreline setback area. Construction includes, but is not limited to remodeling, construction, or replacement. The shoreline setback is 40 feet inland from the upper reaches of the wash of waves, usually evidenced by the edge of vegetation growth, or the upper line of debris left by the wash of the waves.

Projects proposed by government agencies within the 40-feet setback are subject to two public hearings held by the proposing agency--one hearing when the project is first conceived and one hearing prior to letting of the construction contract. The Director has the authority to approve construction of private utilities when there will be minimal interference with natural shoreline processes.

The energy alternatives affected include:

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems (off-shore "wind farms")

2. Requirements.

An applicant must submit a map prepared by a registered land surveyor which shows the actual field location of the shoreline and the position of the proposed facilities relative to it. The purpose of the survey is to show whether the project is subject to the provisions of the shoreline setback law.

The shoreline survey must have been certified by the State Surveyor within twelve (12) months prior to filing.

The filing fee is $100.00.

3. Procedure and Review Criteria.

To obtain a shoreline setback variance, an applicant must prepare a written statement showing that: a) the proposed structure, activity, or facility is in the public interest, or b) that hardship will be caused to the applicant if the request is denied.

2.1.4. SHORELINE SETBACK VARIANCE, continued

A public hearing is required. The Director of Land Utilization must approve or disapprove the request in writing within forty-five (45) days after the hearing, unless this period is extended by written agreement of the applicant.

The variance procedure is often combined with the Special Management Area (SMA) permit process. (Since the SMA overlaps the shoreline setback area, both sets of regulations apply.)

The Department of Land Utilization is delegated the authority to act on shoreline setback variances only for projects either exempted from the SPECIAL MANAGEMENT AREA PERMIT or those receiving an SMA "Minor Permit." All others must be approved by the City Council in conjunction with approval of the SMA Permit. (See SPECIAL MANAGEMENT AREA PERMIT.)

4. Law(s)

Chapter 205, Hawaii Revised Statutes
Ordinance No. 4631(76), City and County of Honolulu
Rule No. 8, Planning Commission, County of Hawaii

5. Rules and Regulations.

Shoreline Setback Rules and Regulations of the City and County of Honolulu

6. Responsible Agency(ies).

Approved by: Department of Land Utilization
City and County of Honolulu
650 S. King Street (7th Floor)
Honolulu, Hawaii 96813

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

2.1.5. PERMIT FOR USE OF STATE WATERS

The conservation district, as defined in law, includes the submerged lands or state waters of the state, and outlying small islands. Therefore, any development in state waters must get a Conservation District Use permit from the State Department of Land and Natural Resources.

2.2. OTHER SPECIAL DISTRICT PERMITS AND CONTROLS

2.2.1. CONSERVATION DISTRICT USE APPLICATION

1. Significance for Energy Alternatives.

Anyone proposing to make any use of lands within the Conservation district, as established by the State Land Use Commission, must apply. The Conservation district includes large areas of mountain and shoreline lands, virtually all traditional Hawaiian fishponds, and most submerged offshore lands and outlying small islands. Maps showing the boundaries of the Conservation district are available at the Department of Land and Natural Resources (DLNR).

The energy alternatives affected include:

Forestry for Biomass Energy

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Geothermal Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Application Requirements.

A complete application form (available at DLNR) must be submitted, identifying the site of the proposed action, and describing the action in sufficient detail to permit a thorough evaluation by the Department. The Department makes recommendations on the proposed uses to the Board.

Site and construction plans are required. Twelve (12) copies of the application form and all attachments must be submitted to the Department.

There is a $10.00 filing fee for permitted uses and $20.00 for other uses.

2.2.1. CONSERVATION DISTRICT USE APPLICATION, continued

3. Procedure and Review Criteria.

Applications are considered during Board meetings which are open to the public. If the Board fails to act within one hundred and eighty (180) days after receipt of an application for permitted uses, the applicant may automatically put his land to the use or uses requested.

An EIS may also be required under Chapter 343, HRS. (See ENVIRONMENTAL IMPACT STATEMENT.)

For Shoreline conservation areas, a number of other permit requirements may apply. See SPECIAL MANAGEMENT AREA PERMIT, SHORELINE SETBACK VARIANCE, PERMIT FOR WORK IN SHORES AND SHOREWATERS, AND WATERS OF THE U.S.

The Board may also grant Temporary Variances from zoned uses for "good cause" and where the Board determines the use to be in accordance with good conservation practices.

4. Law(s).

Chapter 183, Hawaii Revised Statutes

5. Rules and Regulations.

State Department of Land and Natural Resources Regulation No. 4

6. Responsible Agency(ies).

Approved by: Board of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Reviewed by: Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

2.2.2. DESIGNATED GROUNDWATER AREA USE PERMIT

1. Significance for Energy Alternatives.

Anyone wishing to initiate the use of groundwater for non-domestic purposes from "designated groundwater areas" established by the Board of Land and Natural Resources must apply for this permit.

The energy alternatives affected include:

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Small-Scale Water Pumping Wind Energy Conversion Systems

2. Permit Requirements.

The application must be in writing and must state specifically:

(a) the merits of the water use;

(b) the hazards to public health, safety or welfare;

(c) the desirability of the permit; and

(d) any appropriate qualifications of the applicant.

Fees are established by the Board on the basis of the class of the permit, duration, the capital investment to be made, and other relevant factors.

3. Procedure and Review Criteria.

Permits may be granted if:

(a) There is water available for use.

(b) The proposed use will be beneficial.

(c) The most beneficial use and development of the water resources of the State will not be impaired by granting the permit.

(d) Granting the permit will not substantially and materially interfere with other existing permitted uses.

The Board gives notice of the application by publication in a newspaper of general circulation at least ten (10) days before granting the permit. The applicant may also be

2.2.2. DESIGNATED GROUNDWATER AREA USE PERMIT, continued

required to mail notices to any State or City agency or person who may have an interest in the application.

Each permit is issued for a specified period, not exceeding fifty (50) years.

Permits may be conditioned as the Board deems appropriate.

A hearing can be held upon the request of any person who is or may be adversely affected by the granting or denial of the permit.

If municipal water is already available, permission may be denied. The applicant would be required to use municipal supplies.

4. Law(s).

Chapter 177, Hawaii Revised Statutes

5. Rules and Regulations.

As adopted for specified "groundwater areas" by the Board.

6. Responsible Agency(ies).

Issued by: Board of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Reviewed by: Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

2.3. ENVIRONMENTAL PERMITS

2.3.1. ENVIRONMENTAL IMPACT STATEMENTS (EIS) -- NEPA

1. Significance for Energy Alternatives.

A Federal EIS is required for private projects under the National Environmental Policy Act if: (a) the project requires issuance of a Federal permit, and (b) the project constitutes a major action significantly affecting the environment.

Examples are:

(1) diversion of surface fresh waters from streams under the jurisdiction of the U. S. Army Corps of Engineers;

(2) effluent discharge from large-scale operations, or from projects in controversial areas;

(3) projects involving sites on the Federal Register of Historic Places;

(4) projects involving construction in coastal waters (e.g., intake or outfall structures, breakwaters, etc.); and

(5) projects involving the use of Federal lands or direct Federal financing.

The energy alternatives affected include:

Bioconversion of Field Crops or Agricultural Wastes

Forestry for Biomass Energy

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis-fermentation)

Geothermal Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Requirements.

The EIS is to be a thorough, detailed evaluation of the environmental consequences of the proposed action. The document is to include sufficient detail so that responsible decision-makers, and the public, have an accurate picture of its possible consequences. Contract and format requirements are quite specific and are detailed in the Guidelines referred to above.

While the Federal agency is theoretically responsible for preparing the document, in practice the applicant must generate the required information and perform necessary analyses.

There is no filing fee.

3. Procedure and Review Criteria.

Opportunity is provided for public commentary through the EIS review process. Regulations require that public hearings be held in cases of "major" actions.

The permit will not be processed until the EIS review is complete. The project may also be subject to the State's EIS requirement under Chapter 343, HRS.

4. Law(s).

National Environmental Policy Act of 1969 (NEPA), Public Law 91-190

5. Rules and Regulations.

National Council of Environmental Quality Guidelines

6. Responsible Agency(ies).

The Federal agency under whose jurisdiction the proposed land development project falls is responsible for determining the need for an EIS.

2.3.2. ENVIRONMENTAL IMPACT STATEMENT (EIS) -- SMA

1. Significance for Energy Alternatives.

An EIS can be required under City and County of Honolulu Ordinance No. 4529 for projects within the designated Special Management Area (SMA). Refer to SPECIAL MANAGEMENT AREA PERMIT. An EIS can be required after assessment and only if assessment shows probable significant effects on the environment.

The alternatives affected include:

Marine Aqualculture for Biomass Energy (sargassum, and other kelps)

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

2. Requirements.

An EIS under Ordinance No. 4529 must be prepared by the applicant in accordance with the procedural requirements of the existing State EIS law (Chapter 343, HRS).

3. Procedures and Review Criteria.

The City Department of Land Utilization provides the applicant with guidelines for the content of the EIS through an "EIS Preparation Notice." The required EIS is processed in the same manner that an EIS required under Chapter 343, HRS, is, with two exceptions:

a. Distribution of copies is handled by the Department, not the State's Environmental Quality Commission; and
b. Appeals (in the case of non-acceptance of the EIS) are directed to the Honolulu City Council, not the Environmental Quality Commission.

The policies, objectives, and guidelines contained in Ordinance No. 4529 are the primary consideration in reviewing the EIS for acceptability.

There is no public hearing on the EIS, but a hearing is required for SMA permit.

Acceptance by the Department of the required EIS must precede further processing of the SMA permit.

2.3.2. ENVIRONMENTAL IMPACT STATEMENT (EIS) -- SMA, continued

4. Law(s).

Chapter 343, Hawaii Revised Statutes

City Ordinance No. 4529(75), City and County of Honolulu

5. Rules and Regulations.

City Ordinance No. 4529, City and County of Honolulu

Environmental Quality Commission Regulations

6. Responsible Agency(ies).

Department of Land Utilization
City and County of Honolulu
650 S. King Street (7th Floor)
Honolulu, Hawaii 96813

2.3.3. ENVIRONMENTAL IMPACT STATEMENTS (EIS) -- OEQC

1. Significance for Energy Alternatives.

An EIS may be required for a land development project involving: (1) the use of State or County lands or funds; (2) lands within State Conservation District; (3) lands within the shoreline area, defined as 20 to 40 feet inland and 300 feet seaward from the shoreline as defined by Chapter 205.31, HRS; (4) lands within any historic site as designated in either the State or National Register of Historic Places; (5) lands in the City's Waikiki-Diamond Head area (Section A of the Waikiki Development Plan); and (6) an amendment to the City's General Plan where such amendment would result in a designation other than agriculture, conservation, or preservation.

An EIS is required for projects which take place within the above-described categories only when agencies determine that the project may have a significant effect on the environment.

If impacts are judged to be insignificant, a Negative Declaration is filed with the office of Environmental Quality Control by the agency making such a determination.

The energy alternatives affected include:

Bioconversion of Field Crops and Agricultural Wastes

Forestry for Biomass Energy

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Geothermal Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Requirements.

Agencies must assess a project to determine the need for an EIS within thirty (30) days from the submission of the request for approval. No time limits are set on the preparation of the document. The applicant prepares the EIS.

The Environmental Quality Commission (EQC) was directed by law to devise rules and regulations to guide EIS preparation. These rules lay out a general EIS format through which the applicant must respond to a number of specific topic areas in sufficient detail to permit decision-makers to fully anticipate the environmental consequences of the proposed action. The major categories of information called for by the regulations are as follows:

Summary sheet which outlines and concisely discusses the contents.

Project description.

The relationship of the proposed action to land use plans, policies, and controls for the affected area.

Any probable adverse environmental effects which cannot be avoided.

Alternatives to the proposed action.

The relationship between local short-term uses of man's environmental and the maintenance and enhancement of long-term productivity.

Mitigation measures proposed to minimize impact.

Any irreversible and irretrievable commitments of resources.

An indication of what other interests and considerations of governmental policies are thought to offset the adverse environmental effects of the proposed action.

Organizations and persons consulted.

2.3.3. ENVIRONMENTAL IMPACT STATEMENTS (EIS) -- OEQC, continued

There is no filing fee and no public hearing requirement.

3. Procedure and Review Criteria.

After it is determined that an EIS is required, a notice is published in the OEQC Bulletin advising the public that an EIS will be prepared. The Environmental Impact Statement Preparation Notice --prepared by the agency requiring the EIS -- summarizes the proposed action, points out areas of potential impact and generally documents the steps and criteria used in making the decision. The Notice includes the name and address of a person who may be contacted for further information about the project.

Following the publication of the Notice, the public has thirty (30) days in which to request to be a consulted party during EIS preparation. After the EIS is prepared and circulated, the public has an additional thirty (30) days during which to comment in writing. The applicant must respond in writing to any public comments. Both the comments and applicant's response must be included in the final EIS submitted to the approving agency.

An EIS is accepted or not accepted by the agency requiring it. Acceptance of an EIS must be within sixty (60) days of filing the document with the approving agency. Agency acceptance of an EIS means that all identifiable environmental impacts have been adequately described, and questions raised during the review phase of the document have been satisfactorily answered by the applicant. Acceptance does not mean that a project is approved. It is merely a condition preceding requests for permit approval.

The mechanics of filing the statement, public notification of agency decisions, distribution of the statement for review, and appeals from agency decisions are handled through the State Office of Environmental Quality Control, 550 Halekauwila Street, Honolulu, Hawaii 96813.

When actions using State or County resources are subject to both State and Federal EIS requirements, the State's must be satisfied first.

"Public projects," e.g., those involving the use of State or County lands or funds are assessed by the agency proposing the project. If it is determined that there would be significant environmental effects, the agency prepares the required EIS. Acceptance of the document is either by the Governor or Mayor -- depending upon whether State or County funds/ lands are involved. (See Chapter 343, HRS, for

further elaboration.) Review of a public agency EIS is handled in essentially the same manner as the procedure for "private projects" described above.

Projects involving wetlands, streams, and coastal waters could be subject to both State and Federal EIS requirements. (See ENVIRONMENTAL IMPACT STATEMENTS -- NEPA.)

4. Law(s).

Chapter 343, HRS

5. Rules and Regulations.

Environmental Quality Commission's Environmental Impact Statement, Regulations and Rules of Practice and Procedure

6. Responsible Agency(ies).

Whether an EIS is required or not is a determination made by the State or County agency to whom the applicant first applies for any permit connected with a project that falls under any one of the categories specified below.

2.3.4. AUTHORITY TO CONSTRUCT PERMIT AND PERMIT TO OPERATE (AIR QUALITY)

1. Significance for Energy Alternatives.

Anyone engaged or desiring to engage in operations which result or may result in air pollution is required to secure these permits before installation or operation or continued operation. "Air pollution" is defined in Section 342-21(1), HRS. Chapter 42 of the regulations further defines substances which are air pollutants and states that "any industrial, public or private project or development which could constitute a new source of air pollution or an increased source of air pollution will be required to have a permit to construct and operate and, as part of the initial project design, to provide the highest and best practicable degree of air pollution control."

Chapter 43 establishes a specific requirement for permits for all new sources of air pollution.

The alternatives affected include:

Solid Waste (pyrolysis, gasification)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Bioconversion (direct combustion for public or private power generation)

Geothermal Projects

2. Permit Requirements.

Application is made to the Director of Health. Forms are available for this purpose at the State Department of Health.

The form must be accompanied by two copies of complete data, citing information, plan descriptions, specifications, drawings, and other detailed information necessary to determine in what manner the new source will be operated and controlled.

There is a filing fee of $20.00.

2.3.4. AUTHORITY TO CONSTRUCT PERMIT AND PERMIT TO OPERATE (AIR QUALITY), continued

3. Procedure and Review Criteria.

An applicant of Authority to Construct or Permit to Operate must show to the satisfaction of the Director of Health that:

(a) The new source is designed, built, and equipped in accordance with the best practicable control technology so as to reduce emissions to a minimum.

(b) The new source is designed and will be constructed or modified to operate without causing a violation of applicable rules and regulations.

(c) The new source will not endanger the maintenance of applicable ambient air quality standards.

The Director must act on an application within one hundred and eighty (180) days, and must notify the applicant in writing of approval, conditional approval, or denial. The Director may deny an application if the information submitted shows that the new source cannot conditionally or otherwise meet (a) through (c), above.

The Director may grant conditional approval, and in such cases, may:

(a) require an applicant to provide sampling and testing facilities such as sampling ports of size, number, and location as specified by the Director; safe access to each port; and instrumentation for monitoring and recording emission data.

(b) specify conditions which will bring the operation of any new source described in the application up to the standards of (a) through (c) above.

In acting upon an application for a Permit to Operate, the Director can deny if it is found that the facility has not been constructed in accordance with the Authority to Construct.

Performance testing may also be requested by the Director.

The Environmental Protection Agency retains power to formulate a state plan and/or enforce applicable air quality standards in the event a state fails to do so.

2.3.4. AUTHORITY TO CONSTRUCT PERMIT AND PERMIT TO OPERATE (AIR QUALITY), continued

4. Law(s).

Clean Air Amendments of 1977, Public Law No. 95-95

Chapter 342, Hawaii Revised Statutes.

5. Rules and Regulations.

Public Health Regulations, Chapter 42 and 43

6. Responsible Agency(ies).

Issued by: Pollution Technical Review Branch
Environmental Protection and Health Services Division
Department of Health
645 Halekauwila Street
Honolulu, Hawaii 96813

Other: Environmental Protection Agency
Enforcement Division
215 Fremont Street
San Francisco, California 94105

2.3.5. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

1. Significance for Energy Alternatives.

An NPDES permit is required before any effluent discharge can be made from ponds, tanks or other facilities to surface streams or to coastal waters. Refer to Chapter 37 of Public Health Regulations for exemptions.

The energy alternatives affected include:

Solid Wastes (pyrolysis, gasification)

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Alcohol (fermentation)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Forestry (runoff of agricultural chemicals)

Ocean Thermal Energy Conversion (OTEC)

Feedlots

Geothermal Projects (reinjection of mineral, salts, and solids-laden working fluid)

Field Crops (runoff of agricultural chemicals)

2. Permit Requirements.

A national form is available at the Department of Health.

Required data include physio-chemical characterization of the proposed effluent, specifically nitrogen and phosphorous, pH, temperature, and any other factors and parameters by which the effluent differs from the quality of the receiving water.

