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GEOTHERMAL POLICY PROJECT

Quarterly Report
For Period August 1, 1979 - October 31, 1979

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I. INTRODUCTION

With funds from the United States Department of Energy, Division of Geothermal Energy, the National Conference of State Legislatures has undertaken a project to stimulate and assist the review of state policies that affect geothermal development.

The NCSL Geothermal Policy Project has the following work tasks:

- o Prepare background material for state geothermal policy review;
- o Develop specific geothermal profiles for target states;
- o Stimulate state decisions to review geothermal policies;
- o Assist states in their analysis of geothermal issues;
- o Formally review the project's methods and results.

State assistance will be in the form of:

A. Reference Materials

1. "Packet of Background Materials" -- a comprehensive gathering of information on the nature of geothermal resources and the various development opportunities available including important state legislation and research studies;
2. "Geothermal Pamphlet" -- an introduction to the nature of geothermal resources, their beneficial uses, the role of state policies, and the NCSL Geothermal Policy Project;
3. "State Profile" -- a concise description of a state's leading policy concerns and potential benefits from geothermal development, including an outline of the location and character of the state's geothermal resources and their potential applications;
4. "Summary of State Actions" -- a summary of state study results and legislative actions taken during the year.

B. State Presentations and Technical Assistance

As part of the policy review process, the project will provide individual assistance at the request of the state. In the form of workshops or through more informal contacts, project staff will assist in such areas as analyzing policy alternatives, describing legislative action taken in other states, and identifying important studies, expert witnesses and concerned parties available for assistance.

C. Assistance from Experts

To insure that the policy reviews conducted are thorough and complete, the project is designed so that the states receive the expertise of all parties concerned with geothermal development.

Participating in the multifaceted effort will be:

1. State legislators;
2. State legislative staff;
3. State and local officials;
4. Geothermal developers, investors, utilities and other concerned private groups;
5. Consultants from public and private research institutions; and
6. Representatives of the Division of Geothermal Energy, U.S. Department of Energy.

II. SUMMARY

During the third quarter of the project's second year, the NCSL Geothermal Policy Project continued with initiating geothermal studies in new project states and furthering policy development in existing states. The Colorado Legislature has informed project staff that a geothermal policy review would not be possible during the 1979 interim period.

Project staff traveled to Alaska, Washington, New Mexico and Hawaii for state meetings and workshops; workplans were developed and approved for the states of Alaska and Washington.

Project staff negotiated with the DOE to complete project renewal for the period March 1, 1979 - February 29, 1980.

Project staff also met in Utah with the legislative review committee considering the proposed Geothermal Resources Conservation Act, which has been favorably reported for 1980 introduction.

Ken Wonstolen of the project staff attended the Annual Meeting of the Geothermal Resources Council and presented a paper on district heating, and project staff attended a conference on renewable energy in Colorado.

III. PROJECT ACTIVITIES

A. State Activities

In the third part of the project's second year, efforts were continued to initiate geothermal study activities in newly selected project states and to carry forward policy development in existing project states.

1. Follow-up with Existing Project States

a. Alaska -- Project staff traveled to Alaska (Aug. 7-10) to make a presentation to the Joint Special Committee on Renewable Energy Policy of the Alaska Legislature regarding a geothermal study for the state. At that time, extensive discussions were held with numerous state officials to determine specific problem areas associated with geothermal exploration, development and utilization for Alaska. Follow-up contact was also made with the Division of Research and Development concerning the coordination of the project and the Department of Natural Resources (DNR) geothermal policy recommendations.

Project staff traveled again to Alaska in September for field research and workplan development and ratification meetings. A state workshop was held (see A.2.c.), and the state workplan (Appendix 1) was presented and approved.

b. Nevada -- Project staff traveled to Carson City to meet with the Legislative Commission to determine areas which should be examined and addressed in the project's activities in that state. The geothermal study was approved with support from Sen. Lawrence Jacobson, and an oversight committee was established, chaired by Sen. Jacobson. An initial workshop schedule was developed for the state (Appendix 2).

c. Utah -- Project staff met in Utah with the legislative review committee considering the proposed Geothermal Resources Conservation Act (GRCA) and conferred with Robert Cooper of the property tax division of the Department of Revenue regarding geothermal tax issues on a preliminary basis. The GRCA has been favorably reported for 1980 introduction.

Contact was also made in Utah with the State Energy Office regarding tax credit legislation and a 1980 interim study.

d. Washington -- Project staff made follow-up contact with staff of the Senate Energy and Utilities Committee regarding the agenda for the scheduled November workshop and a Washington state workplan was developed and approved (Appendix 3).

e. Colorado -- Following discussions and correspondence by project staff with Colorado legislative leaders, Sen. Fred Anderson and Rep. Robert Burford determined that a geothermal policy review would not be possible during the 1979 interim period.

f. California -- Initial contact was made with the California Department of Conservation regarding a possible District Heating package project through the Geothermal Resources Board.

g. New Mexico -- Contact was made by project staff with the office of the State Engineer regarding legal analysis of the ability to administratively resolve geothermal water law issues.

h. Arizona, Delaware, Maryland and Virginia -- Delaware and Virginia will be examining geothermal issues in November and December committee meetings; Arizona and Maryland remain undecided.

2. State Meetings and Workshops

- a. Hawaii -- Project staff conducted field research and worked with the Senate Committee on Economic Development, Energy and Natural Resources to develop and staff a workshop held September 9. (See attached Agenda--Appendix 4.) A workshop summary will be included in a subsequent report. Sen. T.C. Yim, Chairman, and Robert Takushi, of the Senate staff, were in attendance.
- b. New Mexico -- Meetings were held with state agency personnel in Santa Fe on September 6. Representatives from the State Land Office, Natural Resources Department, Environmental Improvement Agency, Energy and Minerals Department, Taxation and Revenue Department and the State Planning Office were in attendance.
- c. Alaska -- A state workshop, sponsored by the NCSL Energy Program and the Alaska Joint Special Committee on Renewable Energy Policy was held September 13 in Anchorage. (See Appendix 5 for Agenda and list of invitees.)
- d. Washington -- Project staff traveled to Washington for field research and workplan development and ratification. They met with legislators and legislative staff on September 10 to review policy issues and develop the workplan (Appendix 3).

B. Project Materials

The following project materials were prepared during this quarterly reporting period:

- A study memorandum for the state of Utah was prepared for the meeting of the legislative review committee considering the proposed GRCA (Appendix 6).
- A memorandum was prepared regarding leasing and taxation issues in the state of Washington (Appendix 7).

- A "Background Paper for Workshop on Geothermal Energy" was prepared for the Hawaii State Senate (Appendix 8).
- A prospective schedule of project activities -- 9/79-12/81 -- was prepared (Appendix 9).
- A state workplan was developed for the state of Alaska (Appendix 1).
- A state workplan was developed for the state of Washington (Appendix 3).
- The Washington Geothermal Profile was developed by project staff (Appendix 10).
- Policy Recommendations were formulated for the state of Hawaii (Appendix 11).
- Legislative Recommendations and Proposals were developed for the state of Alaska (Appendix 12).
- A memorandum on geothermal water law issues was developed and forwarded to the New Mexico State Engineer.

C. General Meetings and Conferences

1. Ken Wonstolen of the project staff attended the Annual Meeting of the Geothermal Resources Council (September 24 - 25) in Reno, Nevada, at which time he presented a paper on district heating (see Appendix 11 of the August 1979 Quarterly Report).
2. Project staff attended a conference on renewable energy (Convention of Center for Renewable Resources) in Boulder, Colorado (August 16 - 18).

D. Liaison Activities

Project staff negotiated with the DOE, Division of Geothermal Energy, San Francisco office, to complete project renewal for the period 3/1/79-2/29/80.

Contact was made with Al Lopez of Mitre Corporation, who requested information on the project and on current state laws and regulations relating to geothermal energy; project staff met with Dr. W.D. Gertsch and Bob Grant regarding state geothermal leasing policy; recent information

on the legal, institutional and sociological aspects of geothermal were forwarded to Ron Tan, TRW Corp., pursuant to their request; a general information packet on geothermal was prepared for Professor David Getches of the University of Colorado Law School; and an information packet on project activities in Utah for the State Energy Office was prepared.

Liaison activities also included review and comment on EG & G (INEL) funded studies on Geothermal Leasing and Geothermal Taxation, on the Geothermal Omnibus Bill questionnaire distributed by Rep. James Santini (NV), and on the proposed California geothermal development authority bill for the California Department of Conservation; review of the proposed District Heating Municipal Ordinance for Klamath Falls; and a discussion of the parameters of a comprehensive district heating legislative package development project for California.

E. Miscellaneous

Project staff prepared an outline of the presentation to be made at the Geothermal Resources Council Institutional Workshop in San Diego (November 28 - 30), as well as securing faculty for the new laws and regulations session.

The Geothermal Utility Report from the Earl Warren Legal Institute was reviewed, as were operations research reports by state geothermal teams and the Johns-Hopkins University Applied Physics Lab east coast reports. An abstract for a paper to be given at the AAAS Annual Meeting in January 1980 was also prepared.

IV. VARIANCE OR PROBLEMS

None

V. PLANS FOR FUTURE REPORTING PERIODS

Future State Workshops are scheduled for Alaska (November 8), Washington (November 9) and Nevada (November 27).

VI. APPENDICES

1. "Proposed Technical Assistance Program -- State of Alaska"
2. Initial Workshop Schedule for the State of Nevada
3. "Proposed Technical Assistance Program -- State of Washington"
4. "Agenda for Workshop on Geothermal Energy Development, Incentives, and Policy Issues"
5. "Agenda -- Alaska Small-Scale Hydroelectric/Geothermal Workshop" and "List of Invitees to Alaska Workshop"
6. Study Memorandum for Utah Geothermal Resources Conservation Act
7. Memorandum relating to leasing and taxation issues in the state of Washington
8. "Background Paper for Workshop on Geothermal Energy" for the Hawaii State Senate
9. Prospective Schedule of Project Activities
10. "Washington Geothermal Profile"
11. "Suggested Geothermal Policies for Hawaii"
12. "Geothermal Policy Report for Alaska: Preliminary Options and Recommendations"

NATIONAL CONFERENCE OF STATE LEGISLATURES

ENERGY PROGRAM -- GEOTHERMAL PROJECT
PROPOSED TECHNICAL ASSISTANCE PROGRAM

STATE OF ALASKA

Study Areas

A. Resource Characterization

- distinguish high & low temperature resources
 - temperature threshold
- confirm subsurface ownership separate from water right
- address water law interface
 - property implications
 - protection of existing rights & water quality
 - clarification of application to by product water

B. Resource Access

- simplified procedures for low-temperature uses
 - miscellaneous land use permit/water right
 - unregulated put. residential use/water right
- substitute conforming use section for state withdrawals
- examine designation criteria & acreage limit (max.)
- adjust lower acreage limit for small-scale uses
- set deadline for mining claim diversion

C. Resource Allocation

- adopt firm policy with enforcement power
 - assign jurisdiction

D. Permitting

- remove overlapping jurisdiction re drilling
- distinguish regulation of high & low-temperature wells
- implementation of EPCA

E. Finance

- operator's incentives
 - state investment tax credit/property tax adjustment
 - deferral of royalties

- waive royalties for low-temperature use
 - * implications of temperature threshold
 - state loan/bond guarantees or certification
 - mandated pool coverage of reservoir risk
- consumer's incentives
 - income tax credits
 - property tax exemptions
 - state/utility loan program (weatherization/TVA)

F. District Heating

- confirm public bonding ability (alternative heat sources)

G. Public Utility Commission

- investigate commission policies
 - discretion to exempt from rate jurisdiction
 - certification control
 - reliability control

Staff Responsibilities

NCSL energy staff, in conjunction with legislative staff, will identify issues, conduct research, analyze policy concerns, investigate administrative responses and prepare legislative proposals, as needed.

<u>Tasks</u>	<u>Staff</u>	<u>Status</u>
Project Introduction	NCSL	completed
Issue Identification	Joint	completed
Research & Analysis	NCSL	in-progress
Supplemental Field Research	Joint ¹	in-progress
Project Milestones		
- Policy Profile	NCSL	completed
- Options & Recommendations ²	NCSL	12/79
- Discussion Bill Drafts	Optional	1/80
- Draft Legislation	Optional	2/80
Review of Proposed Legislation	Joint	1980

1- State Staff will conduct occasional in-state interviews and facilitate agency visits. Assistance of Geothermal Specialist in Div. of Energy and Power Development (State Energy Office) will be sought.

2- 1980 legislative proposals in selected areas only: leasing revisions, temperature threshold, DH, allocation, permitting, financing.

**National
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President
George B. Roberts, Jr.
Speaker, New Hampshire
House of Representatives

Executive Director
Earl S. Mackey

October 25, 1979

Senator Loren Jacobsen
P.O. Box 367
Minden, NV 89423

Dear Senator Jacobsen:

Per our telephone conversation of last week, I am sending you some information outlining our proposed work with you on Nevada's geothermal resource. My understanding is that the special committee will be chaired by you and is funded for four meetings between November 1979 and April 1980. Our staff contact is to be Fred Weldon. The tentative mode for the four meetings we discussed are:

First Meeting - November 27, Carson City

Overview workshop for bringing committee members up to speed on geothermal energy. NCSL will arrange for a series of presentations to be made to the committee on different aspects of geothermal energy. The possible speakers are:

- o Randy Stephens - U.S. Department of Energy
general information on geothermal and federal geothermal omnibus legislation
- o Ken Boren - Geothermal Products
slide presentation of geothermal uses
- o Kelly Jackson - Nevada Energy Office
review of Nevada's geothermal resource
- o Clay Parr - Attorney, Salt Lake City
review of water law impacts on geothermal development
- o Bill Beye - Phillips/Bill Dolan - Amax
developers viewpoint on Nevada's resource, review potential for electrical production

Second Meeting - Mid January, Carson City
Research scoping session

- o NCSL presents Nevada state profile
- o Committee develops state workplan to guide NCSL research.
NCSL will contact state staff during the development of the state profile and ask them to attend this meeting

Senator Loren Jacobsen

Third Meeting - Late February or March, location optional
Presentation of policy research options and recommendations
Public education workshop

- o NCSL will assist the state staff in developing a series of presentations for the morning meeting to educate the public on geothermal energy, its potential and application in Nevada
- o In the afternoon, NCSL will present the results of its research on the topics selected by the committee, as well as policy options and recommendations
- o Public comment, along with committee comment on NCSL's work will follow
- o The committee will direct NCSL staff to carry out any follow-up research

Fourth Meeting - March or April, Carson City
Final committee meeting

- o NCSL will report back to committee on any additional research requested
- o Consideration by committee on bill drafts, if appropriate

Dwight Connor, Director of NCSL's Energy Program and Ken Wonstolen, Geothermal Special Assistant, will attend the first meeting. Please let us know the entire committee make-up and their addresses for material distribution. We are looking forward to assisting you in your work on this topic. If you have any questions, please call.

Sincerely,

Ronald D. Smith
State Assistance Coordinator
Energy Program

RDS:hho

STATE OF WASHINGTON

Study Areas

- A. Geothermal Leasing Program
- B. Geothermal Regulatory Parameters
- C. District Heating
- D. Low-Temperature Geothermal Development
- E. Financial Incentives

Staff Responsibilities

NCSL energy staff, in conjunction with legislative staff, will identify issues, conduct research, analyze policy concerns, investigate administrative responses and prepare legislative proposals, as needed.

<u>Task</u>	<u>Staff</u>	<u>Status</u>
Project Introduction	NCSL	completed
Issue Identification	Joint	completed
Research and Analysis	NCSL	in progress
Supplemental Field Research	NCSL	in progress
Project Milestones		
- State Profile	NCSL	11/9/79
- Options and Recommendations	NCSL	1980
- Discussion Bill Drafts	Optional	
- Draft Legislation	Optional	
Review of Proposed Legislation	Joint	

DW:d10/9

COMMITTEE ON ECONOMIC DEVELOPMENT, ENERGY
AND NATURAL RESOURCES

SENATOR T. C. YIM, CHAIRMAN

AGENDA FOR

WORKSHOP ON GEOTHERMAL ENERGY DEVELOPMENT,
INCENTIVES, AND POLICY ISSUES

WEDNESDAY, SEPTEMBER 19, 1979
SENATE CONFERENCE ROOM 6

- 9:00-9:10 Welcoming remarks by Senator T. C. Yim.
- 9:10-10:15 General Over-view of Geothermal Activities in Hawaii
by Frank Skrivanek, Deputy Director, Department of
Planning and Economic Development.
- Up-date on the current Hawaii Geothermal Project by
Dr. Paul Yuen, Director of the Hawaii Natural Energy
Institute.
- Up-date on the Federal Geothermal Program by Tak
Yoshihara, Director of the Department of Energy's
Hawaii Liaison Office.
- Up-date on various other projects:
- Resource Assessment Project by Dr. Charles Helsley,
Director, Hawaii Institute of Geophysics.
 - Non-electrical Use Application Study by Dillingham
Corporation.
 - Puna Sugar Company Study of Geothermal Steam for
Cane Juice Processing by Amfac Corporation.
 - Puna Hui Ohana Study by Everett Kinney.
 - Other Projects.
- 10:15-10:30 COFFEE BREAK
- 10:30-12:00 Electrical Production by Lloyd Jones.
- Incentives for Commercial Development.
 - Regulation of Geothermal Development.
 - Land Use and Leasing Provisions.
 - Other Considerations.

Workshop Agenda
Committee on Economic Development
Page Two

- 12:00-1:00 LUNCH
- 1:00-2:30 Direct Use - Non-electrical Applications by Everett Kinney.
Types of Direct Use.
Incentives for Commercial Development.
Regulatory Application.
Land Use and Leasing Provisions.
Other Considerations.
- 2:30-3:30 Community Impact by John Keppeler.
Economic Impact.
Environmental Impact.
Social Impact.
- 3:30-3:45 COFFEE BREAK
- 3:45-4:30 Ownership Issue by D. Richard Neill
- 4:30 Wrap-up

AGENDA
ALASKA SMALL-SCALE HYDROELECTRIC/GEOTHERMAL WORKSHOP
September 13, 1979
State Court Building, Anchorage
9:00 to 5:00

Introduction

The National Conference of State Legislatures (NCSL) is assisting the Alaska Legislature in conducting a policy review of the opportunities and barriers associated with the development of small-scale hydroelectric and geothermal resources. As part of this effort, NCSL and the Joint Special Committee on Renewable Energy Policy are sponsoring a roundtable discussion to identify and prioritize policy concerns affecting the utilization of these indigenous energy resources. The intent of the meeting is to generate a work plan outlining policy areas deserving legislative attention. Further study efforts will be directed to developing legislative proposals for the legislature to address in the 1980 session. In order to facilitate the roundtable discussion, the following issue agenda for each resource has been developed.

Morning Session
Geothermal Development
9:00 - 12:00

- I. Resource Ownership
What is the ownership status of this resource in Alaska?
- II. Resource Leasing
Are the parameters for the leasing of this resource by the state clear and appropriate?
Should the minimum acreage limitation of 640 acres be revised to accomodate the special nature of potential small-scale direct application?
- III. Resource Allocation
How shall geothermal energy production be allocated to insure equity among competing users, protect geothermal systems and maximize returns.
- IV. Water Law Interface
What is the relationship of geothermal resources to water?
- V. Taxation
Does the present method of taxing resource property pose a barrier to geothermal development?
- VI. District Heating
What are the appropriate private and public vehicles to implement geothermal district heating?
Are their financial and other powers adequate to the task?
- VII. Public Utility Commission
Should alternate energy source district heating be exempted from rate jurisdiction?
Should alternate energy district heating be declared in the public interest by the legislature despite its potential competition with existing utilities?

Should a preference for public or private systems be adopted?

VIII. Land Use Planning

Should the legislature direct local government entities in areas of known geothermal potential to prepare geothermal elements for their land use plans in order to facilitate the master permit application process administered by the Department of Natural Resources?

