SCOMM

#44:32

Alaska Center for the Environment
1069 W. 6th Avenue
Anchorage, Alaska 99501
(907) 274-3621

Mark - Do you think we should print this? B

Brian,

You once mentioned that your committee on the alternate power study might be able to publish the Lovins proceedings. Here are/is good typed copy of my conversation/interview with Amory, his lecture at APU and the Soft path study workshop in Fairbanks. They may need some final editing, but are basically ready to go. I would think 50 copies would be adequate — 100 would be best.

A for AE is off. The mailing is out. Jane Galblum is organizing legislative priorities w/ Fairbanks Directors.

100% Recycled Paper

I regret that it has moved so slowly. We have been not a little hampered by holidays, weather & the mid-winter slow down/hypernation. I would guess that legislators are not allowed such cycles.

Be well, and good luck. Don't hesitate to call if you need anything. With the hiring of a new librarian for ACE, (my good right arm, Jennifer departed in a burn-out frenzy this January) we will be on line again & somewhat more dependable.

Peace,
Nancy

HOUSE POWER ALTERNATIVES
STUDY COMMITTEE
610F Gruening Building
University of Alaska
Fairbanks, Alaska 99701

December 28, 1979

Chris Conway
Energy Probe
12 Madison Avenue
Toronto, Ontario
CANADA

Dear Chris:

Unfortunately, Legislative Affairs in Juneau has informed me that they were unsatisfied with the contract between Energy Probe and the House Power Alternatives Study Committee. I had neglected to specify that we were talking about United States dollars, so I have changed page 2 of the contract to correct that.

Also, enclosed is an application for an Alaska State Business License. The cost is U.S.$25. The Juneau office informed me that you were ineligible to do business here unless you had applied for the license. It's really no big matter, except that there's a possibility that you will be liable for taxes here. Check with your accountant on that.

Please sign the contract right away and forward it in the enclosed envelope. Also, the Department of Revenue must receive your business license application before you can get paid.

When you submit a bill, please send it to the committee and Brian will authorize payment and forward it to Legislative Affairs.

We will be here in Fairbanks until January 7, so it might be best that you send correspondence to Brian to his Juneau address: Pouch V, Juneau, Alaska 99811. Mark Wittow, aide to the committee, will return soon so I probably will not be dealing with you anymore. However, if you or Bob make it to Alaska again, you can reach me through Brian.

Sincerely,

Glenda J. Straube

Glenda J. Straube
Administrative Assistant

Happy New Year!

CONTRACT BETWEEN

STATE OF ALASKA
LEGISLATIVE AFFAIRS AGENCY
Pouch Y, State Capitol
Juneau, Alaska 99811

and

ENERGY PROBE
43 Queens Park Cres. E.
Toronto, Ontario M5S 2C3

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, on behalf of the Alaska State Legislature's House Power Alternatives Study Committee, hereinafter referred to as the AGENCY, and ENERGY PROBE, hereinafter referred to as the CONTRACTOR.

THE ABOVE PARTIES TO THIS CONTRACT, in consideration of the covenants hereinafter contained, hereby mutually agree to the terms and conditions hereinafter set forth:

CLAUSE I - STATEMENT OF WORK

(A) Scope of Work
Set out in Attachment A

(B) Schedule

1. Task 1(A) of Attachment A shall be completed by December 10, 1979.
2. Task 1(B) of Attachment A shall be completed by January 7, 1980.
3. Task 1(C) of Attachment A shall be completed by April 1, 1980.
4. Task 1(D) of Attachment A shall be completed by May 1, 1980.

CLAUSE II - PERIOD OF PERFORMANCE

The period of Performance shall be retroactive to November 1, 1979, and terminate on July 1, 1980.

CLAUSE III - TERMINATION

This contract may be terminated by either party upon 30 days notice to the other party.

CLAUSE IV - PROJECT DIRECTOR

The Project Director shall be the Honorable Brian Rogers, Co-Chairman of the House Power Alternatives Study Committee.

CLAUSE V - COMPENSATION AND METHOD OF PAYMENT

(A) Payment for Task 1(A) and 1(B) of Attachment A shall not exceed U.S.$4,000.00 and shall be payable immediately upon billing by the CONTRACTOR.

(B) Payment for Task 1(C) of Attachment A shall not exceed U.S.$4,000.00 and shall be payable immediately upon billing by the CONTRACTOR.

(C) Payment for Task 1(D) of Attachment A shall not exceed U.S.$2,000.00 and shall be payable immediately upon billing by the CONTRACTOR.

(D) Total compensation shall not exceed U.S.$10,000.00.

(E) The CONTRACTOR shall receive no payment in addition to that specified in Clause V(D) for travel and related expenses unless the Project Director requests that the CONTRACTOR travel between the CONTRACTOR'S place of business and Juneau.

CLAUSE VI - RECORDS, DOCUMENTS, AUDITS

The CONTRACTOR shall maintain accurate records, including detailed time records, as may be required by the AGENCY. The records are subject to inspection by the Project Director of the AGENCY at all reasonable times. All documents, reports and writings produced in the course of the work performed under this contract are, upon delivery to the Project Director or the AGENCY or at termination of this agreement, the property of the AGENCY, and/or in the public domain; provided that the CONTRACTOR will have the right to use any such materials for purposes of writing about or discussing the issues.

CLAUSE VII - ALL WRITING CONTAINED HEREIN

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on the dates indicated.

CONTRACTOR

Chris Conway — Date
Energy Probe

LEGISLATIVE AFFAIRS AGENCY

Myrton R. Charney — Date
Executive Director

Accepted:

Rep. Brian Rogers — Date
Co-Chairman, House Power
Alternatives Study Committee

Approved as to Form:

Agency Legal Counsel — Date

ATTACHMENT A

1. Scope of Work

A. Examine current state and structure of the ISER electricity demand forecast. Collect data and information in order to perform a more detailed investigation of the forecast in conjunction with ISER forecasting personnel.

B. Prepare report to ISER forecasting staff which states an evaluation of the current model, identifying areas in which it should be revised and improved. Outline any additional data requirement necessary for an in-depth analysis of the forecast.

C. Maintain an ongoing analysis and development of alternative coefficient and independent variable values and an ongoing analysis of structural adequacy of model.

Continue involvement and discussions with ISER personnel resulting in development and evaluation of alternative model structure and components.

Perform a sensitivity analysis on electricity demand as it relates to different market share and efficiency assumptions.

D. Examine normative context within which the ISER forecast will be introduced, with specific reference to the effects of proposed or potential policies on electricity growth and the impact of these policies on preferred model structure and interpretation.

Submit final report outlining: the revisions (if any) that were made to the ISER forecast during the course of Energy Probe's involvement and the rationale for these revisions, changes that were recommended by Energy Probe but which were not incorporated into the model and the effects (if any) of these, the appropriate role and interpretations of the model results given these revisions.

2. Other Considerations

A. CONTRACTOR may provide additional services upon the request of the Project Director.

B. Scope of Work will include travel for 4 round-trips between Toronto and Alaska.

MEMORANDUM
October 21, 1979

TO: Representative Brian Rogers and Representative Hugh Malone, Co-Chairmen of the House Power Alternatives Project Committee
FROM: Mark Wittow MW
RE: Activities of the Committee, Status of Power Alternatives Study

A. Alaska Power Authority's Selection of a private firm to carry out the Susitna Phase I Plan of Study

The committee analyzed the three voluminous proposals submitted to the Authority by Acres American, International Engineering and Harza. Larry Katkin, a geotechnical consultant, was retained by the committee to review the quality of the geotechnical aspects of the proposals. The committee focused on the sections of the study dealing with power market demand projections, power alternatives, environmental impacts and public participation.

Rep. Rogers presented detailed testimony to the board of the Authority. The testimony strongly supported the choice of Acres American for several reasons:

1. Acres possessed the greatest experience with sub-Arctic construction and planned to retain the most experienced firm in Alaska for geotechnical work.
2. Acres planned to spend a greater portion of the budget in-state than any of the firms.
3. The Acres proposal contained the most objective and detailed studies of power market demand and power alternatives.
4. The Acres proposal provided for the most extensive and direct public participation process.
5. The Acres proposal provided for the most expert, objective check on the quality of seismic work.

Concurring with the committee analysis and other testimony, the Board chose Acres to be the firm to carry out the Plan of Study if the Board chooses to have a private firm, and not the Army Corps of Engineers, build the project. The secision on whether to use the Corps or a private firm will be made at the end of this month. (Committee testimony supported the use of a private firm, due to the greater degree of flexibility and control that the state would have.)

B. Basic Study Design

The legislation authorizing the Power Alternatives Study mandated the completion of a $200,000 study discussing the assumptions of the Susitna project and the feasibility of alternatives including coal, natural gas and small hydro.

A complete analysis of the alternatives has been put off until next year, when the Power Authority will have to review all of the available alternatives in detail as part of the Phase I FERC licensing procedure. The committee will attempt a detailed analysis of the power alternatives section of the Susitna Plan of Study at that point. The Committee's efforts to date have focused on the areas where the most serious gaps exist, and the areas where work could most constructively be accomplished before the April 15, 1980 deadline for the report.

Part of the explanation for reworking the structure of the study lies with the demise of the Legislative Research Division. The $200,000 study was originally to be managed by the Division, along with a concurrent appropriation of $150,000 for a study of the in-state use of natural gas. The funding for the Susitna study was not freed up until the August Legislative Council meeting, when you and Representative Malone were appointed to be committee to manage the study. The additional $150,000 appropriation for gas use is still in limbo. Since August, you and I have talked with a variety of interested parties to see what could best be accomplished before April 1980.

The Alaska Power Authority has been receptive to the concerns of the Committee, and we have decided to cooperate with them as much as possible in order to prevent duplication of effort while providing criticisms of their work at the most useful times. The key areas of concern before April will include work in the areas of power market demand projections, conservation, renewable energy sources and natural gas, as well as a broader look at the basic financing and management issues involved in providing power to the Railbelt area.

The Committee will present a report to the legislature on April 15, 1980, as specified in the legislation. However, some of the sections will still be in draft form then. A final report should be presented sometime in May, although additional work will be necessary after that date if the Power Alternatives Study is to continue checking the work of the Power Authority.

C. Specific Study Contracts

1. Power Market Demand Projections -- by the University of Alaska Institute for Social and Economic Research.

The section of the study is being done in cooperation with the Power Authority. They have shared in the design of the contract,

and will participate in the funding. This portion of the study will also serve as the power market demand projection for the Susitna Phase I Plan of Study.

The particulars of the scope of work include methodological review, data collection and updating, economic projections, assessment of interfuel substitution possibilities, electricity use projections, and an assessment of the probabilities of the various scenarios and projections. The Institute will hold a workshop in December to review the assumptions behind the economic projections, and will cooperate with a variety of other Committee consultants.

2. Review of the ISER Demand work

Brad Tuck, an economist with te University of Alaska School of Business, and Energy Probe, of Toronto, will separately analyze and criticize past demand projections as well as the work ISER is undertaking for the committee.

3. Potential of Conservation and Renewable Energy

The Alaska Center for Policy Studies will manage the various portions of this section of the study. The work will include an analysis of the end uses of energy in the Railbelt area, a determination of the potential for energy conservation and the use of renewable energy sources, a discussion of the social, economic and political measures necessary to achieve the conservation and renewable energy potential, and work on conservation legislation for the 1980 session (HB 364). A variety of subcontractors will carry out the specific tasks.

4. Natural Gas

This portion of the study will address institutional limitations on the future use of natural gas for power generation, the future price and availability of gas, the efficiency of gas-fired generation facilities, and the potential for the use of natural gas in direct consumer applications. A proposal by economist Greg Erickson is pending.