There is a $100.00 filing fee.

3. Procedure and Review Criteria.

There is no mandatory public hearing. However, there is a requirement for public notification of the Department's intent to issue a permit and a hearing will be required if requested by the public.

2.3.5. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT, continued

This permit is issued for a limited period of time, usually five years with no guarantee of renewal.

A monitoring program involving quarterly (or more frequent) sampling of the effluent and its constituents could be required.

In certain cases, an EIS could be required as a condition preceding this permit. (See ENVIRONMENTAL IMPACT STATEMENTS.)

4. Law(s).

Federal Water Pollution Control Act Amendment of 1972, Public Law 92-500

Chapter 342, Part III, Hawaii Revised Statutes

5. Rules and Regulations.

Public Health Regulations, Chapter 37

6. Responsible Agency(ies).

Issued by: Pollution Technical Review Branch
Environmental Protection and Health Service Division
State Department of Health
654 Halekauwila Street
Honolulu, Hawaii 96813

Reviewed by: Environmental Protection Agency
Enforcement Division
215 Fremont Street
San Francisco, California 94105

2.3.6. VARIANCE FROM POLLUTION CONTROLS

1. Significance for Energy Alternatives.

A variance must be obtained for any emission or discharge of a pollutant or noise which exceeds applicable standards. Refer to Chapter 37-A, 42, and 44-A of the Public Health Regulations for water quality, air quality, and noise standards, respectively.

The energy alternatives include:

Biomass Field Crops

Forestry for Biomass Energy

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Geothermal Projects

Ocean Thermal Energy Conversion (OTEC)

Large-scale Wind Systems

2. Requirements.

An application form is available at the Department.

The application must be accompanied by a complete and detailed description of present conditions and how present conditions do not conform to standards.

3. Review Criteria and Procedure.

No variance can be granted unless the application and the supporting information clearly show that:

(a) The continuation of the function or operation is in the public interest;

(b) The emission or discharge occurring or proposed to occur does not substantially endanger human health or safety; and

2.3.6. VARIANCE FROM POLLUTION CONTROLS, continued

(c) Compliance with the rules, regulations, or standards from which a variance is sought would produce serious hardship without equal or greater benefits to the public.

No renewal can be allowed without a thorough review of known and available means of preventing, controlling, or abating the pollution or excessive noise involved.

The Department may issue a variance for a period not exceeding ten years.

Every variance granted must include conditions requiring the applicant to perform air, discharge, effluent, or noise sampling and report the results of such sampling to the department.

Any application for renewal must be made at least sixty (60) days before expiration of the variance.

No variance can be issued or renewed for any discharge of pollutants or wastes which is in violation of the requirements of the Federal Water Pollution Control Act, Amendment of 1972.

4. Law(s).

Chapter 342, Hawaii Revised Statutes

5. Rules and Regulations.

Public Health Regulations, Charters 37-A, 42 and 44-A

6. Responsible Agency(ies).

State Department of Health
1250 Punchbowl Street
Honolulu, Hawaii 96813

2.3.7. ZONE OF MIXING APPROVAL

1. Significance for Energy Alternatives.

A zone of mixing application must be filed by anyone wishing to discharge effluent into a location where water quality standards for that area would be violated. Refer also to NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

Water quality standards are established, by geographical area, in Chapter 37-A.

The energy alternatives affected include:

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Ocean Thermal Energy Conversion (OTEC)

2. Requirements.

Application is made to the Department of Health. Forms are available at the Department.

The application form must be accompanied by a complete and detailed description of present conditions, an explanation of how these conditions do not conform to standards, and other pertinent information.

3. Procedures and Review Criteria.

Applications are reviewed for the effect or probable effect on water quality standards (as specified in Chapter 37-A).

Approval can be granted only after a public hearing is held by the Director of Health in the county where the source of effluent is situated.

No zone of mixing can be granted unless the application and the supporting information clearly show that:

(a) The continuation of the function or operation involved in the discharge is in the public interest;

(b) The discharge occurring or proposed to occur does not substantially endanger human health or safety;

2.3.7. ZONE OF MIXING APPROVAL, continued

(c) Compliance with existing water quality standards would produce serious hardships without equal or greater benefits to the public; and

(d) The discharge occurring or proposed to occur does not violate basic standards applicable to all waters, will not unreasonably interfere with any actual or probable use of the water areas for which it is classified, and has received the best degree of treatment or control practicable under existing technology or, in the case of the proposed discharge, will receive the best available demonstrated pollution control technology, processes and operating methods.

The Director may issue a zone of mixing for a period not exceeding five years.

The grantee may be required to perform effluent and receiving water sampling and report the results of each sampling to the Director. A program of research to develop practicable alternatives to the methods of treatment or control in use by the grantee may also be required.

The establishment of any zone of mixing is subject to the concurrence of the Environmental Protection Agency.

4. Law(s).

Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500

Chapter 342, Hawaii Revised Statutes

5. Rules and Regulations.

Public Health Regulations, Chapter 37-A

6. Responsible Agency(ies).

Approval by: Pollution Technical Review Branch
Environmental Protection and Health Services Division
State Department of Health
645 Halekauwila Street
Honolulu, Hawaii 96813

Reviewed by: Environmental Protection Agency
Enforcement Division
215 Fremont Street
San Francisco, California 94105

2.4. ZONING AND BUILDING PERMITS AND CONTROLS

2.4.1. BUILDING PERMIT FOR BUILDING, ELECTRICAL, AND PLUMBING WORK

1. Significance for Energy Alternatives.

Permits are required:

a. to erect, construct, alter, remove, or demolish any building or structure (including fences, retaining walls, and swimming pools);

b. for any electrical or plumbing work; and

c. to construct or alter any sidewalk, curb or driveway in public rights-of-way.

For specific exemptions, refer to the chapters cited below in Revised Ordinances, 1969.

All of the energy alternatives would be affected.

2. Permit Requirements.

An application must be submitted to the County Building Department. A form for this purpose is available at the Department.

In addition to the application form, three sets of plans are required. They should be drawn to scale with sufficient information and details to clearly show the nature and extent of the work. The plans must be properly stamped and signed by an architect or structural engineer if the principal structural members are of reinforced concrete or structural steel, regardless of value. For retaining wall five feet or more in height, plans must be properly stamped and signed by an architect, structural engineer, or civil engineer.

Certain information must be shown on the plans:

a. On plot plan, show lot dimensions, location of driveway, location of proposed work, distance from property lines and other buildings, easements and other pertinent information.

b. On floor plan, indicate the use of rooms, room dimensions, location and sizes of windows, exits, etc.

c. On framing plans or typical section view, show sizes and spacing of beams, floor joists, rafters, etc., and ceiling heights.

2.4.1. BUILDING PERMIT FOR BUILDING, ELECTRICAL, AND PLUMBING WORK, continued

d. On outside or exterior elevation views, show height of building.

e. Give address and/or tax map key of where the work is to be done, and the name and address of owner.

f. Give name and address of person who prepared the plans (if other than owner).

There is a minimum fee of $3.00 for work up to $500.00 in value. This increases as the value of work being done increases.

3. Procedures and Review Criteria.

The Building Department reviews the application and plans for compliance with the Building, Electrical, and Plumbing Codes.

The application and plans are referred to a number of City and State agencies with jurisdiction over specific aspects of the proposed work to be done. Each of these agencies must sign the application form, indicating compliance with applicable laws.

The Building Department issues the permit on the basis of this compliance.

Refer to guidelines, "Do You Need a Building Permit?" available at the Building Department.

Building permits may also be obtained at Satellite City Halls.

Chapter 16, R.O. 1969, establishes a Building Board of Appeals to hear and adjudge appeals on actions by the Building Superintendent in administering building permits.

See also: SUPPLEMENTAL INFORMATION ON BUILDING PERMITS.

4. Law(s).

Revised City Charter, Chapter 15, City and County of Honolulu

Revised Ordinances, Chapters 16, 17, 18 and 19, City and County of Honolulu

Hawaii County Code, Chapters 11, 13, 15

2.4.1. BUILDING PERMIT FOR BUILDING, ELECTRICAL, AND PLUMBING WORK, continued

5. Rules and Regulations.

Building Code, R.O. 1969, Chapter 16,
City and County of Honolulu

Electrical Code, R.O. 1969, Chapter 17,
City and County of Honolulu

Plumbing Code, R.O. 1969, Chapter 19,
City and County of Honolulu

Fee Schedules and Permit Procedures, R.O. 1969,
Chapter 18, City and County of Honolulu

Hawaii County Code, Chapters 11, 13, 15
Uniform Building Code
National Electrical Code
Uniform Plumbing Code

6. Responsible Agency(ies).

Issued by: Building Department
City and County of Honolulu
650 S. King Street (1st Floor)
Honolulu, Hawaii 96813

Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Reviewed: Various other agencies

SUPPLEMENTAL INFORMATION ON BUILDING PERMITS

As part of the Building Permit approval process, applications must be reviewed and approved in writing by a number of "referral agencies." Some of these agencies review all Building Permit applications (Board of Water Supply, City Fire Department, etc.), while others are involved only when the project would affect a specialized area of their jurisdiction over land development (airports, food establishments, etc.).

The supplemental notes below are intended to call attention to some of the referral agencies' requirements. They are not meant to be a comprehensive description of Building Permit referrals. The agencies should be contacted directly for more detailed information on their requirements.

1. Water Supply. Board of Water Supply concurrence is required for all Building Permit applications. (Note: Concurrence is also required for approval of: AREAWIDE CLEARINGHOUSE REVIEW; SOLID WASTE DISPOSAL PERMIT; PRIVATE SEWAGE DISPOSAL SYSTEM APPROVAL; CONSERVATION DISTRICT USE APPLICATION; ZONE CHANGE; CONDITIONAL USE PERMIT; and SUBDIVISION.)

2. Fire Safety. The City Fire Chief's approval is required for all Building Permit applications. This involves a plans check.

3. Urban Renewal. The City's Department of Housing and Community Development must approve any project proposed for land within an area covered by an Urban Renewal Plan. Construction in these areas is subject to all applicable building codes and zoning regulations, and building permits must be obtained. (Any amendments to an Urban Renewal Plan must be processed through that Department and approved by City Council.)

4. Improvements. Applicants for a Building Permit must comply with Chapter 20, Revised Ordinances of Honolulu, 1969, "Construction of Improvements by Certain Property Owners." The provisions of this Chapter are administered by the City's Department of Public Works. Improvements include sidewalks, curbs, gutters, pavement, adjustments at the property line, and adjustment or relocation of drainage, water, street lighting, sewer and other public utilities lines.

5. Refuse Collection and Disposal. The Refuse Division of the City's Department of Public Works reviews and approves plans for refuse collection from private roads and nonstandard private driveways. This review is done in accordance with the provisions of Section 9-1.3(b) of the Revised Ordinances of Honolulu, 1969. Review takes place during the Building Permit approval process, or as a part of PLANNED DEVELOPMENT or CLUSTER review.

6. Air Conditioning and Ventilation, Food Service, and Noise Permits. An appplicant for a Building Permit which involves the installation of air conditioning or a ventilation system, the establishment of a food service operation, or a request to exceed minimum noise standards during construction will be referred to the State Department of Health for a plans check and the issuance of a permit or certificate as appropriate. Referral is made as a part of the Building Permit approval process. Questions on specific standards and requirements should be referred to the Department of Health.

7. Airports. State Airport Zoning Regulations affect heights of structures and are administered by the Airports Division of the State's Department of Transportation. The purpose of the regulations is to prevent the creation, maintenance, establishment or continuation of airport hazards. Referral would be made for any Building Permit application on lands adjacent to or in the vicinity of airports. The regulations apply to all public, quasi-public and military airports in the State, but do not apply to private airports. They would specifically affect:

(a) any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, and apparatus of a permanent or temporary character; and

(b) alteration of any permanent or temporary existing structure by a change in its height (including appurtenances) or lateral dimensions, including equipment or materials used therein.

In addition, there is a requirement by the Federal Aviation Administration for a "Notice of Proposed Construction or Alteration in the Vicinity of Airports" as authorized by Title 14 of the Code of Federal Regulations.

Copies of FAA regulations and the State's "Airport Zoning Regulations," among other materials related to these requirements, are available on file with the Central Coordinating Agency.

2.4.2. BUILDING PERMIT TO CONSTRUCT, RECONSTRUCT, OR REPAIR SIDEWALKS, CURBS, AND DRIVEWAYS

1. Significance for Energy Alternatives.

This permit is needed for the new construction, reconstruction, installation, improvement, repair or replacement of a "sidewalk," "curb," or "driveway." (These terms are defined in Section 20.2.2 of R.O. 1969, Chapter 20.)

The energy alternatives likely to be affected include:

Forestry Biomass

Terrestial Aquaculture

Feedlots Biomass

Geothermal Projects

Large-Scale Electricity Generating Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

A road permit is also possible, depending on the design and on pre-existing roads for:

Biomass Conversion Facilities (gasification, pyrolysis, combustion)

Alcohol Production Plants (hydrolysis/fermentation)

Biomass Agriculture (Field Crops)

Biomass Marine Aquaculture (the possibility of roadways or sidewalks as part of shore-based support facilities)

Ocean Thermal Energy Conversion (OTEC) (possibility of roadways for shore-based facilities)

Wind Farms

2. Permit Requirements.

The Building Department may require construction in the interest of public safety or welfare when it is determined that such is needed because of action attributable to the owner of land abutting the sidewalk, curb, or driveway.

2.4.2. BUILDING PERMIT TO CONSTRUCT, RECONSTRUCT, OR REPAIR SIDEWALKS, CURBS, AND DRIVEWAYS, continued

The Department must give notice of the required construction to the landowner either by publication in a daily newspaper of general circulation in the City once in each of three consecutive weeks, or by mailing a copy of the notice (certified mail) to the owner.

This notice describes the nature of the construction needed, its location and gives specific direction to the owner to construct the sidewalk, curb, or driveway.

Permit application and the payment of fees are the same as those required for a BUILDING PERMIT FOR BUILDING, ELECTRICAL, AND PLUMBING WORK under R.O. 1969, Chapter 18.

The owner has 60 days after the date of publication or after receipt of the notice to construct the sidewalk, curb, or driveway. (If he fails to do so, such construction is carried out by the City and County and the owner is billed for the costs.)

3. Procedure and Review Criteria.

Standards and specifications for sidewalks, curbs, and driveways are contained in Sections 20-2.8, 20-2.9, and 20-2.10 of R.O. 1969, Chapter 20, respectively. Exceptions and exemptions are also contained in these sections.

The owner is required to notify the Building Department at least 24 hours before work is begun. All work authorized by the permit, including formwork and reinforcement, is subject to Building Department inspection.

R.O. 1969, Chapter 20, contains penalties for any person violating any provision of the Chapter.

4. Law(s).

Revised Ordinances 1969, Chapters 18 and 20, City and County of Honolulu

Hawaii County Code, Chapter 3, Article 2, Sections 9 and 11

5. Rules and Regulations.

Sidewalk Code, R.O. 1969, Chapter 20, City and County of Honolulu

Fee Schedules and Permit Procedures, R.O. 1969, Chapter 18, City and County of Honolulu

2.4.2. BUILDING PERMIT TO CONSTRUCT, RECONSTRUCT, OR REPAIR SIDEWALKS, CURBS, AND DRIVEWAYS, continued

County Code, County of Hawaii

6. Responsible Agency(ies).

Issued by: Building Department
City and County of Honolulu
650 S. King Street (1st Floor)
Honolulu, Hawaii 96813

Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Reviewed by: Various other agencies

2.4.3. CONDITIONAL USE PERMIT

1. Significance for Energy Alternatives

Conditional uses are those uses not usually permitted within certain zoning districts, but which can be permitted under certain conditions. The installation of a private utility is a conditional use.

Other conditional uses within the various zoning districts are listed in R.O. 1969, Chapter 21.

The energy alternatives affected include:

Biomass Field Crops

Forestry for Biomass Energy

Terrestial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum and other kelps)

Feedlot Energy Conversion Systems

Solid Waste Plants (pyrolysis, gasification, combustion) Plants

Alcohol Production Systems (hydrolysis/fermentation)

Geothermal Projects

Hydroelectric Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-scale Electricity Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Permit Requirements.

A Conditional Use Permit application is submitted to the Department of Land Utilization. A form is available for this purpose at the Department. The application must be accompanied by a plan showing:

a. Actual dimensions and shape of the lot.

b. Exact sizes and location of existing and proposed structures.

c. Existing and proposed uses of structures and open areas.

d. Topography, access, surrounding land uses and other matters which may be required.

There is a $100.00 filing fee.

3. Procedures and Review Criteria.

The application is reviewed by the Department. It is also reviewed by various government agencies to ensure the adequacy of water, sewer, and other public facilities to support the proposed use. Compatibility of the proposed use to the surrounding neighborhood is important. Agency and citizen comments are incorporated in a report and recommendation to the Planning Commission and City Council. A recommendation for approval usually contains certain conditions which are contained in a draft resolution. Adjacent property owners are notified and the public hearing notice is published in a newspaper of general circulation. The Planning Commission holds a public hearing and recommends approval, approval with modifications or denial.

The Department's report and recommendation with draft resolution, if needed, and the Planning Commission's recommendation must be forwarded to the City Council for action within thirty (30) days of the close of the public hearing. A second public hearing is held by the City Council. The Council's Planning and Zoning Committee reviews the request and recommends approval, approval with modifications or denial. Approval of a Conditional Use Permit is by adoption of a Resolution by Council as a Whole.

The Mayor has no jurisdiction over a Conditional Use Permit. Final action is taken by the Council and a permit is issued via a committee report and adopted Resolution.

An evening informational meeting may be held by the Department in the community.

4. Law(s).

Chapter 46, Hawaii Revised Statutes

Revised City Charter, 1973, Chapter 10

Revised Ordinances, 1969, Chapter 21 (Comprehensive Zoning Code)

5. Rules and Regulations.

Refer to R.O. 1969, Chapter 21

6. Responsible Agency(ies).

Approval by: Honolulu City Council
City Hall
Honolulu, Hawaii 96813

Reviewed by: Planning Commission
City and County of Honolulu
650 S. King Street (8th Floor)
Honolulu, Hawaii 96813

Department of Land Utilization
City and County of Honolulu
650 S. King Street (7th Floor)
Honolulu, Hawaii 96813

Various other government agencies

2.4.4. PERMIT TO INSTALL UTILITIES WITHIN STATE HIGHWAY RIGHTS-OF-WAY

1. Significance for Energy Alternatives.

A permit is required for new utility installation which are to cross or otherwise occupy the rights-of-way of State Highways. A permit is also required for existing utility facilities which are to be retained, relocated or adjusted within these rights-of-way. (Refer to the Rules and Regulations for exceptions.)