Afternoon Session
Small-Scale Hydroelectric Development
1:30 - 5:00

I. State Licensing

Does the master license application administered by the Department of Environmental Conservation (lead agency) meet the objectives of streamlining the licensing process and providing a decision in a timely manner? If not, what modifications could be made?

Does the local government approval requirement in the Department of Environmental Conservation's master license application pose a barrier? If so, what can be done to alleviate this situation?

If an environmental impact statement (EIS) is required by the state, should the Department of Natural Resources be able to accept a Federal Energy Regulatory Commission's EIS in lieu of repeating the process on its own.

II. Water Law

Are there ambiguities in the Alaska Water Act of 1966 concerning the implied bifurcated water right systems which are potential barriers to small-scale hydroelectric development?

Do federal reserved rights for water pose a problem?

III. Public Utility Commission

What is the PUC's jurisdiction over small-scale hydroelectric sites?

Should stand alone small-scale hydroelectric projects be exempted from regulation? If so, what should be a size limit?

Should the legislature consider declaring it is in the public interest for cooperatives and municipalities to develop small-scale hydro despite potential competition with existing utilities?

What guidelines and standards for determining the value of power should the PUC adopt relative to renewable energy sources?

Should the PUC assist in the development of power marketing contracts between small energy producers and large integrated utilities?

IV. Insurance

Would the adoption of a strict liability standard for dam breach in Alaska become an impediment to small-scale hydroelectric development?

Should the legislature consider developing legislation which indicates a preference for either the strict liability standard or the negligence standard?

V. Natural Resource Utilization

What impact does the designation of public lands as wild and scenic, D-2, national monuments, etc. have on small-scale hydroelectric development? Should the various federal agencies overseeing public lands in Alaska work with the state to consider expediting development of small-scale sites?

Who should pay for necessary fish ladders?

What impact does the issue of competing water uses have on small-scale hydroelectric development?

IV. Financing

What kinds of financing are available to public and private developers from the public and private sectors?

How does the private sector view investing in small-scale hydro?

Do the various state loan programs available for small-scale hydroelectric development provide adequate resources for stimulating its development?

How can the up front risk to the developer during the feasibility stage be reduced?

Should the legislature consider providing financial incentives to small-scale hydro? If so, what kinds?

VII. Power Authorities

What specifically should be the role of the Alaska Power Authority, Alaska Power Administration, and Army Corps of Engineers be in regard to small-scale hydro development?

For further information on the issues concerning geothermal and small-scale hydropower please refer to the Geothermal Policy Report, July 1979, and the forthcoming preliminary State Profile on Small-Scale Hydropower that will be sent to you later.

LIST OF INVITEES TO ALASKA WORKSHOP
September 13, 1979
Anchorage, Alaska
Sponsored by
The National Conference of State Legislatures
Energy Program and the Alaska Joint
Special Committee on Renewable Energy Policy

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Anchorage, AK 99504
907/277-6615

Phil Smith
Rural Alaska Community Action Program
327 Eagle Street
Anchorage, AK 99501
907/279-2511

Jim Wicks
Division of Research & Development
Department of Natural Resources
323 E. Fourth Avenue
Anchorage, AK 99501
907/279-5577

Eric Yould, Executive Director
Alaska Power Authority
333 W. 4th Street
Anchorage, AK 99501
907/277-7641

Also invited will be a representative of the Alaska Department of Revenue
and a representative of Tlingit-Haida.

Members, Special Joint Committee on Renewable Energy Policy

Rep. Bill Miles, Chairman
P.O. Box 4-2038
Anchorage, AK 99507

Sen. Mike Colletta, Vice-Chairman
P.O. Box 3188
Anchorage, AK 99501

Rep. Nels Anderson
P.O. Box 234
Dillingham, AK 99576

Rep. Margaret Branson
P.O. Box 740
Cooper Landing, AK 99572

Rep. E. J. Hangen
P.O. Box 1049
Petersburg, AK 99833

Rep. Vernon Hurlbert
General Delivery
Sleetmute, AK 99668

Sen. Jalmar Kerttula
P.O. Box Z
Palmer, AK 99645

Sen. Pete Meland
P.O. Box 53
Sitka, AK 99835

Sen. Bob Mulcahy
Box 246
Kodiak, AK 99615

MEMORANDUM

TO: Vee Sharp
Stan Green
Clay Parr
Richard Sager

FROM: NCSL Geothermal Policy Project

RE: Review and Revision of Proposed Geothermal Legislation

In reviewing the Geothermal Resource Conservation Act for possible resubmission during the 1980 Legislative Session, several concerns have been raised regarding revising the Act to explicitly deal with:

- the treatment of "hot groundwater" (120° C or less)
- the nature of "grandfather rights"
- state control, via its water laws, over development on federal lands
- the authority to issue state geothermal leases and the nature of the leasable property rights (ownership)

This memo will summarize the policy concerns in each of these areas and suggest possible statutory language to deal with these concerns.

Ken Wonstolen

Ken Wonstolen
Research Associate
Geothermal Policy Project

MEMORANDUM

TO: William Dinehart
Donald Prince

FROM: NCSL Geothermal Policy Project

RE: Proposed Statutory Language on Geothermal Leasing

The review committee on the proposed Utah Geothermal Resources Conservation Act will be meeting on Friday, August 10, to consider revisions to the Act in preparation for possible resubmission to the Legislature in the 1980 session. The committee's areas of concern include groundwater issues and leasing/ownership. In response to those concerns, I have prepared a policy memo, including suggested language on geothermal leasing. The leasing portion of that memo is attached for your perusal. Please refer, as well, to the memo -- "Geothermal Leasing Parameters" -- sent earlier for additional background.

Vee Sharp of the Legislative Reference Bureau has indicated to me that he will speak to you regarding your possible participation in the review committee meeting. If you should be unable to attend the meeting, I would be pleased to meet with you separately on the afternoon of the 10th. Please call me at 303/623-6600 should you have any questions. Thank you.

Ken Wonstolen

Ken Wonstolen
Research Associate
Geothermal Policy Project

Hot Groundwater and Grandfather Rights

The Act is designed, through the use of a temperature threshold (120° C) in the geothermal definition, to effect a severance between "geothermal fluids" and "hot groundwater." Although geothermal fluids would have to be appropriated, via an application procedure similar to that used for groundwater in general, such appropriation would not create property rights to the geothermal resource. Property rights would be obtained, rather, via a resource lease, and be subject to the doctrine of correlative rights. The application to appropriate geothermal fluids is designed as a regulatory mechanism to protect existing standard water rights, necessary to produce the resource but ancillary to lease and correlative property rights.

The Act is currently silent as to the treatment of other subsurface fluids, 120° C or less, valuable for their enthalpy. By implication, such fluids are "hot groundwater," subject to the established groundwater regime. That is, the Act has merely split high-temperature subsurface fluids ("geothermal fluids") from other groundwater resources.

An additional concern is the viability of any "grandfather" claims to geothermal resources under certified, approved or pending standard groundwater appropriation applications. It is suggested that allowing such groundwater rights to encompass geothermal rights would hinder or prevent the application of the doctrine of correlative rights since quantified priorities would be created in the geothermal resource. Further, the validity of existing geothermal (mineral) leases would be called into question.

It is suggested that both of these issues be dealt with by the revision of Section 7 of the Act (new language):

73-1-26.(1)(a) Geothermal fluids are deemed to be a special kind of underground water resource, distinct from, but related to and potentially affecting other water resources of the state. Subsurface fluids at 120° C or less shall be deemed a standard groundwater resource and shall be appropriated and regulated accordingly. The thermal utilization and subsequent disposal of such fluids shall constitute a beneficial use of the water resources of the state.

(b) A certified, approved or pending application to appropriate groundwater shall be deemed to include the right to divert and utilize subsurface fluids at 120° C or less for thermal purposes. No such application shall be deemed to include the right to divert and utilize geothermal fluids, unless such diversion and use were in existence prior to (date).

It should be noted in this regard that, consistent with the intent of this language, the State Engineer should refrain from approving groundwater applications for geothermal fluids pending enactment of the statute. Authority for such action can be found in Section 73-3-8 (UCA 1953):

The State Engineer shall approve an application to appropriate water if . . . (4) . . . the application was filed in good faith and not for the purposes of speculation or monopoly. If the State

Engineer has reason to believe an application will interfere with a more beneficial use for . . . power development . . . or prove detrimental to public welfare it shall be his duty to withhold approval or rejection until investigated.

State Control over Federal Geothermal Development

There are two basic issues regarding state jurisdiction over federal geothermal development. First, does the state have any property interest in "federally owned" geothermal resources? It has been suggested that by declaring geothermal resources to be water and, hence, in the public domain of Utah, the state might gain some leverage vis-a-vis the federal government regarding ownership of the resource.

This position is unrealistic. The federal Geothermal Steam Act of 1970 (Pub. L. 91-581; 84 Stat 1566) clearly states that rights to geothermal resources underlying federally owned lands may only be obtained under the Act (§23b). The same assertion is made with regard to federal mineral reservations, where the surface has passed to private or state ownership (§21b). The Union Oil* decision explicitly ratified this claim regarding federal mineral reservations under the Stock-Raising Homestead Act and would be compelling authority regarding other federal mineral reservations. Thus, the State is pre-empted from asserting any ownership control over federal geothermal development.

The second concern is the extent of state water law jurisdiction over federal geothermal lease operations. Despite the federal government's position that geothermal resources are a mineral (see Union Oil), it has explicitly assented to state water law jurisdiction over lease operations: "Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to its exemption from State water laws." (§22) In addition, where the Secretary of the Interior may compel production of byproducts, including "commercially demineralized water for beneficial uses," it must be done "in accordance with applicable State water laws." (§9)

It is therefore suggested that labeling geothermal resources as water, in addition to calling into question the validity of existing geothermal leases and precluding application of the correlative rights doctrine, would add nothing to existing state jurisdiction over federal geothermal development. The proposed Act already asserts that it "shall apply to all lands in the state of Utah, including federal and Indian lands to the extent allowed by law." This provision, along with the consent provisions in the federal Act, means that federal geothermal lessees must comply with applicable Utah water law (§7 of the proposed Act or existing groundwater laws depending on the resource temperature).

It should be noted in this regard, that the Division of Water Resources of the state of Idaho, without the explicit statutory language regarding applicability of the proposed Utah Act, has asserted: "It is hereby

* 369 FS 1289 (N.D.CA, 1973) rev'd 549 F.2d 1271 (C.A. 9, 1977) cert. den.
____ US ____ (1978).

declared that the state of Idaho claims the right to regulate the development and use of all the geothermal resources within this state." (Rules and Regulations of the Division). It has, in fact, required federal lease operations at Raft River to comply with Idaho water law, without objection from the federal government. Thus, precedent indicates that previously expressed concerns in this regard are unfounded.

Leasing Authorization and Ownership

As was outlined in an earlier NCSL memo -- "Geothermal Leasing Parameters" -- geothermal resources are currently being leased by Utah on the basis of ownership of the mineral estate, without specific statutory authorization. An obvious response to this situation is to declare geothermal resources to be a mineral, thereby ratifying existing leases. The Utah Board of State Lands has general authority to issue mineral leases (§65-1-18 UCA 1953).

However, such a simple declaration may have untoward consequences. That is, leaseholders of oil and gas, coal and "other minerals" might then claim geothermal resources to be within the purview of their leases. Where separate geothermal leases for the same parcel have been granted, conflicts will be created. One response would be a provision that only where specifically intended would prior mineral leases include geothermal resources. Alternatively, a "grace period" may be enacted wherein existing mineral lessees may convert their leases to geothermal leases.

In order to avoid this situation, it is suggested that the State refrain from declaring geothermal resources to be a mineral (or water). Under this approach, geothermal resources would be a unique resource, as defined in the Act. Leasing of geothermal resources would be separately and specifically authorized by the addition of a new section to the Act:

Section 8.* Section 73-1-27, Utah Code Annotated 1953 is enacted to read:

73-1-27.(1) The Board of State Lands of the state of Utah is hereby authorized and empowered to issue geothermal resource leases, upon such terms and conditions as it may establish, where the state owns or controls the subsurface or mineral estate. Reasonable and necessary surface access and use shall be a concomitant of such geothermal resources lease where the state owns or controls the corresponding surface area. Where such corresponding surface area is in private ownership, the geothermal resource lessee is hereby granted an easement for reasonable and necessary surface access and use. The geothermal resource lessee shall provide compensation for such easement as agreed upon by the parties or as determined by the Board in the absence of such agreement.

(2) "Geothermal Steam Leases and Agreements" granted by the Board of State Lands prior to the enactment of this Act are hereby ratified.

(3) All geothermal resource lessees are subject to the provisions of this Act regarding correlative rights, unitization and the requirement to make application to appropriate geothermal fluids.

If this approach is adopted, it would broaden the scope of the Act beyond the original "conservation" aspect, and that word might appropriately be deleted from the title. Alternatively, leasing may be authorized by a separate enactment, wherein additional guidance might be given the Board regarding the terms and conditions of geothermal resource leases. However, no significant problems have surfaced regarding the terms and conditions already established administratively by the Board.

* The existing Section 8 to be renumbered as Section 9, 73-1-28.

MEMORANDUM

TO: Ted Haley, Ted Bottiger, Geraldine McCormick

FROM: Ken Wonstolen, NCSL Geothermal Project

DATE: Sept. 4, 1979

RE: Geothermal Study Issues

The Washington legislature has asked NCSL to assist in a review of legal and regulatory parameters which will affect the pace of resource assessment activities in the state. Leasing and taxation have been identified as areas of concern. Following is a brief outline of possible study issues.

(1) Leasing: The lack of a firm leasing policy regarding geothermal energy has been identified as a major impediment to resource exploration activities. It is imperative that the Dept. of Natural Resources adopt a policy and gear up to implement it. A number of questions are presented by the Department's draft policy.

- a. the draft does not distinguish between medium-temperature (direct use) and high-temperature (electrical) resources, as does Washington's geothermal statute.
- b. Washington has assigned geothermal ownership to the surface estate, in direct opposition to federal claims (as upheld in Union Oil). The treatment of lands with a federal mineral reservation should be considered.
- c. the 640 acre maximum lease size is small in comparison with other states (many states use 640 acres as the minimum lease size).
- d. the 40 acre minimum lease size may be too large for small-scale direct use projects. Discretionary authority in the Department may be appropriate.
- e. the lease term of 5 years (with corresponding diligence requirements) may present a problem where federal leases are needed to complete the exploration unit. Historically, federal leases have often required more than 5 years to obtain.
- f. the competitive only leasing system may impede resource exploration, especially in unknown or less promising areas.
- g. the statutory authority for the Department to lease geothermal energy is unclear.

(2) Taxation: Property and franchise taxation are the types of taxes likely to have an impact on geothermal development in the assessment stage. Of these, the property tax is the most significant. On public lands

(state/federal) a leasehold excise tax is applied in lieu of ad valorem taxation; however, resource extraction is exempt. Thus, there is no property or quasi-property tax burden on geothermal activities on public lands. On private lands, ad valorem taxation would apply to surface equipment and, more importantly, to resource discoveries. This could result in a significant financial burden to the developer, long before he realizes any commercial return on his investment. The legislature may wish to consider whether to equalize the property tax treatment of geothermal activities on private and public lands.

(3) Regulatory Streamlining: The lack of geothermal activity in Washington has prevented the identification of barriers and impediments associated with regulatory processes and permit requirements. However, the Western Public Power Supply System (Richland, WA) is planning a "dry run" in early 1980 of geothermal exploration and development permitting in the state to identify such problems. This represents a unique opportunity for a cooperative effort between the state and industry to develop an efficient, streamlined regulatory process, prior to significant geothermal activity. NCSL is prepared to assist in the coordination of this effort, including analyses of results and preparation of legislative recommendations where needed. The dry run will be more meaningful if the relevant agencies have, at least, preliminary procedures in place by 1980.

cc: Dick Watson
Ken Madsen
Fred Adair

BACKGROUND PAPER
FOR
WORKSHOP ON GEOTHERMAL ENERGY

Hawaii State Senate
Committee on Economic Development,
Energy and Natural Resources

State Capitol
September 19, 1979

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I. Introduction

II. Economic Incentives

III. Drilling Regulation

IV. Land Use and Leasing

V. Relationship of Geothermal to Water Resources

VI. Ownership

I. INTRODUCTION

In 1974, the Hawaii Legislature classified geothermal resources as minerals under Chapter 182 (Reservation and Disposition of Government Mineral Rights) of the Hawaii Revised Statutes. This chapter provides for the competitive leasing of state mineral rights, with requirements for bonds, certain lease stipulations and performance standards. Subsequently, the state Department of Land and Natural Resources promulgated regulations for leasing and drilling of geothermal resources (Regulation 8) under Chapter 182 and Chapters 177 (Ground-Water Use) and 178 (Wells, Generally).

The legislature also has made substantial appropriations for geothermal R & D; authorized county governments to develop geothermal resources; set excise tax rate at 0.5% on gross proceeds from geothermal resources; exempted building improvements for the use of geothermal resources from property tax; provided inducements for geothermal electric power development through certain utility regulations; and adopted federal tax benefits for geothermal development established by National Energy Act of 1978.

When reviewing these existing policies for possible improvements, a distinction should be made between electricity production and direct heat applications. These two types of development typically differ on resource requirements, effects on the environment and surrounding communities, financial requirements and the kinds of investors and developers involved. Consequently, different economic incentives and regulatory policies for the two types of development frequently will be appropriate.

II. ECONOMIC INCENTIVES

Governmental incentives historically have been given to new energy and mineral resource industries to help them compete with conventional sources. State and local governments also commonly offer businesses various financial inducements to locate in their community because of the general employment and economic benefits those businesses bring.

Many states have followed this precedent in giving geothermal development a variety of economic incentives through income tax credits, excise and property tax exemptions, loan programs, leasing policies and utility regulatory policies. (see "Enacted Incentives for Geothermal Development")

The various incentives bear differently on the separate phases of development from exploration to utilization. Their costs and effectiveness also vary according to the nature of development - whether large-scale power production or small-scale direct use.

Direct Investment: Investors in geothermal exploration and development expect high returns comparable to the large risks encountered. If the risks appear too great, or if there is considerable uncertainty about the market for discovered resources, funds for exploration and development will not be available.

To overcome these problems in Hawaii, the state could simply finance resource exploration. By this means, resource potential could be determined, providing the basis for attracting industry and utility investments to use geothermal resources. Counties also may adopt this course through their authority to develop geothermal and other alternate energy (Act 36-1978).

Property and Excise Tax: Short of direct investment, the state may encourage exploration and development through tax incentives to private firms. Property tax may be deferred until commercial production begins. Another approach would be to substitute a well-head tax for ad valorem assessment.

For small-scale projects, the resource could be exempted from property tax, with assessment restricted to the well-head equipment and utilization facilities. This approach essentially would treat the low-temperature resource as water for tax purposes.

Hawaii exempts various categories of industry from its excise (gross income) tax. For instance, pulp and paper manufacturers

using bagasse are exempt for the first five years of production. A similar incentive might be granted geothermal producers. Presently the rate is set at 0.5% (HB 3033-1978).

Loans: Once a commercial resource has been discovered, a state geothermal development loan fund could assist counties and other developers sustain the costs of production wells and utilization facilities. The federal Geothermal Loan Guarantee Program offers this assistance to large-scale developers, but the administrative costs make it unavailable to small projects. A state loan program therefore might make special accommodations for small-scale development projects.

Utility Regulations: Hawaii already has exempted developers of geothermal electrical power from PUC regulations if they sell directly to a public utility, and the state requires utilities to purchase surplus power from such facilities (SB 995-1977).

Another possible incentive would be to reduce or eliminate the risk to utility investments in geothermal facilities due to reservoir failure or volcanic or seismic hazards. The degree of risk facing a utility would be (progressively) reduced by policies to increase the rate of return on geothermal investments; to provide for reservoir insurance financed in part by the utility; to allow rapid amortization of initial geothermal facilities as R&D expenses; to guarantee inclusion of plant costs in the rate base even if the resource or plant facilities should fail.