5. Overview

This section would address the historical background of the supply of electric power in the railbelt, survey the basic policy questions at stake in the Susitna decision, delineate financing questions and address the decision-making structure for Susitna and other power alternatives. A proposal by economist Arlon Tussig is pending.

6. Soci-cultural impacts

This section would investigate the effect of the construction of the Susitna dam on both the local area and Alaska, and relate those effects to both a historical and anormative context. A proposal by the Arctic Environmental and Data Center of the University of Alaska is pending.

7. Other sections of the study

Additional work is contemplated in the areas of coal-fired generation. A review of the adequacy of Phase I study of environmental impacts is also contemplated.

C. Coordination, Misc.

The committee contacted a variety of consultants both inside and outside the state about possible participation in the study. The consultants with the greatest abilities to address questions in an Alaskan context were selected. Constraints of funding, time and experience prevented the Committee from contacting all possible participants.

The committee is coordinating the study with other legislative committee and administrative agencies who are doing related work.

These other contacts include:

Small Hydro (Renewable Energy) Committee
Rural Energy Interim Committee
House Resources Committee
House Finance Committee
Alaska Power Authority
Division of Energy and Power Development
Division of Policy Development and Planning
Department of Environmental Conservation
Department of Fish and Game

Other legislative leg. staff

The committee has also kept various public groups apprised of our work.

M E M O R A N D U M

SUBJECT: Power Alternatives Study

TO: Mark Wittow

FROM: Glenda Straube

DATE: November 21, 1979

Brian will be spending December 13 and 14 at MERDI on his way to the East Coast.

Enclosed is a variety of information I thought you should review: Center outline, contracts for Energy Probe, Brad Tuck and Gregg Erickson, ideas that Brian had for CSHB-364, and the Center outline that was worked on at the Nov. 8th meeting.

Mark, I wish that I could put together a package concerning the Nov. 8th meeting, but I'm too busy. Sorry.

Any suggestions? Enjoy your trip.

DRAFT

CONTRACT BETWEEN

LEGISLATIVE AFFAIRS AGENCY

AND

ARLON R. TUSSING & ASSOCIATES, INC.

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, Pouch Y, Juneau, Alaska 99811, on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency," and ARLON R. TUSSING & ASSOCIATES, INC., 880 H Street, Suite 208, Anchorage, Alaska 99501, hereinafter referred to as the "Contractor".

IT IS MUTUALLY AGREED THAT:

SECTION I. STATEMENT OF WORK

A. Contractor will submit a report to Representatives Brian Rogers and Hugh Malone on the electric utility industry currently serving the Railbelt area of Alaska; the state and federal governmental agencies that promote, plan, and regulate the generation and distribution of electricity in Alaska; the history and status of the proposed Susitna hydroelectric project; and related topics. Specifically, the contractor will:

1. Describe the major electric utilities of the Railbelt area of Alaska:

a. Type of organization (investor-owned, cooperative, municipal agency, or what?);

b. Size and character of market, and its recent growth;

c. Existing generating facilities, facilities under construction or planned, interties;

d. Who decides rate policy? Construction of facilities? (Management. directors, subscribers, municipal assembly?);

e. Utility policies and personality (Is the utility aggressively expansionist? Concerned mainly with costs? Wracked by internal conflict? Etc.?);

2. Describe the main characteristics of the different types of utility organization (investor-owned, cooperative, municipal agency, etc.) with respect to:

a. Organization and governance;

b. Regulation;

c. Access to capital (tax-exempt bonding, REA loans, etc.);

d. Etc., etc.

3. Describe the regulatory framework for the electric utility industry in Alaska. With respect to the Federal Energy Regulatory Commission (FERC), the Alaska Public Utilities Commission (APUC), the Economic Regulatory Administration (ERA) of the U.S. Department of Energy (DOE), and other agencies (if significant):

a. What is its legal jurisdiction and what is the main statutory derivation of that authority?

b. How does it make decisions (by informal rulemaking, adjudication in adversary-type procedings)?

c. What important state, federal, and local certificates, licenses, permits, etc., would be required for construction in Alaska of new electrical generating facilities? ("Important" means potentially contested, or possible sources of prolonged delay or project abandonment. Distinguish where appropriate between procedures that apply to major hydro projects; small hydro projects; oil, gas, or coal-fired steam plants; combustion turbines, etc.)

d. Relate the history, governing legislation, and current status, plans, and proposals of the Alaska Power Authority.

4. Relate the history, with respect to studies, promotion, legislation, and present status or final disposition of past and pending proposals for major Susitna River

hydro projects; and describe any significant legislation (with significant prospects for success) related to proposed Susitna River hydro projects or alternatives currently pending before the U.S. Congress or the Alaska legislature?

B. The report described herein is intended as a background document for legislative staff, consultants and contractors, and is not intended for public distribution in the form produced pursuant to this contract. It shall be brief, concise, and easily understood by nonspecialists.

SECTION II. PERIOD AND DATES OF PERFORMANCE

A. This contract shall have retroactive effect as of 15 November, 1979, and work under this contract shall be accomplished between that date and 31 December, 1979.

B. This contract terminates on 31 December, 1979, unless terminated earlier in accordance with subsection (C) of this section.

C. This contract may be terminated on written notice of the terminating party to the terminated party at the address stated in this agreement.

D. Contractor shall submit the report described in section I(A) to the Project Director not later than 31 December, 1979.

SECTION III. PROJECT DIRECTOR

A. The Project Director shall be Representative Brian Rogers, Box K, College, Alaska 99708.

SECTION IV. COMPENSATION AND METHOD OF PAYMENT

A. The contractor shall be compensated at the following rates for the time and effort of professional personnel; provided, however, that not more than 8 hours shall be chargeable for the effort of any one person in any 24 hour period:

Arlon R. Tussing	$85.00 per hour
Lois S. Kramer	$50.00 per hour
Barbara F. Morse	$30.00 per hour

B. The Contractor shall submit time statements with each billing on which there shall be certified the time worked under this contract, the subject of the work, and the starting and ending time of the work to the nearest one-tenth of an hour. The Contractor shall certify that the time billed under this contract has not been billed to or paid for by any other party.

C. The Contractor is authorized to present a bill for services under this contract at the time he submits the report specified in Section II(D).

D. The costs of necessary and appropriate travel shall be reimbursable to the Contractor on the basis of state per diem rates and coach class air fare.

E. Total compensation for work performed under Section I of this contract, inclusive of travel costs, shall not exceed $5,000.00

SECTION V. OFFICE SPACE, EQUIPMENT, CLERICAL SUPPORT

A. Office space, equipment and clerical support necessary to carry out the Contractor's obligations under this contract shall be supplied by the Contractor at no cost to the Agency.

SECTION VI. RECORDS, DOCUMENTS, AUDIT

A. The Contractor shall maintain accurate records as may be required by the Project Director. The records are subject to inspection by the Agency or the Project Director at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency. The Contractor shall keep the Project Director informed as to the progress of the work performed under this agreement and shall provide progress reports as specified by the Project Director.

SECTION VII. CONFLICT OF INTEREST

A. The Contractor affirms that he is not now engaged in any professional business relationship that could reasonably be construed to constitute a conflict of interest relative to this obligation under this contract, and that he will notify the Project Director before undertaking any such professional business relationship.

SECTION VIII. ALL WRITINGS CONTAINED HEREIN

A. This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties of this agreement.

CONTRACT BETWEEN

LEGISLATIVE AFFAIRS AGENCY

AND

GREGG K. ERICKSON

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, Pouch Y, Juneau, Alaska 99811, on behalf of the Alaska State Legislature, hereinafter referred to as the "Agency," and GREGG K. ERICKSON, 316 Coleman Drive, Juneau, Alaska 99801, hereinafter referred to as the "Contractor."

IT IS MUTUALLY AGREED THAT:

CLAUSE I. STATEMENT OF WORK

A. The Contractor shall be responsible for preparation and submission to the Project Director of a written report on the economic, political, and technical feasibility of future development of a natural gas based electrical economy in the railbelt area of Alaska. The report shall specifically address the following points:

1. The constraints on natural gas usage imposed by the federal "Powerplant and Industrial Fuel Use Act of 1978," and associated administrative regulation.

2. The constraints imposed by the act on the use of state-owned royalty natural gas.

3. The strategies of utilities, both in and outside of Alaska, for obtaining exemptions from the Act.

4. The status and effects of federal natural gas price regulation on the prices of natural gas produced and consumed in Alaska.

5. The effects of pipeline investments which make existing sources of Alaska natural gas available to demand centers in the state.

6. The prospects for, and effect of new gas discoveries on natural gas prices.

7. The significance for future gas prices of existing price escalation provisions in current electrical utility natural gas contracts.

8. The extent to which Alaska gas prices can be expected to respond to changes in world energy price levels.

9. The technical alternatives for implementing a natural gas based electrical economy, and the thermal efficiency to be expected from them, with the implications of these for electrical energy costs.

10. The extent to which electrical demand growth could be moderated by substitution of natural gas for electricity in direct consumer applications, including on-site power generation, with separate consideration of those areas already served by gas utilities and those where gas service is prospective.

11. The institutional and economic means of implementing decisions to substitute natural gas powered generation for other forms of generation.

12. Identification of additional studies that may be appropriate in addressing the viability of an electrical economy based on natural gas.

B. The Contractor shall, at the request of the Project Director, provide up to four days of additional work to be specified by the Project Director. It is contemplated that this work would include testimony for legislative committees on the subject matter of the report prepared under Paragraph (A) of this clause and related subjects.

CLAUSE II. PERIOD AND DATES OF PERFORMANCE

A. This contract shall commence on 1 December 1979 and shall terminate on 30 June 1980, unless terminated earlier by mutual written agreement of the Contractor and the Agency.

B. A preliminary draft of the report described in Clause I(A) shall be submitted to the Project Director on or before 31 January 1980. The final report shall be submitted to the Project Director on or before 7 March 1980.

CLAUSE III. COMPENSATION AND PAYMENT

A. Total payments for the work described in Clause I shall be $20,000, inclusive of all expenses and costs, including travel expenses.

B. Payments to the Contractor shall be made in three installments. The first of these shall be in the amount of $6,000 due on the date this contract is executed by the Agency. The second and third installments shall be of $7,000 each, and shall be due on submission of the preliminary and final reports, respectively.

CLAUSE IV. PROJECT DIRECTOR

The Project Director shall be Representative Brian Rogers, Box K, Fairbanks, Alaska 99708, or his designee.

CLAUSE V. COORDINATION WITH OTHER WORK

The Contractor shall be responsible for insuring the maximum degree of coordination between the work described in this contract and related work being carried out by Arlon R. Tussing and Associates, Inc., and by other contractors working under the direction of Rep. Rogers. The Contractor shall consult with Tussing, coordinate research and writing with him, and so far as practical, endeavor to make the reports submitted by Contractor and Tussing consistent in assumptions and complementary in scope.

CLAUSE VI. OFFICE SPACE, EQUIPMENT, CLERICAL SUPPORT

A. Office space, equipment, clerical support and all other goods and services necessary to carry out the Contractor's obligations under this contract shall be supplied by the Contractor at no cost to the Agency.

CLAUSE VII. RECORDS, DOCUMENTS, AUDIT

A. The Contractor shall maintain accurate records as may be required by the Project Director. The records are subject to inspection by the Agency or the Project Director at all reasonable times. All documents, reports and writings generated as a consequence of work done under this contract shall become the property of the State of Alaska, and on completion of the work or at the termination of this contract shall be delivered to the Agency. The Contractor shall keep the Project Director informed as to the progress of the work performed under this agreement and shall provide progress reports as specified by the Project Director.