Permit requirements apply to utility facilities which are privately-, publicly-, or cooperatively-owned, including private lines which are devoted exclusively to private use. However, installations of private lines within the rights-of-way are limited to crossings only.

The energy alternatives affected include:

Solid Waste Plants (Gasification, Pyrolysis, Combustion, Digestion)

Feedlot Energy Conversion Systemsm

Geothermal Projects

Hydroelectric Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-scale Electricity Generating Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Permit Requirements.

Plans for the proposed utility installation must be submitted to the Department of Transporation.

Use and occupancy agreements between the Department and the utility company (in writing) are required for crossings or other occupancy of the right-of-way of an active or completed State Highway.

2.4.4. PERMIT TO INSTALL UTILITIES WITHIN STATE HIGHWAY RIGHTS-OF-WAY, continued

3. Procedures and Review Criteria.

The location, design, and methods for the accommodation and installation of utility facilities are reviewed to ensure that they (a) do not interfere with the free and safe flow of traffice; (b) otherwise impair the highway or its visual quality; and (c) not conflict with other laws, rules, or regulations.

There are specific restrictions applicable to scenic strips, overlooks, rest areas, recreation areas, the adjacent highway right-of-way, and the rights-of-way of highways which pass through public parks and historic sites.

During installation and maintenance of the utility facilities, adequate provisions must be made for traffic control.

Any deviation from the Rules and Regulations is subject to the Department's approval.

4. Law(s).

Title 23, Code of Federal Regulations

Title 23, United States Code

Chapter 264, Hawaii Revised Statutes

5. Rules and Regulations.

Rules and regulations Relating to the Accommodation and Installation of Utilities and State Highways and Federal-Aid Secondary County Highways

6. Responsible Agency(ies).

Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

2.4.5. GRUBBING, GRADING, AND STOCKPILING PERMIT

1. Significance for Energy Alternatives.

A permit is required for grubbing, grading, or stockpiling operations. Operations under certain conditions are excluded.

The energy alternatives affected include:

Biomass Field Crops

Forestry for Biomass Energy

Terrestial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculturer for Biomass Energy (sargassum, and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Geothermal Projects

Hydroelectric Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-scale Electricity Generating Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Permit Requirements.

The applicant is to prepare a plan showing:

a. All pertinent terrain features.

b. Layout and arrangement of the proposed works on a plan view.

c. Representation to scale of typical cross-sections of cut and fill areas.

2.4.5. GRUBBING, GRADING, AND STOCKPILING PERMIT, continued

d. Details of topography both before and after the proposed work.

e. Indication of means to be employed to assure erosion control.

f. Estimates (in cubic yards) of the amounts of excavation and embankment.

g. If material is to be imported to or exported from the site, an indication of where the material comes from or where it will be deposited. A grading permit is also required for any such offsite locations as well.

(The above information is normally presented in the form of a scale drawing, with explanatory and/or supplementary data presented in the margins.)

Where the graded area is 15,000 square feet or more, the plan should be prepared by a civil engineer licensed in the State of Hawaii. The original copy is to be submitted for review and approval.

If the project involves more than one acre, the applicant must also submit an approved Temporary Erosion Control Plan for review and approval by the Division Chief and the Director.

A soils report prepared by a soils engineer is required in some cases.

The amount of the permit fee depends on the volume of the earth moved or square feet of area denuded.

3. Procedure and Review Criteria.

After approval of the plan, three copies must be submitted to the Permit Section (ground floor, Municipal Building).

At this point, a performance bond may be required in an amount dependent on the volume of earth to be moved. This bond is required for all projects involving movement of more than 500 cubic yards of earth or for excavations or fills of over 15 feet in vertical height. The bond must be obtained from a surety firm operating in Hawaii.

There is no public hearing requirement.

2.4.5. GRUBBING, GRADING, AND STOCKPILING PERMIT, continued

The permit will not be granted until all other environmental and regulatory requirements have been met.

4. Law(s).

Chapter 180C, Hawaii Revised Statutes

Revised Ordinances, 1969, Chapter 23, City and County of Honolulu

Ordinance No. 168, County of Hawaii

5. Rules and Regulations.

Soil Erosion Standards and Guidelines

6. Responsible Agency(ies).

Issued by: Department of Public Works
(Division of Engineering)
City and County of Honolulu
650 S. King Street (1st Floor)
Honolulu, Hawaii 96813

Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

2.4.6. VARIANCE FROM BUILDING, ELECTRICAL, AND PLUMBING CODES

1. Significance for Energy Alternatives.

A variance is required when a person wishes to vary from the requirements of the Building, Electrical, or Plumbing Codes, e.g., requests for variances would include the use of new or alternative materials.

All of the energy alternatives would be affected:

Biomass Field Crops

Forestry for Biomass Energy

Terrestial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Geothermal Projects

Hydroelectric Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

Solar Heating and Cooling (residential and commercial)

Decentralized Direct Solar Electricity (photovoltaics)

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

Direct Solar Heating and Drying Devices and Systems for Agriculture

2.4.6. VARIANCE FROM BUILDING, ELECTRICAL, AND PLUMBING CODES, continued

2. Permit Requirements.

An application must be submitted in duplicate to the Building Department. A form for this purpose is available at the Department. In addition to the application form, two copies of a plot plan, drawings, computations, and other pertinent data are required.

Supporting data should include:

a. An explanation as to why strict application, operation or enforcement would result in practical difficulty or unnecessary hardship;

b. Assurance that safety to life, limb, and property will not be jeopardized; and

c. Assurance that granting the variance would not be injurious to adjoining uses, would not create fire hazards, and would not be contrary to the purpose of the Codes and the public interest.

There is a basic filing fee of $25.00. If the application involves more than one building or more than one item for variance, additional fees of $1.00 for each additional building and $10.00 for each additional item are charged. Checks should be made payable to the City Director of Finance.

3. Procedures and Review Criteria.

The Building Department reviews and prepares a report for the Board. Hearings are usually held the first Friday of each month. The decision to approve or deny the request is made after the hearing is held. The character, use and type of occupancy, and construction of adjoining buildings or buildings on adjoining lots and the building involved in the appeal.

A decision and order and separate findings of fact and conclusions of law are prepared by the Department for the Board and sent to each party or appointed representative after action has been taken.

The nine-member Board of Appeals, under the jurisdiction of the Building Department, is appointed by the Mayor with the approval of the City Council. Four members of the Board must be currently registered engineers or architects of the State of Hawaii; one member each must qualify in experience and training in matters pertaining to electrical and plumbing work.

2.4.6. VARIANCE FROM BUILDING, ELECTRICAL, AND PLUMBING CODES, continued

Appeals from the decision of the Board of Appeals would be directed to the Circuit Court.

4. Law(s).

Revised City Charter, 1973, Chapter 15

Revised Ordinances, 1969, Chapter 16, 17, and 19

5. Rules and Regulations.

Refer to R.O. 1969:
Chapter 16, Building Code

Chapter 17, Electrical Code

Chapter 19, Plumbing Code

6. Responsible Agency(ies).

Approved by: Building Board of Appeals
City and County of Honolulu
650 S. King Street (1st Floor)
Honolulu, Hawaii 96813

Reviewed by: Building Department
City and County of Honolulu
650 S. King Street (1st Floor)
Honolulu, Hawaii 96813

2.4.7. WAIVER

1. Significance for Energy Alternatives.

Certain minimum requirements of the zoning code (R.O. 1969, Chapter 21) can be waived by the Director of Land Utilization for public uses or utility installations. This applies to public utilities and uses only.

The energy alternatives affected include:

Biomass Field Crops

Forestry for Biomass energy

Terrestial Aquaculture for Biomass Energy (single cell algae, hyacinth)

Marine Aquaculture for Biomass Energy (sargassum and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Hydroelectric Projects

Large-Scale Electricity Generating Wind Energy Conversion Systems

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

2. Permit Requirements.

There is no formal application form. Plans must be submitted with a letter requesting a Waiver from the Specific zoning requirement. Data required include:

a. the exact dimensions of the lot;

b. exact location of the proposed structure;

c. existing and proposed uses of the structure; and

d. height elevations of the structures.

There is no filing fee or public hearing requirement.

3. Procedure and Review Criteria.

The plans are reviewed by the Department. The Director may set aside zoning requirements for these uses if he finds that the proposal is in the best interest of the public, that it would not have an adverse impact on the surrounding neighborhood, and that it meets all other applicable Code requirements.

4. Law(s).

Chapter 46, Hawaii Revised Statutes

Revised City Charter, 1973, Chapter 10

Revised Ordinances, 1969, Chapter 21 (Comprehensive Zoning Code)

5. Rules and Regulations.

Refer to R.O. 1969, Chapter 21

6. Responsible Agency(ies).

Approved by: Department of Land Utilization
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

2.4.8. WELL PERMIT

1. Significance for Energy Alternatives.

Any well dug in the City and County of Honolulu requires issuance of a well permit, either for fresh or brackish salt water.

The energy alternatives possibly affected include:

Large-Scale Wind Energy Conversion Systems using Pumped Water Storage

Small-Scale Water Pumping Wind Energy Conversion System

Terrestial Aquaculture for Biomass Energy

Marine Aquaculture for Biomass Energy

2. Permit Requirements.

Basic data include:

(a) Location, size, proposed depth of well.

(b) Purpose to which water will be put.

(c) Capacity of pumps and distribution system.

(d) Specifics of construction, including a cross-sectional drawing of the well throughout its depth.

There is a $100.00 filing fee.

3. Procedure and Review Criteria.

The permit may not be issued if the Board of Water Supply has adequate service to the area. The applicant will be required to use water from the public system.

4. Law(s).

Chapter 54, Hawaii Revised Statutes

Revised City Charter 1973, Article VII

5. Rules and Regulations.

Rules and Regulations Providing for the Protection, Development and Conservation of Water Resources in the City and County of Honolulu

2.4.8. WELL PERMIT, continued

6. Responsible Agency(ies).

Issued by: Board of Water Supply
630 S. Beretania Street
Honolulu, Hawaii 96813

2.5. OTHER PERMITS AND CONTROLS

2.5.1. HISTORIC SITE REVIEW

1. Significance for Energy Alternatives.

This law applies to any construction, alteration, or improvement of any nature on a designated historic site by any person.

All of the energy alternatives could be affected:

Biomass Field Crops

Forestry for Biomass Energy

Terrestrial Aquaculture for Biomass Energy (single cell algae, hyacinth, etc.)

Marine Aquaculture for Biomass Energy (sargassum, and other kelps)

Feedlot Energy Conversion Systems

Alcohol Production Systems (hydrolysis/fermentation)

Geothermal Projects

Hydroelectric Projects

Ocean Thermal Energy Conversion (OTEC)

Large-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Electricity Generating Wind Energy Conversion Systems

Small-Scale Water Pumping Wind Energy Conversion Systems

Solar Heating and Cooling (residential and commercial)

Decentralized Direct Solar Electricity (photovoltaics)

Centralized Direct Solar Electricity (power tower, solar farm, etc.)

Direct Solar Heating and Drying Devices and Systems for Agriculture

2. Requirements.

The applicant must file a notice of his intention to work on the site with the Department ninety (90) days in advance of the proposed start date. The applicant must make clear the nature of the proposed construction and the precise location of the historic site.

3. Procedures and Review Criteria.

After the expiration of the three-month notification period, the Department must respond with one of three answers:

a. The action may proceed unimpeded.

b. Undertake or permit the investigation, recording, preservation, and salvage of any historical information deemed necessary to preserve Hawaiian history.

c. Condemnation proceedings may be initiated to take the property upon just compensation of the owner.

Proposed work within sites on the State or Federal Register of Historic Places may require preparation of an EIS.

It may also require City review under Article 12, Revised Ordinances 1969, Chapter 21 (Historic, Cultural, Scenic Districts). See CERTIFICATE OF APPROPRIATENESS.

4. Law(s).

Chapter 7, Hawaii Revised Statutes

5. Rules and Regulations.

Contained within Chapter 6

6. Responsible Agency(ies).

Reviewed by: Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

2.5.2. CERTIFICATE OF APPROPRIATENESS (HISTORIC, CULTURAL, AND SCENIC DISTRICTS)

1. Significance for Energy Alternatives.

A Certificate of Appropriateness is required to construct, alter, repair, relocate, or demolish a structure within any Historic, Cultural and Scenic District. A developer, owner, or lessee (having at least five (5) years left on a recorded lease) may file for a Certificate of Appropriateness.

Maps showing the boundaries of these districts, such as Hawaii Capitol District and Chinatown, are available at the Department of Land Utilization.

Note that there are certain exemptions in each district. Information on these is also available at the Department.

Certificates of Appropriateness must be obtained for both "non-significant projects" and "significant projects."

Non-significant projects are generally interior alterations, repairs and renovation, and exterior repairs which do not change the character or visual appearance of a building.

All other proposals (unless exempt) are considered to be significant. The underlying zoning regulations of the zoning districts remain in effect. In case of a conflict, the more restrictive provision applies.

The following energy alternatives may be affected:

Solar Heating and Cooling (residential and commercial)

Decentralized Direct Solar Electricity (photovoltaics)

Small-scale Electricity Generating Wind Energy Conversion Systems

2. Requirements.

Separate application forms are available at the Department for each district.

Materials to be submitted with the application generally include:

a. Architectural plans.

b. Site plans.

c. Landscaping plans.

d. Proposed location, size, number, and details of signs.

e. Exterior lighting arrangements.

f. Elevation of structures.

g. Design of door and windows, ornamentation, and colors.

h. Photos or perspective drawings showing visual relationships to adjoining structures and spaces.

There is a filing fee and a public hearing required for "significant projects"; none for "non-significant projects."

A minimum $3.00 fee increases as the total estimated cost of work increases. (Fees are computed in accordance with Table No. 3-A, Section 303 of the Uniform Building Code.) The applicant is notified by letter if the project is classified as significant.

3. Procedures and Review Criteria.

a. Non-Significant Projects.

A Certificate of Appropriateness for a non-significant project must be issued by the Department within fifteen (15) days after receipt of the request. The Director of Land Utilization is authorized to issue this certificate on all non-significant projects without prior approval of Council, except for non-significant projects proposed by the City or State. City and State non-significant projects are subject to Council review and approval. No public hearing is required.

b. Significant Projects.

The Department has fifteen (15) days to decide if a project is significant. Within forty-five (45) days, the Department must prepare a report and recommendation to the Planning Commission which must schedule the public hearing. Within thirty (30) days after the public hearing, the Planning Commission must submit its recommendations to the City Council through the Mayor.

For specific Hawaii Capitol and Special Design (HC & SD) districts, ordinances may add other non-significant projects or exemptions.

2.5.2. CERTIFICATE OF APPROPRIATENESS (HISTORIC, CULTURAL AND SCENIC DISTRICTS), continued

There are four HC & SDs: the Hawaii Capitol District, the Diamond Head District, the Punchbowl District, and the Chinatown District. Informational hand-outs on the requirements of each district are available at the Department of Land Utilization.

4. Law(s).

Chapter 46, Hawaii Revised Statutes

Revised City Charter, 1973, Chapter 10

Revised Ordinances, 1969, Chapter 21 (Comprehensive Zoning Code)

5. Rules and Regulations.

Refer to R. O. 1969, Chapter 21

6. Responsible Agency(ies).

Issued by: Honolulu City Council
City Hall
Honolulu, Hawaii 96813

Reviewed by: Planning Commission
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Department of Land Utilization
City and County of Honolulu
650 S. King Street (7th Floor)
Honolulu, Hawaii 96813

2.6. AGENCY CROSS-REFERENCE

3. PERMITS AND CONTROLS BY ENERGY ALTERNATIVES

3. PERMITS AND CONTROLS BY ENERGY ALTERNATIVES

In this section, the permits and controls affecting each alternative source considered appropriate for Hawaii are covered. The relevant permits may differ within any source category depending on the technology employed for converting the source to usable energy.

The alternate sources covered are biomass; geothermal; hydroelectric; ocean thermal; direct solar; solid waste; waves, tides, and currents; and wind.

Several of the categories have subcategories which utilize distinctly different processes. Biomass covers technologies involved in forestry, direct burning, and marine and terrestrial seaweed farming. Direct solar covers decentralized heating and cooling, photovoltaics, and power towers and solar farms. Solid waste includes hydrogenation and pyrolysis. Wind technology has distinct impacts, depending on whether it is large, small, or if pumping is involved.

The information on the impacts of existing rules, regulations, and policies is, by and large, the same as those for any sizable development. Much of the information has been adapted from the Guide to Central Coordinating Agency Repository Materials, which is a synopsis of controls or regulatory powers over land development projects for the City and County of Honolulu.

Similar material on a comprehensive basis for the Neighbor Islands has been published only for the County of Hawaii.

3.1. SUMMARY TABLE.

Following is a table which summarizes the permits and controls which apply to each technology. The probability of the permits required is noted for each. The higher the rating, the more probable the need for the permit. It should be noted, however, that the actual need for a permit is dependent upon the design of the particular plant and the requirements noted in this section are generalized.