Lease Provisions: Where geothermal resources are being developed under a state lease, economic incentives can be supplied by reducing or deferring royalties or rental charges, either for the full lease term or until the project has achieved a positive revenue balance.

Breaks on rental and royalty charges may be particularly appropriate for small-scale development, since those charges are likely to be much larger in proportion to the net profitability of the project than in the case of electricity production. Bonding requirements also should be flexible so that small-scale development is not precluded on state lands.

III. DRILLING REGULATION

Drilling regulations should be streamlined and should distinguish between wells on a case-by-case basis. That is, wells tapping a zone of corrosive, high-temperature or pressure fluids require stringent controls. Other, less potentially dangerous wells should not be subject to similar burdens.

Hawaii may streamline the drilling regulatory scheme by addressing the overlapping permit jurisdiction of the Department of Land and Natural Resources and County Boards of Water Supply. For example, both the Department of Land and Natural Resources and the Honolulu Board of Water Supply have regulations relating to notice, plan of operations, casing, logging and abandonment, as well as a \$100.00 filing fee. Inter-agency coordination in this regard, including a single application and filing fee, would be a valuable streamlining measure. Alternatively, the state may exempt geothermal wells from local jurisdiction.

The Department of Land and Natural Resources has retained its discretionary authority to establish well requirements on a case-by-case basis in its Regulation No. 8 (1978). Application of such discretion in practice should be monitored. In addition, the Department should extend its discretion in this regard to bonding requirements. The current requirement of a \$50,000 bond per well (\$250,000 blanket bond) seems excessive for low-temperature, shallow wells intended for direct application.

IV. LAND USE & LEASING

A. Land Use

Hawaii has a comprehensive Land Use Law, dividing the state into four use categories: urban, rural, agricultural and conservation. Urban areas are administered by the counties; state (DLNR) and county jurisdictions overlap with regard to special use permits in rural and agricultural areas; the state administers conservation districts.

Two policy concerns emerge regarding the special use permits. First, as has already happened, the DLNR and a county may disagree on the need for or the issuance of a special use permit for geothermal activities. Clarification of their respective authority in such situations would be helpful. Second, requiring all geothermal discovery activities to obtain special use permitting may be unduly burdensome. The state may wish to certify geothermal operations under a DLNR "exploration permit" as a permitted use in the various land use categories.

It should be noted in this regard, that the issuance of the exploration permit by DLNR will require an environmental impact statement if the action is likely to have a significant effect on the environment.

B. Leasing

Hawaii may wish to refine its geothermal leasing policy to accommodate the special nature of small-scale direct uses as greenhouses, aquaculture facilities and food processing plants. Presently such operations would require a mining lease obtained through competitive bidding as well as a \$10,000 bond. These requirements may constitute an unnecessary impediment to small-scale development.

The state may wish to institute a "commercial lease" system for small-scale development as an alternative to the mining lease system. Under this approach, the Department of Land and Natural Resources would have a choice of leasing options in its management of state geothermal resources. The DLNR would have the authority to grant non-competitive commercial geothermal leases where the applicant presents a small-scale plan of operations well-matched to the site and resource in question.

Such a system would likely serve as a major incentive to rapid small-scale development. Such development will return many benefits to state and local economies in terms of job creation, tax base enhancement and displacement of fossil fuel consumption. Additional revenue to the state would be secured through a negotiated rental.

V. RELATIONSHIP OF GEOTHERMAL TO WATER RESOURCES

Title to geothermal resources generally will be obtained on a lease issued by the owner of the mineral estate, whether state or private. Ancillary property rights to the resource also may be created by the granting of a groundwater use permit by the Board of Land and Natural Resources. This would occur only in "designated ground-water areas." Outside such areas no prescriptive property rights to groundwater (geothermal) may be established through use. Production in such areas may be subject to "reasonable use" regulation by the Board.

Two policy concerns emerge in the groundwater area. First, a groundwater use permit should not create a geothermal property right absent a mineral lease. This is a special concern in Hawaii, since a geothermal lease, by definition, conveys title only to enthalpy (and by-products) and not to fluid transfer mediums. The Board has the authority to establish classes of permits. It is suggested that a class of "thermal groundwater use permits" be established. As a condition of issuance of such permits, the applicant should demonstrate valid title to the thermal resource via a geothermal mineral lease.

The second concern relates to integrated geothermal reservoir management under a system of correlative rights - equitable apportionment. The property right to a specific quantity of fluid inherent in a groundwater use permit is incompatible with a system of flexible apportionment. However, should the state assert the public interest in efficient reservoir management (correlative rights), the Board may have existing authority to circumvent this problem. That is, where the geothermal system does not contain enough fluid to satisfy all the permit quantities, the Board may, after a public hearing, apportion production levels in the public interest.

It is suggested that legislation be considered which would direct the Board to establish a class of thermal water permits as outlined above and would express the public interest in integrated geothermal reservoir management under such regulations as the Board may establish. In other regards relating to the water-geothermal interface, the Board's statutory authority appears adequate.

VI. OWNERSHIP

Hawaii has declared geothermal to be a mineral resource. Thus the state would own those geothermal resources underlying state lands (approx. 38% of the state) as well as those under private lands where the state retains a mineral reservation. Other geothermal resources would be the property of private mineral estate owners. No compelling reason has been advanced to alter this situation. In fact, any such midstream change would create a climate of uncertainty and lead to litigation, thereby tending to deter development.

The remaining uncertainty in the existing ownership regime relates to the possibility of a legal challenge by Native Hawaiian groups. Such an action would probably claim that the state had breached its trust responsibilities (Section 5f, Admissions Act) by failing to assert ownership of a public resource. HO'ALA KANAWAI filed an amicus brief in Robinson v. Ariyoshi (CA9, No. 7432) arguing in this vein regarding water. A similar challenge regarding geothermal resources remains a possibility.

NATIONAL CONFERENCE OF STATE LEGISLATURES

GEOHERMAL POLICY PROJECT

Prospective Schedule
of Activities
9/79 - 12/81

September 1979

Douglas M. Sacarto
Acting Director

National Conference of State Legislatures
1405 Curtis Street
23rd Floor
Denver, Colorado 80202

NATIONAL CONFERENCE OF STATE LEGISLATURES
GEOTHERMAL POLICY PROJECT

	1979				1980								1981															
Activities	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Geothermal Policy Reviews with State Legislatures	[REDACTED]							[REDACTED]												[REDACTED]								
*Legislative Sessions					[REDACTED]												[REDACTED]											
Drafting of Legislation			[REDACTED]												[REDACTED]												[REDACTED]	
Presentations to Legislative Committees (during session)					[REDACTED]												[REDACTED]											
Quarterly Reports			●			●			●			●			●			●			●			●			●	
Project Renewal Required						X												X										

* Vary in length; some restricted to Governor's call or budget items.

National Conference of State Legislatures

Geothermal Policy Project

Prospective Schedule
of Activities
By State

I. STATES IN WHICH CONTACT HAS BEEN MADE

Alaska
Arizona
Colorado
Delaware
Hawaii
Maryland
Nevada
New Mexico
Utah
Virginia
Washington

II. STATES IN WHICH CONTACT WILL BE MADE 1979 - 80

Georgia
Idaho
Montana
North Carolina
Oregon
South Carolina
South Dakota
Wyoming

I. STATES IN WHICH CONTACT HAS BEEN MADE

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	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
<u>A L A S K A</u>																										
Policy Workshop or Committee Meeting	X		X																							
Legislative Session																										
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										
<u>A R I Z O N A</u>																										
Decision by Legislature on Geothermal Policy Review																										
Legislative Session																										
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										

I. STATES IN WHICH CONTACT HAS BEEN MADE

	1979				1980								1981													
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
<u>COLORADO</u>																										
Decision by Legislature on Geothermal Policy Review	X																									
Legislative Session																										
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										
<u>DELAWARE</u>																										
Policy Workshop or Committee Meeting		X		X																						
Legislative Session																										
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										

I. STATES IN WHICH CONTACT HAS BEEN MADE

1979				1980								1981												
SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

HAWAII

Policy Workshop or
Committee Meeting

X

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

MARYLAND

Policy Workshop or
Committee Meeting

X

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

I. STATES IN WHICH CONTACT HAS BEEN MADE

1979				1980				1981																
SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

NEVADA

Decision by Legislature on Geothermal Policy Review

X

Policy Workshop or Committee Meeting

X

Legislative Session

(No Session)

Interim Study & Policy Workshops

Final Policy Review & Bill Drafting

NEW MEXICO

Policy Workshop or Committee Meeting

X

Legislative Session

*

Interim Study & Policy Workshops

Final Policy Review and Bill Drafting

* Budget Session -- May prevent consideration of geothermal policies.

I. STATES IN WHICH CONTACT HAS BEEN MADE

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	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
<u>U T A H</u>																										
Policy Workshop or Committee Meeting			X																							
Legislative Session					*																					
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										
<u>V I R G I N I A</u>																										
Policy Workshop or Committee Meeting			X																							
Legislative Session																										
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										

* Budget Session -- May prevent consideration of geothermal policies.

I. STATES IN WHICH CONTACT HAS BEEN MADE

1979												1980												1981											
SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP											

WASHINGTON

Policy Workshop or
Committee Meeting

X

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

II. STATES IN WHICH CONTACT WILL BE MADE 1979 - 80

1979				1980				1981																
SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

GEORGIA

Initial Project
Contact with State
Legislature

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

IDAHO

Initial Project
Contact with State
Legislature

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

II. STATES IN WHICH CONTACT WILL BE MADE 1979 - 80

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Initial Project Contact with State Legislature									X																	
Legislative Session						(No Session)																				
Interim Study & Policy Workshops																										
Final Policy Review and Bill Drafting																										
<u>N O R T H C A R O L I N A</u>																										
Initial Project Contact with State Legislature									X																	
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Interim Study & Policy Workshops																										
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Legislative Session						(No Session)																				
Interim Study & Policy Workshops																										
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S O U T H D A K O T A

Initial Project
Contact with State
Legislature

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

W Y O M I N G

Initial Project
Contact with State
Legislature

X

Legislative
Session

Interim Study &
Policy Workshops

Final Policy
Review and
Bill Drafting

WASHINGTON GEOTHERMAL PROFILE

Geothermal Policy Project
National Conference of State Legislatures
1405 Curtis Street, Suite 2300
Denver, Colorado 80202
303/623-6600

October 1979

ACKNOWLEDGEMENT

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WASHINGTON GEOTHERMAL PROFILE

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I. INTRODUCTION

The National Conference of State Legislatures (NCSL) Geothermal Project is working with the Washington Legislature in a review of geothermal policy issues. Project activities were initiated in September, 1979, with a staff visit to Olympia. This visit included an issue identification session with staffers for the House and Senate Energy and Utilities Committees, the Senate Agriculture Committee and the Senate Ecology Committee. Subsequently, staff conducted field research with relevant executive agency personnel. A summary of this field research is attached (Appendix C).

On September 11, 1979, NCSL geothermal and small-scale hydro staff met with legislative committee leadership to present project workplans. Committee leadership provided input to and approved the Geothermal Project Proposed Technical Assistance Program (Appendix B).

The Washington Geothermal Profile is a basic document of the Technical Assistance Program. It contains a compilation of information on geothermal resources in Washington, as well as an initial analysis of workplan study areas. The profile has been prepared as background material for a legislative workshop scheduled for the evening of November 9, 1979.

II. POTENTIAL RESOURCE

A. Physical Resource

Although inadequate knowledge exists as to the actual extent of Washington's geothermal resources, the presence of the Cascade Range -- with its geologically recent volcanism -- suggests a major resource. Currently, the United States Geological Survey (USGS) and the Washington Division of Geology and Earth Resources are planning a cooperative assessment of the Cascade Range geothermal province.

The characteristic geothermal resource in Washington is likely to be the hydrothermal reservoir. This type of system may be vapor- or liquid-dominated. Liquid-dominated systems below 170°C (338°F) apparently predominate in Washington. Other potential geothermal resources which may be tapped at some future date include "hot dry rock" and magma chambers. The technology to utilize these deep geothermal resources is in initial stages of development.

Another significant and apparently wide-spread thermal resource in Washington consists of low- to moderate-temperature groundwaters. These will probably be the first "geothermal" (see section IV.C. for the Washington geothermal definition) resources developed in the state. Such fluids are susceptible to numerous direct (non-electric) applications.

B. Location

The Cascade Range -- which extends north-south the entire length of the state -- makes central-western Washington the most geothermally active part of the state. The analysis of hot and mineral springs in the state has indicated eight areas containing potentially significant hydrothermal fluids. These are: Indian Heaven Known Geothermal Resource Area (KGRA); Mount St. Helens KGRA; Kennedy Hot Springs KGRA-Gamma Hot Springs; Mount Adams Potential Geothermal Resource Area (PGRA); Mount Rainier PGRA; Mount Baker PGRA; Yakima; and, Olympic-Sol Duc Hot Springs. (See Figure 1*) Low-temperature potential exists in the state along the Columbia River Gorge and in the eastern plains; however, resource knowledge is insufficient for adequate assessment.

Due to economic, legal and physical constraints, only four of these identified areas (Mount St. Helens, Mount Rainier, Mount Baker and Yakima) are considered to be likely targets for commercial development. These four -- as evaluated by the Oregon Institute of Technology -- represent a total of 2,597,094 acres, 56% of which is federally-owned.

* See p. 16.

III. RESOURCE APPLICATIONS

A. Existing

Geothermal energy is not currently utilized in Washington for electrical generation. The National Park Service (NPS) runs a resort at Sol Duc Hot Springs which heats cabins, an inn and mineral baths using naturally-heated waters. In the city of Yakima, geothermal waters are used in warm-water irrigation wells and a car wash.

B. Potential

The hydrothermal reservoirs of the four prime areas range from 100°C (212°F) to approximately 170°C (338°F). The heat energy (enthalpy) available at these temperatures can be used for a variety of purposes, notably spaceheating, warm-water irrigation, food processing, greenhousing, aquaculture, timber drying and as "pre-heated" industrial process waters. At the high end of the temperature range binary (heat exchange) systems may make electrical generation practical. And, at the low end of the range the use of a water-referenced heat pump offers great potential. Ephrata is currently under consideration for the use of heat pumps to extract enthalpy from 20° - 38°C (70° - 100°F) groundwaters. Furthermore, the energy and economic efficiency of geothermal utilization can be increased by "cascading" -- using industrially-discharged waters in spaceheating, for example.

C. Energy and Economic Value

Washington, along with the rest of the Pacific Northwest, has been blessed with abundant hydroelectric resources. Due to the availability of inexpensive power, residential and industrial electrical use has mushroomed, to the point where the state must find new power sources to meet increased energy demand. This has forced the state to look at oil, coal and nuclear energy, which are expensive and environmentally hazardous.

Geothermal resources, like hydroelectric, are indigenous to Washington and constitute a relatively benign source of energy. The historically cheap power costs have attracted energy-intensive industries to the state, including aluminum production, wood/paper production, food processing and glass manufacturing; all-electric houses also abound.

Direct heat applications at less than 250°C account for 40% of the nation's total energy consumption. Geothermal energy can displace the consumption of costly, high-grade fossil resources for these purposes. In the long term, these fossil reserves may be more valuable as chemical feedstocks than as heat sources. And, geothermal will become more cost-competitive as the costs of traditional energy sources continue their upward spiral.

As a source of electricity, geothermal resources can greatly enhance a smooth transition of Washington's energy supply mix. But, as described above, in the near-term, a greater potential use of Washington's geothermal resources lies in the direct use of geothermal heat. Certain end-uses would require very little change in existing facilities (such as for industrial process water), while other end-uses would necessitate some retrofitting (e.g., spaceheating in all-electric houses).

Geothermal energy is most efficiently utilized near its production site. This factor, along with the diversity of end-uses it can serve, makes it particularly amenable to small-scale, locally determined energy needs. Geothermal utilization will not only promote a more diversified energy future for Washington, but will permit greater local participation in solving energy dilemmas.

IV. STATUTES AND REGULATIONS

A. Federal Law

Various federal laws and policies affect geothermal development by establishing procedures for the use of federally-owned geothermal resources, levying taxes and providing incentives. Particularly important are the "Geothermal Steam Act of 1970" (30 USC 23 §§ 1001-1025) and the comprehensive National Energy Act (P.L. 95-617 through 95-621). The key provisions of these acts and their corresponding regulations follow.

1. "Geothermal Steam Act of 1970" (see also 30 CFR 270-271 and 43 CFR 3000-3240 regulations)

- a. The Secretary of the Interior may issue leases for the development of geothermal resources for all federally-owned lands including mineral reservation lands,
- b. Lands within KGRAs must be competitively leased; non-KGRA lands are non-competitively leased,
- c. The Bureau of Land Management (BLM) conducts lease sales, contingent on the completion of Environmental Impact Statements (EISs) by the surface management agency,
- d. National park, recreation and wilderness lands can not be leased; tribal lands are under the jurisdiction of the Indian nations,
- e. Lease size and terms, maximum holdings and environmental requirements are specified.

2. "National Energy Act"

Two of the five acts within the National Energy Act are particularly important to geothermal energy.

- a. "Energy Tax Act of 1978" (P.L. 95-618)
 - i. Authorizes the deduction of intangible drilling costs on the same basis as for oil and gas wells,
 - ii. A declining depletion allowance is granted for geothermal resources,
 - iii. Allows a residential energy tax credit for the use of geothermal energy,
 - iv. Establishes a supplemental business investment credit for equipment used to produce or use geothermal energy (although not available to utilities).

b. "Public Utilities Regulatory Policies Act of 1978"
(P.L. 95-617)

i. "Qualifying small power producers" (one which generates not more than 80 megawatts of electricity from renewable resources, which is presumed to include geothermal energy) can be interconnected to existing transmission facilities by order of the Federal Energy Regulatory Commission (FERC),

ii. FERC can require utilities to sell or purchase electricity from small power producers,

iii. Power producers not more than 30 megawatts may be exempted by FERC from the regulatory control of the Federal Power Act and state utility commissions.

B. Federal Land Ownership

The status of federally-owned lands is critical to Washington's geothermal development. Over 90% of the Mount St. Helens KGRA lies in the Gifford Pinchot National Forest; 85% of the Mount Rainier PGRA is in the Mount Rainier National Park, or in National Forests; more than 97% of the Mount Baker PGRA belongs to the Mount Baker-Snoqualmie National Forest; and, although only 21% of the land of the Yakima area is federal, an additional 20% is in the Yakima Indian Reservation.

The National Park land is explicitly excluded from geothermal development, and no change is expected. The Forest Service has produced the EIS necessary for the BLM to conduct lease sales on the Gifford Pinchot National Forest, but the Mount Baker-Snoqualmie National Forest EIS is not yet complete. The uncertain status of federal lands reflects on the development of state and privately owned geothermal lands, most of which border on or are surrounded by the federal lands.

C. State Statutes

Washington has enacted two geothermal statutes: The "Geothermal Resources Act" of 1974 (RCW 97.76) and the "Geothermal Resources Rights" of 1979 (S.B. 2191).

1. The "Geothermal Resources Act" details requirements in developing certain geothermal resources on state and private land. Important provisions include:

a. The Act defines geothermal resources as those from which it is "technologically practical to produce electricity commercially,"

b. The geothermal resources, as defined above, are characterized as sui generis -- neither a mineral nor a water resource,

c. The Department of Natural Resources (DNR) is given the authority to regulate the drilling, operation, environmental protection, safety, bonding and restoration of geothermal projects,

d. Any non-electricity producing wells are regulated under the Department of Ecology's water-well rules,

e. DNR is allowed to promulgate well-spacing requirements, implement unitization programs and establish proportionate costs.

2. The "Geothermal Resources Rights" Act assigns the ownership of high-temperature geothermal resources to the surface estate owner (as opposed to the public domain or mineral estate owner).

D. State Regulations

In response to the "Geothermal Resources Act" and the responsibility of managing state-owned lands (including 20,736 acres in the Mount Rainier PGRA and more than 160,000 acres in the Yakima area), DNR has adopted drilling regulations and drafted leasing regulations.