CLAUSE VIII. CONFLICT OF INTEREST

A. The Contractor affirms that he is not now engaged in any professional business relationship that could reasonably be construed to constitute a conflict of interest relative to this obligation under this contract, and that he will notify the Project Director before undertaking any such professional business relationship.

CLAUSE IX. ALL WRITINGS CONTAINED HEREIN

A. This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties of this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on the dates noted.

CONTRACTOR

GREGG K. ERICKSON 11/5/79
(Ak. Business License 73957) Date

LEGISLATIVE AFFAIRS AGENCY

MYRTON R. CHARNEY Date
Executive Director

Approved as to form:

Agency Legal Counsel Date

Accepted:

Rep. Brian Rogers Date

ALASKA CENTER FOR POLICY STUDIES

November 9, 1979

from meeting on 11/8

ALTERNATIVE ENERGY/CONSERVATION STUDY

for the

HOUSE POWER ALTERNATIVES STUDY COMMITTEE

Phase I: Workplan Development

Preliminary Workplan elements:

1. End Use Structure.....Alaska Federation for Community Self Reliance
   - a. Residential
   - b. Commercial
   - c. Industrial
   - d. Transportation

Feb 1

2. Conservation Potential.....Alaska Federation for Community Self Reliance

March 1

3. Alternative Energy Source Potential.....Mark Fryer and Associates
   - a. Geothermal
   - b. Waste Heat
   - c. Solid Waste
   - d. Wind
   - e. Wood
   - f. Hydro
   - g. Solar (active, passive and photovoltaic).....Rich Seifert, Institute of Water Resources

4. Implementation and Management Considerations.....Alaska Public Interest Research Group
   - a. State Law
   - b. State agencies
   - c. Utilities
   - d. Financing
   - e. Local government
   - f. Research and Demonstration
   - g. Values and attitudes
   - h. Marketing
   - i. Employment

Legislative package Jan. 1

April 1

April 15 - Consolidated

Scope of work to be undertaken by Alaska Federation for Community Self Reliance on the Susitna study. Includes methodology for investigating end use structure and for conservation. The following is intended for use by the Alaska Center for Policy Studies in formulating a work plan for Phase Two of the study. Please read carefully and prepare comments for November 9 meeting. After that meeting we hope to have a reasonably clear idea of what work we will be doing over the next few months.

END USE STRUCTURE

The Federation will be investigating energy end uses in the railbelt north of the Alaska Range. We will attempt to estimate total regional energy consumption, and break down this total according to the amounts of energy used in the various sectors. The sectors are:

residential
commercial
industrial
transportation.

We may decide that its necessary to separate government and/or military consumption. If so, these would become independent sectors. - also divide between state & local

Within each sector are several subsectors. Depending on data available, we will further break down the energy consumed in each sector to the appropriate subsector. We will look at sources of energy which supply heat below 100°C, and those which supply heat over 100°C. Heat below 100°C is considered of low quality, while heat above 100°C is of high quality. The notion of energy quality is important, as in order to use energy efficiently, energy quality must be well matched to energy requiring tasks. Low quality heat is sufficient for a variety of tasks, and these tasks can be performed with low quality energy sources. Vice versa for high quality.

Here's a sector by sector look at what we will be investigating in developing an end use structure for the northern railbelt:

Residential sector - We will try to find end use numbers for the following subsectors: space heat, water heat, lighting, refrigeration, cooking, and other appliances.
Where we'll look for the information - utilities, AK Division of Energy, local governments, AK Public Utilities Commission, HUD ...
What's needed in analyzing this sector - 1) # of housing units, broken down according to type 2) heating degree days, and 3) heating requierments for a standard house.

Commercial sector - includes retail stores, office buildings, hospitals, radio stations, restaurants, and the like. This should prove to be the most difficult sector to compile end use information for. We will attempt to break down total energy used in the sector to: space heating, space cooling, lighting, water heating, refrigeration, cooking, and other.
Sources of information - Chamber of Commerce, ISER, local governments, State Department of Economic Development, Clarissa's office, ...
We need to know the energy requierments for the subsectors. Will involve guesstimates. We may base guesstimates on energy intensities per square foot of commercial space, or intensities per employee. Or, we may be able to use some national data for this sector.

Industrial sector--- includes manufacturing, mining, agriculture, and construction, as well as petroleum refining and other processes.
We need to break down energy end uses according to type of industry, and fuel sources required.
Information can be tracked down in a Census Bureau publication titled "Annual Survey of Manufacturing: Fuel and Electrical Energy Consumed". Other information might come from U.S. Department of Commerce publications on the Minerals, Construction and Agriculture industries. AK Division of Energy may be helpful, and the Yellow Pages no doubt will be.

Transportation sector - We will want to determine the Vehicle Miles Travelled for Alaskan automobiles, trucks, boats, buses, barges, airplanes, and the Alaska RailRoad. Once this is done, comparisons of fuel efficiencies will be made.
Sources of information include local governments, and the State Department of Transportation and Public Facilities.

CONSERVATION

In this section, we will be looking at ways to increase the energy productivity of the energy being applied to various tasks in the railbelt. We will concentrate on technical fixes. In this section, the following will serve as an outline:

1) Discuss energy use efficiency in terms of the Second Law of Thermodynamics.
2) Quantify current energy uses for performing specific tasks.
3) Identify opportunities to increase present efficiencies.
4) Estimate capital costs of implementing technical fixes to raise energy efficienceies.
5) Quantify the resultant increases in energy productivity.
6) Estimate the indirect benefits of conservation - in terms of economic multipliers, the creation of new work places ...

We will want to look at energy conservation in each sector. The information we need to carry out this section of the study includes:

Residential sector -- we'll need to estimate residential space heating requirements, have a fair idea on what the current housing stock looks like, and know what the efficiencies of various home appliances are.

Commercial/industrial sectors -- Using the end use information compiled for these sectors we can estimate where energy can be conserved. Potential energy conservation can result from attentive management, lighting standards, insulation, waste heat capture, thermostat set-backs, cogeneration of electricity and steam etc...

Transportation sector -- We will limit our discussion of conservation in this sector to decisions which can be made in Alaska. We will primarily look at the various fuel efficiencies for transportation forms, and look for possible substitutions to increase efficiencies.

Rich- address energy storage

WORK PLAN OF ALTERNATIVE ENERGY SOURCE POTENTIAL

The work will analize renewable energy resources along the rail belt:

1. Geothermal
2. Solar
3. Waste Heat
4. Solid Waste (not assume 100% to burn)
5. Wind
6. Wood
7) HYDRO tidal

Three maps will be drafted, each containing renewable energy resource "opportunity" isolines (Solar, Wind, & Waste Heat). The isoline "opportunity index" for each resource mapped will contain:

site specific

* Cost of non-renewable resource currently in use
* Climate factors
* Availability of renewable resource at current costs

The level of independence upon the non-renewable resource will be determined for each of the options examined. This analysis will be developed on a unit model basis, through the construction of generic end use consumption machines:

* Residential model
* Institutional model
* Commercial model

The product of the work will be:

1. Opportunity index maps
2. End use models
3. Intra-project report
    a. Summary
    b. Introduction
    c. Overview of renewable energy resources
    d. Methodology
    e. Solar resources
    f. Wood resources
    g. Wind resources
    h. Solid waste
    i. geothermal
    j. HYDRO.
4. Conclusions and recommendations

Comments on potential of tidal power. Don't do model on it - but just applicability in future. Should state look into?

Proposed workplan

AkPIRG will address the management, regulatory, and legal issues presented by a program to encourage conservation and the use of alternative renewable energy resources, looking at the institutional and financial barriers to wider acceptance and use.

Other subcontractors will study the technical feasibility of conservation and alternative energy sources, including an attempt to quantify the potential for particular sources. A good deal of coordination will be essential in determining the alternatives with the most promise and identifying problems common to those alternatives.

It will be important for all parties concerned to develop some similar standards or common assumptions for determining the economic feasibility of various energy sources.

Our proposed workplan includes the following:

1. State law. Alaska statutes and pending legislation will be analyzed to determine its effects on the acceptance of alternative energy sources and conservation efforts. In conducting this review, AkPIRG will examine the laws of other states and Canadian provinces/territories. Of particular concern will be:

    a) building codes and standards
    b) public facility procurement policy
    c) solar access rights
    d) waste heat recovery
    e) electrical efficiency standards

2. State agencies. Examine the organization, management, funding, and mandates of state agencies with responsibility for conservation or alternative energy. Review:

    a) level of coordination between agencies
    b) short and long-range goals
    c) planning capabilities
    d) staffing and funding levels
    e) sensitivity to community needs

3. Utilities. Among other things, AkPIRG will consider:

    a) existing utility involvement in conservation and alternative energy programs
    b) implications of the National Energy Act
    c) role of the APUC

4. Finance mechanisms. The how and who of paying for energy programs, including:

a) private market
b) government loans and subsidies
   -AHFC
   -APA
   -REA
   -other agencies and approaches
c) tax incentives

5. Local government. Programs involving energy conservation and alternative energy may have to depend upon local governments to require better use of existing resources and to develop new ones. This may include building standards, zoning for cogeneration, or government-run winterization programs. We will look at communities of different sizes in different areas and climates of the railbelt.

6. Research and Demonstration. Key to any Alaskan soft energy path will be R&D efforts to eliminate information gaps and demonstrate the viability of new approaches to heating and power generation. AkPIRG will:

a) describe state R&D programs
b) identify specific data problems
c) suggest priorities for additional research
d) identify needed pilot and demonstration projects

7. Values and attitudes. The perceptions of key energy players, including public officals, utility managers, financers, builders, and consumers, have an important part in determining the availiability of conservation and alternative sources of energy. AkPIRG will interview and survey these groups to determine their perceptions of the barriers to an effective soft energy path program for Alaska.

8. Marketing. If attitudes or lack of information are a barrier to the acceptance of conservation and alternative energy , new or expanded marketing efforts may be important. We will look at the type of marketing problems these energy approaches encounter and discuss possible responses.

9. Employment impacts. AkPIRG will undertake a review of the employment benefits of an aggressive solar and conservation program, as compared to more contralized, capital intensive energy production strategies.

HOUSE POWER ALTERNATIVES
STUDY COMMITTEE
610F Gruening Building
University of Alaska
Fairbanks, Alaska 99701

November 5, 1979

Mark Wittow
5493 Sampson Drive
Girard, Ohio 44200

Dear Mark,

Brian received your 5 page memo concerning MERDI. However, page 2 was missing. Could you please send it to us soon. I haven't seen the memo yet, but Brian said that it's extremely interesting.

The committee meeting on the 9th is set up and the following people will be there, Seifert, Baumgartner, Goldmsith, Jamie and Eric, Vic, Marc Fryer, Chris Conway and Bob Crow, Tussing, Tuck, Van der Ryn, Plunkett, Brian and myself. Apparently noone had called Sim back, so it was nip&tuck as to getting him here. Everything is OK now, though. He's going to speak at the Conference on energy conservation emphasizing the potential of state and local government involvement to encourage conservation. He'll speak about the Farrallones Rural Center and hopefully show some slides. He's agreed to do a 2 hour workshop Saturday morning on waste disposal issues.

We miss you!!!!!! There are many things in life that I feel confident with, but this is not one of them. ha. Technically, I know very little about alternative energy and conse vation but I am interested in it. Oh--- never fear, though ----I am keeping on top of the organizational end of the study.