1 = UNLIKELY
2 = POSSIBLE
3 = LIKELY
4 = REQUIRED

RENEWABLE ENERGY ALTERNATIVES 1 of 4

SIGNIFICANT PERMITS AND REGULATIONS	BIOMASS						GEOTHERMAL	HYDROELECTRIC	NUCLEAR	OCEAN THERMAL ENERGY CONVERSION	SOLAR (DIRECT)				SOLID WASTE	WAVES, TIDES, OCEAN CURRENTS	SMALL W.E.C.S.	WIND	
	BAGASSE	FORESTRY	ALGAE-MARINE	ALGAE-LAND	FEEDLOTS	ALCOHOL					HEATING AND COOLING	PHOTOVOLTAICS	POWER TOWER	AG. HEATING				SMALL W.E.C.S. WITH PUMPING	LARGE W.E.C.S.
A. Shoreline and Coastal Waters Permits																			
1. Permit for Work on Shores and Shore Waters (DOT)	1	1	4	2	1	1	1	1	3	3	1	1	1	1	1	4	1	2	2
2. Special Management Area Permit (County)	1	1	4	2	1	1	1	1	3	2	1	1	1	1	1	3	2	2	3
3. Permit for Activities in Waterways (Army Corps of Engineers)	1	1	4	2	1	1	1	3	3	3	1	1	1	1	1	4	1	2	2
4. Shoreline Setback Variance (County)	1	1	3	2	1	1		1	3	3	1	1	1	1	1	3	1	1	2
B. Other Special District Permits																			
1. Conservation District User Permit (DLNR)	2	3	3	2	1	1	3	2	2	3	1	1	2	1	1	2	1	2	3
2. Designated Ground Water Area Use Permit (DLNR)	1	1	1	3	1	1	1	4	3	1	1	1	1	1	1	2	1	2	1

1 = UNLIKELY
2 = POSSIBLE
3 = LIKELY
4 = REQUIRED

RENEWABLE ENERGY ALTERNATIVES 2 of 4

SIGNIFICANT PERMITS AND REGULATIONS	BIOMASS						GEOTHERMAL	HYDROELECTRIC	NUCLEAR	OCEAN THERMAL ENERGY CONVERSION	SOLAR (DIRECT)				SOLID WASTE		WAVES, TIDES, OCEAN CURRENTS	SMALL W.E.C.S.	WIND	
	BAGASSE	FORESTRY	ALGAE-MARINE	ALGAE-LAND	FEEDLOTS	ALCOHOL					HEATING AND COOLING	PHOTOVOLTAICS	POWER TOWER	AG. HEATING	GASIFICA/ PYRALOSIS				SMALL W.E.C.S. WITH PUMPING	LARGE W.E.C.S.
C. Environmental Permits																				
1. Environmental Impact Statement -- NEPA (Federal)	2	3	3	2	3	2	3	3	4	3	1	1	3	1	3		3	2	2	3
2. Environmental Impact Statement -- SMA (County)	2	1	3	2	1	1	1	3	4	2	1	1	1	1	1		3	1	1	2
3. Environmental Impact Statement -- County	2	3	3	2	3	2	3	3	4	3	1	1	3	1	3		3	2	2	3
4. Environmental Impact Statement -- OEQC (State)	2	3	3	2	3	2	3	3	4	3	1	1	3	1	3		3	2	2	3
5. Air Quality Permit (DOH)	2	1	1	1	3	2	3	1	3	3	1	1	1	1	3		1	1	1	1
6. Water Pollution (DOH)	2	2	3	2	3	2	3	3	3	2	1	1	1	1	2		2	1	1	2
7. Variance from Pollution Controls (DOH)	1	2	3	2	2	2	2	3	3	2	1	1	1	1	2		2	1	1	2
8. Zone of Mixing Approval (DOH)	1	1	3	2	1	1	1	3	3	3	1	1	1	1	1		2	1	1	1

1 = UNLIKELY
2 = POSSIBLE
3 = LIKELY
4 = REQUIRED

SIGNIFICANT PERMITS AND REGULATIONS	RENEWABLE ENERGY ALTERNATIVES 3 of 4																	
	BIOMASS						GEOTHERMAL	HYDROELECTRIC	NUCLEAR	OCEAN THERMAL ENERGY CONVERSION	SOLAR (DIRECT)				SOLID WASTE	WAVES, TIDES, OCEAN CURRENTS	SMALL W.E.C.S.	WIND	
	BAGASSE	FORESTRY	ALGAE-MARINE	ALGAE-LAND	FEEDLOTS	ALCOHOL					HEATING AND COOLING	PHOTOVOLTAICS	POWER TOWER	AG. HEATING				SMALL W.E.C.S. WITH PUMPING	LARGE W.E.C.S.
D. Zoning and Building Permits/Controls																			
1. Building Permits -- buildings, electricity, plumbing (County)	2	3	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4
2. Building Permits -- sidewalks and roads (County)	2	3	2	3	3	2	3	4	3	2	1	1	3	1	2	2	1	1	3
3. Conditional Use Permit (County)	2	3	2	2	3	2	2	3	3	2	1	1	3	2	2	2	2	2	3
4. Permit to Install Utilities in State Highways (DOT)	1	1	1	1	2	1	3	3	2	3	1	1	3	1	2	1	1	1	3
5. Grubbing, Grading and Stockpiling (County)	1	4	2	3	4	3	3	4	4	2	1	1	4	1	2	2	1	1	3
6. Variance from Building, Electricity, and Plumbing Codes (County)	2	2	2	2	3	2	3	3	3	3	2	2	3	2	2	3	2	2	3
7. Zoning Waiver for Public Utilities (County)	1	2	1	1	2	2	2	3	3	2	1	1	2	1	2	2	1	1	3

1 = UNLIKELY
2 = POSSIBLE
3 = LIKELY
4 = REQUIRED

SIGNIFICANT PERMITS AND REGULATIONS	RENEWABLE ENERGY ALTERNATIVES 4 of 4																			
	BIOMASS						GEOTHERMAL	HYDROELECTRIC	NUCLEAR	OCEAN THERMAL ENERGY CONVERSION	SOLAR (DIRECT)				SOLID WASTE		WAVES, TIDES, OCEAN CURRENTS	SMALL W.E.C.S.	WIND	
	BAGASSE	FORESTRY	ALGAE-MARINE	ALGAE-LAND	FEEDLOTS	ALCOHOL					HEATING AND COOLING	PHOTOVOLTAICS	POWER TOWER	AG. HEATING	GASIFICA/ PYRALOSIS				SMALL W.E.C.S. WITH PUMPING	LARGE W.E.C.S.
8. Well Permit (County Water Authority)	1	1	1	2	1	1	1	3	3	1	1	1	1	1	1		1	1	2	2
E. Other Permits and Control																				
1. Historic Site Review (DLNR)	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2	2
2. Certificate of Appropriateness -- historic, etc. (Counties)	1	1	2	2	1	1	1	2	2	1	2	2	1	1	1		2	1	1	1

3.2. BIOCONVERSION.

The use of biomass crops will require the construction and operation of a biomass conversion plant. These crops include:

1) sugar for alcohol fermentation;
2) field crops and their wastes for pyrolysis, combustion or alcohol hydrolysis/fermentation;
3) forestry crops and/or their wastes for pyrolysis, combustion, or alcohol hydrolysis/fermentation;
4) feedlot waste conversion (anaerobic digestion or combustion);
5) marine or fresh water aquaculture biomass products for anaerobic digestion or oil production.

3.2.1. All Plants. From a regulatory point of view, each of these conversion plants is fairly similar. The following may be required:

1) Authority to Construct or Operate Permit

Required for: any operations that may or will result in air pollution

Issued by: State Department of Health

2) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

Reviewed by: various agencies having approving authority

b) Federal

Required for: major projects involving federal action that may significantly affect the environment; some examples are:

1) projects involving sites on the Federal Register of Historic Places

2) projects using federal lands or funds
3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction in the coastal zone

3) Variance from Pollution Controls

Required for: any emission or discharge that exceeds applicable standards

Issued by: State Department of Health

4) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway

Issued by: County Building or Planning Departments

5) Grading Permit

Required for: land alteration activities that may result in erosion, such as grubbing, grading, and stock piling

6) Variance for Building, Plumbing, or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

7) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

8) Waiver

Required for: waiver of certain minimum requirements of the zoning code, for public uses or utilities only

Issued by: County Department of Land Utilization or Public Works

Depending on where the bioconversion plant is located, one or more of the following may also be required:

1) Shoreline Setback Variance

Required for: projects located between 20 and 40 feet inland from the shoreline

2) Special Management Area Permit

Required for: all water and land developments in the Special Management area that

a) can affect the SMA and/or
b) has a total fair market value over $25,000.

3) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation District

Issued by: State Department of Land and Natural Resources

3.2.2. Terrestrial Plants

Biomass can be produced in terrestrial or marine ecosystems. Terrestrial aquaculture to produce biomass can be either in ponds or in tanks. Terrestrial aquaculture for biomass energy may require the following:

1) Permit for Work in Shores and Shorewaters

Required for: dredging, filling, dumping, placement of temporary or permanent structures and other construction below the mean high water mark

Issued by: State Department of Transportation

2) U.S. Department of Army, Corps of Engineers Permit

Required for: dredging, filling, construction, dumping, etc. in navigable waters

Issued by: U. S. Army Corps of Engineers

3) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private

Issued by: State Department of Land and Natural Resources

4) Groundwater Area Use Permit

Required for: projects using groundwater for non-domestic purposes from "designated groundwater areas"

Issued by: State Department of Land and Natural Resources

5) Authority to Construct or Operate Permit

Required for: any operations that may or will result in air pollution

Issued by: State Department of Health

6) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or anchaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

b) Federal

Required for: major projects involving federal action that may significantly affect the environment; some examples are:

1) projects involving sites on the Federal Register of Historical Places
2) projects using federal lands or funds
3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction in the coastal zone.

7) National Pollution Discharge Effluent System (NPDES)

Required before: any effluent discharge can be made to surface streams of coastal waters

Issued by: State Department of Health

8) Variance from Pollution Controls

Required for: any emission of discharge that exceeds applicable standards

Issued by: State Department of Health

9) Zone of Mixing Approval

Required for: Effluent discharge that would result in violation of water quality standards for that area

Issued by: State Department of Health

10) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway.

Issued by: County Building or Planning Departments

11) Grading Permit

Required for: land alteration activities that may result in erosion such as grubbing, grading, and stock piling

12) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

3.2.3. Marine Aquaculture

Marine aquaculture will likely occur within the coastal zone. The following may be required:

1) Permit for Work in Shores and Shorewaters

Required for: dredging, filling, dumping, placement of temporary or permanent structures, and other construction below the mean high water mark

Issued by: State Department of Transportation

(For more details on permits required for aquaculture, see Permits and Governmental Requirements for Aquaculture in Hawaii, DPED, 1977.)

2) U.S. Department of Army, Corps of Engineers Permit

Required for: dredging, filling, construction, dumping, etc. in navigable waters

Issued by: U. S. Army Corps of Engineers

3) Shoreline Setback Variance

Required for: projects located between 20 and 40 feet inland from the shoreline

4) Special Management Area Permit

Required for: all water and land developments in the Special Management area that

a) can affect the SMA and/or
b) has a total fair market value over $25,000

5) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private

Issued by: State Department of Land and Natural Resources

6) Authority to Construct or Operate Permit

Required for: any operations that may or will result in air pollution

Issued by: State Department of Health

7) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

b) Federal

Required for: major projects invclving federal action that may significantly affect the environment; some examples are:

1) projects involving sites on the Federal Register of Historical Places
2) projects using federal lands or funds
3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction in the coastal zone

8) National Pollution Discharge Effluent System (NPDES)

Required for: any effluent discharge can be made to surface streams of coastal waters

Issued by: State Department of Health

9) Variance from Pollution Controls

Required for: any emission or discharge that exceeds applicable standards

Issued by: State Department of Health

10) Zone of Mixing Approval

Required for: effluent discharge that would result in violation of water quality standards for that area

Issued by: State Department of Health

11) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway.

Issued by: County Building or Planning Departments

12) Grading Permit

Required for: land alteration activities that may result in erosion such as grubbing, grading, and stock piling

13) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

3.2.4. Forestry

The use of conservation zones for forestry operations to produce biomass may require:

1) Permit for Work in Shores and Shorewaters

Required for: dredging, filling, dumping, placement of temporary or permanent structures, and other construction below the mean high water mark

Issued by: State Department of Transportation

2) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

3) Historic Site Review

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

3.2.5. Agricultural

In principle, the planting and harvesting of field crops for biomass energy in existing agricultural zoned areas would seem to incur few if any additional permits or regulatory controls. However, special requirements of the specific biomass crops might require permits. Examples include special pesticide applications, new equipment access roads, or effects of the planting, cultivating, or harvesting technologies or environmental variables like runoff water hydrology. Applicable permits would have to be determined in each case.

3.3. GEOTHERMAL.

Geothermal plants may be located on private or public lands in agricultural or conservation districts. The following may be required:

1) Authority to Construct or Operate Permit

Required for: any operations that may or will result in air pollution

Issued by: State Department of Health

2) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-30 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

b) Federal

Required for: major projects involving federal action that significantly affect the environment; some examples are:

1) projects involving sites on the Federal Register of Historic Places
2) projects using federal lands or sites
3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction in the coastal zone

3) Variance from Pollution Controls

Required for: any emission or discharge that exceeds applicable standards which includes variances for the air, water, and noise pollution standards in Public Health Regulations, Chapters 37-A, 42, and 44-A

Issued by: State Department of Health

4) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove or demolish structures; to construct or alter sidewalk, or curb, driveway

Issued by: County Building or Planning Department

5) Grading Permit

Required for: land alteration activities that may result in erosion such as grubbing, grading, and stock piling

6) Utility Installation Permit

Required for: new private, public, or cooperatively owned utility installations that would cross or occupy rights-of-way of State highways

Issued by: State Department of Transportation

7) Variance for Building, Plumbing or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

8) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

Depending on the location of the plant, one of the following may be needed:

9) Conditional Use Permit

Required for: private utilities on agricultural lands of Oahu

Issued by: County Departments of Land Utilization or Public Works

A variety of rules, regulations, permits and controls apply to geothermal energy development. A detailed document called the "Regulations on Leasing of Geothermal Resources and Drilling for Geothermal Resources in Hawaii," Regulation 8, June, 1978, is available from the Department of Land and Natural Resources. Several permits, such as mining leases, exploration permits, drilling permits, etc., are explained. This is the first such compendium of rules and regulations for a renewable energy source for Hawaii. Similar compendia for the other energy alternatives are needed and some are already under development.

3.4. OCEAN THERMAL.

OTEC plants may be located in the legally defined shorewaters of the State and will likely be funded by federal and possibly State grants. Shorewaters extend 3 miles from the coast. The State hopes to extend this from 12 to 200 miles. The following may be required for offshore activities:

1) Permit for Work in Shores and Shorewaters

Required for: dredging, filling, dumping, placement of temporary or permanent structures, and other construction below the mean high water mark

Issued by: State Department of Transportation

2) U.S. Department of Army, Corps of Engineer Permit

Required for: dredging, filling, construction, dumping, etc., in navigable waters

Issued by: U. S. Army Corps of Engineers

3) Conservation of District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private

Issued by: State Department of Land and Natural Resources

4) Authority to Construct or Operate Permit

Required for: any operations that may or will result in air pollution

Issued by: State Department of Health

5) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-30 feet landward of the mean high water mark)

4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

b) Federal

Required for: major projects invclving federal action, that may significantly affect the environment; scme examples are:

1) projects involving sites on the Federal Register of Historic Places
2) projects using federal lands or funds
3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction in the coastal zone.

6) National Pollution Discharge Effluent System (DPDES)

Required for: any effluent discharge can be made to surface streams of coastal waters

Issued by: State Department of Health

7) Variance from Pollution Controls

Required for: any emission or discharge that exceeds applicable standards

Issued by: State Department of Health

8) Zone of Mixing Approval

Required for: effluent discharge that would result in violation of water quality standards for that area

Issued by: State Department of Health

9) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway

Issued by: County Building or Planning Departments

10) Variance for Building, Plumbing or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

For shore base facilities linking OTEC with the islands, (such as harbors, cable ways, piers) the following may be needed in addition to the above:

1) Shoreline Setback Variance

Required for: projects located between 20 and 40 feet inland from the shoreline

2) Special Management Area Permit

Required for: all water and land developments in the Special Management area that

a) can affect the SMA; and/or
b) has a total fair market value over $25,000.

3) Conditional Use Permit

Required for: private utilities on agricultural lands of Oahu

Issued by: County Departments of Land Utilization or Public Works

4) Grading Permit

Required for: land alteration activities that may result in erosion such as: grubbing, grading, and stock piling

5) Utility Installation Permit

Required for: new private, public, or cooperatively owned utility installations that would cross or occupy rights of way of State highways

Issued by: State Department of Transportation

6) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department cf Land and Natural Resources
County Departments cf Land Utilization or Public Works

3.5. WIND.

Permits for the development of wind energy systems are separated into large-scale wind electrical generation systems, small-scale wind electrical generation systems, and small-scale pumping systems.

3.5.1. Large-Scale Wind Systems.

Large-scale wind energy conversion systems (WECS) generally refer to systems with the capability of supplying electrical energy to communities with the capacity of 50 kw or greater. They are most likely to be located in agricultural or conservation districts. The following permits may be needed:

1) Airport Hazard Permit

Required for: proposed construction or alteration in the vicinity of non-private airports

Issued by: State Department of Transportation

2) Environmental Impact Statements

a) State

Required for: projects having significantly environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

b) Federal

Required for: major projects involving federal action that may significantly affect the environment. Some examples are:

1) projects involving sites on the Federal Register of Historic Places
2) projects using federal lands or funds

3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction

3) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway

Issued by: County Building or Planning Departments

4) Grading Permit

Required for: land activities such as grubbing, grading, and stock piling that may result in erosion

5) Utility Installation Permit

Required for: new private, public, or cooperatively owned utility installations that would cross or occupy rights of way of State highways

Issued by: State Department of Transportation

6) Variance for Building, Plumbing, or Electrical Codes

Required when: a person wishes to vary from the code

Issued by: County Building Board of Appeals

7) Historic Site Review

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

8) Waiver

Required for: waiver of certain minimum requirements of the zoning code for public uses or utilities only

Issued by: County Department of Land Utilization or Public Works

Wind systems involving a pumped storage facility may also require:

9) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private

Issued by: State Department of Land and Natural Resources

Offshore Wind systems have been proposed. These may require:

10) Permit for Work in Shores and Offshorewaters

Required for: dredging, filling, dumping, placement of temporary or permanent structures, and other construction below the mean high water mark

Issued by: State Department of Transportation

11) U.S. Department of Army, Corps of Engineers Permit

Required for: dredging, filling, construction, dumping, etc., in navigable waters

Issued by: U.S. Army Corps of Engineers

12) Special Management Area Permit

Required for: all water and land developments in the Special Management area that

(a) can affect the SMA and/or
(b) has a total fair market value over $25,000.

13) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private

Issued by: State Department of Land and Natural Resources

3.5.2. Small-Scale Wind Generators.

Small-scale wind generators generally refer to machines scaled to meet the needs of a few households with the capacity of 0.25 to 50 kw. These will probably be located in agricultural, coastal, or rural districts. The following permits may be needed in all of these areas:

1) Airport Hazard Permit

Required for: proposed construction or alteration in the vicinity of non-private airports

Issued by: State Department of Transportation

2) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway.

Issued by: County Building or Planning Departments

3) Variance for Building, Plumbing, or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

4) Historic Site Review

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

Wind generators in the coastal zone on land may also require:

5) Shoreline Setback Variance

Required for: projects located between 20 and 40 feet inland from the shoreline

6) Special Management Area Permit

Required for: all water and land developments in the Special Management area that

(a) can affect the SMA and/or
(b) has a total fair market value over $25,000.

7) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or funds

Reviewed by: various agencies having approving authority

3.5.3. Small-Scale Pumping Using Windmills.

Small-scale pumping using windmills generally refers to pumping mills with blade spans less than 25 feet in diameter or with 10 or less kW capacity. They may be located in agricultural, conservation, or coastal zones. The following may be necessary in all three zones:

1) Permit for Work in Shores and Shorewaters

Required for: dredging, filling, dumping, placement of temporary or permanent structures, and other construction below the mean high water mark

Issued by: State Department of Transportation

2) U.S. Department of Army Corps of Engineers Permit

Required for: dredging, filling, construction, dumping, etc., in navigable waters

Issued by: U.S. Army Corps of Engineers

3) Airport Hazard Permit

Required for: proposed construction or alteration in the vicinity of non-private airports

Issued by: State Department of Transportation

4) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway.

Issued by: County Building or Planning Departments

5) Variance for Building, Plumbing or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

6) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

Windmills in the coastal zone, for an aquaculture project, for example, may also require:

7) Shoreline Setback Variance

Required for: projects located between 20 and 40 feet inland from the shoreline

8) Special Management Area Permit

Required for: all water and land developments in the Special Management Area that

(a) can affect the SMA and/or
(b) has a total fair market value over $25,000.

9) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation Districts

Issued by: State Department of Land and Natural Resources

10) Enviromental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

Windmills for pumping from streams or groundwater reserves in an agricultural district may also require:

11) Groundwater Area Use Permit

Required for: projects using groundwater for non-domestic purposes from "designated groundwater areas."

Issued by: State Department of Land and Natural Resources

12) Well Permit

Required for: any well dug on Oahu for either fresh or brackish water

Issued by: County Board of Water Supply

Windmills in a conservation district, pumping from streams or groundwater, may also require:

13) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private

Issued by: State Department of Land and Natural Resources

14) Groundwater Area Use Permit

Required for: projects using groundwater for non-domestic purposes from "designated groundwater areas."

Issued by: State Department of Land and Natural Resources

15) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)

4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

16) Well Permit

Required for: any well dug on Oahu for either fresh or brackish water

Issued by: County Board of Water Supply

3.6. SOLAR RADIATION.

The permits for the development of solar energy resources are listed separately under Heating and Cooling, Decentralized Electricity (Photovoltaics), Centralized Electricity (Solar Farms), and Agricultural Heating and Drying.

3.6.1 Solar Heating and Cooling: Domestic and Residential

The installation of domestic or residential solar water heating or air cooling systems may require the following:

1) County Building Permit

Required for: any electrical or plumbing work; to erect, construct alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway

Issued by: County Building or Planning Department

2) Variance for Building, Plumbing or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

3) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land Natural Resources
County Departments of Land Utilization or Public Works

(Note: the various counties have several control categories which are essentially aesthetic or urban design controls. When a water heater is to be installed on a building in any of these districts, the installation is subject to the appropriate review process. However, where the proposal is for a standard installation with only the flatplate collectors on the roof, and tanks, pumps, etc., at ground-level or inside buildings, there is no objection to the installations.)

3.6.2. Decentralized Electricity Production Using Photovoltaics

The use of photovoltaic cells would involve installation in new or existing buildings. This may require the following:

1) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway

Issued by: County Building or Planning Department

2) Variance for Building, Plumbing, or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

3) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization

3.6.3. Centralized Solar Electricity Production

The large scale production of electricity using solar energy, such as the "power tower" or "solar farm", would involve large collector areas.

For such installations, the following may be required:

1) Conservation District Use Permit

Required for: any activity on lands and waters in Conservation districts, public or private.

Issued by: State Department of Land and Natural Resources

2) Conditional Use Permit

Required for: private utilities on agricultural lands of Oahu

Issued by: City Department of Land Utilization

3) Airport Hazard Permit

Required for: proposed construction or alteration in the vicinity of non-private airports

Issued by: State Department of Transportation

4) Environmental Impact Statements

a) State

Required for: projects having significant environmental effects, located

1) in a Conservation district
2) in a designated historic or archaeological site
3) in the coastal zone (300 feet seaward and 20-40 feet landward of the mean high water mark)
4) on state or county lands or using state or county funds

Reviewed by: various agencies have approving authority

b) Federal

Required for: major projects involving federal action, that may significantly affect the environment; some examples are:

1) projects involving sites on the Federal Register of Historic Places
2) projects using federal lands or funds
3) controversial projects requiring a permit
4) projects involving surface fresh water diversion or construction in the coastal zone.

Reviewed by: various agencies have approving authority

4) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway.

5) Grading Permit

Required for: land alteration activities that may result in erosion such as: grubbing, grading, and stock piling

6) Utility Installation Permit

Required for: new private, public, or co-operatively owned utility installations that would cross or occupy rights of way of State highways

Issued by: State Department of Transportation

7) Variance for Building, Plumbing, or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

8) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

9) Waiver

Required for: waiver of certain minimum requirements of the zoning code, for public uses of utilities only

Issued by: County Department of Land Utilization or Public Works

3.6.4. Solar Heating and Drying

Solar energy has many direct applications for agriculture. These include: solar coffee-drying on the Big Island, other solar-assisted crop drying, solar heating for horticulture (such as propagation beds), solar-heated brooders, and solar-aided biogas generation from farm wastes (piggeries, dairies, etc.).

For such projects, the following may be required:

1) County Building Permit

Required for: any electrical or plumbing work; to erect, construct, alter, remove, or demolish any structure; to construct or alter sidewalk, curb, or driveway.

Issued by: County Building or Planning Departments

2) Variance for Building, Plumbing, or Electrical Codes

Required when: a person wishes to vary from the codes

Issued by: County Building Board of Appeals

3) Historic Site Review and Certificate of Appropriateness

Required for: any construction, alteration, or improvement of any nature on a designated historic site

Issued by: State Department of Land and Natural Resources
County Departments of Land Utilization or Public Works

4. POLICY ENVIRONMENT FOR ALTERNATE ENERGY DEVELOPMENT

4.1. INTRODUCTION

In the area of energy policy, policies are being generated at all levels. Congress passed the National Energy Act of 1978, which contains several elements which can have a significant impact on Hawaii's energy future. At the State level, the State Administration and Legislature have come forward with their own aggressive support for alternative energy development. Finally at the County levels, the energy self-sufficiency movement has burgeoned and all the Counties are working to establish general and then specific policies towards implementation of energy self-sufficiency.

This summary notes the most salient elements of the complex and rapidly evolving government energy policy matrix in Hawaii as it exists in the Fall of 1978.

4.2. FEDERAL POLICIES

President Carter signed the long-debated National Energy Act on November 9, 1978. The act contains several provisions which impact on renewable energy development in Hawaii, either directly or by the impacts of alternatives on coal, oil, and natural gas.

4.2.1. National Energy Conservation Policy Act: Calls on state governments to have regulated public utilities set programs to educate their customers on ways to conserve energy, including appliance efficiency. The bill also appropriates funds for conservation modifications to schools, hospitals, and local government buildings. Home improvement loans for energy conservation measures are also funded. The effect of the program vis-a-vis renewable energy development will be further manifestation of the importance the federal government attaches to the energy situation and of the linkage between individual users' habits and energy use. The general resistance to energy alternatives because "there really is no energy crisis" may thereby be further eroded. In terms of major impact on future energy markets, this program is not expected to engender the level of conservation needed to significantly lower demand for energy in the future. The hope is, at best, to moderate the growth of per capita energy use, not to reverse it.

4.2.2. Energy Tax Act of 1978: Most important for Hawaii's renewable energy alternatives is the income tax credit of up to $2,200. This includes 30% of costs up to $2000 and 20% of next $8000) for installation of qualified renewable energy source devices, e.g., solar or wind equipment (retroactive to April 20, 1977). This may provide a significant increase in the rate of the adoption of solar water heaters in Hawaii. On typical systems costing $3000, a savings of about $800 would be made. A tax on "gas guzzling" cars was included in the package. It would apply to 1980 model year cars. The charges are:

14-15 mpg	$200 tax
13-14 mpg	$300 tax
less than 13 mpg	$550 tax.

Both the standards and the amount of the tax are to rise yearly so that for any 1986 cars getting less than 12.5 mpg, the tax will be $3,850.

This may have an effect, but this is expected to be minor since there are few technical impediments to getting car performance to better than 15 mpg. However, if the precedent of this gas guzzler tax is used as a basis for progressively strict standards on mileage in coming legislation, then overall fleet efficiency of the cars in Hawaii could be expected to respond. This response would of course reduce the demand to be met by energy alternatives for transportation--especially those liquid fuels seen as replacements for gasoline, i.e., "gasohol" (gasoline/ alcohol blends).

4.2.3. Investment Tax Credit for Energy Conservation Renewable Energy Sources: This tax credit provides businesses with an additional 10% credit for installing energy-saving devices and equipment using energy alternatives to oil and natural gas. On the mainland this may largely support a switchover to coal, but in Hawaii it may help pay for solar conversions.

There is a growing body of knowledge and experience on the use of solar energy to provide industrial process heat (or at least pre-heating). This would be significant in the Hawaii industrial context for the food processing industries, especially sugar and pineapple. The Hawaii Sugar Planters Association already is experimenting with the use of flat solar collectors in their production processes. Other food processing which may be affected are tuna canning and macadamia nut and coffee drying. This tax credit will widen the applications and technologies which may be economical for this kind of use. One such technique is the focusing solar collector.

4.2.4. Power Plant and Industrial Fuel Use Act: Certain policies are intended to convince utilities and industry to switch over to the use of alternatives to oil and gas, particularly coal. For various reasons, including logistics and ecological concerns, coal may not be considered a likely or attractive source for Hawaii; however, the provisions of this act may be used to help accelerate the switch by utilities and industry to renewable energy sources. For example, the funds for planning grants for assessment of impacts of coal and uranium development could conceivably be used to look at the impacts of alternative energy developments, i.e., geothermal or ocean thermal.

4.2.5. Public Utilities Regulatory Policies Act: The objectives of the Act are:

1) conservation of energy;
2) efficient use of facilities and resources;
3) equitable rates to electric consumers.

To achieve these goals the Act sets forth 11 standards for rate design and utilities practices which must be considered by state Public Utilities Commissions and non-regulated utilities.

The rate designs include: cost of service, declining block rates, time of day rates, seasonal rates, interruptible rates, and load management techniques. Other standards include master metering, automatic adjustment clauses, and termination procedures. The impact of this provision per se is likely minimal in Hawaii since the State Public Utilities Commission is currently considering most of these ideas already in rate hearings. The provisions of the Act, however, might be to encourage conservation and therefore to reduce the demand or peak

load for electric energy. To make the legislation more effective, the federal government is given the right to participate and intervene in rate-making proceedings or other appropriate regulatory deliberations. It is also authorized to require interconnections of grids and wheeling of power, subject to the proviso that such action does not place undue burden on a utility, impair the reliability of a system, or require an enlargement of generation facility. To achieve interconnections, the Federal Energy Regulatory Commission can exempt utilities from state laws or regulations which prohibit or prevent voluntary pooling. This provision can be significant in Hawaii as there have already been instances where sugar companies wanted to use the public utility grid to wheel power from one of their bagasse generators to other points of use and this, in the past, has been denied by electric utilities.

The Act also requires the Federal Energy Regulatory Commission to prepare rules whereby utilities will be obligated to both buy and sell power to qualified co-generation facilities and qualifying small power production facilities. This would have impacts in Hawaii not only on power generation at the scale of individual multi-KW wind mills (or photovoltaic arrays) but also on larger scales, e.g., bagasse generation plants or private geothermal generation ventures, both of which are significant factors in Hawaii. In effect, this legislation gives a federal imprimatur to the legal initiative begun in Hawaii by the State legislature--the legislation to insure that utilities would buy power generated by bagasse and geothermal (and other renewable energy options).

4.2.6. <u>The Natural Gas Policy Act:</u> The impact of this legislation will be a planned rise in the price of natural gas. It will have little direct impact on Hawaii since no natural gas is used in Hawaii. Our gas is synthetic, produced from petroleum. However, it will make some small contribution to the energy cost of machinery and equipment used to tap various renewable energy alternatives.

4.3. STATE OF HAWAII POLICIES

4.3.1. Hawaii State Plan. The Hawaii State Plan, signed into law on May 22, 1978, is the first such comprehensive state plan in the nation. The plan contains a strong section on energy objectives and policies.

The stated objectives are:

1) dependable, efficient, and economical statewide energy and communication systems capable of supporting the needs of the people;
2) increased energy self-sufficiency.

To achieve these objectives, a number of policies are enunciated in the the State Plan. These can be seen as responding to the concerns of various interests or viewpoints in the politics of energy alternatives.

From the point of view of utilities and other public servants concerned with dependable, low risk technologies, come two policies:

1) Provide adequate, reasonably priced, and dependable power and communication services to accommodate demand; and
2) Ensure a sufficient supply of energy to enable power systems to support the demands of growth.

Reflecting the enthusiasts of new energy alternatives are two policies:

1) Accelerate research, development, and use of new energy sources; and
2) Promote the use of new energy sources.

For the energy conservationist:

1) Promote prudent use of power and fuel supplies through education, conservation, and energy-efficient practices.

For environmentalists:

1) Ensure that the development or expansion of power systems and sources adequately consider environmental, public health, and safety concerns, and resource limitations.

Finally there is a small but persistent group in Hawaii who foresee the possibility of improving communication technologies obviating much face-to-face communication, thereby changing radically the shape of human settlements, work patterns, and,

therefore, the commuting behavior and energy use in transportation. This view is reflected in the final policy of the State Plan:

1) Facilitate the development and use of improved communications technology.

A public opinion survey conducted as part of the background for the Hawaii State Plan found substantial support for development of indigenous energy sources, even at some cost to natural resources and conservation areas. This finding has helped, clearly, to girder the general political feeling that energy self-sufficiency is a popular issue and therefore to explain its strong endorsement in the State Plan.

4.3.2. State Energy Program. The Director of the Department of Planning and Economic Development was designated by the Governor as the State Energy Resources Coordinator. Under the coordinator, a State Energy Program has been developed. The overall objective of the program is to reduce per capita petroleum imports as rapidly as possible. This objective is pursued by programs in three areas: conservation, implementation of alternate energy applications which will lead to utilization of local energy resources in the short term and a R&D and demonstration program on longer range alternate energy sources that will lead to self sufficiency in energy for Hawaii.

A high-level Governor's Committee on Alternate Energy Development reviews programs and the work of technical committees on self-sufficiency, biomass, wind, solar, geothermal, and ocean thermal energy.

Several programs to meet the objectives of the State Plan and the State Energy Program have been advanced by the State Energy Coordinator.

1. Carry out projects under the State Conservation Program.
2. Focus resources on developing short-term usable energy as rapidly as possible. This includes solar collectors for hot water; electricity from sugar cane, solid wastes, and wood; alcohol from molasses; passive solar; small windmills; solar industrial process heat; and geothermal energy.
3. Support continuing research, development, and demonstration programs in geothermal, biomass, wind, OTEC, solar air conditioning, and other solar technologies.
4. Provide incentives such as State-guaranteed low-interest loans to further develop Hawaii's energy resources.
5. Wherever feasible, direct future urbanization into easily serviceable, more compact, concentrated developments next to existing urban areas.

6. Provide incentives or mandate the use of passive design, energy conserving technology and efficient appliances in new home and building construction.
7. Develop incentives for using alternative energy sources in homes and other buildings.
8. Institute consumer education programs to help people understand the problems of energy shortages and to make them aware of the various conservation actions available.

Most of these program ideas are currently in at least pilot stages of implementation. Each of the programs has some impacts toward encouraging development of Hawaii's renewable energy sources--especially numbers 2, 3, 4, and 7 above.

4.3.3. State/County Energy Self-Sufficiency Coordinating Committee. This committee was formed in early 1977 to provide information exchange and coordination among state and county energy planners. The membership represents the State, University of Hawaii Natural Energy Institute, the counties, and U.S. Department of Energy representatives in Hawaii. Each county has a self-sufficiency committee and key individuals from these are on the Statewide Committee.

4.3.4. Hawaii Integrated Energy Assessment Project. The current study, funded by the U.S. Department of Energy, is aimed at developing a technical data base and socio-economic information as well as information on social, political, and regulatory impacts on alternative energy development in Hawaii. This information will be part of the input to a major integrated energy study for the State which will involve application of an energy input/output model for the State. A series of computerized scenarios will be run against the energy/economics input/output matrix to forecast future implications of various energy development strategies. The assessment is seen as pioneering a major planning tool, of use to the State, to the Counties for their energy self-sufficiency planning, and as an example for other states as well.

4.3.5. Summary. In summary, then, the policies of the State of Hawaii regarding renewable energy alternatives are highly positive and supportive. There is a commitment in the State's comprehensive plan to development, research, and promotion of new energy sources, with caveats on dependability, environmental impacts, need for conservation, and the need to pursue improved communications.

Substantively, the State has established an overall administrative/coordinating infrastructure to link State plans with County efforts. The State, with the legislature, has, compared to other states, funded an ambitious array of programs,

moving to implement the policies. These include basic technical research on many energy alternatives, public education, conservation programs, and support for legislation to facilitate the planning and implementation of alternate energy resources.