1. DNR's draft leasing regulations affect both electricity-generating and direct-use wells. Its main features are:

a. Method -- all lands are competitively leased by cash bonus bidding, at either an oral auction or by sealed bids,

b. Primary term -- five years,

c. Renewal -- for length of commercial productivity, up to 20 years, with preferential right to second 20 year lease,

d. Renegotiation -- (no provisions),

e. Annual rental -- \$3/acre,

f. Royalties -- after DNR determines that paying quantities have been produced: \$10/acre annual royalty; additionally: 10% of gross revenues of energy production, 4% of net revenues on byproducts,

g. Acreage limits -- minimum: 40 acres; maximum 640 acres,

h. Bonding -- \$5,000 per lease.

2. DNR's drilling regulations, "Geothermal Drilling Rules and Regulations" (WAC 332-17), are applicable to all lands within the jurisdiction of the state. Distinctions are made between exploratory core-holes and production wells. The important features are:

- a. Permit -- required for all geothermal wells,
- b. Bonds -- \$15,000 per well, \$50,000 blanket bond for more than one; \$5,000 per core-hole, \$25,000 blanket core-hole bond,
- c. Well spacing -- site-specific well-spacing approved by DNR, taking into consideration topography, economic efficiency, multiple use of lands and the protection of correlative rights,
- d. Equipment -- casing and cementing, blowout prevention and electric logging (the two former on a site-specific basis),
- e.. Abandonment -- approval by DNR required, plugging required,
- f. Unitization -- (no explicit provisions),
- g. Environment -- protection of esthetic values, public health and physical and biological environment.

V. POLICY CONCERNS

Various unresolved issues, as well as legal and institutional impediments, may hinder the full utilization of Washington's geothermal resources. Many of these issues have been identified for study in the state workplan. A preliminary analysis follows.

A. Geothermal Leasing Program

There is no specific statutory authorization for the Department of Natural Resources (DNR) to lease state-owned geothermal resources. Rather, DNR, is relying on its general authority to manage state lands for the school trust fund, as well as the legislative declaration "that it is in the best interests of the state to further the development of geothermal resources." In addition, the Washington Attorney General's office has advised the DNR that it has complete authority regarding state leases.

Beyond the issue of the basic authority to lease is the issue of legislative guidance. To date the legislature has left the parameters of state geothermal leasing to the discretion of DNR. The DNR has yet to adopt a geothermal leasing regulation, although it has prepared a draft. While many of the issues raised by this draft may amenable to administrative resolution, the legislature should consider whether the proposed policy is responsive to its expressed desire to further the development of geothermal resources. A summary of areas of concern follows:

1. The DNR draft policy does not distinguish between geothermal resources with electrical potential and other thermal waters, as does the Act. Thus, all developers who wish to utilize fluid enthalpy on state lands will be required to obtain a competitive lease and be subject to a production royalty of 10% of gross revenues. This may severely impede small-scale low-temperature development (discussed under V. D below).
2. Competitive bidding for leases is limited to cash bonus (front-end) bids. This may prevent small entrepreneurs without substantial capital reserves from participating in the process. A possible approach would be to allow profit shares as an alternative or supplemental bidding factor.
3. Geothermal leases are limited to an initial term of five years, whereupon they are cancelled unless the lessee is either producing geothermal resources or actively involved in drilling. This represents a potential problem where state parcels are located within federal lands. Federal geothermal leasing may entail lengthy delays, and operators will be reluctant to drill on state lands lest they discover a resource and trigger KGRA designation for the surrounding federal lands. Washington and Arizona are the only states with five year initial terms for geothermal leases.

4. Upon commercial production, geothermal leases are converted to a 20 year term, with preferential rights to a second 20 year term. No other state limits productive geothermal leases to less than a 40 year term. Given that geothermal electrical plant amortization occurs over a 25-30 year period, it would seem appropriate to establish an equivalent primary term.

5. The proposed royalty schedule includes a \$10 per acre minimum annual royalty, as well as a 10% production royalty on gross revenues (exclusive of approved charges). This constitutes a significant financial liability during the early years of commercial production. The legislature may wish to consider a moratorium period on production royalties as an incentive to development. Alternatively, the royalty may be levied on net revenue.

6. The Act provides for a system of access to state lands for exploration purposes without obtaining a lease. The draft leasing regulation does not contain provisions to implement such an exploration permit system.

7. Washington has declared geothermal ownership to be in the surface estate. The federal government claims geothermal via ownership of the mineral estate. The possibility for conflicting claims (i.e., the extent of federal mineral reservations should be assessed).

B. Geothermal Regulatory Parameters

The basic issues in this area relate to reservoir management, water law and streamlining the permit process. An analysis follows:

1. The Act authorizes DNR to promulgate combining orders and unitization programs to prevent the waste of geothermal resources. The draft leasing policy, however, refers only to voluntary unitization. The drilling regulations only provide for well-spacing in order to protect correlative rights. The ability of DNR to allocate production absent voluntary unitization or to compel cooperative development should be confirmed.

2. The Act provides that geothermal wells may not unreasonably interfere with prior groundwater rights unless such rights are acquired by purchase or condemnation. Certain public entities possess eminent domain power; private parties may condemn a water right only if their proposed use is "superior" (90.03.040 RCW). While the judiciary has jurisdiction over such actions, the legislature may wish to express its policy as to whether geothermal development is a superior use of water.

3. The Act provides that authorization for secondary uses of byproduct water shall be obtained via standard appropriation procedures. The legislature may wish to declare that the geothermal developer has a preferential right to appropriate such "developed" water.

4. While Washington has a coordinated licensing process, its application to geothermal development is untested. The Geothermal Power Development Group, a consortium of northwest utilities (including Washington Public Power Supply System), is considering case studies of the geothermal licensing processes in Washington, Oregon and Idaho during 1980. NCSL is in contact with this effort and will incorporate its results into policy recommendations regarding regulatory streamlining.

C. District Heating

District heating is likely to be a near-term and widespread application of naturally heated fluids. Under Washington law, such development would not be a use of geothermal resources, but rather of hot groundwater. Both publicly-owned and investor-owned systems are possible. The question of Utilities and Transportation Commission (UTC) rate jurisdiction is applicable to both types of entities. For public systems, the ability of various political subdivisions to finance and operate heating districts should be confirmed.

1. The UTC has rate jurisdiction over "water companies", including those supplying water for power or other beneficial municipal and domestic uses. Whether this provides rate jurisdiction over an investor-owned heating district is unclear (municipally-owned utilities are given full control over "water service" rates - 35.92.010 RCW). The legislature may wish to exempt heating districts using alternate energy sources (geothermal, biomass, waste heat, cogeneration) from UTC rate jurisdiction as an incentive to development.

2. Two basic approaches are possible with regard to establishing public heating districts (see Appendix E). A comprehensive new statute, similar to the Oregon Geothermal District Heating Act (see Appendix F) may be enacted; alternatively, existing political subdivisions may be authorized to provide such services. Washington has three likely candidates for district heating vehicles. All have existing authority to issue bonds in order to supply water; however, explicit authorization to form a heating district may be necessary to ensure bond marketability.

a. Public Utility Districts (PUD's) are the prime candidate for geothermal district heating. PUD's are exempt from UTC jurisdiction. In addition, PUD's are exempt from ad valorem (property) taxation, paying an in lieu gross revenue tax (3.6%). PUD's need flexibility

with regard to district heating service areas. They may joint venture with other utilities regarding power generation and transmission. Both the UTC and the Public Utility tax administrators are of the opinion that a heating district could not presently organize as a PUD.

b. Municipal Utilities have existing authority to provide water and heating services, and to issue general indebtedness and revenue bonds. Flexibility with regard to district heating service areas should be ensured.

c. Metropolitan Municipal Corporations (MMC's) comprise a range of entities (including PUD's) with six allowable functions, including water service. Specific district heating authorization, as well as flexibility regarding service areas, should be ensured.

3. The above entities each possess revenue and general indebtedness bonding authority. Revenue bonds are the standard method to finance heating district construction. However, they may not be available for financing exploration and drilling due to the risk factor. Political considerations and debt limits may constrain the use of general indebtedness bonds for these purposes as well. Alternative approaches include joint ventures with private drilling companies, sales contracts and supply franchises with private operators, and state-financed drilling programs via a geothermal fund (see Appendix G) or geothermal development authority (see Appendix H).

D. Low-Temperature Development

The use of hot groundwater for small-scale direct applications such as space heating, food processing, aquaculture, greenhousing and pre-heating process water should be encouraged. The draft leasing policy probably represents the primary obstacle to such development.

1. One method of encouraging low-temperature development is through demonstration projects. State financing of such projects can stimulate an initial market, as well as educating the public about the possibilities. Technical assistance programs for potential users (similar to the program run by Oregon Institute of Technology) may be useful. A regulatory ombudsman to facilitate the permit process for small-scale developers is another option.

2. The proposed DNR geothermal leasing regulation does not distinguish between high-temperature (electrical) geothermal resources and low-temperature groundwater resources. Thus, any applicant desiring to extract enthalpy on state lands is subject to a competitive leasing (cash bonus) procedure and is liable for acreage and production royalties. This is despite the fact that a low-temperature well may be converted to Department of Ecology groundwater jurisdiction. An alternative

approach would be to allow non-electric geothermal developers to obtain a non-competitive business/commercial (surface use) lease for projects on state lands. Such lessees would pay an annual rental or profit share and would appropriate their groundwater energy source rather than leasing it. This approach would seem consistent with the Geothermal Resources Act, which relates only to electrical application of geothermal resources.

3. An additional problem relating to the draft leasing policy is the minimum lease size of 40 acres. This acreage is probably too large for most small-scale projects. DNR should be granted discretion in this regard.

E. Financial Incentives

Financial incentives for geothermal development can be categorized under utility regulation, funding and taxation.

1. UTC rate jurisdiction may be employed to incentivize geothermal electrical development. For instance, utilities may be allowed a higher rate of return on facilities utilizing geothermal resources. Accelerated amortization schedules may be adopted. Exemption from rate jurisdiction may be appropriate for geothermal heating districts.

2. State funding for demonstration projects, public assistance programs and resource assessment may constitute a valuable incentive. Grants, matching funds or loans are various options. A low-interest loan program for residential or commercial geothermal retrofitting should be examined (Oregon has such a program for veterans).

3. A state geothermal development authority or geothermal development fund may be established, perhaps by earmarking state revenues from federal geothermal leases (see Appendix G). Under the Federal Land Policy and Management Act (§317), 50% of federal lease revenues are returned to the state. A development authority should also have the ability to bond and establish a sinking fund (see Appendix H).

4. Geothermal producer tax incentives might include exemption from or reduction of : the .44% gross receipts tax for resource extraction; the 1% steam (hot water) sales tax; and the 3.6% gross revenue Public Utility District tax. Deferral of ad valorem property taxation on lease improvements until commercial production begins would constitute a major financial incentive.

5. Geothermal user tax incentives would include exemption of the added value due to the installation of geothermal equipment from ad valorem taxation.

The above is presented as an initial analysis of the study areas defined in the state workplan. Options are presented regarding each issue. NCSL staff will conduct additional field research and policy analysis during 1980 in order to prepare legislative recommendations for the 1981 session.

FIG. 1 - GEOTHERMAL LAND CLASSIFICATION MAP OF WASHINGTON STATE

-16-

● KNOWN GEOTHERMAL RESOURCES AREA

▨ LANDS VALUABLE PROSPECTIVELY FOR
GEOTHERMAL RESOURCES

▩ AREA OF KNOWN WARM WATER USE

The most likely commercialization targets are: Mount St. Helens, Mount Rainier, Mount Baker and Yakima.

VI. APPENDICES

- A. State Contacts
- B. Glossary
- C. Workplan
- D. Field Research Summary
- E. District Heating Article
- F. Oregon District Heating Law
- G. Comparison of Two California Geothermal Revenue Bills
- H. California Energy Development Authority

APPENDIX A

State Contacts

Legislative

Staff: Dick Watson (S. Energy and Utilities Commission)	206/753-9107
Staff: Fred Adair (H. Energy and Utilities Commission)	206/753-3187
Senator Ted Bottiger	
Senator Al Williams	
Representative Ted Haley	
Representative Geraldine McCormick	
Representative Bob Williams	

Agency

Gordon Bloomquist (Div. of Geology and Earth Resources)	206/753-6183
Eric Schuster (Div. of Geology and Earth Resources)	206/753-6183
Ted Livingston (Div. of Geology and Earth Resources)	206/753-6183
Wallace Hoffman (Division of Lands)	206/753-4165
Jerry Louthain (Office of Water Programs)	206/753-2800
Anthony Cook (Utilities and Transportation Commission)	206/753-6423
Paul Hoff (Revenue and Taxation)	206/753-1268
Deloss Brown (Revenue and Taxation)	206/753-5540
Ralph Radcliffe (Revenue and Taxation)	206/754-1268
Clinton Randle (Revenue and Taxation)	206/753-2051
Dick Heady (Revenue and Taxation)	206/753-5551
Steve Craig (State Energy Office)	206/754-1361

Private

Vic Johnson (WPPSS)	509/375-5345
Paul Groaner (Seattle City Light)	206/625-3552

APPENDIX B

GLOSSARY

Binary (heat exchange) system - electrical-generating system in which geothermal energy heats a working fluid (with a low boiling point) to power turbines.

Byproducts - dissolved minerals and gases entrained in geothermal fluids and extracted during production (statutory definitions generally exclude hydrocarbons).

Cascading - the successive use of progressively cooler geothermal fluids for various direct applications.

Developed water - a new source of water made available only due to a particular project development; separation.

Enthalpy - heat content of a body or a system available as thermal energy.

Flash system - electrical-generating system in which high-temperature geothermal fluids under pressure rapidly vaporize at atmospheric pressure to power turbines.

Hydrothermal reservoir - subsurface systems containing geothermally heated fluids. If dry steam is produced (e.g., The Geysers, California), the reservoir is characterized as vapor-dominated; if steam and hot water are produced, it is characterized as liquid-dominated.

Industrial process water - water used for its chemical or heat value in industrial processes (e.g., hot water for food processing).

KGRA (Known Geothermal Resource Area) - lands classified by the USGS on the basis of geological and geophysical data, resource discoveries or overlapping lease applications.

Mineral reservation - the severance of real property rights into separate surface and mineral (sub-surface) estates. The federal government claims ownership of geothermal resources where it has reserved the mineral rights, and was upheld in the decision of Union Oil v. U.S., 369 FS 1289 (1973) rev'd. 549 F. 2d 1271 (1977) cert. den. ____ U.S. ____ (1978).

Retrofitting - adapting existing facilities to utilize geothermal or other new energy sources.

Space conditioning - heating or cooling residential or commercial buildings for human comfort, including the production of domestic hot water.

Sui generis - constituting a class alone; with unique properties.

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

$$^{\circ}\text{F} = 9/5 ^{\circ}\text{C} + 32$$

APPENDIX C

WORKPLAN

ENERGY PROGRAM -- GEOTHERMAL PROJECT
PROPOSED TECHNICAL ASSISTANCE PROGRAM

STATE OF WASHINGTON.

Study Areas

- A. Geothermal Leasing Program
- B. Geothermal Regulatory Parameters
- C. District Heating
- D. Low-Temperature Geothermal Development
- E. Financial Incentives

Staff Responsibilities

NCSL energy staff, in conjunction with legislative staff, will identify issues, conduct research, analyze policy concerns, investigate administrative responses and prepare legislative proposals, as needed.

<u>Task</u>	<u>Staff</u>	<u>Status</u>
Project Introduction	NCSL	completed
Issue Identification	Joint	completed
Research and Analysis	NCSL	in progress
Supplemental Field Research	NCSL	in progress
Project Milestones		
- State Profile	NCSL	11/9/79
- Options and Recommendations	NCSL	1980
- Discussion Bill Drafts	Optional	
- Draft Legislation	Optional	
Review of Proposed Legislation	Joint	

DW:d10/9

APPENDIX D

Field Research Summary

The NCSL staff visited Olympia on 9/10-11/79 and conducted field research with the following agency personnel:

Division of Geology and Earth Resources (DNR)

- Eric Schuster, Gordon Bloomquist
 - general review of geothermal policy needs, especially relating to leasing

Division of Lands(DNR)

- Wallace Hoffman
 - review of geothermal leasing policy concerns. Mr. Hoffman expressed the opinion that many of these concerns could be resolved administratively and requested that NCSL review and comment on the draft leasing policy.

Utilities and Transportation Commission

- Anthony Cook
 - review of regulatory policies regarding geothermal electrical and direct utilization. Mr. Cook indicated the need to authorize Public Utility Districts to provide heating services.

State Energy Office

- Steve Craig
 - general review of geothermal policy issues, as well as other energy concerns in Washington

Office of Water Programs (DOE)

- Jerry Louthain
 - general review of water law issues involved in geothermal development. Mr. Louthain requested additional information on the subject.

In addition, NCSL staff has conducted phone research with other relevant parties in the state:

Revenue and Taxation

- Discussion of geothermal tax policies with administrators of various types of taxes:
 - Public Utility Tax (Paul Hoff)
 - Business Occupation Tax (Deloss Brown)
 - Leasehold Excise Tax (Ralph Radcliffe)
 - Ad Valorem Tax (Clinton Randle)
 - Steam Sales Tax (Dick Heady)

Washington Public Power Supply System

- Vic Johnson
 - discussion of WPPSS interest in geothermal development, perceived problems and possibility for a regulatory process case study

Seattle City Light

- Paul Groaner
 - discussion of geothermal policy needs

APPENDIX E

District Heating Article

DISTRICT HEATING:
LEGAL & INSTITUTIONAL PARAMETERS

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ABSTRACT

District heating is a proven vehicle for the direct application of geothermal energy. Successful systems currently exist in Iceland, France and the U.S., with numerous others in planning or construction stages. As geothermal resources come on-line, district heating is likely to be a widespread method of utilization. Such systems will provide centralized space-conditioning, as well as "cascaded" uses where feasible. Legal and institutional factors should be examined to ensure an adequate foundation for implementing geothermal district heating.

INTRODUCTION

District heating basically means the centralized distribution of heat to multiple end-users within a particular service area. Cascaded utilization would involve the successive use of progressively cooler fluid (e.g. industrial process heat, space-conditioning, greenhousing, aquaculture). The heat source may be geothermal, solar or fossil fuel. The use of cogenerated or waste heat would be especially appropriate. If alternate energy sources are used, supplemental fossil fuel capacity may be necessary to meet peak demands or emergencies. Various entities, both private and public, may constitute vehicles to develop and operate a heating district. Such a heating district will be presumed to be a utility.

INVESTOR-OWNED UTILITIES

The private sector may organize a heating district by incorporating an investor-owned utility. Some existing utilities may already have a steam distribution system in place. In other states, specific legislative authorization for utilities to provide district heating services may be required. Such authorization should allow the production and transmission of various heat mediums, including geothermal, for public and private use.

In order to incorporate a new investor-owned utility, or expand the scope of an existing one, certification from the Public Service Commission (PSC) will ordinarily be necessary. Such a "certificate of public convenience and necessity" may be difficult to obtain where the

heating district would impinge on an existing heating utility (gas/electric) service area. State legislatures should consider exempting heating districts using alternate fuel sources or waste heat from the certification requirement. Alternatively, they may direct the PSC to grant certification where the public interest would be served, despite competition with an existing utility.

Investor-owned utilities are under the rate-making jurisdiction of Public Service Commissions, although this may not be clear where heating/cooling services are newly authorized. PSC control of utility rates normally is justified due to the monopoly status accorded a utility in a particular service area. State legislatures may consider, as an incentive to investment, exempting heating districts using alternate or waste heat sources from PSC rate-making jurisdiction.

Thus, legislatures should review at least three aspects of district heating via investor-owned utilities: the authorization to provide district heating services; the requirement of PSC certification; and, the applicability of PSC rate-making jurisdiction.