Here's the rundown on the status of the contracts: Tuck (BR signed and forwarded to Brad), TUSSING (AT & BR signed, sent to LAA), VAN DER RYN (BR signed, sent to Sim), ISER (Signed and sent to LAA), CENTER (signed and sent to LAA), ENERGY PROBE (being drafted with final draft being completed upon meeting with Conway in Anchorage), PLUNKETT (have seen no paper work concerning contract for his consultation services and cannot reach him -- he's in D.C. Can deal with that when we meet in Anchorage).

Mark, if there's anthing else you might want to keep informed about, don't hesitate to let me know. I'll send you a memo after next weekend's meeting and Conference.

Glenda Straube

I sent Malone a letter concerning 11/9 meeting.

MEMORANDUM

SUBJECT: Power Alternatives Study

TO: Jim Rhodes

FROM: Glenda Straube

DATE: November 16, 1979

I spoke with Brian about Hugh's and your concern with the Power Alternatives Study. We should be contracting the "cost-effectiveness" work out near the end of the study.

Chris Conway and Bob Crow from Energy Probe were quite interested in doing it and have some expertise in it. However, they feel that it would be unfeasible to attempt to put together any kind of formula at this time due to the amount of variables present. They have suggested that this work be done shortly after all the contractors' reports have been submitted.

So, at this time, I think we should wait. If there are any other suggestions you may have, please let me know.

cc: Brian Rogers
Mark Wittow

WHILE IN SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907) 465-4925

HOME:
BOX K - COLLEGE
FAIRBANKS, ALASKA 99708
(907) 456-2037

BRIAN ROGERS

Alaska State Legislature

POWER ALTERNATIVES STUDY COMMITTEE

October 19, 1979

Jerry Plunkett
Montana Energy Research and Development Institute
Box 3809
Butte, Montana

Dear Jerry,

I am writing to confirm my visit to the Institute on October 25th. I am scheduled to arrive in Butte at 10:30 am that morning, and plan to depart the same time the next day.

I have three basic reasons for visiting:

1. Our committee is planning a study of the potential of energy savings through the use of renewable energy sources and through conservation. I would like to talk with the people who have done similar studies or work in Montana.

2. Several legislators are interested in using part of Alaska's oil wealth to establish an energy research institute devoted to renewable energy forms, enhanced oil recovery and related areas. I would like to find out the details of how your Institute was established as well as the substance of its current budget and operations.

3. Alaska has large amounts of undeveloped coal resources. I know that your Institute has done a great deal of work on coal, and I would like to be able to be appraised of the areas in which you provide expert or technicla help to Alaska.

The first two areas are of greatest interest to me.

I look forward to meeting you and the staff of the Institute, and appreciate your invitation to visit.

Sincerely,

Mark Wittow

Mark Wittow
Study Coordinator



Alaska Center for the Environment
1069 West 6th
Anchorage, Alaska
99501

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1ST ALASKA ALTERNATIVE ENERGY CONFERENCE

GENERAL SESSIONS — CUDDY CENTER, UNIVERSITY OF ALASKA, ANCHORAGE

FRIDAY, NOVEMBER 9TH — 7:30 pm

Welcome Introduction — Bill Spear, Alaska Renewable Resource Corp.

Keynote Speaker — Floyd Stea, Organization for Renewable Energy, Copenhagen, Denmark.
"Alternative Energy in Denmark & Scandinavia"
sponsored by the Alaska Renewable Resources Corp.

Rich Seifert, Water Resources Institute, Fairbanks.
"Renewable Resource Potential for Alaska"

David Morris, Institute for Local Self-Reliance, Washington D. C.
"Community Energy Systems"

SATURDAY, NOVEMBER 10TH — 9:00 am

Jerry Plunkett, Montana Energy Research and Development Institute, Butte, MT.

Sim Van der Ryne, Farallones Institute, Berkley and Occidental, CA.

Chris Conway, Energy Probe, Ottawa, Ontario, Canada

SUNDAY, NOVEMBER 10TH — 9:00 am

Rep. Bill Miles, Statewide Energy Policy

State Panel — Clarissa Quinlan, Division of Energy and Power Development

Phil Smith, Rural Alaska Community Action Program

Brian Rogers, Legislator

WORKSHOP SERIES I
Saturday, November 10th 10:30 — 12:30 pm

PASSIVE SOLAR DESIGN	BOB ROGSCH, Super insulated houses Fairbanks SKIP ROY, D.A.T.A, Davis, CA ED McGRATH, insulated shutters, Fairbanks
GREENHOUSES	BIRNEY BIRNBAUM, National Center for Appropriate Technology, Field Representative JOHN COLLETT, Fairbanks Solar Greenhouse
FINANCING	BILL SPEAR, ARRC ABE LOVE, Homer Federal Savings BOB SULLIVAN, Alaska Mutual Savings
WIND ENERGY BASICS	BOB SHIPLEY, Division of Energy JIM WISE, Arctic Environmental Data and Information Center TUNIS WENTINK, University Of Alaska (Fairbanks)
FUNDING	CHRIS NOAH, Office of Science and Technology FRANK BROWN, D.O.E. Small Grants Program ANNE HEGNAUER, U.S.D.O.E. Washington D.C. BOB SHIPLEY, Western Sun NEWTON CHASE, H.U.D.
METHANE	CHUCK VOWELL, Unalaska ELLIOT LIPSON, Dept. of Environmental Conservation
GEOTHERMAL	DON MARKLE, Division of Energy
RENEWABLE ENERGY EDUCATION K-6	ANNE WIELAND, Science Coordinator, Anchorage Public Schools

WORKSHOP SERIES II
Saturday, November 10th, 1:30 — 3:30 pm

WIND ENERGY APPLICATIONS	MARK NEWEL, Wind Program, Alaska Native Health Service DAN DENSLOW, Ambler SARA & CHUCK HORNBERGER, Lake Clark
SMALL HYDRO	LORAN BAXTON, U.S. Army Corp of Engineers
RECYCLING	BOB MORRISON, AK Center for the Environment VIRGINIA dal PIAZ, Bottle Bill
ALCOHOL	(To be announced), Solar Energy Research Institute
SOLAR WATER HEATING	BIRNY BIRNBAUM, National Center for Appropriate Technology, Field Representative
MAKING YOUR HOME MORE ENERGY EFFICIENT	ED McGRATH, Energy Extension Service, Fairbanks LESLIE TOUSSANT, Designer, Fairbanks JEFF WILSON, AIA
DESIGNING SOLAR NEIGHBORHOODS	SKIP ROY, D.A.T.A., Davis, CA

WORKSHOP SERIES III
Saturday, November 10th 4:00 — 6:00 pm

PASSIVE SOLAR	SKIP ROY, D.A.T.A, Davis, CA
AGRICULTURE AND SOLAR	BARNEY HOLLEMBAEK, Farmer SAM SKAGGS, Small Scale Agriculture
STATE AND LOCAL PROGRAMS	STEVE BADEN, Division of Energy LEE LEONARD, Dept. of Transp. & Public Facilities MARY STACKELROOT, Bethel House DEE LANE, RuRAL CAP
UTILITY INVOLVEMENT WITH SOLAR	CHUGACH ELECTRIC DAVID MORRIS, Institute for Local Self-Reliance KETCHIKAN UTILITY
DISTRIBUTED ENERGY SYSTEMS	BOB CHILDERS
WOOD HEAT	KEN KILBORN, U.S. Forest Service OLI WIK, Ambler JACK SPRATT, Anchorage
COMMUNITY SELF-RELIANCE	MORRIS MORGAN, Tanana Chiefs Conference WENDY WARNICK, Sun Till
RENEWABLE ENERGY EDUCATION SECONDARY LEVEL	STEVE HENNESSY, Wasilla High School DAN BRISCOE, SAVE I High School
HOEDOWN	8:30 pm — 1:00 am — Cuddy Center with live bluegrass music

WORKSHOP SERIES IV
Sunday, November 11th, 10:30 am - 12:30 pm

COMMUNITY ENERGY SYSTEMS	DAVID MORRIS, Institute for Local Self-Reliance MARK NEWELL, Wind Program, Alaska Native Health Service
SELF-SUFFICIENT HOMESTEAD	DAN DENSLOW, Ambler SARA & CHUCK HORNBERGER, Lake Clark
TRANSPORTATION	LEE LEONARD, Dept. of Trans. & Public Facilities HERB CUTLIP, Alternate Energy Systems, Inc. natural gas auto JOHN RICHARDS, electric car, Anchorage
HYDRO	Same as Above
FINANCING	Same as Above
GEOTHERMAL	DON MARKLE, Division of Energy and Power Development
FUNDING	Same as above

WORKSHOP SERIES V
Sunday, November 11th 1:30 — 3:00 pm

POLICY CAUCUS	•Marketing •Utility •Involvement •Financing •Solar Information and Education •Rural Energy •Urban Energy •Energy Conservation •Solar and Food Production

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FINAL GENERAL SESSION 3:15 — 5:00 pm

Adoption of resolutions from policy caucus

HOUSING: Housing has been arranged as follows:

☐ GOLDEN LION — Closest hotel to the Conference (1 mile). Attractive, comfortable, the Golden Lion offers a restaurant, coffee shop, lounge and gift shop at $44.10 per person for single or double occupancy.

☐ ALASKA PACIFIC UNIVERSITY, DORMS — $16.00 for Single (Includes linen)
$20.00 for Double
Meals can be purchased in nearby Providence Hospital adjacent to UAA

☐ I WOULD LIKE SLEEPING BAG SPACE

☐ I LIVE IN ANCHORAGE AND WILL PROVIDE SLEEPING BAG SPACE FOR OTHERS

☐ [illegible]

1ST ALASKA ALTERNATIVE ENERGY CONFERENCE

WHAT WE ARE ALL ABOUT.....

Alaska's First Alternative Energy Conference will be held November 9, 10 and 11, on the University of Alaska at Anchorage, campus. It will provide information to Alaskans concerned with high energy costs about the potential of solar, wind, small hydro, biomas and geothermal energy. Alaskan experts and resource people from "Outside" will discuss the state of the art of alternative energy technologies, as practiced here and elsewhere. Participants will learn about demonstration projects developed in Alaska, and have an opportunity to discuss these projects with the people responsible for them. The tone of the Conference will be relaxed and informal for a maximum information exchange.

THE WIND BLOWS

There are many operating wind generators in Alaska, providing reliable service. Lake Illiamna is one center with over a dozen operating units, and more to be installed this year. Dan Denslow of Ambler has a Jacobs wind electric generator, that not only powers his house, but 2 others as well. With 33,000 miles of coastline, and various wind tunnels through our mountain ranges, wind power for electricity provides a real energy alternative to many areas where liquid fuels are most expensive.

THE WATER FLOWS

Remote mining, cannery operations have been powered by Pelton wheels throughout Alaska since the 1890's. Many of these small hydro systems still provide power to the bush communities. Gerald Johson of Valdez received a Federal grant this year to expand his water power project to include the home of a neighbor, while in southeast, several homes and lodges are powered by hydro plants of up to 50 KW in size.

THE SUN SHINES

Many Alaskans still feel that solar energy is unfeasible this far north. This is hardly the case. Alaskans, like Bob Roggash of Fairbanks, are finding that passive solar energy can reduce annual heating bills by 75%, through proper design and construction for natural heat gain. Joe Balch in Fairbanks has pioneered a method of raising ground temperature for gardening by running solar heated water through underground pipes. Berry Hollenbaek will use the same technique in combination with solar grain drying, and space heating at his new Delta Junction farm. Even downtown Anchorage fire alarm boxes are powered by photo cells. Applications are numerous and widespread.