4.4. HAWAII STATE LEGISLATURE

Necessarily, the Hawaii State Legislature has had and will continue to have a major role in policy regarding renewable energy development. The Legislature not only has voted millions of dollars for energy research and development (over $10 million in 1978), but also has passed several key laws relating to alternative energy development. These include:

- the establishment of the Hawaii Natural Energy Institute to coordinate renewable energy Research and Development.
- the establishment of the Natural Energy Laboratory of Hawaii at Keahole Point. (Act 235-74)
- creation of the position of Energy Resources Coordinator. (Act 237-74)
- creation of the State Program for Energy Planning and Conservation. (Act 240-74)
- definition of geothermal resources as "mineral" and establishment of the Board of Land and Natural Resources as the regulatory agency for geothermal development. (Act 241-74)
- funding for solid waste management demonstration projects as well as alternate energy R. & D. (Act 195-75)
- passage of tax incentives for energy conservation--income tax credit for 10% of the cost of solar energy device; property tax exemption for alternate energy improvements to buildings. (SB2467-76)
- mandating of natural cooling for State Buildings. (SB2467-76)

Act 102, passed in 1977, was a key law in removing some of the legal questions which could impede use of biomass energy, particularly bagasse. The bill was prompted by concern with the effects of Hawaii's dependence on petroleum, the vulnerability of the large proportion of jobs influenced by foreign energy strategies, and the desire to utilize the vast infrastructure of sugar cane production already in existence in the State.

In response, the Legislature exempted non-fossil fuel electricity sources (such as sugar plants burning bagasse to generate power) from PUC for energy conservation and for the development and use of alternative regulation. This exemption makes the whole prospect of going into energy production much more attractive to sugar companies. The act also empowers the PUC to direct electric utilities to utilize excess energy from biomass fuels and further empowers the PUC to set a fair and equitable rate for the energy if the utilities and the suppliers cannot come to terms themselves. This section aims to insure that if sugar companies can produce energy at reasonably competitive prices to those produced by utilities from imported fossil fuel, the market will be assured.

Parallel legislation was passed in 1978 for geothermal energy. Similar legislation is pending for non-fossil non-"fuels" such as solar and wind energy.

The 1978 Legislature was outstanding in its active, fiscal support for alternate energy development in Hawaii. The legislature voted a sum of more than $10 million for energy-related projects.

Since both research and development on energy and the piloting of new programs through government processes are difficult and prone to delay, the State's current energy development projects provide ample opportunity for corrective criticism from the Legislature. Thus, in proper scale, the "checks and balances" relationship between the energy activists in the Legislature and the energy administrators in the executive branch of State government is a healthy one.

Future activities by the Legislature in the energy area are hard to predict--there are many energy alternatives to consider and legal uncertainty surrounding all of them. In fact, the reduction of legal uncertainties, to the degree this can be done outside the courts, will be a major energy activity for future legislatures. In particular, property rights for geothermal, hydroelectric, and wind will have to be dealt with.

The case of solar rights is especially difficult legally. Specifically, there is the problem of what the legal right of an individual is when the flow of solar energy to his solar conversion device has been blocked by neighboring construction or vegetation. This is a controversial issue in the State. One suit of this kind has already been dismissed because the judge felt the Legislative bodies have provided him with no laws on which to proceed.

The legislature will also, of course, be called upon to fund further efforts in energy Research and Development (R & D).

The third major policy area in which the legislature may become involved is in helping to set "shadow prices" which more actively than the market reflect the real costs and benefits of shifting from dependence on distant, foreign, exhaustible, polluting fossil fuels to local, Hawaiian, renewable, cleaner energy sources.

This can involve many possible tax and other fiscal policy measures designed to improve the economic attractiveness of conservation and development of our own energy sources. The pressures on the Legislature to make such fiscal policies may mount, especially if (1) further research shows no near term way to price the local renewable energy alternatives low enough to compete with fossil fuels, or (2) there is an interruption in our petroleum supply lines. Both are likely to occur.

4.5. COUNTY POLICIES

The major energy policies of the counties of the State are reflected in the county self-sufficiency plans or committee documents, where plans have not yet been formulated in detail.

4.5.1. City and County of Honolulu. The energy self-sufficiency planning in the City and County of Honolulu is just getting underway. However, the underpinning of overall policies and objectives for the county has been laid.

In a resolution of June 14, 1978, the City Council formally called for the drafting of a Comprehensive Energy Self-Sufficiency Plan for the City and County of Honolulu and for drafting of objectives and policies on energy self-sufficiency for inclusions in the County General Plan. In the preamble to that resolution, the considerations included an awareness that energy may be "the greatest challenge our country will face during our lifetime" and that the city is precariously dependent on energy for every aspect of human life. In response to the City Council, the Department of General Planning drafted some proposed objectives and policies for Energy Self-Sufficiency for inclusion in the General Plan.

The three elements of the proposed program are conservation, development of near-term and longer-term alternatives, and education. This closely follows the objectives and policies of the State Plan. However, the City's proposed plan has a more specific emphasis on public information.

In an August 1978 version, the proposed policies and objectives included wind among "proven energy alternatives," but in the version transmitted by the Council to the Planning Commission for comment in October, wind was transferred to the category of "new sources to be developed" and solid waste and bagasse burning had been elevated to the proven alternatives category. There was also inserted, under the conservation objective, a policy to provide incentives and where needed, controls to insure energy efficiency in new buildings.

The proposed objectives and policies on energy for the City and County of Honolulu General Plan, as of October 4, 1978, were:

OBJECTIVE A

TO MAINTAIN AN ADEQUATE, DEPENDABLE, AND ECONOMICAL SUPPLY OF ENERGY FOR OAHU RESIDENTS.

Policy 1

Establish economic incentives and regulatory measures which will reduce Oahu's dependence on petroleum as its primary source of energy.

Policy 2

Support programs and projects which contribute to the attainment of energy self-sufficiency on Oahu.

Policy 3

Cooperate with the State and Federal governments in carrying out programs for energy conservation and for the development and use of alternative sources of energy.

OBJECTIVE B

TO CONSERVE ENERGY THROUGH THE MORE EFFICIENT MANAGEMENT OF ITS USE.

Policy 1

Ensure that the efficient use of energy is a primary factor in the preparation and administration of land use plans and regulations.

Policy 2

Provide incentives and, where appropriate, mandatory controls to achieve energy-efficient design in new development.

Policy 3

Carry out public and promote private programs to more efficiently use energy in existing buildings and outdoor facilities.

Policy 4

Promote the development of an energy-efficient transportation system.

OBJECTIVE C

TO FULLY UTILIZE PROVEN ALTERNATIVE SOURCES OF ENERGY.

Policy 1

Encourage the use of solar energy systems in public facilities, institutions, residences and business developments.

Policy 2

Support solid waste and other biomass energy recovery programs.

OBJECTIVE D

TO DEVELOP AND APPLY NEW, LOCALLY AVAILABLE ENERGY RESOURCES.

Policy 1

Support research into new applications of biomass and solar radiation.

Policy 2

Encourage the development of wind energy, geothermal energy, and ocean thermal energy conversion.

Policy 3

Secure State and Federal support of City and County efforts to develop new sources of energy.

OBJECTIVE E

TO ESTABLISH A CONTINUING ENERGY INFORMATION PROGRAM.

Policy 1

Supply citizens with the information they need to fully understand the potential supply, cost, and other problems associated with Oahu's dependence on imported petroleum.

Policy 2

Foster the development of an energy conservation ethic among Oahu residents.

Policy 3

Keep consumers informed about available alternative energy sources, their costs, and benefits.

Policy 4

Provide information concerning the impact of public and private decisions on future energy use.

An Oahu Energy Self-Sufficiency Committee has been formed and has met a few times. This committee is to produce a plan to implement the objectives and policies on energy when they are ratified by the City Council.

The tone of the comments of many of the energy experts is that complete energy self-sufficiency for Oahu is a long way off, if it is ever to be achieved. They point to the much greater energy use of Oahu compared to the rest of the State put together and to the seeming head start on energy production of the outer islands, particularly the Big Island with its proven geothermal potential and the pilot OTEC plants slated for installation there. The conclusion drawn is that, at best, Oahu will be able to exchange its dependence on Indonesian and other foreign crude oil for dependence on hydrogen, deep sea electricity cables, or some other energy transmission system from the outer islands.

However, other alternative energy supporters suggest that the Island of Oahu could indeed become energy sufficient. The advocates of wind energy calculate that a farm of multi-megawatt wind energy conversion systems at Kahuku and Kaena Points could meet the total energy needs of the island. Wind energy from an area of only several square miles could theoretically be able to provide the islands electrical requirements if reasonable storage facilities (pumped water or batteries) were available.

Others speak of the possibility of geothermal energy on Oahu, too. And it is pointed out that if OTEC can work off the Big Island, it should also be able to work off Oahu where there is also a steep drop off in ocean depths.

It remains to be seen, then, which attitude will prevail in the energy planning to come out of the Oahu Energy Self-Sufficiency Committee. Whatever decision is made on complete self-sufficiency, there is bound to be strong emphasis on energy conservation, on the promulgation of the technologies which are appropriate now for Oahu (solar water heaters, bagasse burning, solid waste utilization), and on public education programs to enlist the widest support.

4.5.2. Maui County. The Maui County General Plan Citizen's Advisory Committee identified two major objectives for energy development:

(1) Greater self-sufficiency in the provision and utilization of of energy; and
(2) Prudent use of non-renewable energy resources.

To meet these two major objectives, the committee drafted five policies:

(1) Provide incentives for solar water heaters and other energy saving devices;
(2) Establish programs to test the feasibility for alternative energy generation;
(3) Provide for an on-going assessment of energy resources and alternatives;
(4) Establish and publicize a program for the prudent use and conservation of energy; and
(5) Require all new construction in the public sector, where feasible, and encourage all private developments to include energy saving features.

Maui county is moving actively toward implementing these policies and objectives. Two volumes dealing in general with feasibility of energy self-sufficiency for the county and how it may be achieved have been published. The third volume, is a detailed plan for implementation.

4.5.3. Kauai County. Kauai had a later start in energy self-sufficiency planning that did the Big Isle and Maui County. The county has not yet adopted a program of objectives and policies for energy self-sufficiency. However, the resolution passed by the Kauai County Council, which called upon the Mayor to launch the Kauai Energy Self-Sufficiency Committee, noted the urgency of energy planning.

Kauai now has a widely representative group of 13 citizen task forces preparing reports on sub-areas of energy self-

sufficiency. These will be reporting shortly to the county-wide Energy Self-Sufficiency Committee.

The next step will be to put the task force reports together into a cohesive program. This effort is especially laudable, if time consuming, in that it is entirely a volunteer citizens' effort, rather than centering on the work of experts, as on Maui and the Big Island. The results of the task force reports will become evident later.

One citizen group report, Alternate Sources of Energy--Ocean Energy and Other Large Size Appropriate Technology, has been distributed. The Hawaii Natural Energy Institute is scheduled to release a more technical document on Kauai's prospects for energy self-sufficiency in the near future.

The prospects for energy self-sufficiency for the Garden Isle are high. Only a few decades ago the island was self-sufficient in electrical energy, generating all its needs from bagasse burning. Kauai is also blessed with a few good wind sites, possibilities of OTEC, solar, hydroelectric, and a chance at geothermal energy.

4.5.4. Hawaii County. The Big Island has been the leader in energy planning at the policy level. Long before energy self-sufficiency was a popular cause throughout the State, the Hawaii County planning officials were considering a special land use permit for geothermal exploration. At about the same time, in March, 1976, Carl Vesy and Justus Muller were commissioned by the Hawaii Natural Energy Institute to draft a brief analysis of the prospects for energy independence for Hawaii County. That publication not only said, in short, that it could be done, but also triggered the other counties to plan for energy too.

Since that report was published, planning for energy self-sufficiency has increased rapidly on the Big Island. At present, the county is the recipient of a $150,000 grant from the U.S. Department of Energy to do a detailed analysis in conjunction with Stanford Research Institute and to come up with action plans for implementing a program to achieve maximum energy sufficiency by 1990.

Young Ki Hahn, the County energy planning coordinator, points out that it may appear on paper that the Big Island lags behind other counties which may already have drafted policies and objectives. But, he notes, it is easy to draft "motherhood" policies about energy conservation and self-sufficiency, but that it is a more rigorous effort to come up with action proposals. By "action proposals" he means implementation proposals which are grounded in a comprehensive analysis of the energy resources, needs projections, financial constraints, and social and environmental impacts. Hawaii County is slated, under the current schedule of their energy planning cycle, to have such

action plans for energy self-sufficiency ready by about June, 1979.

4.6. PUBLIC UTILITIES COMMISSION (PUC)

The public utilities, including providers of communications, electricity, gas, and transportation in Hawaii, are regulated by the Public Utilities Commission.

Because competition for electric companies would be extremely costly with separate distribution grids, generating equipment, management, etc., monopolies are allowed to exist under public regulations in this and certain other basic functions of society.

Basically, the PUC has overview of all the financial, and also the the technical decisions of the electric utilities. When increased costs of generation such as rising wages, rising fuel costs, or the need to replace wornout equipment indicates the necessity for a rate increase, the utility must petition for a rate increase from the PUC. In a quasi-judicial manner, the PUC is charged with determining whether a rate increase is just and reasonable. In Hawaii, individuals and consumer groups may seek, standing before the PUC, to participate as a party at any PUC case hearing. Additionally, the public's interest in the matter is served officially by the Office of the Consumer Advocate, a section within the Department of Regulatory Agencies which is legally responsible for participating in PUC cases from the point of view of the consumer.

4.6.1. Decision-Making Process of the P.U.C. The PUC is responsible for monitoring the utilities to be sure they are balancing the requirement of providing a reliable energy system while keeping the cost to the consumers as low as possible. The attempt to balance these sometimes conflicting goals is basic in the regulatory procedure.

In Hawaii, the detailed analysis of technical and financial alternatives is done by the utilities themselves. For example, every year or so, Hawaiian Electric Company (HECO) develops their estimates of their generating and other plant needs for the ensuing 20 years. Their computer generates many alternative scenarios using different technologies in different phases to meet the projected needs. The technically viable scenarios are then sifted by the financial specialists for the company, considering predicted costs of capital, etc., to come up with the preferred, least cost solutions.

The chosen capital investment plan or its initial increment is presented to the PUC. The PUC then judges whether the analysis presented demonstrates the proposed need and whether the proposed investment combines the criteria of reliability and serviceability in meeting the public's expected needs with the criterion of least costs. Other utilities follow basically the same procedure.

The least-cost criterion, however, is not always chosen. The long HECO contract with Standard Oil of California, which has been very beneficial to HECO following the 1974 oil price increases, was initially considered expensive 10 years ago but HECO management, with PUC approval, selected Standard Oil because of their reliability as a supplier.

4.6.2. New Criteria for Public Utility Investment Decisions. As a result of the energy crisis, there is increasing interest in the use of Hawaii's own natural energy resources for utilities.

Most State and county policy statements and laws on energy have added several new considerations to decision-making on energy futures. These include:

- the vulnerability of Hawaii's high-energy-use lifestyle, fueled almost completely by foreign energy sources;
- the anticipated rising costs of fast depleting world-wide fossil fuel resources;
- the balance of payments drain represented by the State's $600,000,000 annual energy bill;
- the job-creation potential of relatively stable cost and relatively labor-intensive local renewable energy development and of industries attracted to cheap, abundant energy; and
- the benign environmental impacts which the renewable energy alternatives represent, especially when contrasted to the coal or nuclear alternatives.

The PUC is beginning to consider how these benefits might be integrated into the rate-making structure so that the higher initial costs of renewable energy alternatives can be made financially attractive to the utilities. The basic question is: how much more should consumers be asked to pay for the use of energy alternatives?

This problem becomes increasingly difficult to resolve as the economics of the renewable energy alternatives and of fossil fuels are changing very rapidly.

Research and development on many conversion devices for renewable energy sources is expanding rapidly. Many technological breakthroughs have occurred, and more are expected. For example, volume production of megawatt scale wind energy conversion systems with attendant price drops is being forecast for as early as 1985. Likewise, recent reports on improvements in the efficiency of biomass gasification apparatus are encouraging.

4.6.3. Pricing Energy Alternatives. The possibility now exists for eliminating some of the areas of uncertainty in the pricing equations studied by the PUC. The various State and

county programs in energy planning and energy technology R & D are designed to reduce much of the technical and economic uncertainty as soon as possible.

It is conceivable that a major economic input/output matrix could confirm or deny the guesstimate that the current $600 million outlay in the state's balance of payments really represents about $1 billion when the multiplier effects of the energy dollars spent in Hawaii are analyzed.

In short, it is possible, that in the next few years, with more definitive technical and economic energy data available, the PUC would be in a more knowledgeable position for judging the costs of renewable energy alternatives.

4.6.4. Added Responsibilities of the PUC. Regulation of electric utilities by the PUC has, in the past, been relatively non-controversial. That was true largely because throughout most of this century, electricity production has been a declining cost industry. Each new generating facility of the grid component for Hawaii was more efficient, used less labor per kWh, and cost less per unit of energy than older ones. The real cost of energy has remained constant or dropped for decades.

With the 1974 increase in world petroleum prices, the rate of growth of energy unit prices also increased. In a period of rising costs and, consequently, rising rates, the function of the PUC became both technically and economically more difficult.

In 1976, the Commission was restructured. Five part-time commissioners were replaced by three full-time commissioners. The PUC was separated by the Legislature from the Department of Regulatory Agencies (DRA) and placed under the Department of Budget and Finance for administrative purposes. This was in part to clarify the role of the DRA's Consumer Advocate in testifying on PUC matters.

Although the new PUC is institutionally independent, it pays close attention to energy planning being formulated under the direction of the State Energy Resources Coordinator at the State Department of Planning and Economic Development as well as to the Legislature. The PUC must also respond to policy directives from Washington, D.C.

Federal policies effecting the PUC include not only regular reporting to the Federal Power Commission, but also response to specific policies. An example is President Carter's energy policy package, which calls for PUCs to consider rate structure systems designed to encourage conservation of energy and the federal endorsement of "power wheeling" (transmission of external power through the utility system's grid). The Hawaii PUC is already hearing, in the "Generic Rate" case, arguments concerning most of the rate bases advocated by the federal policy.

At the State level, PUC duties and responsibilities are delineated in Chapter 269 of the Hawaii Revised Statutes. The laws are subject to revision by the State Legislature. Recent significant revisions have been made concerning PUC responsibilities for alternate energy sources.

The revised definition of a "public utility" excludes, among other services, the operator of a facility producing power from non-fossil fuel sources for internal use, who also sells surplus power to a public utility for transmission to the public.

Another amendment makes rates for electric power produced from geothermal sources subject to approval by the PUC, although the producers of geothermal power are excluded from coverage as "public utilities."