PUBLICLY-OWNED UTILITIES

Counties, municipalities, special districts and other political subdivisions also are possible vehicles for implementing district heating. However, most political subdivisions possess no inherent powers. Thus, specific enabling legislation often will be necessary to authorize a political subdivision to organize a heating district. In some cases, municipal utility codes or authorizations to provide "water" may be liberally construed to cover district heating services. "Home rule" entities also may be able to implement district heating on their own initiative.

Where new enabling legislation is required, at least two approaches are possible. One is to enact a comprehensive, specific statute such as Oregon's Geothermal Heating Districts Act (ORS Chap. 523, 1977). Such an approach has the advantage of authorizing entities with a specific, single mandate. Alternatively, an existing political subdivision charter may be amended to include district heating, as Idaho has done with

its municipal code (S. 1062, 1979). While the district heating mandate to such entities may be diluted by existing functions, this approach has the advantage of utilizing personnel and infrastructure in place. In addition, where existing bonding and other powers are already adequate, the legislative drafting job is simplified.

Special districts, a species of local government, offer several advantages as district heating vehicles. They may usually cross other political subdivision boundaries and may sometimes include non-contiguous areas, important factors in matching resource and service load centers. Special districts may be able to impose differential taxing coincident with service areas. Their bond issues normally are exempt from constitutional debt limitations applied to cities and counties. And, they are organized and operated to perform a narrow range of similar functions.

Whatever political subdivision is chosen as a district heating vehicle, certain basic parameters need to be established. These relate to the method of heating district formation, the nature of its boundaries, its purposes and its powers, especially financial.

Formation of a heating district will normally involve resolutions of the governing bodies of participating political subdivisions or, perhaps, a local citizen initiative. A referendum on the matter may be required, especially where the district would have property taxation (ad valorem/special assessment) power. State legislative and/or Public Service Commission approval also may be necessary, although this is less common.

A heating district should have flexibility with regard to its boundaries. The crossing of municipal and county lines, and the inclusion of non-contiguous areas, may be necessary to match the heat source with load centers. Annexation capability would be a useful adjunct. The district also may require extra-territorial jurisdiction over sources of supply and facilities.

The purposes of a heating district will generally be to produce, distribute, utilize, sell and dispose of geothermal resources and other heat mediums for domestic, commercial and industrial use. The authority should be broad enough to include geothermal and cogenerated or waste heat sources, as well as the use of fossil fuels for peaking or emergencies such as well shut-downs. While centralized space-conditioning may often be the primary function, integrated development of cascaded uses should be within the purview of the district.

Since political subdivisions are inherently not risk-taking entities, the exploration function may require an innovative approach. Exploration may be an appropriate function for the district

where the geothermal resource is demonstrated or where outside (state/federal) capital is available. Otherwise, joint enterprise ability - joint power authorities (with other political subdivisions) and joint ventures (with private industry) - may be necessary to obtain financing. Alternatively, franchises may be granted to private companies to explore for and produce the resource under a contract of sale. Exemption of such production from PSC rate-making jurisdiction would be an appropriate incentive to attract private risk capital. Publicly-owned utilities already are exempt from PSC jurisdiction in most states.

A geothermal heating utility will require the range of powers of a body corporate and politic: legal status to sue and be sued; ability to contract for services and employ personnel; ability to acquire and dispose of property (within and without the district); ability to fix rates for service; ability to apportion user charges and enforce collection (usually via liens); and, the ability to generate capital.

The most likely avenue for capital financing of a geothermal heating district will be revenue bond issues. Service charges would be designed, and may be statutorily required, to retire revenue bond principal and interest, as well as covering operating expenses. However, the ability to levy special assessments may be a necessary concomitant in order to cover revenue shortfalls. Revenue bond issues are not subject to constitutional debt limits and usually need not be approved in an election.

Where the district has ad valorem taxation power, it may be authorized to issue general obligation bonds. Such bonds also may be retired by project revenues but are supported by the full faith and credit (taxes) of the issuing district. General obligation bonds will usually be subject to debt limits if the issuing authority is a municipality or county. Debt limits for special districts are less common, and if applicable, special district debts are generally not cumulative with other local political subdivision debt. General obligation bond issues may need to be approved in an election.

Whatever the bond option chosen, marketability is subject to legislative initiative. State legislatures should consider declaring heating district bonds a legal investment for all banks, trust funds, school funds and other institutional investors. Such accreditation would expand the capital market for the bonds.

A final consideration regarding the powers of heating districts is the grant of easements and eminent domain. Easements along, across and under public byways and existing transmission corridors would assist the district in forming its distribution network. The power to condemn easements on certain private property also may be necessary to complete the system. Consideration may be given to extending the eminent

domain power to existing geothermal wells and sources of supply, although such a proposal is likely to be controversial.

The problem of condemning existing wells or their forced incorporation into a heating district may be unavoidable where single or multi-family wells are already in use. Geothermal production for a heating district may result in reservoir drawdowns, rendering such wells useless. District monetary liability for such events, as opposed to the issuance of an injunction restraining operations, would result, as a practical matter, in condemnation. A possible method to minimize such liability would be the designation of system-wide economic drilling levels, above which no liability would accrue to the district.

Thus, the legislative agenda for public district heating is manifest. The charters of existing political subdivisions should be examined to identify suitable candidates and amended as necessary. Alternatively, a comprehensive, new district heating statute may be enacted. Formation, boundaries, purposes and powers are the parameters which need to be established for public heating districts.

CONCLUSION

While this paper has focused on the specific legal and institutional parameters of geothermal district heating, there are additional factors subject to legislative initiative which will generally affect the pace of implementing such systems. These include: public funding for demonstration projects; geoheating public buildings; innovative and compatible building codes and zoning ordinances; public education and technical assistance; loan programs and tax incentives for alternate energy systems; royalties and taxes on resource production; streamlined regulatory and leasing procedures; and, resolution of ownership and water rights issues. While beyond the scope of this paper, the NCSL geothermal project is prepared to assist states to deal with these policy areas.

APPENDIX F

Oregon District Heating Law

OREGON REVISED STATUTES

Chapter 523

1977 REPLACEMENT PART

Geothermal Heating Districts

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523.015 Definitions for ORS 523.020

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CROSS REFERENCES

Air and water pollution control permits for geothermal well drilling and operation, 468.350

523.480
Information on bond issues to Municipal Debt Advisory Commission, 287.040, 287.042

523.330 Ejectment assessment; credit; rebate
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DEFINITIONS

523.010 Definitions. As used in this chapter unless the context requires otherwise:

(1) "Board" or "board of commissioners" means the governing body of a district.

(2) "By-product" means any mineral or minerals (exclusive of oil, hydrocarbon gas, helium or other hydrocarbon substances) which are found in solution or in association with geothermal resources and which have a value of less than 75 percent of the value of the geothermal resources or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves.

(3) "District" means a geothermal heating district formed under this chapter.

(4) "County" means the county in which the district, or the greater portion of the taxable assessed value of the district, is located.

(5) "County board" means the county court or board of county commissioners of the county.

(6) "County clerk" means the county clerk of the county.

(7) "Geothermal heat" means heat derived from geothermal resources.

(8) "Geothermal resources" means the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from, the natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gases, and steam, in whatever form, found below the surface of the earth, exclusive of oil, hydrocarbon gas, helium or other hydrocarbon substances, but including, specifically:

(a) All products of geothermal processes, embracing indigenous steam, hot water and hot brines;

(b) Steam and other gases, hot water and hot brines resulting from water, gas or other fluids artificially introduced into geothermal formations;

(c) Heat or other associated energy found in geothermal formation; and

(d) Any by-product derived from them.

(9) "Inhabitant" when used with respect to a district includes a business located within the district.

(10) "Owner" means the holder of the record title to real property or the vendee under a land sale contract, if there is such a contract.

(11) "Voter" means a registered voter of the state who resides in the district or proposed district.
(1975 c.782 §1)

523.015 Definitions for 523.020 For the purposes of ORS 523.020 and this section, notwithstanding ORS 523.610 to 523.670, "board," as defined in ORS 523.010, includes the governing body of a city. "District," as defined in ORS 523.010, includes an incorporated city.
(1977 c.212 §1)

Note: 523.015 and 523.020 were enacted into law by the Legislative Assembly but were not added to or made a part of ORS chapter 523 or any series therein by legislative action. See the Preface to Oregon Revised Statutes for further explanation.

CREATION AND POWERS

523.020 City as geothermal heating district. (1) An incorporated city, when empowered by its charter to do so, may provide geothermal heating services to persons within and without its boundaries in accordance with the provisions of this chapter, where not in conflict with ORS 523.015 and this section.

(2) The powers conferred by this chapter and ORS 523.015 and this section are in addition to the powers conferred by any other law and not in substitution for any right, power or privilege vested in a city.
(1977 c.212 §2)

Note: See note under 523.015.

523.030 Incorporation of geothermal heating districts; disposal of surplus; exclusion from district. Communities may be incorporated for the purpose of supplying their inhabitants with geothermal heat as provided by this chapter; and, in connection therewith, may supply, furnish and sell for any use any surplus geothermal heat over and above the heating needs of its inhabitants to any persons, corporations or associations, either within or without the district, or to other communities or municipal corporations.

All railroad rights of way or improvements thereon or rolling stock moving thereover shall be excluded from districts organized under ORS 198.010, 198.180, 198.520, 198.710, 199.420, 229.020, 366.321, 451.573 and this chapter and for purposes of this

chapter shall not be considered as property within the boundaries of such districts, unless the owner of the railroad property expressly consents to its inclusion.
(1975 c.782 §2)

523.040 Powers of district; emergency power; applying for financing gifts and grants. (1) A district formed under this chapter shall have the power to make contracts, hold and receive and dispose of real and personal property within and without its described boundaries and do all other acts and things which may be requisite, necessary or convenient in carrying out the objects of the district or exercising the powers conferred upon it by this chapter, sue and be sued, plead and be impleaded in all actions and suits or other proceedings brought by or against it.

(2) In an emergency or in order to meet peak demand a district may supply its inhabitants with heat derived from an energy source other than from geothermal resources for purposes of supplementing the geothermal heat supplied by the district.

(3) In addition to any other power of a district, it may apply and qualify for and receive any private or federal grants, loans or other funds available for carrying out the objects of the district.
(1975 c.782 §3)

523.050 Water and real property transactions; right to obtain geothermal heat from other sources. A district may purchase, sell and hold interests in water and real property in carrying out the objects of the district. A district also has the right to purchase or obtain from other cities or like corporations, geothermal heat, or an interest in geothermal heat, or an interest in a geothermal heat pipeline owned or operated by any such city or like corporation, or to obtain jointly with any such city or like corporation, any right, or to lay and own individually or jointly with any city or like corporation, any geothermal heat pipeline for the purposes specified in ORS 523.030.
(1975 c.782 §4)

523.060 Cooperative agreements; bonds. (1) Districts may enter into cooperative agreements with each other providing for the joint acquisition, construction, ownership, use or control of facilities for the collection, treatment, distribution or supply of geothermal heat.

(2) Each district may issue and sell general obligation, revenue or refunding bonds, subject to the limitations and procedures

maintained or referred to in this chapter for the authorization, issuance or sale of such license. For the purpose of paying its share of the cost of the acquisition or construction of facilities provided for in cooperative agreements authorized by this section.

(1975 c.782 §118)

523.070 Authority to perform drainage work. Any district may perform drainage work for the purpose of reclaiming real property located within the district, protecting all or personal property located within the district from the effects of geothermal heating, promoting sanitation, providing for the public health, convenience and welfare or providing services of public utility or benefit. Any district may use all applicable powers authorized to it by this chapter, including the rights and powers of eminent domain, in performing the drainage work authorized by this section.

(1975 c.782 §117)

OPERATION

523.110 Regulations on use of geothermal heat; effect of failure to comply. Any district may adopt and promulgate regulations concerning the use of geothermal heat on the property of the district. The board of commissioners may refuse to supply any building, place or premises with geothermal heat where the user fails after 10 days' written notice to comply with the regulations. The written notice shall be by registered mail and shall be deemed given when it is deposited in the United States Post Office properly addressed with postage prepaid.

(1975 c.782 §111)

523.120 Deposit for use of heat. Any district may require a reasonable cash deposit to insure payment for the use or rent of geothermal heat to be furnished by the district.

(1975 c.782 §112)

523.130 Rates; contracts with users. A district shall charge consumers for the geothermal heat furnished and fix and collect rates therefor. Rates charged may be fixed or classified according to the type of use and according to the amount of geothermal heat used. Any contract entered into by a district with individuals, corporations or associations other than domestic users shall provide for immediate cancellation whenever no surplus supply of geothermal heat exists over and above any and all demands of domestic users. A district also may contract with other com-

munities, geothermal heat districts, individuals or corporations, private or municipal, to supply, furnish and sell them surplus geothermal heat on such terms and conditions and at such rates as the board of commissioners considers advisable.

(1975 c.782 §113)

523.140 Rate increase procedure. (1) Whenever any increase is proposed in the existing rates charged geothermal heat consumers by a district pursuant to ORS 523.130, the board of commissioners shall first provide for a public hearing on such proposal before any increased rates are ordered into effect.

(2) The public hearing required under subsection (1) of this section shall be held at a place designated by the board after notice thereof has been given by inclusion of a notice of the public hearing in the geothermal heating bills sent to consumers by the district during the period of 30 days prior to the date of the hearing.

(1975 c.782 §114)

523.150 Termination of service for nonpayment of heating charge. In case prompt payment of geothermal heating rent or charge is not made, a district may shut off the geothermal heating supply to the building, place or premises to which the district supplied the geothermal heating.

(1975 c.782 §115)

523.160 Refund of heating service extension costs by owner of adjacent property. If any person is required by a district to pay the cost of extending a geothermal heating pipeline adjacent to property other than his own so that geothermal heating service is provided for such other property without further extension of the geothermal heating pipeline, the district shall require the owner of the other property, prior to providing geothermal heating service to that property, to refund to the person required to pay the cost of extending the geothermal heating pipeline, a pro rata portion of the cost of the extension. The right to require such refund shall not continue for more than 10 years after the date of installation of the extension of the geothermal heating pipeline. The amount to be refunded shall be determined by the district and such determination shall be final.

(1975 c.782 §116)

ASSESSMENTS

523.210 Special assessment for improvement; report; contents. Whenever the district board considers it necessary, upon its own motion, or upon the petition of the owners of one-half of the property that benefits specially from the improvement, to make any improvement to be paid for in whole or in part by special assessment according to benefits, the board shall, by motion, cause a survey and written report for such project to be made and filed with the secretary. Unless the district board directs otherwise, the report shall contain:

(1) A map or plat showing the general nature, location and extent of the proposed improvement and the land to be assessed for the payment of any part of the cost thereof.

(2) Plans, specifications and estimates of the work to be done; however, where the proposed project is to be carried out in cooperation with any other governmental agency, the district board may adopt the plans, specifications and estimates of such agency.

(3) An estimate of the probable cost of the improvement, including any legal, administrative and engineering costs attributable thereto.

(4) An estimate of the unit cost of the improvement to the specially benefited properties.

(5) A recommendation as to the method of assessment to be used to arrive at a fair apportionment of the whole or any portion of the cost of the improvement to the properties specially benefited.

(6) The description and assessed value of each lot, parcel of land or portion thereof, to be specially benefited by the improvement, with the names of the record owners thereof and, when readily available, the names of the contract purchasers thereof.

(7) A statement of outstanding assessments against property to be assessed.

(1975 c.782 §119)

523.220 Action on special assessment report by board. After the report has been filed with the secretary, the district board may by motion approve the report, modify the report and approve it as modified, require additional or different information for the improvement, or it may abandon the improvement.

(1975 c.782 §120)

523.230 Approval of special assessment report; notice of improvement; contents. After the district board approves the report as submitted or modified, the board shall, by resolution, declare its intention to make the improvement, provide the manner and method of carrying out the improvement and direct the secretary to give notice of the improvement. Such notice shall be given by two publications one week apart in a newspaper of general circulation within the district, and by mailing copies of the notice by registered or certified mail to the owners to be assessed for the costs of the improvement. The notice shall contain the following:

(1) That the report of the improvement is on file in the office of the secretary and is subject to public examination.

(2) That the district board will hold a public hearing on the proposed improvement on a specified date, which shall not be earlier than 10 days following the first publication of notice, at which objections and remonstrances to the improvement will be heard by the board; and that if prior to such hearing there shall be presented to the secretary valid, written remonstrances of the owners of two-thirds of the property or two-thirds of the front footage of the property to be specifically affected for the improvement, then the improvement will be abandoned for at least six months, unless the improvement is unanimously declared by the district board to be needed at once because of an emergency.

(3) A description of the property to be specially benefited by the improvement, the owners of the property and the estimate of the unit cost of the improvement to be paid for by special assessments to benefited properties.

(1975 c.782 §121)

523.240 Means of constructing improvement. The district board may provide in the improvement resolution that the construction work will be done in whole, or in part, by the district, by a contract or by any other governmental agency, or by any combination thereof.

(1975 c.782 §122)

523.250 Order to carry out or abandon improvement after public hearing; assessment ordinance. (1) At the time of the public hearing on the proposed improvement, if the written remonstrances represent less than the amount of property required to defeat the proposed improvement, if such an improvement is one that can be remonstrated against, then on the basis of such hearing of

written remonstrances and oral objections, if any, the district board may, by motion, at the time of the hearing or within 60 days thereafter, order the improvement to be carried out in accordance with the resolution, or the district board may, on its own motion, abandon the improvement.

(2) After the public hearing on the proposed improvement and after the district board has moved to proceed with the improvement, it may pass an ordinance assessing the various lots, parcels of land or parts thereof, to be specially benefited with their apportioned share of the cost of the improvement; but the passage of an assessment ordinance may be delayed until the contract for the work is let, or until the improvement is completed and the total cost thereof is determined.

(1975 c.782 §123)

523.260 Method of assessment. The district board in adopting a method of assessment of the costs of the improvement may:

(1) Use any just and reasonable method of determining the extent of any improvement district consistent with the benefits derived.

(2) Use any method of apportioning the sum to be assessed as is just and reasonable between the properties determined to be specially benefited.

(3) Authorize payment by the district of all, or any part, of the cost of any such improvement, when in the opinion of the board the topographical or physical conditions, or unusual or excessive public travel, or other character of the work involved warrants only a partial payment or no payment by the benefited property of the costs of the improvement.

(1975 c.782 §124)

523.270 Appeal of assessment. Any person feeling aggrieved by the assessments made under an assessment ordinance may, within 20 days after the passage of the ordinance levying the assessment by the district board, appeal to the circuit court for the county in which the district is located. The appeal and the requirements and formalities thereof shall be heard, governed and determined, and the judgment thereon rendered and enforced, in the manner provided for appeals from assessments in ORS chapter 223. The result of the appeal shall be a final and conclusive determination of the matter of the assessment, except with respect to the district right of reassessment provided by ORS 523.360.