ENERGY FOR AN ALASKAN LIFESTYLE

During the next legislative session state leaders will be meeting to formulate a statewide energy policy for Alaska. Unfortunately many decision-makers feel that renewable energy is still a technology of the future, despite the fact that problems like utility interface, financing, and community planning have limited solar development, not technological shortcomings. It is important for this conference to demonstrate that a grassroots constituency exists that understands the problems facing alternative energy technologies, and wishes its state energy policy to clear the way for alternative energy development.

Therefore, policy workshops and speakers will be offered at the conference to clarify these issues. After hearing these options, conference participants will be asked to choose a policy issue, about which they are concerned, and attend that Policy Caucus. There a position will be defined by the workshop members. This resolution will then be presented to the general assembly for approval.

Alaska is the last frontier, the refuge for those who want to take control of their own lives. The idea of relying less and less on centralized power sources, and more on local, small scale energy systems is a concept that the conference will explore. Alaska can lead the nation in this direction. We have the potential, the need, and the independence to do it. Discussions and resolutions will be carried to decision makers to insure consideration of an active renewable energy policy in Alaska.

A SOLAR CATALOGUE FOR ALASKA

The Alaska Center For The Environment has recently produced an Alaskan segment of a national catalogue of model solar and conservation projects for the Center For Renewable Resources, in Washington, D.C. Solar is used here in a broad definition, that include wind, hydro, biomass, and other renewable energies. Through this project 1500 individuals and agencies in Alaska were surveyed as to their knowledge, experience and skills, relating to alternative energy projects. The twenty (20) most unique were chosen for the catalogue, along with some 175 individuals, resource people business and agencies, in the Directory listing.

Work continues on an expanded version for in-state use that will be as comprehensive as possible. Conference participants will be asked to contribute their expertise.

Registration fees for the Conference will include a copy of the catalogue for each participant, upon its publication, after the Conference.

1ST ALASKA ALTERNATIVE ENERGY CONFERENCE

REGISTRATION FEES

Regular $5.00 In Advance ..... $10.00 Day of Conference
Seniors and Students..... $5.00

WHERE: University of Alaska, Anchorage, at the Cuddy Center

FRIDAY, NOVEMBER 9, 1979 — 4:00PM to 8:00PM
SATURDAY, NOVEMBER 10, 1979 — 8:00AM to 11:00PM
SUNDAY, NOVEMBER 11, 1979 — 10:30AM to 5:00PM

Registration Fee includes Admission to the Conference, a registration packet, and one copy of the Alaska Solar Catalogue, to be published following the Conference.

☐ Pre-Registration for Conference $5.00

☐ I would rather volunteer to work with the Conference Committee than pay a registration fee (Limited number only!)

☐ I have an exhibit to display (Please include a brief description, and space requirements)

REGISTRATION

NAME: _____

ADDRESS: _____
(Street) (City and State) (Zip)

TELEPHONE: _____

AREAS OF INTEREST IN ALTERNATIVE ENERGY: _____

_____

_____

Alaska State Legislature
POWER ALTERNATIVES STUDY COMMITTEE

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

Address until January 1980:

c/o Representative Brian Rogers
Box K -- College
Fairbanks, Alaska 99708

October 22, 1979

To Whomever:

Attached are the draft contracts and contract proposals under active consideration by the Committee.

CONTRACT BETWEEN

STATE OF ALASKA
LEGISLATIVE AFFAIRS AGENCY
Pouch Y, State Capitol
Juneau, Alaska 99811

and

UNIVERSITY OF ALASKA
INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH
700 "A" St.
Anchorage, Alaska 99501

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, on behalf of the Alaska State Legislature's House Power Alternatives Study Committee, hereinafter referred to as the AGENCY, and the University of Alaska Institute of Social and Economic Research, hereinafter referred to as the CONTRACTOR.

THE ABOVE PARTIES TO THIS CONTRACT, in consideration of the covenants hereinafter contained, hereby mutually agree to the terms and conditions hereinafter set forth:

CLAUSE I - STATEMENT OF WORK

(A) Scope of Work
Set out in Attachment A

(B) Work Products
1. A detailed work plan of I(A) shall be completed by November 15, 1979.
2. A Workshop on the input assumptions, as described in 1(C) of Attachment A, shall be held on approximately December 11, 1979 for the purpose of gauging the validity of those assumptions
3. A draft report shall be completed by March 1,198
4. A final report, as described in 1(G) of Attachment A, shall be completed by May 15, 1980.

CLAUSE II - PERIOD OF PERFORMANCE

The Period of Performance shall be October 1, 1979 through June 30, 1980.

CLAUSE III - TERMINATION

This contract may be terminated by mutual consent.

CLAUSE IV - PROJECT DIRECTOR

The Project Director shall be the Honorable Brian Rogers, co-Chairman of the House Power Alternatives Study Committee.

CLAUSE V - COMPENSATION AND METHOD OF PAYMENT

(A) The CONTRACTOR shall be compensated $60,000 for the work specified in Clause I of this Agreement.

(B) Payment shall be on the basis of monthly billings of not more than $7,000.

(C) The CONTRACTOR shall receive no payment in addition to that specified in Clause V (A) for travel and related expenses unless the Project Director requires more than four total trips between the CONTRACTOR'S place of business and Juneau, Alaska. The four trips may be four trips by one individual, two trips by two individuals, etc.

CLAUSE VI - RECORDS, DOCUMENTS, AUDIT

The CONTRACTOR shall maintain accurate records, including detailed time records, as may be required by the AGENCY. The records are subject to inspection by the Project Director or the AGENCY at all reasonable times. All documents, reports and writings produced in the course of the work performed under this contract are, upon delivery to the Project Director or the AGENCY or at termination of this agreement, the property of the AGENCY, and/or in the public domain; provided that the CONTRACTOR will have the right to use any such materials for purposes of writing about or discussing the issues.

CLAUSE VII - ALL WRITINGS CONTAINED HEREIN

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement. IN WITNESS WHEREOF, the parties have executed this agreement on the dates indicated.

CONTRACTOR

Lee Gorsuch Date
Director, Institute of Social and Economic Research

Howard Cutler Date
Chancellor, University of Alaska

Accepted:

Rep. Brian Rogers Date
Co-Chairman, House Power Alternatives Committee

LEGISLATIVE AFFAIRS AGENCY

Myrton R. Charney Date
Executive Director

Approved as to Form:

Agency Legal Counsel Date

ISER

ATTACHMENT A

1. Scope of Work

A. Methodological Review and Data Collection $5,000

Review methods available for projecting the level of economic activity in the railbelt and for estimating the level of electricity consumption. Review the existing work on both subjects with special reference to strengths and shortcomings and relevance to present study. Prepare a detailed work plan for review by the Project Director or consultant of his choice.

Collect the economic and electricity consumption data required for the study. The economic data is readily available to the Institute, and it is only required that it be properly formatted for this study. The Institute has a large amount of historical data on electric power consumption in Alaska through 1974 which must be updated through more recent years. This data will be obtained directly from the utilities, the Alaska Public Utilities Commission, and the Federal Energy Regulatory Commission.

B. Economic Model Specification $10,000

Incorporate 1978 economic data into the Man-in-the-Arctic Program (MAP) econometric model which will be used to project economic activity in Alaska and the railbelt regions. The most recent economic data is important for providing the best information on the structure of the economy.

Develop a procedure which regionalizes the economic projections in a manner consistent with the three potential service areas of a Susitna hydroelectric facility. These regions will be:

1. Anchorage-Cook Inlet
2. Fairbanks-Tanana Valley
3. Glennallen-Valdez

C. Economic Projections $8,000

Develop the input scenarios required to run the economic model. Specify the assumptions upon which each scenario is built. Several alternative scenarios will be generated which will provide both a most likely case as well as a likely range of outcomes. The scenarios will include not only estimates of exogenous basic sector activity but also of state government activity. A workshop will be held in early December to familiarize the Project Director with the scenarios and to obtain suggestions regarding corrections and additions to scenarios from invited experts on the various sectors of the Alaskan economy.

Generate the economic projections from the scenarios. The projections will be by region and will be through the year 2005. The sensitivity of the results to both variations in the scenarios as well as the specification of the equations will be tested and reported.

D. Assessment of Interfuel Substitution Possibilities $13,000

Conduct an econometric analysis of the sensitivity of electricity consumption to changes in prices of fuels and of income. This analysis will concentrate on the residential sector for which the best data is

available. It is recognized that severe technical problems exist in attempting to estimate a "demand function" for electricity within Alaska, but the best and most appropriate techniques will be applied to this analysis. The results will be interpreted in relation to their relevance for the overall study objective.

Conduct a case study-type analysis of interfuel substitution possibilities, again concentrating primarily on the residential component use. This study will attempt to define the relative fuel prices at which it becomes economically rational for consumers to substitute among fuels for various purposes. It will further attempt, on the basis of present and future inventories of durable goods used in energy-related functions, to determine the aggregate electricity-use impact such interfuel substitution could have. This analysis will concentrate on space heating which is the largest energy user in the home and which can be supplied by a variety of energy sources. It will attempt to define the limits of substitution possibilities by investigating the extreme cases of all electric space heating and all gas (or other nonelectric alternative) space heating in the residential sector. This study will attempt to draw upon and integrate previous work done on this subject in Alaska and elsewhere.

E. Electricity Use Projections $14,000

Develop electricity use projections for the following categories of consumers:

1. Residential
2. Commercial
3. Non-self-supplied industrial

4. Self-supplied industrial, presently operating in railbelt market areas

5. Potential industrial consumers, not presently operating in the railbelt area

6. Residential and commercial electricity users who cannot be integrated into the urban power grid.

The projections, through the year 2005, will be for total kilowatt hours of electricity consumed. They will not include projections of peak load, capacity requirements, or the load curve over the year or for representative days during the year. Projections will be provided for each of the market areas described in Task B. Several electricity-use projections will necessarily be developed in order to incorporate the results of the analysis of interfuel substitutability. The sensitivity of projection results to this factor as well as to other factors affecting per-customer usage will be analyzed.

The analysis of electricity consumption requirements of potential industrial consumers will not be directly integrated into the results for other sectors since this is recognized to be a highly speculative and uncertain component of demand. Probable electric power requirements for more likely alternatives will be identified, but "scenarios" for such industrial development will not be generated. In this category will also fall estimates of energy requirements for unconventional uses of electricity such as railroad electrification.

The projections will be constructed in such a way that estimates of the impact of various conservation measures could be integrated into the analysis. Such measures would derive from other studies.

F. Assess Projection Probabilities $2,000

Subjectively evaluate the probability of each of the projections generated by a combination of an economic projection and an electricity-use projection. Choose a most likely case and analyze the sensitivity of that case to key economic and energy-use factors. Compare the results of the analysis to previous work.

G. Prepare Final Report $8,000

The final report will be written in nontechnical language with appendixes containing the required technical backup information necessary not only to critically evaluate the work but to serve as a guide for updating the analysis periodically. As Tasks A and C are completed, a draft of each will be written and made available to the Project Director.

The final report will include a discussion of all tasks outlined in the Scope of Work. It will specifically document the choice of methodology for the analysis including not only a discussion of its strengths but also of its weaknesses and indicating the proper interpretation of results that these weaknesses require.

2. Additional Considerations

A. Coordination

This analysis of electricity requirements forms a portion of a larger study of alternatives for supplying electricity to the railbelt market in future years. It is important for this analysis to be consistent with the requirements of this larger study and also for the methodology

and assumptions used in the analysis to have as broad a consensus as possible. Thus, the Institute will seek to coordinate with the following groups and solicit suggestions and criticisms of methods and assumptions from them. Final decision on all matters discussed with regard to these efforts will remain with the Institute.