The PUC is also authorized to determine the extent to which electricity generated from non-fossil fuel is available to the public. It may direct public utilities to acquire such electricity and shall approve the rates paid.

In the exercise of its authority to determine the just and resonable rates for the non-fossil fuel generated electricity supplied to the public utility by the producer, the commission shall give due consideration, among other factors, to the costs that the public utility would incur in the supply of electricity, to the need in the public interest of adequate and economical electric service by the public utility, and to the need of revenues sufficient to enable the producer of non-fossil fuel generated electricity to provide the electricity to the public utility.

4.7. UTILITIES

4.7.1. Perspective. The electrical utilities in Hawaii are all investor-owned. They play a unique and critical role in the policy planning for the energy future of Hawaii simply because they handle and deliver so much of the state's energy.

The utilities are in a curious position. On one hand they are private industries, and it is possible that their stockholders and investors wish to earn a maximum return commensurate with the risks involved. At the same time, the utilities are regulated by the Public Utilities Commission and are monitored to be sure that they provide sufficient and reliable energy at the least possible cost. The resulting environment of potential conflict creates special stresses for utilities.

4.7.2. Planning Processes. The Hawaiian Electric Company (HECO) reports that its planning is a continuous process. Basically, the company's planners, when considering expansion or replacement of generation capacity, adopt a 20-year time horizon. They consider alternative investment paths for the next 20 years, attempting to identify the investment path which meets the expected demand at the least cost. Literally dozens of scenarios are conceived and run on HECO's computer in the search for the best alternative. The best alternatives are selected for detailed financial analysis to determine the expected financing costs of that strategy over the next 20 years.

Top management makes a decision from among these alternatives. Because of changing technologies and changing prices of energy resources, it is common for the 20-year plan to be significantly modified after one or two years. This continuous updating and relatively long time horizon are encouraging to an outsider. It suggests a sensitivity to the possibilities of the future which, hopefully, would keep the people of Hawaii from more "energy crises."

From this perspective, Hawaiian Electric Company concludes that predominant reliance on the energy alternatives to fuel oil appears to be 40 years away. The perspective that the utilities tend to bring to consideration of energy alternatives, then, is that they are important for the future and it is difficult for the utilities to commit more than research level support to the energy alternatives.

4.7.3. Investment Climate. The president of HECO, Carl H. Williams, gave testimony against the passage of the recent Constitutional Convention amendment which would make it very difficult to gain legislative approval to construct a nuclear power plant in Hawaii. The primary reason for his opposition to the constitutional curtailment of the use of nuclear energy in Hawaii was that it would raise local energy costs.

Williams argued that investors on the New York money market would be less willing to invest in HECO if they knew that nuclear option would be closed off. They would see this as increasing the risk that the company might not be able to maintain attractive rates to insure sufficient sales to meet its obligations.

However, since the amendment has been passed, HECO's argument becomes a historical footnote--the question now is how to insure adequate financing for HECO to provide generation expansion in a manner which would be supported by the majority of Hawaii's people. The obvious long-run solution would be development of cheap and tested alternative renewable energy technology.

In the short-run, it may be necessary to consider more direct steps to help attract investment capital if public policy is to implement renewable local energy sources. This may involve public underwriting of specific liabilities the utilities may incur.

An alternative, proposed separately by Kelvin Kai of Kauai's Citizens' Electric and Bruce Yamashita of Molokai Electric, was for government to directly provide some of the funds needed for capitalizing the energy alternatives. Both cited that the "front end" costs of facilities and equipment for harnessing renewable energy sources are so high that there is need for government assistance to utilities in this area. The recently approved constitutional amendment which allows the issuance of tax exempt bonds a low interest for private industry under some conditions may provide a legal framework for such a program.

However, it is clear that implementing such a program of public assistance to utilities for the purpose of encouraging the utilization of renewable energy sources is not without critics. There is a vocal and influential sector within the utility industry itself that would oppose such moves as another extension of government bureaucracy into the market, prone to all the problems that such intervention often spawns. This argument may seem minimal in the face of the already extensive government influence on the electrical "market." The issue may be publicly debated soon.

4.7.4. Operating Requirements. Electric utilities are almost unique in that they are expected to deliver their product to whomever wants it, in whatever quantity they desire, and whenever they want it. And the quality of the product (frequency, voltage) may not vary at all, practically speaking. The public has come to expect and depend on this level of service. In hospitals and elsewhere, people's lives may depend on utilities meeting this extremely high expectation.

In general, Hawaii's utilities have achieved high performance levels compared with other utilities in the country. To achieve flexibility to new loads coming on line and continuous reliability using conventional oil-fueled generators, the utilities maintain a "spinning reserve" of steam turbines which are spinning and warmed up to operational temperatures. The warm-up can take up to 12 hours. When a new load comes on the line, the load to these spinning reserves is simply increased to meet the demand. And should one of the fully-loaded generators fail, the load may be shifted to the spinning reserve.

In addition, the utilities maintain some small portion of their generation capability in much quicker starting generators, such as diesel engines or gas turbines, which can start up in 45 to 50 seconds. For example, HECO has about 900 megawatts of steam thermal generators and about 100 megawatts of quick-start machines.

The drawbacks of the quick start machines are that they are not as thermally efficient as the steam generators. They are not engineered for the extremely long periods of conventional service which steam units can deliver. Finally, the quick-start generators are normally simply standing by, not generating energy, but still representing a considerable capital investment.

So utilities look at energy alternatives from the viewpoint of operational experience, evaluating whether anyone can promise to deliver as steadily and predictably as the steam thermal plants, which are typically on line about 8000 of the total 8760 hours in the year or about 90% of the time. The "down times" are generally scheduled maintenance stops, which the utility can stagger to minimize the need for back-up equipment. Many of the energy alternatives cannot match this level of reliability.

Solar and wind energy present a reliability problem; what happens when there is no sun or wind? There is no way to predict accurately for very far in advance when these periods will be.

Thus utility planners make a distinction between energy alternatives which are of "base load" generation quality and those which are "oil replacers". Base load alternatives are those which give promise of being able to operate with consistency and predictability equivalent to that of the thermal plants now in use as base load plants. The alternatives which may be capable of meeting these strict qualifications include:

(1) Biomass Systems. The very nature of biomass systems have a built-in stability. The biomass fuel itself--bagasse, wood chips, etc.-- is actually a store of converted solar energy gathered over many months or years. Short-term variations in sunlight, e.g., cloudy days, would have little impact on the electrical output of a system using biomass for fuel.

(2) Geothermal Systems. Geothermal generating systems are expected to act as base load capacity, as they do in developed geothermal fields elsewhere in the world. The significant uncertainty about their output from the utility's rigorous standpoint is the possible effect of seismic activity on plant location and steam supply.

(3) Ocean Thermal Energy Conversion. OTEC can be capable of offering base load capacity. Just as biomass is stored solar energy, so is the thermal differential between the upper and lower layers of the ocean. This difference varies little day or night, winter or summer. Further, OTEC planners believe that the system can be engineered to make the OTEC plant stable and unaffected even by major tropical storms.

In contrast to these alternatives, wind electric systems or direct solar thermal systems are subject to rapid, major, and short lead time fluctuations in their power output. Without economical energy storage systems, these energy sources can only act as fuel replacers.

From the utility company's point of view, this distinction is very important. If an energy alternative can meet the rigorous requirements of base load capacity, it can take the place of conventional base load steam thermal generators. Duplicate capacity is not needed, saving 10-15% in emergency fast-start generation equipment. In contrast, the fuel replacement alternatives are much less efficient and produce energy more expensively than base load thermal generators.

To be attractive to utilities, wind, direct solar electric, or other intermittent power systems must generate cheaply enough to be competitive. This includes the capital costs for 100% quick-start backup or economical energy storage systems. Barring these factors, HECO feels they could only generate about 10-15% of their total demand (about equal to their current quick -start capability) with fuel replacement alternatives such as wind electric systems.

As proof that the utilities are willing to use alternate sources of energy which meet the rigorous demands of a base load source, the utilities point to the contract between Hawaiian Electric Light Co. (HELCO) on the Big Island and the Hilo Coast Processing Company, a sugar mill. This is a firm power agreement, in that the sugar company has agreed to supply a specified amount of power whenever the utility demands it. If for any reason the sugar company finds itself without bagasse to burn, it must burn fuel oil to meet the terms of the agreement. Maintenance to the sugar company's advanced generation plant and boilers is scheduled in the contract document.

In effect, this is a baseload facility which the utility can treat as its own. The electric company pays the sugar company about the same it would cost them in fuel, generating equipment, operations, and maintenance. The arrangement seems to be beneficial to the electric company and to the people of the Big Island, who get a significant portion of their energy from a local renewable energy source. The sugar companies, however, say that the current rate is low.

Why is this not done everywhere there is sugar? The problem is that the Hamakua coast is unusually favorable for sugar cultivation because there is enough water available by gravity alone to irrigate the crops. By contrast, in most of the other sugar growing areas of the state, irrigation water must be raised from ground water tables, often from considerable depth. The energy required to raise the millions of gallons per day needed by large sugar plantations is enormous.

The result is that excess capacity exists when the irrigation pumps are not being used, but when the pumps are being used, they frequently draw more power than they can generate and the sugar companies have to draw electricity from the utility grid to fulfill their needs.

Therefore, plantations which must pump irrigation water can only offer the utilities "interruptible supplies" of energy--fuel replacement, not base load capacity. For this kind of power the utilities can only pay the cost of the fuel saved, which is so low per kWh that it is not worthwhile for most of the sugar planters.

There are a few plantations outside the Hamakua Coast which enjoy gravity irrigation and could supply baseload power. Several on Kauai are in this position. (See Energy Inventory for Hawaiian Sugar Factories, Hawaii Sugar Planters Association.)

4.7.5. An Increasing Cost Industry. In real dollars, the cost of electricity on Oahu was about constant from early in the century until 1974. During this period, as the demand for energy grew, HECO expanded capacity with new, larger, more efficient generating equipment. Electric utilities were a falling cost industry, that is, each increment to generating capacity produced energy more cheaply than the one before it. But since the fourfold increase in the cost of oil and the attendant economic ripples around the world, the situation has been reversed. Electric utilities are now increasing cost industries. Each expansion or replacement of generating capacity is more expensive than older equipment per unit of energy output.

This is because new equipment is so much more expensive, reflecting the higher cost of the energy which went into its production. Also, more significantly, new equipment must be financed on a utility bond market, which has jumped with the oil

crisis. A bond which was floated at 3% interest in the past requires more than 10% in today's tight capital market.

With these increasing cost pressures, utilities are particularly skittish of changes either in consumer energy use habits or in generation technology. The rosy financial situation they enjoyed before 1974 no longer exists.

Utilities are looking even more carefully at their load factor--the ratio between installed capacity (kW's) and power sales (kWh's). The importance of this consideration to utilities can be seen from a simple illustration. HECO was called upon some years ago to install electricity to two consumers in windward Oahu. The first was a bank. Analysis showed that the bank would use enough energy to need a 100 kW pad transformer. The use came to about 20,000 kWh per kW of transformer installed.

Nearby, a McDonald's restaurant was built. The restaurant, too, needed a 100 kW transformer. However, unlike the bank, the restaurant operated and used electricity 24 hours per day. Its average use was about 50,000 kWh per kW of transformer installed. The utilities prefer loads which are even, like the restaurant's since they can supply energy more economically when loads are even.

To promote even loads, the utilities have special rate mechanisms. One such is the "11-month ratchet" whereby large commercial users of electricity are given a low per kWh rate. Their bill is figured by a computer which searches the preceding 11 months and sets the billed energy use at the average between the present month and the highest monthly use in the 11-month period. To keep their energy costs low, managers must phase the use of energy-consuming equipment. Simultaneous implementation of new equipment can mean higher electrical bills.

Because even loads and predictable loads are so important to utilities, they are presently considering the need for a special higher rate for customers who want to use electricity as a backup to their solar water heaters. The problem is that if weather conditions occur so as to cut down solar energy available simultaneously to solar water heaters over a wide area (a 3-day Kona storm, for example) then all the customers with electric backup systems would then be making a simultaneous, unpredictable, large-scale demand on the utility's generating capacity. The problem is to determine the probability of such weather-induced solar system backup demand and whether it would be great enough to require generation expansion.

A likely policy option, if this does prove to be a significant load, is to make a special surcharge to people who use electric backups for their system. This will tend to encourage people to have either an individual gas-fired backup, to have solar systems engineered to be 100% solar, i.e.,

substantial storage, or to individually live within the capacities of their own systems.

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6. APPENDIX

Progress Report and Recommendations - August 1980

Legislation passed by Tenth Legislature, State of Hawaii, 1980, concerning energy conservation and alternate energy resource development.

PROGRESS REPORT - AUGUST 1980

A review of the efforts made by State and County agencies in streamlining the permit processes involved in the development of alternate energy sources in Hawaii indicates substantial progress has been made and is continuing.

Act 74 of the 1977 State Legislature provides for the designation of one agency in each County to act as a "Central Coordinating Agency" for land development laws and regulations.

Hawaii's four Counties have designated the following agencies as central coordinating agencies:

City & County of Honolulu - Land Utilization Department.

County of Hawaii - Planning Department.

County of Kauai - Planning Department.

County of Maui - Department of Public Works.

Honolulu, Hawaii and Maui Counties have compiled files of all laws, regulations, rules, procedures, permit requirements and review criteria of Federal, State, and County agencies having control or regulatory powers over land development. The County of Kauai, which encountered delays in funding for implementation of the project, is currently preparing such a compilation.

Each of the designated agencies reports that all possible efforts are made to assist applicants for alternate energy projects through use of joint agency review of applications and scheduling of joint public hearings where such combined hearings would be to the interest of the applicants and providing individual assistance with specific problems.

The State Department of Planning and Economic Development and the University of Hawaii's Hawaii Natural Energy Institute are coordinating efforts to provide technical assistance in the research and development phases of alternate energy resource projects, and in securing the cooperation and assistance of Federal and County agencies and private industry in working towards the elimination of legal and other barriers to the implementation of alternate energy projects.

Several bills facilitiating the development and use of alternate energy resources in Hawaii were passed by the 1980 Tenth Legislature of the State of Hawaii and signed into law by Governor George R. Ariyoshi. These additions and amendments to the Hawaii Revised Statutes removed several barriers to specific energy development projects and provided financial and other incentives for the production and use of electric energy from non-fossil fuel sources. In addition, the State budget included funding for many programs of energy conservation and alternate energy resource development.

A brief description of these laws and their impact on the development and use of alternate energy resources is given below, together with a summary of some of the energy projects receiving funding under the State budget. Copies of the laws will be found in the Appendix with the exception of Act 300, the State Budget Appropriation Act, which is omitted because of its length.

Act 24: Allows wind machines and wind farms which produce energy for public, private, and commercial use to be located in Agricultural Land Use Districts. This legislation permits the placement of wind machines in optimum wind regime areas throughout the State.

Act 65: Amends the existing fuel distribution law to require registration of all fuel importers, manufacturers, distributors and exporters of fuel with the Department of Planning and Economic Development. It also requires submission of statistical reports to the Director of DPED (who is the State Energy Resources Coordinator) on the amounts of fuel imported, exported, used and sold. This law strengthens reporting procedures and will provide more complete and accurate statistics on fuel production, supply, and use in the State.

Act 77: Excludes producers of power from non-fossil fuel intended for sale to utility companies in Hawaii, from regulation as public utilities. This law encourages production and sale of power by companies in other fields which may not wish to have all of their operations come under full regulation by the Public Utilities Commission. For example, sugar processing companies which use biomass to generate electricity, can sell this power to a utility company without coming under regulation as a public utility.

Act 78: Sets the general excise tax on sales of electric power generated from non-fossil fuels to a public utility company at a rate of 1/2 of one percent rather than the general 4 percent. This provides a financial incentive for the production and sale of electricity by non-utility companies.

Act 177: Requires sellers of solar energy devices to itemize the cost of the devices, accessories, installation and other costs. Provides consumers with data needed to compare costs and to apply for tax credits.

Act 274: Exempts gasohol from the 4 percent State excise tax at the retail level. This will help reduce the present price differential between gasoline and gasohol, and promote the sale of the alcohol-extended fuel.

Act 300: State Budget: The high priority assigned to the development of alternate energy resources and energy conservation by the State of Hawaii was demonstrated in the number of programs and projects approved for funding in the State's operating and capital improvements budgets in 1980.

Funds were provided for determining the environmental impact of a manganese nodule processing industry, a prerequisite for the development of this industry—a development which would improve the economic feasibility of geothermal power in Hawaii.

Funds were appropriated for energy audits and implementation of recommendations for modifying structures and electric/mechanical systems in hospitals, schools and public buildings in the State to obtain significant energy savings.

State assistance will be provided for plans, design and construction of facilities for alternate energy demonstration and commercialization projects.

Funds were approved for plans for an OTEC pilot plant, initially for 10 megawatts design, but capable of expansion to 40 megawatts. This project includes an environmental study of the Waianae Coast area which is a proposed site for the pilot plant. Funds are also provided for design, construction and equipment for facilities for the integration of aquaculture research with the OTEC energy project.

High priority was given for funding of plans and design for a 90 kilowatt hydroelectric plant on Molokai; a 1.6 megawatt pumped hydroelectric storage system on Molokai; and for run-of-the-river hydroelectric systems statewide.

Funding was also approved for survey of soils and improved tree nursery facilities in the development of an energy tree farm which can be used as a source of biomass for power generation.

(To be made one and ten copies)

HOUSE OF REPRESENTATIVES
TENTH LEGISLATURE, 1980
STATE OF HAWAII BL 1468-80

H.B. NO. 2418-80 H.D. 1 S.D. 1

ACT 24

A BILL FOR AN ACT

RELATING TO ENERGY PRODUCTION FACILITIES IN AGRICULTURE DISTRICTS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The purpose of this Act is to allow the establishment of wind energy facilities as a permitted use in agriculture districts.