(1975 c.782 §125)

523.290 Notice of assessment to property owners; publication; contents. Within 10 days after the ordinance levying assessments is adopted, the secretary of the district shall send by registered or certified mail a notice of assessment to the owner of the assessed property, and shall publish notice of the assessment twice in a newspaper of general circulation in the district, the first publication of which shall be made not later than 10 days after the date of the assessment ordinance. The notice of assessment shall recite the date of the assessment ordinance and shall state that upon the failure of the owner of the property assessed to make application to pay the assessment in installments within 10 days from the date of the first publication of notice, or upon the failure of the owner to pay the assessment in full within 30 days after the date of the assessment ordinance, then interest will commence to run on the assessment and the property assessed will be subject to foreclosure. The notice shall also set forth a description of the property assessed, the name of the owner of the property and the amount of such assessment. (1975 c.782 §20)

523.290 Entry of amount of assessment; liens; priority; foreclosure. After passage of the assessment ordinance by the district board, the secretary shall enter in the docket of district liens a statement of the amounts assessed upon each particular lot, parcel of land or portion thereof, together with a description of the improvement, the name of the owners and the date of the assessment ordinance. Upon such entry in the lien docket, the amount so entered shall become a lien upon the respective lots, parcels of land or portions thereof, which have been assessed for such improvement. All assessment liens of a district shall be superior and prior to all other liens or encumbrances on property in so far as the laws of the state permit. Interest shall be charged at the rate of six percent per annum until paid on all amounts not paid within 30 days from the date of an assessment ordinance. After expiration of 30 days following the date of an assessment ordinance the district may proceed to foreclose or enforce collection of the assessment liens in the amount provided by the general law of the state. However, the district may, at its option, enter a bid for the property being offered at a foreclosure sale, which bid shall be prior to all bids except those made by persons who would be entitled under the laws of the state to redeem the property. (1975 c.782 §21)

523.310 Errors in assessment. Claimed errors in the calculation of assessments shall be called to the attention of the secretary of the district, who shall determine whether there has been an error in fact. If the secretary finds that there has been an error in fact, he shall recommend to the district board an amendment to the assessment ordinance to correct the error. Upon enactment of the amendment, the secretary shall make the necessary correction in the lien docket and send a correct notice of assessment by registered or certified mail. (1975 c.782 §22)

523.320 Deficit assessment; hearing; objections; notices. In the event that an assessment is made before the total cost of the improvement is ascertained, and if it is found that the amount of the assessment is insufficient to defray the expenses of the improvement, the district board may, by motion, declare such deficit and prepare a proposed deficit assessment. The board shall set a time for a hearing of objections to such deficit assessment and shall direct the secretary to publish one notice thereof in a newspaper of general circulation in the district. After the hearing the board shall make a just and equitable deficit assessment by ordinance, which shall be entered in the lien docket as provided by ORS 523.210 to 523.380. Notices of the deficit assessment shall be published and mailed and the collection of the assessment shall be made in accordance with ORS 523.290 and 523.290. (1975 c.782 §23)

523.330 Excess assessment; credit; rebate. Upon the completion of the improvement project, if it is found that the assessment previously levied upon any property is more than sufficient to pay the costs of the improvements, the district board shall ascertain and declare the amount of the excess by ordinance. When declared, the excess amounts shall be entered on the lien docket as a credit upon the appropriate assessment. If any assessment has been paid, the person who paid it, or his legal representative, shall be entitled to the repayment of the rebate credit, or the portion thereof which exceeds the amount unpaid on the original assessment. (1975 c.782 §24)

523.340 Abandonment of improvement; cancellation of liens; refunds. The district board may abandon proceedings for an improvement at any time prior to the final completion of the improvement. If liens have been assessed upon any property under ORS

523.210 to 523.380, they shall be canceled, and any payments made on such assessments shall be refunded to the person paying the same, his assigns or legal representatives. (1975 c.782 §31)

523.350 Restriction on rendering assessment invalid; correction by board. No improvement assessment shall be rendered invalid by reason of a failure of the improvement report to contain all of the information required by ORS 523.210, or by reason of a failure to have all of the information required to be in the improvement resolution, the assessment ordinance, the lien docket or notices required to be published and mailed, nor by the failure to list the name of, or mail notice to, the owner of any property as required by ORS 523.210 to 523.380, or by reason of any other error, mistake, delay, omission, irregularity or other act, jurisdiction or otherwise, in any of the proceedings or steps specified, unless it appears that the assessment is unfair or unjust in its effect upon the person complaining. The district board may remedy and correct all such matters by suitable action and proceedings. (1975 c.782 §32)

523.360 Reassessment. Whenever any assessment, deficit assessment or reassessment for any improvement which has been made by the district is set aside, or its enforcement restrained by any court having jurisdiction thereof, or when the district board is in doubt as to the validity of an assessment, deficit assessment or reassessment, or any part thereof, the district board may make a reassessment in the manner provided by ORS 223.405 to 223.485. (1975 c.782 §33)

523.370 Application of certain provisions of ORS chapters 223 and 287 to assessments. If the cost, or any portion of the cost, of an authorized improvement is assessed against the property directly benefited, the provisions of ORS 223.205 to 223.300, in regard to the payment of assessments in installments, the provisions of ORS 223.770, relating to the assessment of public property benefited by public improvements for the cost of such improvements, and the provisions of ORS 287.502 to 287.510, relating to the issuance of improvement warrants by cities, shall apply in so far as practicable and applicable in the district. Where, in ORS 223.205 to 223.300, 223.770 and 287.502 to 287.510 officials of cities are referred to, the corre-

sponding officials of districts where applicable shall perform the required functions. (1975 c.782 §34)

523.380 Foreclosure of assessment lien. (1) In case the whole or any portion of the cost of an improvement is assessed against the property directly benefited and the owner of the property fails to pay the amount of the lien, or any portion thereof, or the interest thereon, when they become due, the board may proceed to foreclose the lien in any manner provided by law for the collection of liens by municipalities and may provide by ordinance a general procedure for the collection of liens in any manner not inconsistent with law.

(2) The provisions of ORS 223.405 to 223.485 relating to reassessment shall be available to districts where applicable. (1975 c.782 §35)

TAXING POWER

523.410 Ad valorem taxation; special tax; collection; enforcement. (1) A district may assess, levy and collect taxes in an amount each year not to exceed one-fourth of one percent (0.025) of the true cash value of all taxable property within the limits of the district, computed in accordance with ORS 308.207. The proceeds of the tax shall be applied by it in carrying out the objects and purposes of ORS 523.030 to 523.050 and 523.420 to 523.490 and for the purpose of financing the employees' retirement system.

(2) A district may annually also assess, levy and collect a special tax upon all such property in an amount sufficient to pay the yearly interest on bonds theretofore issued by the district and then outstanding, together with any portion of the principal of such bonds maturing within the year. The special tax shall be applied only in payment of interest and principal of bonds issued by the district, but the district may apply any funds it may have toward payment of principal and interest of any such bonds. If the bonds are registered with a county treasurer under ORS 208.200, the officer who collects the special tax shall transfer the proceeds to the county treasurer referred to in ORS 523.460. If the district bond fund is not sufficient for this purpose, the district shall transfer to the county treasurer any additional funds it has as required to pay the principal and interest of any such bonds.

(3) Taxes shall be levied in each year and returned to the county officer whose duty it is

to extend the tax roll by the time required by law for city taxes to be levied and returned.

(4) Taxes levied by the district shall become payable at the same time and be collected by, the same officer who collects county taxes, and except as otherwise provided in subsection (2) of this section, the proceeds shall be turned over to the district according to law. The county officer whose duty it is to extend the county levy shall extend the levy of the district in the same manner as city taxes are extended.

(5) Property is subject to sale for nonpayment of taxes levied by the district in like manner and with like effect as in the case of county and state taxes. (1975 c.782 §36)

523.420 Disposal of taxes levied by invalid district. When an attempt has been made to organize a district under the provisions of this chapter and subsequently by a decree of a court of competent jurisdiction it has been declared that the organization is invalid, but prior to such decree the invalid organization has levied taxes, the funds derived from the levy shall be disposed of as follows:

(1) If the area embraced in the invalid organization is embraced in a subsequently created organization composed of unincorporated or incorporated territory, or combinations thereof, for the purpose of furnishing geothermal heat to the inhabitants thereof, the custodian of the taxes collected for the invalid organization shall turn them over to the subsequent organization to be used only for the purpose of furnishing geothermal heat to such inhabitants.

(2) If the subsequent organization does not embrace all territory embraced in the invalid organization, such taxes as have been collected from the levy upon property in areas not embraced in the subsequent organization shall be refunded to the payers thereof by the custodian of the taxes before the balance is turned over to the subsequent organization.

(3) If no such subsequent organization is created to provide geothermal heat for the inhabitants of such an area, within a period of two years after the entry of the decree of invalidation, the taxes collected shall be refunded by the custodian of them to the taxpayers who paid them. (1975 c.782 §37)

BONDS

523.460 General obligation bonds; limit; issuance; maturity; interest; election; pledge of revenue. (1) For the purpose of carrying into effect all or any powers granted by this chapter, the district, when authorized at any properly called election held for that purpose, may borrow money and sell and dispose of general obligation bonds. Except as otherwise provided by this section, the bonds shall never exceed in the aggregate two and one-half percent of the true cash value of all taxable property within the limits of the district, computed in accordance with ORS 308.207.

(2) The bonds shall be issued from time to time by the board of commissioners in behalf of the district as authorized by the voters, and may be issued in an amount not to exceed one-half of one percent of the true cash value referred to in subsection (1) of this section without the approval of the voters. The bonds shall mature serially within not to exceed 30 years from issue date, in like manner as bonds issued under authority of ORS 287.008, and shall bear interest not exceeding seven percent per annum payable semiannually as the board shall determine. The bonds shall be so conditioned that the district agrees to pay to the bearer at a place named, which may be at the office of the county treasurer of the county in which proceedings for formation of the district were conducted, the principal sum, with interest at the rate named, payable semiannually, in accordance with the tenor and terms of the interest coupons attached. Each bond payable at the office of the county treasurer shall be signed by, and registered in accordance with ORS 208.200 in the office of, the county treasurer referred to in this subsection.

(3) If the district has within its corporate limits a population of 300 or over, it may issue bonds in an amount which shall not exceed in the aggregate 10 percent of the true cash value referred to in subsection (1) of this section.

(4) For the purpose of additionally securing the payment of the principal and interest on general obligation bonds issued under this section, the district may, by resolution of its board which shall constitute part of the contract with the holders of the bonds, pledge all or any part of the net revenue of its geothermal heating system. The board may adopt such a resolution without submitting the

question of the pledge to the voters of the district.
(1975 c.782 §4; 1977 c.188 §7)

523.470 Revenue bonds; terms; issuance. In addition to the authority to issue general obligation bonds, the district, when authorized at any properly called election, shall have the power to sell and dispose of revenue bonds, and to pledge as security therefor all or any part of the unobligated net revenue of the district or system, to purchase, acquire, lay out, construct, reconstruct, extend, enlarge or improve a geothermal heating system, for the purpose of obtaining geothermal heating for the use of consumers, within or without the boundaries of the district. The revenue bonds shall be issued in the same manner and form as are general obligation bonds of the district, but they shall be payable, both as to principal and interest, from revenues only, as specified by this section. The revenue bond shall not be subject to the percentage limitation applicable to general obligation bonds and shall not be a lien upon any of the taxable property within the corporate limits of such district, but shall be payable solely from such part of the revenues of the district as remain after payment of obligations having a priority and of all expenses of operation and maintenance of the district, including any taxes levied against it. All revenue bonds shall contain a clause reciting that both the principal and interest are payable solely from operating revenues of the district remaining after paying such obligations and expenses.
(1975 c.782 §7)

523.480 Refunding bonds. Refunding bonds of the same character and tenor as those replaced thereby may be issued pursuant to a resolution duly adopted by the board of commissioners without submitting to the voters the question of authorizing the issuance of such bonds.
(1975 c.782 §8)

523.490 Advertising and sale of bonds. All general obligation and revenue bonds, including refunding bonds, issued under ORS 523.460 to 523.480 shall be advertised and sold in the manner prescribed in ORS 287.002 for the sale of bonds of cities of this state.
(1975 c.782 §9)

DISSOLUTION

523.510 Assumption of debts and obligations of district upon dissolution.

(1) A city may enter into a written agreement with a geothermal heating district contemplating dissolution undertaking to assume, in the event of such dissolution, all of the outstanding debts and obligations of the district and to continue to furnish geothermal heat to the inhabitants of the dissolving district for domestic and municipal use for a term therein specified, not to exceed 25 years. Subject to the provisions of this section, the successor city shall, if the dissolution is approved, have the powers and assume the responsibilities of geothermal heating districts under this chapter. Any person entitled to geothermal heating service within the area of the dissolved district has the same remedies at law or in equity to enforce his rights to geothermal heating service as are available to enforce the right to geothermal heating service within the district.

(2) The successor city or district shall furnish geothermal heat to persons owning or occupying property within the dissolved district on the same terms and conditions as in the case of those owning or occupying property within the city, or elsewhere within the district. If the district assets and obligations are transferred to a city, the city may charge a rate for the service that is no more than the rate which is uniformly applied to all users in similar classifications outside the city. No such differential rate may be charged, however, unless such a differential is provided for, and specifically limited, by the terms of the agreement made prior to the dissolution. Nothing in this section authorizes a city to levy an ad valorem real property tax on property outside the city or district.

(3) Any debts or obligations assumed by the successor city by reason of, or during the period of, its commitment under the agreement shall bind the city until they are fully paid and discharged. No contract shall be effective unless all of the terms thereof are reduced to writing, signed by the entities and filed with the county clerk.
(1975 c.782 §17)

ADMINISTRATION

523.610 Board; election; power; term; organization. (1) Except as otherwise provided by this chapter, the power and authority given to districts is vested in and shall be exercised by a board of five commissioners, each of whom shall be a qualified voter within

the district. Except as provided by subsection (2) of this section, each commissioner shall be elected for a term of four years.

(2) Within 10 days after the formation of a district and the election of the members of the first board, the commissioners shall meet and organize, first taking and subscribing an oath of office. The commissioners first elected shall determine by lot the length of term each shall hold office. The term of one commissioner shall expire the next July 1 following his election, and the terms of the other four shall expire one in one year, one in two years and two in three years after the next July 1 following their election.
(1975 c.782 §36)

523.620 Election. A regular election shall be held in the district each year, on the date fixed by ORS 259.240, for the election of one or more commissioners to succeed any commissioner whose term expires the following July 1, and to elect commissioners to fill any vacancy which then may exist.
(1975 c.782 §37)

523.630 Meetings; officers; quorum; employees; employee benefits. (1) The board of commissioners shall hold meetings at such time and place within the district as it may determine. The board shall hold at least one regular meeting in each month on a day to be fixed by it, and may hold special meetings under such rules as it may make.

(2) The board shall, at the time of its organization, choose from the commissioners a president, a secretary and a treasurer, who shall hold their offices until the first regular meeting in January, or until their successors are elected and qualified. The officers shall have, respectively, the powers and shall perform the duties usual in such cases. A majority shall constitute a quorum to do business and, in the absence of the president, any other member may preside at a meeting.

(3) The board of commissioners may employ engineers, superintendents, mechanics, clerks or other persons as it may find requisite, necessary or convenient in carrying on any work of the district and at a rate of remuneration as it may consider just.

(4) The board may provide life insurance and retirement or pension plans for employees of a district, if the insurer issuing the policy is licensed to do business in the State of Oregon.
(1975 c.782 §39)

523.640 Special election. The board of commissioners at any regular meeting may

call a special election of the voters of the district.
(1975 c.782 §38)

523.650 Initiative and referendum. I the exercise of initiative and referendum powers reserved under the Constitution of the state to the voters of every municipality an district as to all local, special and municipal legislation of every sort and character in on for their respective municipalities and districts, the general laws of the state as applicable to cities and towns shall govern in geothermal heating districts, except that the measure referred by the board of commissioners shall be filed with the secretary not less than 3 days before the election at which they are to be voted upon. The chairman of the board shall act as mayor and perform his duties. The secretary shall perform the duties of auditor or recorder, the attorney shall perform the duties of city attorney, and if there is an attorney, the secretary shall perform the duties required of the attorney.
(1975 c.782 §40)

523.660 District funds; deposits; records. (1) Except as otherwise provided in ORS 523.410, the money of a district shall be deposited in one or more banks, to be designated by the board of commissioners. The money shall be withdrawn or paid out on when previously ordered by vote of the board and upon checks signed by the treasurer or such other person as may be authorized by resolution of the board. Receipts or vouchers showing clearly the nature and items covered by each check drawn, shall be kept on file.

(2) All the proceedings of the board of commissioners shall be entered at large in record book. All books, maps, plans, documents, correspondence, vouchers, reports and other papers and records pertaining to the business of the district shall be carefully preserved and shall be open to inspection by the public.
(1975 c.782 §41)

523.670 Agreements between district and annexed city. If a city has been annexed to a district under ORS 198.865, the city and the district may:

(1) Enter into contracts and agreements do any act or thing which either could have done if the annexation had not occurred.

(2) Contract and agree for the collection by the district of any geothermal heat tax charge imposed by the city upon geothermal heat users within the territory of the city, and the district thereupon may provide for

collection according to its rules and regulations for the collection of amounts due the district by geothermal heat users, including but not limited to shutting off the geothermal heat supply for nonpayment.
(1975 c.782 §42)

523.680 Employees' retirement system; establishment; contents. (1) A district may establish an employees' retirement system. The board of commissioners may enter into agreements necessary to establish the system and carry out the plan and may agree to modifications of such agreements from time to time.

(2) The retirement plan may provide for retirement benefits measured on the basis of services rendered or to be rendered by an employee, either before or after the date on which such employee first becomes a member of the retirement plan. The retirement plan may provide for a minimum of years of service and a minimum and maximum age of retirement for the employee.
(1975 c.782 §43)

523.690 Payments to retirement plan fund. The district may budget and provide for payment into the fund of the retirement plan an amount sufficient:

(1) To provide on an actuarial reserve basis the amortized level premium cost of the retirement benefits which, under the provision of the retirement system, are to be pro-

vided by the district to its employees who attain the retirement age or retire in accordance with the terms of the retirement plan.

(2) To meet the actuarially computed costs of retirement benefits measured on the basis of services rendered or to be rendered by an employee before or after the date on which such employee becomes a member of the retirement plan.
(1975 c.782 §44)

523.700 Employee contributions to retirement plan. The district may collect, as a contribution from any employee, that percentage of the salary received by the employee which is necessary to fund on an actuarial reserve basis the cost of retirement benefits which the employee is required to provide pursuant to the provisions of a retirement plan.
(1975 c.782 §45)

523.710 Limit on eligible individuals in retirement plan. Nothing in this chapter authorizes the district to budget, provide for payments or collect contributions to fund retirement benefits for an individual who is not in the employment of the district at the time of the creation of a membership status under a retirement plan.
(1975 c.782 §46)

CERTIFICATE OF LEGISLATIVE COUNSEL

Pursuant to ORS 173.170, I, Thomas G. Clifford, Legislative Counsel, do hereby certify that I have compared each section printed in this chapter with the original version in the enrolled bill, and that the sections in this chapter are correct copies of the enrolled sections, with the exception of the changes in form permitted by ORS 173.160 and other changes specifically authorized by law.
Done at Salem, Oregon,
October 1, 1977.

Thomas G. Clifford
Legislative Counsel

CHAPTERS 524 AND 525

[Reserved for expansion]

APPENDIX G

Comparison of Two California Geothermal Revenue Bills:

- AB 1905
- Administration Proposal

FACT SHEET

COMPARISON OF THE GEOTHERMAL RESOURCES DEVELOPMENT FUND (GRDF)
AND THE BOSCO BILL (AB1905)

- o Both bills establish procedures for dispersing the revenues returned to the State as a result of base scales on federal land pursuant to the Federal Land Policy and Management Act (FLPMA). Under FLPMA, half the revenue from bonus bids on geothermal leases, as well as from rentals and production royalties are returned to the State. The State is directed to place priority on using the funds to offset the impacts of geothermal development.

AB 1905

- o All of the funds returned to the State go directly to the county where the lease sale is held (county of origin)

GRDF

- o 60% of the funds go to the county of origin. 25% is available to assist other counties with known or potential resources plan for such development 15% is available to supplement State agency programs which will promote environmentally sound and expeditious geothermal development.

o Allows counties of origin
to spend funds on anything.

o Funds would go only to counties
where a federal lease sale has
occured. There are at least 17
counties in California with
geothermal resources on federal,
state or private lands. At least
4 of these counties will not have a
federal lease sale, although there
will be development occuring on
State and private lands. They
would receive no funds under this
bill to plan for geothermal
development.

o Counties of origin will not be able
to receive funds until 6 to 12 months
after the lease sale has occured.
This would make it difficult, if not
impossible, to carry out advance
planning prior to development
pressures already occuring.

o Requires that funds only
be expended on geothermal
related activities.

o Funds would be available
to all counties where it is
needed to plan for geothermal
development and not just
counties with federal lands
or lease sales.

o Funds would be available for
all counties, well ahead of
lease sales and development
pressures.

o Specifies that funds would
be available to local and
State agencies to permit,
monitor and inspect geotherm
activities.