1. The Army Corps of Engineers (or their representative) or Acres American Incorporated (or their representative) - review of methodologies used in economic projections and demand analysis.

2. Energy Probe (or other consultants of the Project Director's choosing) - review of methodologies used in economic projections and demand analysis.

3. Dr. Bradford Tuck (or other consultants of the Project Director's choosing) - review the economic assumptions underlying the econometric model and the demand analysis.

4. Other consultants of the Project Director's choosing.

5. Alaskan utilities - consultation concerning electricity demand projections.

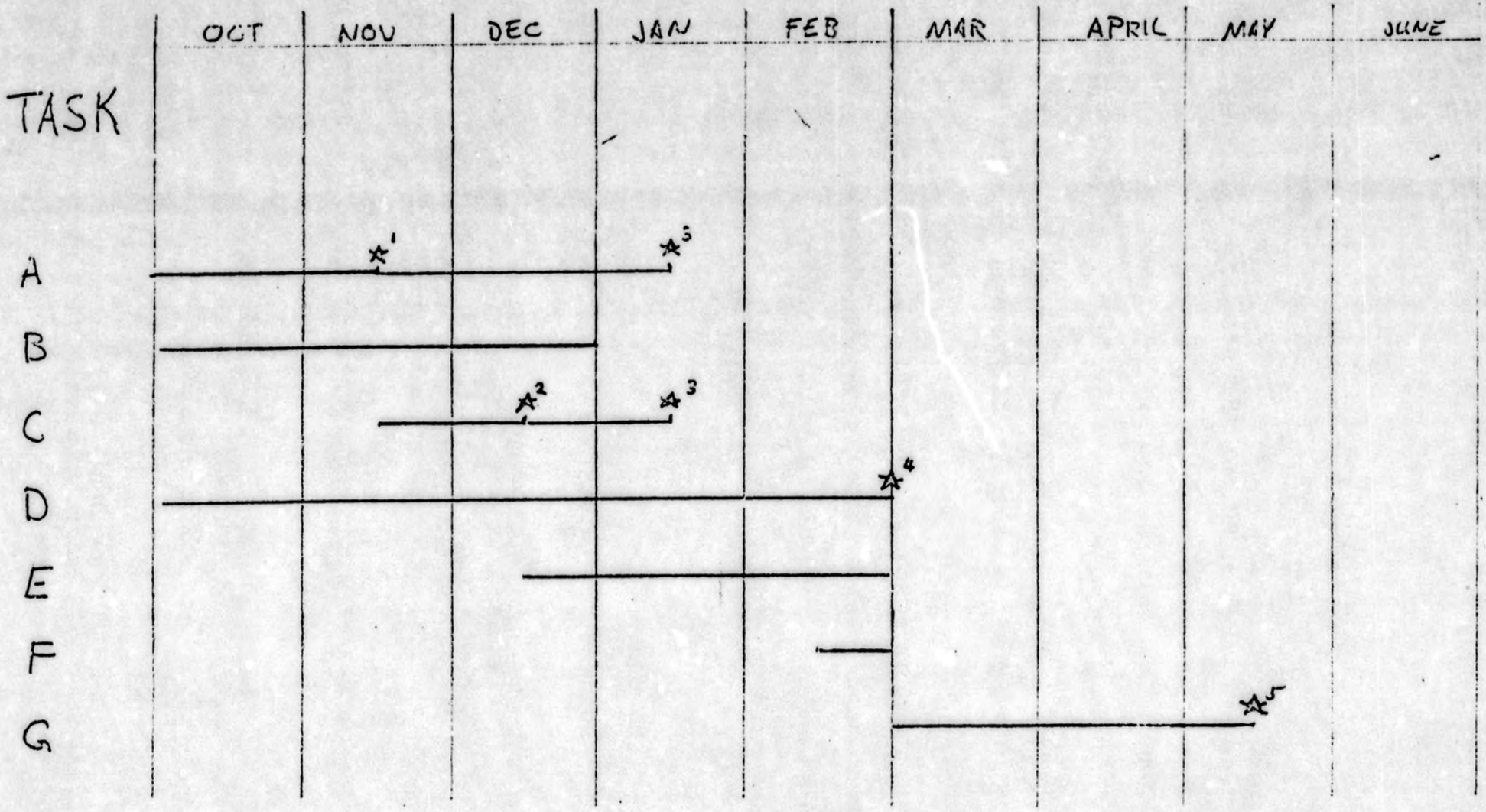
6. Center for Policy Studies - consultation concerning conservation possibilities.

In addition, the study will coordinate with the Alaska Power Authority and the Division of Energy and Power Development through the Project Director or his representative.

B. Updating

The analysis will be conducted in a manner which, as much as possible, will allow for updating of the results in a straightforward and consistent manner as factors affecting the projections change over time. All relevant methodological steps will be outlined in technical appendixes to the final report.

PROJECT SCHEDULING



☆ DATES WHEN PRODUCTS DUE.

1 Detailed work Plan
2 Input Assumptions Workshop
3 Tasks A & C reports
4 Interim Report
5 Final Report

study. Since the ISER forecasts will, in part, be dependent upon the MAP model, special attention will be given to the properties of the MAP model and to the data scenarios used to generate the forecasts.

III. SUMMARY AND CONCLUSIONS

A. Synopsis of findings.
B. Usefulness of findings for decision about Project.

DATE OF STUDY: To be completed by March 1, 1980.

COST: $5,500.00.

lump sum at completion

interim report Jan. 20, 1979

1822 CINDYLEE LANE
ANCHORAGE, AK 99507
907-344-9293

from Energy Probe

A PROPOSAL TO EXAMINE THE ELECTRICITY DEMAND FORECASTS USED BY THE ALASKA POWER ADMINISTRATION AND THE INSTITUTE FOR SOCIAL AND ECONOMIC RESEARCH

Introduction

The electricity demand forecast is the most significant component of the utility planning process. The forecast provides the primary rationale for the construction of new generation and distribution facilities, and dictates their nature and scheduling.

The demand forecasting procedure generally requires the development and interpretation of one or more mathematical models, usually econometric. Basic relationships between electricity demand and key socioeconomic factors are estimated in a core model using time series and/or cross sectional data. Independent variables are projected into the future using a variety of techniques; these forecasted values are then applied to the core model to yield an estimate of electricity demand for the forecast year. Frequently, subjective adjustments are applied to the forecast model results to accommodate the effects of qualitative factors which cannot be explicitly accounted for.

Analyzing Forecasting Procedures

A forecast of this type represents a "most likely" future state, given that basic relationships between demand and the predictors in the model remain stable over the forecast period, and that the forecasted values of the predictor variables are also "most likely". Any critique of an electricity demand forecast, then, must address at least the following questions:

1. Is the model reasonably specified and appropriately estimated?

2. Is the model's explanatory power adequate?

3. What values have been assumed for the independent (predictor) variables over the forecast period? What techniques and assumptions were employed in projecting the values of these independent variables?

4. What values have been estimated for the model's coefficients? Are the coefficients likely to remain relatively stable over time? Are the

values used consistent with other empirical work?

5. Does the forecast include an indication of the sensitivity of electricity demand to changes in the values of the independent variables and their coefficients?

6. Are the forecast results reasonably compatible with end use projections based on expected fuel market shares and utilization efficiencies?

7. To the extent that sub-markets are identified and are likely to change over the forecast period, are both energy and peak demand growth given consideration?

8. Does the forecast model allow an examination of the effect of changing energy market shares on electricity demand?

In addition to these structural issues, electricity demand forecasts can be analyzed with respect to their role in a broader energy policy and planning process. Consequently, a demand forecast must be examined in terms of its compatibility with local, state and federal policy initiatives which could have effects on electricity growth during the forecast period. These policy initiatives may have sweeping effects on the values of both the predictor variables and their partial relations with electricity demand. In addition, these initiatives may warrant the respecification of the basic (core) model.

Structural issues must be supplemented, then, with an analysis of other, normative issues:

1. Are the values used for the independent variables consistent with proposed or potential policy intervention?

2. Are the values of the coefficients consistent with proposed or potential policy intervention?

3. Are proposed or potential policy initiatives likely to introduce new, significant predictor variables?

Summary

Such a review of the electricity demand forecasts now used in the State of Alaska will provide important

information concerning the need for additional supply facilities and their alternatives. With its expertise in quantitative analysis and its access to computer facilities, Energy Probe believes it could make a significant contribution to an understanding of the possibilities for Alaska's electricity future.

+ help in
conservation
study
design

CONTRACT BETWEEN

STATE OF ALASKA
LEGISLATIVE AFFAIRS AGENCY
Pouch Y, State Capitol
Juneau, Alaska 99811

and

ALASKA CENTER FOR POLICY STUDIES
221 E. 7th Ave. #204
Anchorage, Alaska 99501

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, on behalf of the Alaska State Legislature's House Power Alternatives Study Committee, hereinafter referred to as the AGENCY, and the Alaska Center for Policy Studies, hereinafter referred to as the CONTRACTOR.

THE ABOVE PARTIES TO THIS CONTRACT, in consideration of the covenants hereinafter contained, hereby mutually agree to the terms and conditions hereinafter set forth:

CLAUSE I - SCOPE OF WORK

(A) General Tasks - The Contractor shall accomplish the following:

1. End Use Structure -
Establish the general end uses of energy by category for the Anchorage-Cook Inlet and Fairbanks-Tanana Valley power planning regions.

2. Potential for Energy Conservation -
Establish the varying levels of energy savings in the Railbelt area that would be realized from conservation measures taken by utilities, consumers, businesses and government. The numbers from this portion of the study will be used in the second stage of the University of Alaska Institute of Social and Economic Research power demand analysis, also being undertaken by the AGENCY.

3. Potential for Renewable Energy sources - Establish the contribution the available renewable energy sources can make towards satisfying energy demand in the Railbelt area. The numbers from this portion of the study will be used in the second stage of the University of Alaska Institute of Social and Economic Research power demand analysis, also being undertaken by the AGENCY.

4. Policy Development and Implementation - discuss the social, political and economic measures necessary to realize the potential described in numbers 2 and 3 above. These measures would include a draft legislative package and suggestions for market incentives, consumer education and state programs. The possible role of state agencies in developing and implementing these programs will also be discussed. A discussion of the employment effects of conservation and renewable energy programs will be included in this section.

5. Prepare one or more final reports as specified by the Project Director.

(B) Phase One

CONTRACTOR shall prepare a detailed plan of study including allocation of work responsibilities, designation of any subcontractors and related activities. The detailed study will be subjected to review by the Project Director and such parties as he may designate.

(C) Phase Two

Phase Two will consist of implementation of the study plan developed in Phase One, as approved by the Project Director.

(D) Schedule

1. Phase One shall be completed by November 15, 1979.
2. Phase Two shall be commenced as soon as possible, but no later than November 15, 1979.
3. Task A(1) shall be completed by February 1, 1980.
4. Tasks 4(2) and A(3) shall be completed by March 1, 1980.
5. Tasks A(4) and A(5) shall be completed by April 2, 1980.

The draft legislative package shall be submitted to the Project Director or his designee by January 7, 1980.

CLAUSE II - PERIOD OF PERFORMANCE

The Period of Performance shall be October 1, 1979 through June 30, 1980.

CLAUSE III - TERMINATION

This contract may be terminated by either party upon 30 days notice to the other party.

CLAUSE IV - PROJECT DIRECTOR

The Project Director shall be the Honorable Brian Rogers, Co-Chairman of the House Power Alternatives Study Committee.