SECTION 2. Section 205-2, Hawaii Revised Statutes, is amended to read as follows:

"Sec. 205-2 Districting and classification of lands. There shall be four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural, and conservation. The land use commission shall group contiguous land areas suitable for inclusion in one of these four major districts. The commission shall set standards for determining the boundaries of each district, provided that:

(1) In the establishment of boundaries of urban districts those lands that are now in urban use and a sufficient reserve area for foreseeable urban growth shall be included;

(2) In the establishment of boundaries for rural districts, areas of land composed primarily of small farms mixed with very low density residential lots, which may be shown by a minimum density of not more than one house per one-half acre and a minimum lot size of not less than one-half acre shall be included, except as herein provided;

(3) In the establishment of the boundaries of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation; and

(4) In the establishment of the boundaries of conservation districts, the "forest and water reserve zones" provided in section 183-41 are renamed "conservation districts" and, effective as of July 11, 1961, the boundaries of the forest and water reserve zones theretofore established pursuant to section 183-41, shall constitute the boundaries of the conservation districts; provided that thereafter the power to determine the boundaries of the conservation districts shall be in the commission.

In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county.

Urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated.

Rural districts shall include activities or uses as characterized by low density residential lots of not more than one dwelling house per one-half acre in areas where "city-like" concentration of people, structures, streets, and urban level of services are absent, and where small farms are intermixed with the low density residential lots except that within a subdivision, as defined in section 484-1, the commission for good cause may allow one lot of less than one-half acre, but not less than 18,500 square feet, or an equivalent residential density, within a rural subdivision and permit the construction of one dwelling on [said] such lot, provided that all other dwellings in the subdivision shall have a minimum lot size of one-half acre or 21,780 square feet. Such petition for variance may be processed under the Special Permit Procedure. These districts may include contiguous areas which are not suited to low density residential lots or small farms by reason of topography, soils, and other related characteristics.

Agricultural districts shall include activities or uses as characterized by the cultivation of crops, orchards, forage, and forestry; farming activities or uses related to animal husbandry, aquaculture, game and fish propagation; aquaculture, which means the production of aquatic plant and animal life for food and fiber within ponds and other bodies of water; wind generated energy production for public, private and commercial use; services and uses accessory to the above activities including but not limited to living quarters or dwellings, mills, storage facilities, processing facilities, and roadside stands for the sale of products grown on the premises; wind machines and wind farms; agricultural parks; and open area recreational facilities.

These districts may include areas which are not used for, or which are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics.

Conservation districts shall include areas necessary for protecting watersheds and water sources; preserving scenic and historic areas; providing park lands, wilderness, and beach reserves; conserving endemic plants, fish, and wildlife; preventing floods and soil erosion; forestry; open space areas whose existing openness, natural condition,

or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; [and] other related activities; and other permitted uses not detrimental to a multiple use conservation concept."

SECTION 3. Section 205-4.5, Hawaii Revised Statutes, is amended by amending subsection (a) to read as follows:

"(a) Within the agricultural district all lands with soil classified by the Land Study Bureau's Detailed Land Classification as Overall (Master) Productivity Rating Class A or B shall be restricted to the following permitted uses:

(1) Cultivation of crops, including but not limited to flowers, vegetables, foliage, fruits, forage, and timber;

(2) Game and fish propagation;

(3) Raising of livestock, including but not limited to poultry, bees, fish, or other animal or aquatic life that are propagated for economic or personal use;

(4) Farm dwellings, employee housing, farm buildings, or activity or uses related to farming and animal husbandry;

Farm dwelling as used [herein shall mean] in this paragraph means a single-family dwelling located on and used in connection with a farm or where agricultural activity provides income to the family occupying the dwelling[.];

(5) Public institutions and buildings which are necessary for agricultural practices;

(6) Public and private open area types of recreational uses including day camps, picnic grounds, parks, and riding stables, but not including dragstrips, airports, drive-in theaters, golf courses, golf driving ranges, country clubs, and overnight camps;

(7) Public, private, and quasi-public utility lines[,] and roadways, transformer stations, communications equipment building, solid waste transfer stations, and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, treatment plants, and major storage tanks not ancillary to agricultural practices, or corporation yards, or other like structures;

(8) Retention, restoration, rehabilitation, or improvement of buildings or sites of historic or scenic interest;

(9) Roadside stands for the sale of agricultural products grown on the premises;

(10) Buildings and uses, including but not limited to mills, storage and processing facilities, maintenance facilities that are normally considered direct accessory to the abovementioned uses; [or]

(11) Agricultural parks[.]; or

(12) Wind energy facilities, including the appurtenances associated with the production and transmission of wind generated energy; provided that such facilities and appurtenances are compatible with agriculture uses and cause minimal adverse impact on agricultural land."

SECTION 4. Statutory material to be repealed is bracketed. New material is underscored.

SECTION 5. This Act shall take effect upon its approval.

Approved by the Governor on APR 17 1980

(To be made one and ten c

HOUSE OF REPRESENTATIVES
TENTH LEGISLATURE, 1980
STATE OF HAWAII BL 1466-80 ACT 65

H.B. NO. 2535-80 S.D. 1

A BILL FOR AN ACT

RELATING TO DISCLOSURE BY FUEL IMPORTERS, MANUFACTURERS, DISTRIBUTORS, AND EXPORTERS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. Findings and purpose. The legislature finds that accurate information concerning the availability of fuel within the State is of vital importance to the safety, health, and welfare of the people because the lack of such information can lead to uncertainties and difficulties in the State's efforts to plan for assured energy supplies as well as to assess and cope with fuel shortages and contingencies dealing with energy supply and demand.

It is the purpose of this Act to require a disclosure of fuel movements into, out of, and within the State in order to obtain accurate and current data for energy planning and management actions on the part of the State.

SECTION 2. Chapter 486E, Hawaii Revised Statutes, is amended to read:

"CHAPTER 486E

[LIQUID] FUEL DISTRIBUTION

Sec. 486E-1 Definitions. Whenever used in sections 486E-2 to 486E-4:

"Aviation fuel" means and includes all liquid substances of whatever chemical composition usable for the propulsion of airplanes.

"Director" means the director of [regulatory agencies] planning and economic development.

"Distributor" means and includes:

(1) Every person who refines, manufactures, produces, or compounds [liquid] fuel in the State, and sells it at wholesale[;] or at retail, or who utilizes it directly in the manufacture of products or for the generation of power;

(2) Every person who imports or causes to be imported into the State or exports or causes to be exported from the State, any [liquid] fuel [and sells it at wholesale therein]; and

(3) Every person who acquires [liquid] fuel through exchanges with another distributor.

["Liquid fuel" or "fuel"] "Fuel" means and includes [all liquids ordinarily, practically, and commercially

usable in internal combustion engines for the generation of power and includes liquefied petroleum gases, all distillates of and condensates from petroleum, natural gas, coal, coal tar, and vegetable ferments, such distillates and condensates being ordinarily designated as a gasoline, naphtha, benzol, benzine, and alcohols so usable but not restricted to such designation. All aviation fuel which is sold at wholesale for use in airplanes is deemed to be "liquid fuel" or "fuel" whether or not coming within the definition contained in the foregoing sentence.] fuels whether liquid, solid, or gaseous, commercially usable for energy needs, power generation, and fuels manufacture, which may be manufactured, grown, produced, or imported into the State or which may be exported therefrom; including petroleum and petroleum products and gases, coal, coal tar, vegetable ferments, and all fuel alcohols.

"Month" or "calendar month" means each full month of the calendar year.

"Person", except where the context or sense otherwise requires, means and includes individuals, firms, associations, or corporations.

["Retail dealer" means and includes a person who purchases liquid fuel from a registered distributor, and sells the liquid fuel at retail.]

Sec. 486E-2 Distributors to register. Every distributor, and any person before becoming a distributor, shall register as such with the department of [regulatory agencies] planning and economic development on forms to be prescribed, prepared, and furnished by the department.

Sec. 486E-3 Statements. Each distributor shall [on or before the twenty-first day of each calendar month], at such reporting dates as the director may establish, file with the director, on forms prescribed, prepared, and furnished by him, a certified statement showing separately for each county and for the islands of Lanai and Molokai within which and whereon [liquid] fuel is sold or used during the last preceding [month of the calendar year,] reporting period, the following:

(1) The total number of gallons or units of [liquid] fuel refined, manufactured, or compounded by the distributor within the State and sold or used by him, and if for ultimate use in another county or on [either] another island, the name of that county or island;

(2) The total number of gallons or units of [liquid] fuel imported or exported by him or sold or used by him, and if for ultimate use in another county or on [either] another island, the name of that county or island;

(3) The total number of gallons or units of fuel sold as liquid fuel, aviation fuel, diesel fuel, and such other types of fuel as required by the director; and

(4) The total number of gallons or units of [liquid] fuel and the types thereof sold to: federal, state, and county agencies, ships stores, or base exchanges, commercial agricultural accounts, commercial nonagricultural accounts, retail dealers, and such other customers as required by the director.

In addition to the above reporting [for the prior month], each distributor shall [on or before the twenty-first day of each calendar month,] file with the director, Federal Form FEO-1000 or an equivalent state form to be prescribed, prepared, and furnished by the director, showing the expected supply of [liquid] fuel products for the coming month, and their intended distribution as categorized by Form FEO-1000

or the equivalent state form. The state form [will] shall be supplied in the event that the Federal Mandatory Petroleum Allocation Regulations should expire, be revoked, or be amended to delete or substantially change the reporting requirements provided therein.

All statements submitted to the [department of regulatory agencies] director under this section shall be held confidential.

Sec. 486E-4 Failure to register; to make and file statements; making false statement unlawful; penalty. It shall be unlawful for any distributor, or any other person, to fail, neglect, or refuse to register or to make and file any statement required by section 486E-3 in the manner or within the time therein provided or to make any such statement which is false in any particular. Any distributor or any other person violating the requirements of this section, or sections 486E-2 and 486E-3 shall be fined not more than $5,000."

SECTION 3. Statutory material to be repealed is bracketed. New material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor on MAY 17 1980

(To be made one and seven copies)

THE SENATE

TENTH LEGISLATURE, 1980

STATE OF HAWAII

ACT 77

S.B. NO. 1897-80 S.D. 1 H.D. 1

A BILL FOR AN ACT

RELATING TO PUBLIC UTILITIES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that commercial development of the State's renewable energy resources needs to be encouraged in order to reduce the State's dependency on fossil fuels. The legislature further finds that producers, other than public utilities, will be encouraged to produce electric energy from such renewable energy resources for sale to the public utilities if such producers are assured that they will not be considered public utilities under state law.

It is the purpose of this Act to promote the commercial development of such renewable energy resources by excluding certain producers of electric energy from renewable non-fossil, non-nuclear energy resources from the definition of the term "public utilities" under state law.

SECTION 2. Section 269-1, Hawaii Revised Statutes, is amended by amending the definition of "public utilities"

to read as follows:

""Public utility" means and includes every person who may own, control, operate, or manage as owner, lessee, trustee, receiver, or otherwise, whether under a franchise, charter, license, articles of association, or otherwise, any plant or equipment, or any part thereof, directly or indirectly for public use, for the transportation of passengers or freight, or the conveyance or transmission of telephone or telegraph messages, or the furnishing of facilities for the transmission of intelligence by electricity by land or water or air within the State, or between points within the State, or for the production, conveyance, transmission, delivery, or furnishing of light, power, heat, cold, water, gas, or oil, or for the storage or warehousing of goods, or the disposal of sewage; provided that the term (1) means and includes any person, insofar as such person owns or operates an aerial transportation enterprise as a common carrier; (2) means and includes any person, insofar as such person owns or operates a private sewer company or sewer facility; (3) shall not include persons owning or operating taxicabs, as defined herein; (4) shall not include common carriers transporting only freight on the public highways, unless operating within localities or along routes

or between points which the public utilities commission finds to be inadequately serviced without regulation under this chapter; (5) shall not include persons engaged in the business of warehousing or storage unless the commission finds that regulation thereof is necessary in the public interest; (6) shall not include the business of any carrier by water to the extent that such carrier enters into private contracts for towage, salvage, hauling, or carriage between points within the State and the carriage is not pursuant to either an established schedule or an undertaking to perform carriage services on behalf of the public generally, and also shall not include the business of any carrier by water, substantially engaged in interstate or foreign commerce, transporting passengers on luxury cruises between points within the State or on luxury round-trip cruises returning to the point of departure; and (7) shall not include any person [who] which (a) controls, operates, or manages plants or facilities for production, transmission, or furnishing of power primarily or entirely from non-fossil fuel sources, [for its internal uses but who also provides, sells or transmits the portion of such power not used for such purposes directly to a public utility for transmission to the public.] and (b) provides, sells, or transmits all

of such power, except such power as is used in its own internal operations, directly to a public utility for transmission to the public.

In the event the application of this chapter is ordered by the commission in any case provided in (3) and (4) the business of any public utility which presents evidence of bona fide operation on the date of the commencement of the proceedings resulting in the order shall be presumed to be necessary to public convenience and necessity, but any certificate issued under this proviso shall nevertheless be subject to such terms and conditions as the commission may prescribe, as provided in section 269-20."

SECTION 3. Statutory material to be repealed is bracketed. New material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor on MAY 21 1980

(To be made one and seven copies)

THE SENATE BL 1433-80
TENTH LEGISLATURE, 19 80
STATE OF HAWAII

ACT 78 S.B. NO. 1999-80 S.D. 2

A BILL FOR AN ACT

RELATING TO THE TAXATION OF NON-FOSSIL FUEL GENERATED ELECTRICITY.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that Act 102, Session Laws of Hawaii 1977, was enacted to promote the generation and provision of electric power generated from non-fossil fuels to public utility companies. The legislature finds that the revenues resulting from the sale of such power to public utility companies are subject to the full general excise tax of four per cent even though the resale of such power by the public utility company is subject to the public service company tax levied pursuant to chapter 239, Hawaii Revised Statutes. The legislature further finds Act 135, Session Laws of Hawaii 1978, provides geothermal resource producers a reduced excise tax rate.

The purpose of this Act is to reduce the general excise tax assessment on power generated from an alternate energy resource and sold to public utility companies for resale to customers.

SMA 034-681

SECTION 2. Chapter 237, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"Sec. 237- Assessment on non-fossil fuel generated electricity. (a) Any other provision of the law to the contrary notwithstanding, the levy and assessment of the general excise tax on the gross proceeds from the sale of electric power generated from non-fossil renewable natural resources to a public utility company for resale to the public, shall be made only as a tax on the business of a producer, at the rate assessed producers, under section 237-13(2)(A).

(b) As used in this section, "alternate energy resource" means any non-fossil or non-nuclear natural resource, industrial waste, industrial process steam or heat, or agricultural waste or product within this State used or usable for the production of energy, and includes, but is not limited to, hydroelectric, solid waste, biomass, geothermal, solar, wind, ocean temperature differentials, waves, tides, or currents."

SECTION 3. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor on MAY 21 1980

(To be made one and ten copies)

HOUSE OF REPRESENTATIVES
TENTH LEGISLATURE, 1980
STATE OF HAWAII

H.B. NO. 1945-80 H.D. 1 S.D. 1

ACT 177

BL 1467-80

A BILL FOR AN ACT

RELATING TO SOLAR ENERGY DEVICES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. Chapter 481B, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"Sec. 481B- Sale of solar energy devices; disclosure requirements; penalty. (a) No person shall advertise, offer to sell, or sell a solar energy device unless the person clearly discloses separately the following information concerning the sale price of the solar energy device to the consumer:

(1) The cost of the solar energy device and accessories related to the operation of the solar energy device and for their installation; and

(2) The cost of items unrelated to the operation of the solar energy device, including but not limited to, "free gifts", offers to pay electric

bills, rebates, and other incentives designed to promote the sale of the solar device.

(b) As used in this section, "solar energy device" means any new identifiable facility, equipment, apparatus, or the like which makes use of solar energy for heating, cooling, or reducing the use of other types of energy dependent upon fossil fuel for its generation.

(c) Failure to disclose the information required under this section shall constitute an unfair method of competition and an unfair or deceptive act or practice in the conduct of any trade or commerce under section 480-2."

SECTION 2. Section 235-12, Hawaii Revised Statutes, is amended by amending subsection (a) to read as follows:

"(a) Each individual and corporate resident taxpayer who files an individual or corporate net income tax return for a taxable year, may claim a tax credit under this section against the Hawaii state individual or corporate net income tax. The tax credit may be claimed for a solar energy device in an amount not to exceed ten per cent of the total cost of the device[.]; provided that after the effective date of this Act, the tax credit shall apply only to the actual cost of the solar energy device, its accessories and installation

and shall not include the cost of consumer incentive premiums unrelated to the operation of the solar energy device offered with the sale of the solar energy device. The credit shall be claimed against net income tax liability for the year in which the solar energy device was purchased and placed in use; provided the tax credit shall be applicable only with respect to solar devices which are erected and placed in service after December 31, 1974 but before December 31, 1981. Tax credits which exceed the taxpayer's income tax liability may be used as a credit against his income tax liability in subsequent years until exhausted."

SECTION 3. Statutory material to be repealed is bracketed. New material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor on MAY 29 1980

(To be made one and seven copies)

THE SENATE BL 1442-80

TENTH LEGISLATURE, 1980

STATE OF HAWAII

ACT 274 S.B. NO. 1906-80 S.D. 2

A BILL FOR AN ACT

RELATING TO GASOHOL.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The purpose of this Act is to provide the incentives to encourage the purchase of gasohol by the consumer.

SECTION 2. Chapter 237, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"Sec. 237- Exemption of sale of gasohol. (a) There shall be exempted from and excluded from the measure of the taxes imposed by this chapter all of the gross proceeds arising from the sale of gasohol by retail dealers from July 1, 1980 to July 1, 1985, or sooner if the director of taxation determines by rule under chapter 91 that the exemption granted by this section is no longer needed as an incentive and terminates the exemption.

(b) As used in this section:

LRB 047-020

(1) "Gasohol" means a gasoline and alcohol liquid fuel mixture consisting of at least ten per cent ethanol (biomass derived) commercially usable as a fuel to power automobiles or other motorized vehicles.

(2) "Retail dealer" means and includes a person who sells the gasohol at retail. Only sales of gasohol for consumption or used by the purchaser, and not for resale, are sales at retail.

(c) The director of taxation shall annually submit a written report to the governor and legislature prior to the regular session of the legislature indicating a comparison of the number of gallons and average price per gallon of gasohol and gasoline sold in the State at the retail level and the director's recommendations as to whether the exemption under this section should continue at the current or at a lesser amount when the total exemption is no longer needed as an incentive to retailers and consumers for the marketing and use of gasohol.

(d) The director of taxation shall adopt rules pursuant to chapter 91 necessary to administer this section."

SECTION 3. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor on JUN 16 1980