- o Specifies that funds would be available to local governments and State agencies to provide public services necessary to support geothermal activities.

o No such provision

- o Would make funds available to local governments and State agencies to install geothermal district heating systems and demonstrate other direct heat and electrical applications.

o No such provision

- o Provides for an interagency counsel with local and public membership to determine projects which merit funding support.

o No such provision

- o Requires biennial reporting of expenditures and accomplishments made as a result of projects undertaken.

o No such provision

- o Requires reevaluation of program at the end of 10 years.

ASSEMBLY BILL

No. 1905

Introduced by Assemblyman Bosco
(Principal coauthor: Senator Keene)

May 21, 1979

REFERRED TO COMMITTEE ON RESOURCES, LAND USE, AND ENERGY

An act to add Chapter 6 (commencing with Section 3790) to Division 3 of the Public Resources Code, relating to geothermal revenues, and declaring the urgency thereof, to take effect immediately.

LEGISLATIVE COUNSEL'S DIGEST

AB 1905, as introduced, Bosco (Res., L.U., & E.). Geothermal resources: federal lease sales: disposition of revenues.

Existing state law does not provide for the distribution of moneys received by the state from federal geothermal lease sales of public lands. Existing federal law provides for 50 percent of the moneys received for geothermal leases under the federal Geothermal Steam Act of 1970, as amended, to be paid to the state where the leased lands are located.

This bill would provide that all moneys received by the state from the federal government for federal geothermal leases within California be deposited in the State Treasury and allocated by the Department of Finance to the counties socially or economically impacted by the federal geothermal leases generating the revenues.

This bill would take effect immediately as an urgency statute.

Vote: $\frac{2}{3}$. Appropriation: no. Fiscal committee: yes.

State-mandated local program: no.

The people of the State of California do enact as follows:

1 SECTION 1. Chapter 6 (commencing with Section
2 3790) is added to Division 3 of the Public Resources Code,
3 to read:

4
5 CHAPTER 6. GEOTHERMAL REVENUES
6

7 3790. All moneys received by the state from the
8 federal government for sales, bonuses, royalties, and
9 rentals of public lands within the State of California
10 under the federal Geothermal Steam Act of 1970, as
11 amended (Chapter 23 (commencing with Section 1001)
12 of Title 30 of the United States Code) shall be deposited
13 in the State Treasury and allocated by the Department of
14 Finance to the counties socially or economically
15 impacted by the federal geothermal leases generating
16 such revenues. The revenues allocated to counties under
17 this section shall be for the purpose of planning,
18 construction and maintenance of public facilities, and
19 provision of public services.

20 SEC. 2. This act is an urgency statute necessary for
21 the immediate preservation of the public peace, health,
22 or safety within the meaning of Article IV of the
23 Constitution and shall go into immediate effect. The facts
24 constituting such necessity are:

25 Moneys will be received from the federal government
26 in July from geothermal revenues and it is essential that
27 act be effective at that time.

O

LEGISLATIVE INTENT

It is the intent of the Legislature to encourage alternative energy development in the State. Further, the Legislature recognizes that California has substantial geothermal energy potential. Geothermal resources offer excellent energy sources which are advantageous in that: (1) they are indigenous to California; (2) their development provides a stimulus to the State's economy; (3) the environmental impacts of geothermal direct heat may be more acceptable than those associated with traditional electrical generation, and mitigation of such impacts is better understood than those associated with traditional electric generation technologies; (4) their development reduces dependence on other fossil fuel sources; (5) geothermal power plants are small scale distributed technologies which can increase system reliability and flexibility; and (6) the lead time for electric power plant construction is relatively short. Based on the opportunities afforded by geothermal development, it is the intent of the Legislature to promote environmentally sound geothermal resources development.

POLICY

It is the policy of the Legislature to encourage environmentally sound geothermal resources development. It is further the policy of the Legislature to reduce the State's dependency on scarce fossil fuels. Therefore, in order to ensure that geothermal development occurs in an orderly and sound fashion, the Legislature hereby declares that all revenues derived from the U. S. Bureau of Land Management's activities under the Geothermal Steam Act of 1970 and distributed through Section 317 of the Federal Land Policy and Management Act (FLPMA), PL 94-579, be appropriated in the following ways:

GENERAL PURPOSES

All monies returned to the State pursuant to Section 317 of FLPMA shall be used to promote geothermal resources development related activities including, but not limited to:

- (1) Carrying out necessary planning activities to ensure orderly, environmentally sound geothermal development in as expeditious a manner as possible, including, but not limited to:

- (A) resource assessment and exploration technology
 - (B) local and regional planning and policy development and implementation for complying with State and federally mandated programs
 - (C) identification and incorporation of feasible mitigation measures necessary to offset adverse impacts to the State's natural resources including the necessary collection of baseline data and monitoring
 - (D) preparing geothermal elements to county general plans, zoning and other ordinance and accompanying environmental and planning documents.
- (2) Providing the necessary public services required to implement, mitigate and enhance geothermal resources development, including, but not limited to:
- (A) processing requests and preparing permit application,s related environmental documents, monitoring and inspection of geothermal activities to insure compliance with local, regional and State laws, regulations, ordinances and other geothermal related activities: identifying and carrying out actions necessary to mitigate impacts as well as participating in research and development activities
 - (B) planning, construction, operations and maintenance of necessary public services.
- (3) Projects demonstrating the technical feasibility and economics of geothermal direct heat and electrical applications.
- (4) Other projects that can be shown to promote development consistent with the policies of this Act.

SPECIFIC PROVISIONS

Public Services means those services which local jurisdictions must provide as a result of geothermal development activities.

Local Jurisdictions means legal subdivisions of the State, including cities, counties, and special districts.

County of Origin means any county in which the Bureau of Land Management lease sale occurred.

Geothermal Resources Development Account means the account established in the State Controller's Office which shall consist of all monies returned to the State by the U. S. Treasury pursuant to Section 317 of the Federal Land Policy and Management Act.

Geothermal Resources Development Fund means those funds which are earmarked for disbursement by the Council and which shall consist of 40 percent of the Geothermal Resources Development Account.

Potential or Known Geothermal Resources means those areas of the State in which there is an identified geothermal resource either as: a) known geothermal resource area (KGRA) as designated by the U. S. Geological Survey; b) geothermal resource areas as designated by the Division of Oil and Gas; or, c) areas with surface manifestations and other indications of the presence of a geothermal resource.

The Geothermal Resources Development Fund and the Geothermal Resources Development Account are hereby created. All monies in the Account shall be expended for the purposes stated in the Act.

There is in the Department of Finance an advisory body known as the Geothermal Coordinating Council, hereafter known as the Council, which shall establish guidelines for the administration of monies in the Geothermal Resources Development Fund.

The Council shall have the authority to determine which local jurisdictions have potential or known geothermal resources for the prescribed purposes of this Act.

The Council shall coordinate with the California Energy Commission's statewide planning policy and research and development efforts, as well as other affected State agencies' geothermal planning and program activities, for the promotion, or regulation of geothermal energy resources in establishing its guidelines for the administration of the Geothermal Resources Development Fund.

APPENDIX H

California Energy Development Authority

AMENDED IN ASSEMBLY AUGUST 24, 1978

AMENDED IN ASSEMBLY AUGUST 8, 1978

AMENDED IN SENATE JUNE 20, 1978

AMENDED IN SENATE JUNE 7, 1978

AMENDED IN SENATE APRIL 10, 1978

SENATE BILL

No. 1600

Introduced by Senators Roberti and Alquist (Principal Coauthor: Assemblyman Calvo) Senate Coauthors: Beverly, Campbell, Paul Carpenter, Dills, Dunlap, Garamendi, Greene, Holden, Petris, Rains and Smith (Assembly Coauthors: Bane, Bates, Berman, Chel, Chimbole, Fazio, Gage, Gualco, Kapiloff, Keene, Rosenthal, Suitt, Torres, Wornum and Wray)

February 27, 1978

An act to add Division 16 (commencing with Section 32000) to the Financial Code, relating to energy and making an appropriation therefor.

LEGISLATIVE COUNSEL'S DIGEST

SB 1600, as amended, Roberti. Energy.

No provision of existing law provides for a State Assistance Fund for Energy.

This bill would provide for the creation, organization, and operation of a nonprofit corporation to be known as the State Assistance Fund for Energy, California Business and Industrial Development Corporation.

The purpose of the corporation would be to provide financing assistance only to qualified alternative energy business firms or to small businesses for the purpose of purchasing, installing, replacing or implementing an alternative energy system, as defined. The members of the board of directors

would be the Governor, the Superintendent, the President of the Corporation and 6 other appointees.

This bill would create a State Energy Loan Fund in the General Fund which would loan money to the corporation under specified conditions.

This bill would also appropriate \$3,000,000 from the Energy Resources Conservation and Development Special Account for the purposes of its provisions.

Existing law provides for a surcharge upon every person consuming electrical energy in this state purchased from an electrical utility. The State Board of Equalization is authorized to establish a surcharge rate annually that it estimates will produce sufficient revenues to fund expenditures authorized to be made from the State Energy Resources Conservation and Development Special Account.

This bill would require the board to establish a rate sufficient to raise the funds appropriated pursuant to this act; but would provide that the surcharge rate established by the board for the purposes of this act shall not exceed the maximum rate established during the 1977/78 fiscal year.

Vote: $\frac{2}{3}$. Appropriation: yes. Fiscal committee: yes. State-mandated local program: no.

The people of the State of California do enact as follows:

1 SECTION 1. Division 16 (commencing with Section
2 32000) is added to the Financial Code, to read:

3
4 DIVISION 16. STATE ASSISTANCE FUND FOR
5 ENERGY,

6 CALIFORNIA BUSINESS AND INDUSTRIAL
7 DEVELOPMENT CORPORATION

8
9 CHAPTER 1. GENERAL PROVISIONS

10
11 Article 1. Short Title, Construction and Severability

12
13 32000. This division shall be known and may be cited
14 as the "State Assistance Fund for Energy Act of 1978."

15 32001. In this division, unless the context otherwise

SUGGESTED GEOTHERMAL POLICIES FOR HAWAII

Energy Program -- Geothermal Policy Project
National Conference of State Legislatures
1405 Curtis Street, Suite 2300
Denver, Colorado 80202
303/623-6600

November 1979

PREFACE

This report is based on a review of geothermal policies conducted in conjunction with the Committee on Economic Development, Energy and Natural Resources of the Hawaii State Senate. The staff of the NCSL Geothermal Policy Project wishes to express its high regard and appreciation to Senator T. C. Yim, chairman of the committee, for the crucial support he has given to this study. Special thanks also to Robert Takushi for the many hours of assistance and guidance he gave the NCSL staff. The cooperation extended by the Legislative Reference Bureau, the Department of Land and Natural Resources, the Department of Planning and Economic Development and numerous other persons who have devoted their time to this review is sincerely appreciated.

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I.

INTRODUCTION

In 1974, the Hawaii Legislature classified geothermal resources as minerals under Chapter 182 (Reservation and Disposition of Government Mineral Rights) of the Hawaii Revised Statutes. This chapter provides for the competitive leasing of state mineral rights, with requirements for bonds, certain lease stipulations and performance standards. Subsequently, the state Department of Land and Natural Resources (DLNR) promulgated regulations for leasing and drilling of geothermal resources (Regulation 8) under Chapter 182 and Chapters 177 (Ground-Water use) and 178 (Wells, Generally).

The legislature also has made substantial appropriations for geothermal R & D; authorized county governments to develop geothermal resources; set excise tax rate at 0.5% on gross proceeds from geothermal resources; exempted building improvements for the use of geothermal resources from property tax; provided inducements for geothermal electric power development through certain utility regulations; and adopted federal tax benefits for geothermal development established by National Energy Act of 1978.

When reviewing these existing policies for possible improvements, a distinction should be made between electricity production and direct heat applications. These two types of development typically differ in resource requirements, effects on the environment and surrounding communities, financial requirements and the kinds of investors and developers involved. Consequently, different economic incentives and regulatory policies for the two types of development frequently will be appropriate.

The Hawaii Legislature already has dealt with major issues in large-scale power development by adopting income tax incentives, substantially reducing the excise tax, exempting certain types of private geothermal power development from utility regulation, and assuring industrial geothermal heat/power cogenerators a market for their excess electricity. Consequently, many of the suggestions for legislative action presented here address the problem of small-scale developers, in particular, regulatory burdens and financing. Suggestions on permitted land uses, property taxation and water regulations pertain to all types of geothermal development. In addition, legislative options regarding ownership and public development authorities are offered for discussion.

LAND USE & LEASINGA. Land Use

Hawaii has a comprehensive Land Use Law, dividing the state into four use categories: urban, rural, agricultural and conservation. Urban areas are administered by the counties; state (DLNR) and county jurisdictions overlap with regard to special use permits in rural and agricultural areas; the state administers conservation districts.

Two policy concerns emerge regarding the special use permits. First, as has already happened, the DLNR and a county may disagree on the need for or the issuance of a special use permit for geothermal activities. Clarification of their respective authority in such situations would be helpful.

Second, requiring all geothermal activities to obtain special use permits in agricultural and rural districts may be unduly burdensome. Land classification and use permits ensure that development activities are compatible with the land and existing uses. But geothermal exploration and development also are subject to environmental assessment, with a full impact statement required if significant effects on the environment are likely. Coordination of these two regulatory procedures could ease permitting without violating land use objectives.

Pending Legislation: H. B. 504, carried over from the 1979 session, would make geothermal exploration, including deep drilling, a permissible use within agricultural districts.

Suggested Actions

- (1) Clarify the respective authority of DLNR and the counties in cases of dispute over special use permits for geothermal activities.
- (2) Include geothermal exploration and small-scale development projects as permitted uses in agricultural and rural districts. If all geothermal exploration activities are found to be compatible with agricultural or rural districts, legislation like H. B. 504 certainly is warranted. Beyond exploration, certain kinds of development, particularly small-scale projects, also may be suitable, and including such development as a permitted use in agricultural and rural districts would be helpful.

Objections to making geothermal exploration or development permitted uses may be raised, however, due to their potential diversity in size and effects on the environment. The problem is to sort out permissible geothermal activities from those that should require special use permits. Coordination of land use regulations with the state environmental review process appears to be one way to accomplish this.

- (3) Make any geothermal exploration or development project a permitted use in agricultural and rural districts if DLNR determines that the activity is not likely to have a significant effect on the environment. By integrating environmental assessment and land use permitting, geothermal operations having minimal effects on the environment could be authorized without the burden of special use permits. Projects likely to have significant environmental effects, and thus requiring a full impact statement, would not be permitted uses and would be subject to special use review.

B. Leasing

Hawaii may wish to refine its geothermal leasing policy to accommodate the special nature of small-scale direct uses as greenhouses, aquaculture facilities and food processing plants. Presently such operations would require a mining lease obtained through competitive bidding as well as a \$10,000 bond. These requirements may constitute an unnecessary impediment to small-scale development.

Suggested Actions

Authorize the Board of Land and Natural Resources to issue non-competitive geothermal leases for small-scale, direct use projects. The legislation should provide for a simplified leasing process, with a negotiated rental fee, modest bonding requirements corresponding to the intended development, and discretion to eliminate royalties.

FINANCIAL INCENTIVESA. Property Tax

Whether property taxation becomes a burden for geothermal development depends on the method of assessment and when in the development process the levy is imposed. If the resource itself is assessed prior to production, the property tax can be comparable in magnitude to the federal income tax, but more burdensome in being imposed without regard to the current profitability of the enterprise.

Pending Legislation: H. B. 395, carried over from the 1979 session, would provide for the deferral of property and excise tax payments through an elaborate land classification procedure. The bill does not address the effects of the property tax on small-scale development or the important issue of how property is assessed.

Suggested Actions

- (1) Assess only the surface facilities and down-hole well costs of small-scale, direct use projects for property taxation. This approach essentially would treat the low-temperature resource as a water not subject to property taxation.
- (2) The property tax on large-scale geothermal development should be applied to the assessed value of surface facilities, well costs and geothermal resources commercially produced at the well head. This method of assessment would not defer property taxes. Instead, it limits taxation to the demonstrated market value of the resource upon commercial production. It is a common method of assessment in the Western states for oil and gas properties.

The distinction between types of development for purposes of taxation may be made by end use (electric vs. direct use), temperature of the resource being produced (e.g., 120° C down-hole temperature threshold) or the rate of energy production (BTU/hr).

B. Loan Program

Once a commercial resource has been discovered, a state geothermal development loan fund could assist counties and other developers sustain the costs of production, wells and utilization facilities. The federal Geothermal Loan Guarantee Program offers this assistance to large-scale developers, but the administrative costs make it unavailable to small projects.

Suggested Actions

Establish a state geothermal loan program for small-scale, direct use projects. Qualification for loans should be more lenient than commercial loans, and special efforts should be made to advertise the availability of such loans and simplify the application process. A more comprehensive Small-Scale Energy Loan Program to encourage small solar, wind, biomass and geothermal developments also might be considered.

REGULATORY REQUIREMENTSA. Water Law

Groundwater is subject to state regulation mainly within "designated groundwater areas," although all well-drillers must file a notice with the Board of Land and Natural Resources (BLNR). Within designated areas, which currently includes only Pearl Harbor, three types of groundwater uses are recognized: domestic, preserved, and permitted. Domestic users need not obtain a permit; preserved uses are those existing prior to designation of the area and subsequently certified; permitted uses are inferior to the other categories and obtain a priority vis-a-vis each other.

Permits which would interfere with superior uses are approved if the applicant is able to furnish replacement water to the injured party. In addition, BLNR may exempt certain types of uses from the permit requirement. On state lands, a "water license" may be acquired for project development, although the volume of water use is not regulated except in areas of shortage. The license must be sold at public auction and is subject to legislative revocation.

Suggested Actions

- (1) Include geothermal space heating/cooling and domestic hot water heating within the definition of "domestic" use, thereby giving such use a preferred status.
- (2) Declare geothermal uses where a heat exchanger is employed, with subsequent reinjection, to be exempt from the permit requirement.

B. Drilling Regulations

Drilling regulations should be streamlined and should distinguish between wells on a case-by-case basis. That is, wells tapping a zone of corrosive, high-temperature or pressure fluids require stringent controls. Other, less potentially dangerous wells should not be subject to similar burdens.

The DLNR has retained its discretionary authority to establish well requirements on a case-by-case basis in its Regulation No. 8, but without establishing special procedures for non-critical wells. Also, the current requirement of a \$50,000 bond per well (\$250,000 blanket bond) seems excessive for low-temperature, shallow wells intended for direct heat applications.

Another concern is the overlapping jurisdictions of DLNR and the county boards of water supply. For example, both DLNR and the Honolulu Board of Water Supply have regulations relating to notice, plan of operations, casing, logging and abandonment, as well as a \$100.00 filing fee.

Suggested Actions

- (1) Through legislative resolution, direct DLNR to examine the need for a simplified regulatory "fast track" for shallow or low-temperature geothermal development. The division should be instructed to establish a special procedural track, if needed, and to report back to the legislature its findings and measures adopted.
- (2) Through legislative resolution, direct DLNR to work with the county boards of water supply to set up coordinated geothermal well-permitting procedures, including single application and filing fee, and to report back to the legislature on the measures adopted.

OWNERSHIP

Hawaii has declared geothermal resources to be mineral. According to this designation, the state owns those geothermal resources underlying state lands (about 38 percent of the state) and those under private lands where the state retains an explicit or implied mineral reservation.

Ownership claims nevertheless are disputed, particularly for lands without explicit mineral reservation to the state, and legislation meant to resolve these disputes has been introduced.

Pending Legislation: Two bills were introduced and carried over from the 1979 legislative session:

- (1) H. B. 396 would declare state ownership of all geothermal rights in the state and prohibit any person from developing, using or exercising any ownership rights to the resource without obtaining a lease from the state.
- (2) S. B. 1781 would exclude geothermal resources found on private lands from the provision (Section 182-2 HRS) reserving mineral rights to the state.