CLAUSE V - PRINCIPAL INVESTIGATOR

The principal investigator shall be Vic Fishcher.

CLAUSE VI- COMPENSATION AND METHOD OF PAYMENT

(A) Total compensation shall not exceed $68,500.

(B) Payment for Clause I(B) shall not exceed $8,500.00 and shall be payable immediately upon billing by the CONTRACTOR.

(C) Payment for Clause I(C) shall not exceed $60,000, and shall be on the basis of monthly billing.

(D) The CONTRACTOR shall receive no payment in addition to that specified in Clause VI(A) for travel and related expenses unless the Project Director requests that the CONTRACTOR travel between the CONTRACTOR'S place of business and Juneau.

CLAUSE VII - RECORDS, DOCUMENTS, AUDIT

The CONTRACTOR shall maintain accurate records, including detailed time records, as may be required by the AGENCY. The records are subject to inspection by the Project Director of the AGENCY at all reasonable times. All documents, reports and writings produced in the course of the work performed under this contract are, upon delivery to the Project Director or the AGENCY or at termination of this agreement, the property of the AGENCY, and/or in the public domain; provided that the CONTRACTOR will have the right to use any such materials for purposes of writing about or discussing the issues.

CLAUSE VII - ALL WRITINGS CONTAINED HEREIN

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on the dates indicated.

CONTRACTOR

Joe Josephson, Chairman Date
Board of Directors, Alaska
Center for Policy Studies

Accepted:

Rep. Brian Rogers Date
Co-Chairman, House Power Alternatives
Study Committee

LEGISLATIVE AFFAIRS AGENCY

Myrton R. Charney Date
Executive Director

Approved as to Form:

Agency Legal Counsel Date

Subcontractors for the Scope of Work

I(A) 1. & 2. - Fairbanks Federation for Community Self-Reliance (Mark Baumgartner & Sam Skaggs)

3. Rich Seifert, UA, other consultants to be chosen

4. AkPIRG

Energy Probe will be utilized as an advisor for the entire scope of work

Additional subcontracts, both in-state & out-of state, will be let as necessary.

DRAFT

MEMORANDUM

TO: The Honorable Brian Rogers

FROM: Gregg Erickson

SUBJECT: A natural gas based electric economy in central and southcentral Alaska - hazards and prospects

SUMMARY

An important part of the legislature's study of alternatives to the proposed Susitna Hydroelectric Project will be an analysis of the prospects and possible risks associated with basing the electrical economy of the railbelt area of Alaska on natural gas fired generation. At your request, we submit here our preliminary study design for conducting this Analysis. We propose to carry out the work described below for a fixed fee contract price of $20,000 over a period of 3-1/2 months, commencing on 1 December 1979 and concluding on 15 March 1980.

BACKGROUND

Since you are already fully familiar with the background of the Susitna project itself, and the factors that caused the legislature to request a Study of Alternatives, we will discuss these matters only briefly.

Although questions remain concerning the railbelt electricity demand projected for the next decade and beyond, existing studies by the region's utilities and others anticipate average annual growth rates of 10% or more.

The Susitna project is being held out by its proponents as a means of meeting this growing demand, and simultanously insulating power consumers from the repetitive cycle of energy cost increases that have marked the past seven years. Whatever the promise of the Susitna Project may be, however, a judgment of its appropriateness must be made in the context of the various alternatives that are available to it. One of these alternatives is clearly an electrical economy based on natural gas. Such a development path would be an extension of what has already occurred in the Anchorage area, where natural gas has come to completely dominate the generation picture. A similar scenario may be plausably constructed for the interior, commencing with the completion of the Northwest Alaska Gas Pipeline.

Even if the Susitna Project is constructed, service reliability standards will require that new generation capacity be developed in the Anchorage/Kenai and Fairbanks intertie areas to handle both the load growth occurring between now and the time Susitna comes into service, and to serve as backup to Susitna once it

(2)

is built. Almost all of this interim and "backup" generation capacity is expected to be either gas fired or easily convertable to natural gas.

Given these expectations it is reasonable to review in depth the question of whether Alaska might be able -- or more importantly, well advised -- to dispense with Susitna entirely. An important component of the information necessary to answer this question will be elucidated in the study outlined below.

STUDY DESIGN

1. Historical Background: The choices raised by the Susitna project are not totally unprecedented, even in Alaska. For example, the decision to construct a MINE mouth power plant at Healy added, in the context of the Fairbanks power demand of that day, a comparable increment of capacity. The Rampart and Eklutna experiences also provide important insights to the kinds of issues posed by Susitna. We contemplate conducting this part of the project in association with an academic historian who has already written on and studied this particular sub-area of Alaska history.

2. Institutional Factors: Recent federal legislation (the power plant and industrial fuel use of 1978) sharply restricts the extent to which natural gas (and oil) may be used to fire new electrical generation facilities. A central part of this project will be an evaluation of whether this and other potential end use regulations effectively eliminate the natural gas alternative.

   At first blush, it would seem unwise for Alaska to pursue a power strategy that so clearly flies in the face of congressionally enunciated national policy. Nevertheless, several factors argue for careful consideration of whether this policy will pertain in the future, and -- if it does -- whether exceptions might be made for Alaska. For example, it is possible that a transfer of Alaska's royalty gas might be structured in a way that avoids the act's restrictions; a legal analysis of the act directed at this issue will be a part of this project.

   If the act cannot be circumvented, it is still possible that economic factors unique to Alaska or general to the nation will result in some sort of "amendment" of the current "policy." This has already happened to some extent in response to the administration's recent realization of a potential "near term" "surplus" of natural gas. Environmental protection factors or "unique hardship" arguments may also be possible.

In any event, even if Susitna is approved it seems certain that some sort of relief from the Act's restriction will have to be sought, since the demand growth expected between now and the earliest date Susitna could come on line can not realistically be met by coal fired generation (oil fired generation is also restricted).

3. Economic Factors: The major economic hazard associated with expanded reliance on natural gas for power generation is that Alaska gas prices will continue to rise in response to world oil price increases. If world energy prices continue to rise, it is likely that the phasing out of federal regulation of natural gas prices would make those prices even more responsive to market forces than they have in the past.

On the other hand, major discoveries of new gas in the state or pipeline investments which make existing reserves accessible to Alaska markets may restrain the rate of price increase. An analysis of these and related issues is essential to assessing the "natural gas option."

4. Engineering Factors: The efficiency of gas fired generation facilities will be examined in order to move from expected gas prices to expected "bus BAR" power costs. although not directly related to the question of a gas based electric economy, we would also propose to evaluate in substantial detail (at $5,000 additional cost) the potential for substitution of natural gas for electricity in direct consumer applications as a means of moderating the growth of electrical demand. There is obviously great potential for this sort of substitution in the interior, but quantitative data, and data on the extent of natural gas market saturation in southcentral would need to be obtained.

5. The Decision Making Structure: The decision to build Susitna is effectively a government decision, although one in which the utilities and others will be extensively consulted. If Susitna is not built, the decision as to what alternatives are to be pursued may be taken in a much more decentralized context, a context in which the individual utlities would be expeced to play a more leading role. If a decision was reached by the legislature to opt for natural gas fired generation, the means of implementing that decision would need to be carefully considered. We intend to ADDRESS this matter carefully, with particular attention to the institutional structures (such as the Alaska Power Authority) which might be used or fashioned to implement it.

ARLON R. TUSSING & ASSOCIATES / 880 H St., Suite No. 210, Anchorage, Alaska 99501

October 13, 1979

Mr. Mark Wittow, c/o
Representatives Hugh Malone and Brian Rogers
Alaska State Legislature
727 N Street
Anchorage, Alaska 99501

Dear Mark:

In response to your request last week, this letter describes the report I would submit to Representatives Malone and Rogers on alternatives to the Susitna project.

SCOPE OF WORK.

Arlon R. Tussing will submit a report to Representatives Hugh Malone and Brian Rogers, on the technical, economic, financial, legal, and policy issues that Alaskans should consider in connection with the Susitna hydroelectric project or alternative measures for meeting the anticipated demand for electric power. This report will be brief and pointed, in plain English with a minimum of technical jargon. The report will:

1. Survey and relate the policy issues that concern Alaskans with regard to the Susitna project or possible alternatives. The issues to be considered include but need not be limited to:

    a. The availability, reliability, and cost of electricity to meet projected residential, commercial, and industrial demand;

    b. Opportunities to substitute electricity in residential, commercial, and industrial energy applications that would otherwise require more costly, less reliable, or environmentally inferior fossil fuels;

1220 19th Ave. N.W., Suite No. 201, Washington D.C. 20036 / 2720 Rainier Bank Tower / Seattle, Washington 98101 / (206) 447-0321

c. Opportunities to use the availability of electrical power to attract new industry to Alaska; and

d. The cost and risks to the state treasury, demands on the administrative capabilities of state government, the effectiveness, and the economic impact, of various forms of state support for construction and operation of electrical generating facilities (or for alternative measures such as conservation).

2. Identify the different technologies available to meet the expected growth of demand for electricity in the market area that would be served by the proposed Susitna hydroelectric project. The technologies and measures considered will include but need not be limited to:

a. Major hydro plants;

b. Small hydro plants;

c. Nuclear, coal, oil, gas, and biomass-fired steam generation plants;

d. Oil, gas, and biomass-fired combustion turbines (including combined-cycle plants);

e. Unconventional electrical generation technologies, including solar, geothermal, tidal, and wind power;

f. Conservation by load management;

g. Conservation by rate design; and

h. Conservation by other means, including regulation and growth management.

3. Describe and relate the factors and principles that govern the planning of electrical generation and distribution systems, including the choice of generation technologies, and relate them to the market area that would be served by the proposed Susitna hydroelectric project. Factors to be considered include but need not be limited to:

a. Expected growth of demand, and the degree of uncertainty in projections of demand growth;

b. Current and expected load profiles (peaking, etc.);

c. Scale and nature of existing plant;

d. Scale, capital costs, and fuel requirements for different generating technologies;

e. Expected availablity and prices for different fuels;

f. Likelihood of adverse engineering or environmental suprises, licensing and permitting difficulties, litigation, and other causes of delay, cost overruns, or non-completion, for different generating technologies; and

g. Operational reliablity of different generating technologies.

4. Describe and relate the factors and principles governing the organization and financing of electrical generation and distribution systems, with particular reference to options for the Alaska Power Authority and the utilities currently serving the areas that would be served by the Susitna project. Factors to be considered include but need not be limited to:

a. Characteristics, advantages and disadvantages of various forms of business organization (investor-owned utilities, cooperatives, government agencies, government-owned corporations, etc.);

b. Characteristics, advantages and disadvantages of various financing arrangements (conventional balance sheet financing, project financing, leveraged leasing, joint ventures, etc.);

c. Capital structure (proportions of various forms of debt and equity), and the cost of capital;

d. Tax liabilities, if any;

e. Accounting practices (treatment of depreciation, taxes, and earnings, etc.);

f. Implications for rates and rate structures;

g. Costs and risks to the state treasury; demands on the policy-making and administrative capabilities of state goverment, the Alaska Power Authority, or existing utilities; the effectiveness, and the economic implications, of various forms of state assistance to construction or operation of electrical generation facilities;

h. Relevance to current deliberations over institutions for the distribution or management of surplus state revenues (Alaska, Inc., AGSOC, the Permanent Fund, etc); and

i. Relation to energy credit proposals and other proposals for energy subsidies.

The topics will not necessarily be presented in the organization or order set out above.

This report will be submitted to Representatives Malone and Rogers as a review draft not later than December 31, 1979, and a final version ready for publication will be submitted by January 31, 1980.