Suggested Actions: Two options are suggested for consideration.

- (1) No action. This approach would leave resolution of ownership disputes to the courts.
- (2) Suspend state claim to geothermal resources on private lands for which the state has no explicit mineral reservation; in addition, institute a severance tax, (e.g., 5 percent) on all geothermal resources hotter than 120° C down-hole temperature. This approach would waive the state's claim to geothermal resources on certain private lands and would levy a severance tax on high-temperature geothermal resources produced from those lands. For geothermal resources produced under state lease, royalties serve in lieu of any severance tax (Act 135-1978).

VI.

DIRECT INVESTMENT

A. Funding for Research and Development

Hawaii has been a leader in funding R & D for geothermal and other alternative energy development. Continued support, particularly for geothermal resource assessment on all the islands, appears warranted. Considerable support was expressed at the Workshop on Geothermal Energy, September 19, 1979, for a step-out well in Puna. Several pieces of legislation for geothermal funding were introduced in 1979 and carried over.

Pending Legislation:

SB No. 974. Appropriates \$30,000 for research and development of geothermal fluids in combination with biomass energy projects.

SB No. 987. Appropriates \$150,000 to initiate a study to determine the feasibility of obtaining liquid fuel from biomass products, using the heat and other by-products from a geothermal well.

HB No. 502. Appropriates \$600,000 to be expended by the department of planning and economic development for plans, designs, and construction of a research facility for non-electric applications; assessment of geothermal resources statewide; and the State's share of the cost of a step-out well in Puna.

Suggested Actions

Specific funding recommendations are outside the scope of this policy review, but continued, aggressive support for geothermal R & D generally, and for direct use in particular, is suggested.

B. Public Energy Development Authority

Presently almost all of Hawaii's energy supply is imported oil. Understandably, this dependency is deemed intolerable and 1990 has been set as the date for energy self-sufficiency. The obstacles to this goal are considerable, for even though the State has abundant resources in geothermal energy, solar, wind, biomass, and ocean thermal energy, the costs of developing these resources are great, while the market is completely local.

In most states, large investments in electric power plants, coal mines or oil shale plants can be contemplated because large markets for energy are within easy reach. In Hawaii, private investors must deal with a very limited market, and this constraint may preclude aggressive development of alternative energy sources.

Due to Hawaii's tremendous exposure to interruptions of its imported energy supply, the public interest may warrant rapid development of indigenous energy sources by public entities. The State already has authorized the counties to develop geothermal and other alternative energy resources (Act 36-1978). Direct involvement of the State also may be desirable.

Suggested Actions: Rather than actual policy suggestions, two options are offered for discussion.

- (1) Establish a State geothermal (or indigenous) energy development financing authority. The authority would be empowered to conduct exploration, develop resources, build facilities and issue loans for the development of geothermal (indigenous) energy sources. The authority would not be permitted, however, to actually operate facilities and market energy. Instead, facilities developed by the authority would be leased or sold to counties, utility companies or other private firms.

Due to its overriding concern with the public welfare, an authority of this type could invest in projects too low in financial return or too risky to be considered by private investors. For example, a geothermal power plant might be built by the financing authority and leased to the county or public utility. The risk of reservoir failure or volcanic damage would be borne by the authority.

A geothermal financing authority of this type has been proposed in the California Geothermal Energy Development Authority Act (A.B. 1961 - 1979).

- (2) Create a State indigenous energy development authority. The authority would have the same powers as the finance authority just outlined, but would also be directed to operate facilities and market energy directly to utilities and industrial consumers. New York and Alaska have established State power authorities, and the Alaska legislation is suggested as a reference.

Appendix 12

GEOTHERMAL POLICY REPORT FOR ALASKA:
Preliminary Options and Recommendations

Energy Program -- Geothermal Project
National Conference of State Legislatures
1405 Curtis Street, Suite 2300
Denver, Colorado 80202
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INTRODUCTION

The NCSL Geothermal Project is assisting the Alaska Legislature in a review of geothermal policies. To date project staff have conducted field research on two occasions, as well as participating in a public workshop (9/13/79) co-sponsored by the Joint Special Committee on Renewable Energy Policy. As a result of these activities NCSL proposed a State Technical Assistance Program (see Appendix A) which was ratified by the committee leadership (9/14/79).

This document has been prepared pursuant to the state workplan as background material for a committee meeting (11/8/79) intended to consider the policy recommendations herein. The study areas identified in the state workplan are treated as follows:

I. Proposed Comprehensive Geothermal Resources Act

- includes resource characterization (definition), resource access (leasing), water law, permitting and well regulation, and resource allocation.

II. Financial Package

- includes a review of various tax and other incentives for geothermal producers and users, as well as suggestions regarding a state geothermal fund (this section should be considered in conjunction with the NCSL Small-Scale Hydro Policy Report which contains additional material regarding state financing of energy development).

III. District Heating

- includes a proposal to authorize publicly-owned heating districts, as well as a review of utility regulatory issues.

I. PROPOSED GEOTHERMAL RESOURCES ACT

Synopsis

It is recommended that the existing geothermal statute (38.05.181) be repealed and re-enacted in a simplified form. The NCSL draft geothermal statute is proposed for discussion purposes.

The proposed act would:

- (1) redefine geothermal resources via a temperature threshold (120°C/248°F)
- (2) provide for mineral leasing of geothermal resources on state lands
- (3) establish statewide regulatory authority in the Division of Minerals and Energy Management over geothermal drilling activity
- (4) indicate the applicability of the Water Use Act (46.15) to geothermal development
- (5) provide for simplified access to state lands for low-temperature development
- (6) establish regulatory authority over low-temperature development in the Division of Forest, Land and Water Management

The overall design of the proposed act is to distinguish between the development of high-grade thermal resources by major projects (e.g., electrical generation, industrial process heat) and the development of "hot groundwater" for small-scale direct uses (e.g., space heating, greenhouses, aquaculture). The proposed act would also establish the relationship of geothermal development to existing water uses. Certainty, simplification of procedures and stimulation of development are the objectives.

DISCUSSION DRAFT

TITLE 38. PUBLIC LANDS

Chapter _____. Geothermal Resources Act

Article

1. Declaration of Policy and Definitions
2. Geothermal Leasing and Regulation
3. Low-Temperature Development

ARTICLE 1. DECLARATION OF POLICY AND DEFINITIONS

Sec. 1

A. It is declared to be in the public interest to foster and promote the discovery, development, production, utilization and disposal of geothermal resources in the state of Alaska in such a manner as will prevent waste, provide for maximum economic recovery, protect correlative rights, and safeguard the natural environment and the public welfare.

B. It is declared to be in the public interest to foster and promote, under existing law, the utilization of the thermal energy contained in the groundwaters of the state of Alaska in an efficient and environmentally sound fashion.

Sec. 2

This act shall apply to all lands in the state of Alaska, including federal and Alaskan Native lands to the extent allowed by law. When any of these lands are committed to a unit agreement involving lands subject to federal jurisdiction, the operation of this act or any part of this act may be suspended, provided that the unit operations are regulated by the United States and that the conservation of geothermal resources is accomplished under such unit agreement.

Sec. 3

Administration of this chapter shall be under the principle of multiple use of public lands and, insofar as feasible, shall allow for the coexistence of other permits or leases of the same lands for other purposes. Leases or permits issued for lands withdrawn or acquired in aid of the functions of the Department of Natural Resources shall carry such conditions as will conform the lease operations to the purposes of such lands.

Sec. 4

A survey of the state's geothermal resources shall be performed by the state geologist and included in the complete geological survey of the state authorized by AS 41.07.020. A statement of the progress of the geothermal resources survey shall be contained in the annual report required by that section. A geothermal resources file shall be maintained and made available to the public in the offices of the State Geological and Geophysical Survey (and/or the State Division of Energy and Power Development).

Sec. 5

As used in this act, unless the context requires otherwise:

- A. "byproduct" means dissolved or entrained minerals and gases (exclusive of hydrocarbon substances and helium) associated with geothermal resources, and demineralized water;
- B. "correlative rights" means the right of each geothermal owner in a geothermal system to produce without waste his just and equitable share of the geothermal resources in the geothermal system;
- C. "division" means the Division of Minerals and Energy Management in Article 2 of this chapter and means the Division of Forest, Land and Water Management in Article 3 of this chapter;
- D. "geothermal area" means the general land area which is underlain or reasonably appears to be underlain by geothermal resources;
- E. "geothermal fluid" means brines, water and steam naturally present in a geothermal system;
- F. "geothermal resources" means (1) the natural heat of the earth at temperatures greater than 120 degrees Celsius; (2) the energy in whatever form, present in, resulting from, created by or which may be extracted from that natural heat, including pressure; (3) the material medium containing the energy; and (4) all dissolved or entrained minerals and gases which may be obtained from the material medium, but excluding hydrocarbon substances and helium;
- G. "geothermal system" means any strata, pool, reservoir or other geologic formation containing geothermal resources;
- H. "material medium" means geothermal fluids or water and other substances artificially introduced into a geothermal system to serve as a heat transfer medium;
- I. "operator" means any person drilling, maintaining, operating, producing or in control of any well;
- J. "owner" means any person who has the right to drill into, produce and make use of geothermal resources;
- K. "person" means any individual, business entity, political subdivision or body politic of this or any other state;

- L. "waste" means any inefficient, excessive or improper production, use or dissipation of geothermal resources, including, but not limited to:
- (1) drilling, transporting or storage methods that cause or tend to cause unnecessary surface loss of geothermal resources;
 - (2) locating, spacing, drilling, equipping, operating, producing or venting of any well in such a manner that results or tends to result in reducing the ultimate economic recovery of geothermal resources.
- M. "well" means any well drilled, converted or reactivated for the discovery, testing, production or subsurface injection of geothermal resources, of groundwater valuable for its thermal energy.

ARTICLE 2. GEOTHERMAL LEASING AND REGULATION

Sec. 1

A. The Division of Minerals and Energy Management shall have and is hereby given jurisdiction over all persons and property, public and private, necessary to enforce the provisions of this article, and shall have the power and authority to make and enforce rules, regulations and orders reasonably necessary to carry out the purposes of the act.

B. Any affected person may apply for a hearing before the division, or the division may initiate proceedings upon any questions relating to the administration of this article, and jurisdiction is hereby conferred upon the division to hear and determine the same and enter its rule, regulation or order with respect thereto.

Sec. 2

The state of Alaska shall own all geothermal resources where it has title to the minerals or subsurface estate. Rights to explore for, develop and utilize geothermal resources owned by the state of Alaska may be obtained solely in accordance with the provisions of this article.

Sec. 3

The division may designate geothermal resource areas and declare certain of these, or portions thereof, as a "competitive geothermal resource area," each of which shall contain at least one well capable of producing geothermal resources in commercial quantities.

Sec. 4

A. The division may, under rules and procedures it shall adopt, grant prospecting permits and leases to any qualified person in order to explore for, develop or utilize state-owned geothermal resources.

B. Where title to the surface is held by a person other than the state, such person shall have a preferential right to a prospecting permit or lease for such parcel.

Sec. 5

A. On lands which have not been designated as a geothermal resource area, the division shall issue a prospecting permit to the first qualified applicant.

Such permit shall convey an exclusive right, for a period of two years, to prospect for geothermal resources on lands included within the permit. The division may revoke a permit should it find that the permittee has failed to diligently prosecute efforts to discover geothermal resources.

B. A holder of an exclusive prospecting permit shall have the right, within the permit term or thirty days thereafter, to convert such permit to a lease. Should the lands included within the permit be declared a "competitive geothermal resource area" during the permit term, the permittee must make application for a lease within thirty days or forfeit his conversion privileges and his exclusive right to prospect.

C. On lands which have been designated a geothermal resource area, prospecting permits may be granted on a non-exclusive basis for a one year term. Such permits may, at the discretion of the division, be renewed annually. Holders of non-exclusive prospecting permits shall have no right to convert such permits to a lease; however, the division may allow expenditures made under the permit to be credited against lease payments for any lease covering the same lands, which is subsequently issued to the permittee.

Sec. 6

A. On lands which have not been declared a "competitive geothermal resource area," and which are not included under an exclusive prospecting permit, the division may issue a geothermal lease to the first qualified applicant.

B. On lands declared to be within a "competitive geothermal resource area," and which are not included under an exclusive prospecting permit, the division may issue geothermal leases by public auction to the highest qualified bidder. At the discretion of the division, competitive lease sales may be by oral or sealed bid, on the basis of a cash bonus, profit share or other single factor.

Sec. 7

A. The division shall, on all permits and leases, attach such conditions as it shall deem necessary to provide for multiple use of state lands, protect the rights of other persons holding an interest in the same lands, prevent waste and safeguard the natural environment and the public welfare.

B. The division shall require a geothermal permittee or lessee to compensate the owners of prior interests in the same lands for damage to those interests, or to post a sufficient bond pending judicial determination of the matter.

Sec. 8

A. Prospecting permits and leases granted under this article shall normally be issued on parcels at least 40 acres in size, but in no case more than 2560 acres in size.

B. No person shall own, or hold an interest in, geothermal leases covering more than 51,200 acres; except that leases in commercial production, individually or in concert, shall not be counted against this acreage limitation.

C. All prospecting permits and leases shall be subject to an annual rental, payable in advance, of at least one-dollar per acre.

Sec. 9

- A. Geothermal leases shall be issued for a primary term of ten years and shall be renewed for an additional term of five years if the lessee is actively engaged in drilling operations. Geothermal leases shall be valid for the duration of commercial production, up to a term of 40 years.
- B. The division may renegotiate the provisions of a geothermal lease, including rentals and royalties, beginning 15 years after the initiation of commercial production and at 10 year intervals thereafter.

Sec. 10

- A. The division shall charge a royalty of at least 10% but not more than 15% on the gross revenues derived from the production, sale or utilization of geothermal resources under a state lease. It shall also charge a royalty of at least 2% but not more than 10% on the net proceeds derived from the production, sale or utilization of byproducts under such lease. In no case shall the combined royalties on a lease be less than two-dollars per acre.
- B. The division may, at its discretion and in the public interest, reduce, suspend or waive the royalties otherwise due under a state lease. In such cases, the lessee shall pay a minimum annual rental of three-dollars per acre.

Sec. 11

- A. The division shall promulgate a development program on each discernible geothermal system, including well-spacing and pooling orders, limits on production and reinjection requirements, in order to prevent waste, promote maximum economic recovery and protect correlative rights.
- B. Lessees on a geothermal system, or part thereof, may enter into a unit agreement for cooperative development, with the approval of the division. The division may suspend or modify its development program in accord with such unit agreement.
- C. Should the owners of two-thirds of the leasehold interests in a geothermal system ratify a unit agreement approved by the division, the division may enforce the agreement as to lessees not a party to the agreement by allocating production under the principle of correlative rights and by apportioning costs and revenues.
- D. Lease operations under a well-spacing and pooling order or an approved unit agreement shall be deemed to be in compliance with individual lease requirements.

Sec. 12

- A. The division shall promulgate regulations covering the siting, spacing, drilling, casing, cementing, testing, logging, operating, producing and abandonment of geothermal wells so as to prevent:

- (1) geothermal resources, water or other fluids, and gases from escaping into strata other than that in which they are found (unless in accordance with an approved reinjection program);
- (2) pollution of surface and groundwater;
- (3) premature cooling of any geothermal system by water encroachment or otherwise;
- (4) blowouts, cavings and seepage; and
- (5) unreasonable disturbance or injury to neighboring properties, prior water rights, human life, health and the natural environment.

B. The division shall cause the operator of any geothermal well or wells to file adequate individual or blanket surety bonds to ensure compliance with its regulations.

C. The division shall have the right to enter upon any property, public or private, to inspect a geothermal operation for compliance with its regulations.

D. Geothermal wells regulated by the division shall be exempt from Oil and Gas Commission jurisdiction under AS 31.05.030(g).

Sec. 13

A. Operators shall, prior to drilling a geothermal well, file a notice of intent with the Chief Officer of the Water Management Section of the Department of Natural Resources. Such notice shall contain sufficient information to enable the Chief Officer to determine whether the operation of such well will interfere with and impair an existing water right.

B. Operators shall not commence the drilling of a geothermal well without the approval of the Chief Officer, who shall grant such consent upon finding that:

- (1) the proposed geothermal well operation will not significantly interfere with or substantially impair an existing water right; or
- (2) the geothermal owner has acquired through purchase or condemnation adequate water rights to offset the potential interference or impairment; or
- (3) the geothermal owner has obtained and dedicated an equivalent amount of replacement water of comparable quality to the affected party or parties.

The Chief Officer shall retain his jurisdiction, including the authority to suspend well operation, in the event of unforeseen interference which occurs subsequent to his approval.

C. The withdrawal of geothermal fluids from a geothermal well and its sale or utilization for primary energy production shall not otherwise be subject to the Water Use Act (AS 46.15). The secondary use of spent geothermal fluids or of demineralized water obtained as a byproduct shall be subject to the provisions of the Water Use Act. However, the geothermal owner shall have a preferential right to appropriate such geothermal fluids or demineralized water, in order to make beneficial use thereof.

ARTICLE 3. LOW-TEMPERATURE DEVELOPMENT

Sec. 1

A. The Division of Forest, Land and Water Management shall have and is hereby given jurisdiction over all persons and property, public and private, necessary to enforce the provisions of this article, and shall have the power and authority to make and enforce rules, regulations and orders reasonably necessary to carry out the purposes of the act.

B. Any affected person may apply for a hearing before the division, or the division may initiate proceedings upon any questions relating to the administration of this article, and jurisdiction is hereby conferred upon the division to hear and determine the same and enter its rule, regulation or order with respect thereto.

Sec. 2

A. It is hereby declared that the beneficial use of groundwater includes the extraction for sale or use of thermal energy contained therein for domestic, commercial, industrial, agricultural, aquacultural or other purposes approved by the division.

B. Priority of appropriation includes the right to preserve thermal aspects of groundwater use from subsequent impairment.

C. The utilization of groundwater for thermal purposes shall be governed by the provisions of the Alaska Water Use Act (AS 46.15) and regulations promulgated thereunder.

Sec. 3

A. The division shall have the authority to issue a special land use lease to any qualified person who applies to use the surface of a state land parcel to construct a facility utilizing groundwater for thermal purposes, or utilizing spent geothermal fluids in a secondary application.

B. Prior to the issuance of such lease, the division shall determine that there is available unappropriated groundwater or spent geothermal fluids sufficient to achieve the purposes of the lease. In the case of groundwater, the appropriation shall be made in the name of the state of Alaska and dedicated to the benefit of the leasehold. Upon termination of the lease, the water right shall revert to the state, unless the division grants an extension of the water right for good cause and in the public interest.

Sec. 4

A. The division shall exercise discretion with regard to the term, renewal and acreage (not to exceed 160 acres in size) of any special land use lease issued under this article. Such conditions shall correspond to the intended use to be made of the state parcel. The division shall attach such other conditions to the lease as to protect the public interest and conform the lease operation to other established uses of such lands.

B. Lease payments to the state of Alaska shall be on the basis of an annual rental, payable in advance, or on the basis of a profit share, such payments to be negotiated between the lease applicant and the division. In no case shall such lease payments total less than three-dollars per acre.

Sec. 5.

A. The division shall promulgate such regulations as are necessary to control the drilling of any groundwater wells for thermal purposes so as to prevent:

- (1) groundwater from escaping into strata other than that in which they are found (unless in accordance with an approved reinjection program);
- (2) pollution of surface and groundwater;
- (3) impairment of prior water rights by premature cooling, or reduction in quality or quantity; and
- (4) unreasonable disturbance or injury to neighboring properties, human life, health and the natural environment.

B. The division shall have the authority to require any operator of a groundwater well for thermal purposes to file a notice of intent and receive the approval of the division prior to commencing actual drilling. The division may require the maintenance of such records and well logs as it may require and may enter upon any property, public or private, to inspect the operations for compliance with its regulations.

C. If the division finds that an encounter of oil, gas or other hazardous substance is likely to result from well drilling, the provisions of AS 31.05.030(g) shall apply.