I suggest that a contract be drawn up between the appropriate agency of the Legislature and Arlon R. Tussing and Associates, Inc., Suite 208, 880 H Street, Anchorage, Alaska 99501, with an effective date of October 15, 1979, and a termination date of June 30, 1980, providing for:

1. The report described above;

2. General consulting services to Representatives Malone and Rogers, concerning electrical facilities planning and related topics; and

3. Appearances at the request of Representatives Malone or Rogers before appropriate bodies of the Legislature, concerning the report and related topics.

This arrangement will permit any follow-up desired during the 1980 Session, without the necessity of a new contract. Payment for my time will be at the rate of $85 per hour; at this rate I absorb all clerical and research assistance expenses, and all office and other overhead; travel expenses are additional. The total billings over the period are not to exceed $12,500. At your request I would be happy to draft a formal contract incorporating these terms, in a general form that has been approved in the past by the Legislative Affairs Agency and by Legislative Audit.

The proposal above is tentative; please let me know if you wish any additions or amendments.

I shall be in the Seattle office Monday through Wednesday (October 15-17), in Edmonton at the Four Seasons Thursday and Friday (October 18-19), and in Anchorage Saturday through Monday (October 20-22).

Sincerely,

Arlon R. Tussing

Arlon R. Tussing

Arctic Environmental Information and Data Center
707 A Street
Anchorage, Alaska 99501

PHONE (907) 279-4523

UNIVERSITY OF ALASKA

October 18, 1979

Mr. Mark Wittow
c/o Representative Hugh Malone
and Representative Brian Rogers
Alaska State Legislature
727 N Street
Anchorage, Alaska 99501

Dear Mr. Wittow:

In response to your request, this letter describes the report AEIDC would submit to Representatives Malone and Rogers on the long-range socio-cultural impacts of the proposed Susitna Hydropower project.

SCOPE OF WORK

AEIDC will submit a report to Representatives Hugh Malone and Brian Rogers on the long-range socio-cultural factors which should be considered in connection with the Susitna hydropower project as presently proposed. The report will analytically survey, within the constraints of time and funding, the policy and planning issues which should be taken into account.

Relevant considerations include, but need not be limited to, the impacts on:

Human occupancy patterns in the affected region:
- Population trends
- Housing and attendant services
- Land ownership patterns

Infrastructure:
- Energy
- Transportation
- Communication
- Other public facilities

Employment opportunity patterns
- Government, corporate, private

Economic developments in:
- Manufacturing and commerce
- Mining and real estate
- Recreation and tourism
- Agriculture and fishing
- Other

expenditures require more state $ than revenue takes in on jobs

UNIVERSITY OF ALASKA

Political developments in:
- Governmental jurisdictions
- Regional voting patterns and political strength
- Land use planning and regulation
- Taxation

Environmental impacts and cultural change

The cultural past



Attitudinal developments:
- Value framework
- The cultural mix: way of life/lifestyle

While the focus of this report will be on the long-term, appropriate attention will be paid to developments and trends in all phases of the proposed project: pre-construction, construction, post-construction. The underlying emphasis of the study will be on the effort to portray the interacting interrelationships between developments in the above noted areas which come together to form the cultural whole.

Time and funding permitting, an attempt will be made to find and research experiences with similar hydropower projects in other northern regions of the United States, Canada and Scandinavia.

It is anticipated that the costs of this study will amount to $8,500, with the report to be submitted by March 1, 1980.

Sincerely,

Charles Konigsberg

Charles Konigsberg
Research Associate

CK/bsm

PLEASE REPLY BY AIRMAIL

Another energy related issue concerns a study of alternative energy sources for the Anchorage and rainbelt area. A multi-billion dollar dam is planned for the Susitna area. Environmentalists oppose the project, and the legislature has appropriated some money to study alternative sources of energy. Our area of concentration will be conservation, solar, and perhaps natural gas. Much has already been written on the efficiency of conservation in providing needed energy, and the off-the-shelf feasibility of solar technologies. We will not be attempting to recreate this research, but rather to apply existing research to the specific facts of the Anchorage and railbelt areas. On one level we will determine which technologies work best in Alaska, given our different geographic and climatic situation. On another level, we will address the management system which is necessary to deliver conservation or solar power to significant numbers of the population.

This management system will include a complete review of statutory, regulatory, financial, and tax considerations, in addition to more traditional management considerations. The dilemma with conservation and solar energy programs is its decentralized nature. While this is an attractive feature to many (myself included), it requires a different approach than a conventional energy alternative. Instead of dealing with a few utilities or large corporations, solar and conservation programs depend upon the actions of hundreds of thousands of individual consumers, many of whom lack technical or financial knowledge which is necessary to make informed decisions.

Thus, market considerations are not as important for the so-called "soft" technologies, as for the hard. Community education, training, and merketing are necessary to achieve widespread acceptance of solar or conservation technologies that are already available at a competitive price. Moreover, consumers may lack the financial ability to finance solar or conservation investments, while utilities are better able to raise equity and debt capital. Other problems need to be addressed also. Pricing strategies by electric or gas utilities can either encourage or discourage conservation or solar efforts. Zoning policies can provide assurances to solar investors that sunlight will be available, and building codes can require higher insulation standards.

These ideas are not particularly new, of course. Our job is to adopt these concepts to Alaska, in the most specific, practical, and compelling way. We want to identify political problems in adopting certain policies, and to discuss the constituencies that would support a good energy program. The impact on employment will be quantified and compared to that of the dam project. Our goal is to avoid dealing in the abstract, and to design a program that is ready to implement.

The Montana Energy and MHD Research and Development Institute, Inc.

Post Office Box 3809
Butte, Montana 59701

(406) 494-6100
FTS 587-6100

September 21, 1979

Mr. Mark Wittow
ALASKA LEGISLATURE
727 N. Street
Anchorage, Alaska 99501

Dear Mr. Wittow:

It was indeed a pleasure talking with you relative to the energy demand study that you are about to commence. The impact of renewable energy utilization and market penetration and its impact on conventional energy delivery sources and systems is an area of great interest to Montana.

Enclosed are several items that relate to MERDI and the types of work that we undertake. It is possible that John Orth and I would be available to assist you in your studies even though our schedules are quite full. However, John & I always seem to be able to schedule a bit more work here or there.

I appreciate your interest and if you are in this area please plan to drop by and visit the Institute.

Sincerely,

Jerry D. Plunkett

Jerry D. Plunkett
Managing Director

JDP:pf

Enclosures (1) CFI Information
(2) MERDI Brochure
(3) Montana Renewable Energy Program (Proposed)
(4) Montana Energy Conservation Plan (under separate cover to follow)

Tentative Outline -- Power Alternaitves Study, Conservation and Renewable Energy Sources Section

I. Develop a detailed plan of study.

Responsibility--Center for Policy Studies, in conjunction with the Federation, Seifert and other consultants.
Completion--first draft by November 9, 1979, revision by November 15; final plan should become scope of work for the final contract, due by November 30.

II. General Tasks

A. End Use Structure. Establish the general end uses of energy by category for the power planning regions of the Railbelt: Anchorage-Cook Inlet (inc. Mat-Su)
Fairbanks-Tanana Valley
~~Glenallen-Valdez (?)~~

Responsibility--Federation, with assistance from ISER, Seifert.
Completion--February 1, 1980.

B. Potential for Energy Conservation. Establish good numbers for possible levels of conservation. What efficiencies will result from positive actions from consumers, businesses, government, utilities? The numbers from this portion of the study will be used in the second half of the ISER demand analysis to determine future electric demand at various levels of conservation.
Responsibility--Federation and Center, with appropriate technical advice (engineering, architectural and economic).
Completion--March 1, 1980 (firm)

C. Potential for Renewable Energy Sources. What contribution can the various sources make in the next 25 years? Again, numbers used here will be used in the ISER forecast.
Possible sources include active and passive solar, wind, geothermal, tidal, small hydro, fuel cells, hydrogen, biomass, wave, marine thermal and heat pumps.
Responsibility--Center overall, with Seifert, Council on Science and Technology, various consultants as needed.
Completion--March 1, 1980 for estimates of potential contribution.

D. Policy Development and Implementation for Delivery of Conservation and Renewable Energy Sources. This section would discuss how to accomplish Parts B & C in practice. It would include work on legislation for the 1980 and 1981 sessions, and would consider education efforts and market incentives as well as legal standards or mandates. Ideas such as cogeneration, loan programs, labelling of life-cycle energy costs would be discussed. The responsibilities of the pertinent state agencies, such as the Alaska Power Authority and the Division of Energy and POwer Development would be reviewed, with an eye for needed changes. A proposal for a Solar/Conservation Retrofit Assistance Program (SCRAP)?
Responsibility--Center, with assistance from Federation and consultants.
Completion--1980 legislative package by January 7, 1980, final report by April 1, 1980.

The final product of each part should be a report, written for a knowledgable but general audience.

(10-12-79)

rough breakdown of figures

60,000 ISER

20,000 GE

15,000 Me

5000 Exp

5000 Consult

5000 Trans.

10000 AEIDL

5000 SVD

125

(5 Cons)

IB - Demand

10,000 - Fed

5000 Seitert

500 - Fryer

2000 - Reg

~~AKDIRG~~

15,000 - AKPIRG

~~5000~~

10,000 - Outside MERDI, Dubin

10,000 - alternatives

54500

Phase I

economic

study

Principal Investigator

68,500

10-12-79
• Fairbanks

Lovins, Myers, Fischer, Seifert, Baumgartner, Rogers, Witbeck, Stranks

(1) end use structure
(ISER - Federation)
project end use out into the future

(2) Potential from Energy Conservation (Fed - engineers - architects)
estimate

(3) Potential from Renewable Sources (Seifert, AkPIRG, Fed)
solar, wind, small hydro, geothermal, tidal, fuel cells
~~Seifert~~

experts:
Energy Policy

(4) Given potential, how is it delivered (AkPIRG, Fed)
what proposals will achieve this.

coal
natural gas

Given demands + supplies, what are the cheapest ways of satisfying demand?
Where can investments best be made?

Fri, Nov. 9th - meeting of all consultants in Anchorage

Brian -
(How to tie this into a whole?)

[Fischer] (Center for Policy Studies) - Center has no staff, wants to provide medium for sponsoring progressive ideas, contracting to individuals to do the work. Center can function as coordinator for the effort

BK - want to encourage contact between activist groups in Fairbanks and Anchorage.
Only way to discourage Susitna is with hard proof.
Feasibility studies will take 3 years
Should implement policies, can have effect on decision in 1982+3.

Council on S + T - would like to do seminar with experts on various alternative forms of generation

Fischer - have initial phase of designing study - Nov 9/15)
Draft of Phase One by Nov. 9

Seifert - Who's responsible?
Fischer - bring advisors in, discuss components as outlined by Committee
our role to come up with coordinated research plan
+ we → general coordination with study

Individuals

Seifert - course on renewable resource assessment for the state
done in general manner
regional variation - detail needed for good analysis
course study will have some quantifiable information
assumed flat 3½% growth per year
matching end use requirements to need
→ Transportation primary sector of consumption
main interest in solar energy
passive space heating → need new construction rates for housing
would like to work through the Institute

Baldgartner - Federation began in 78. "House doctor" program
telling people where they can conserve.
Skaggs just attended Lovins conference on soft energy paths
will look at end use structure for Railbelt. FNSB study provides
good basis for area-wide study.

Love (~~Center for Policy Studies~~) - previous work - utility, tariff cases, oil & gas policies
housing, finance, banking
aim -
Designing pragmatic solutions to problems - social benefits viewpoint
Want to work with people who have knowledge on conservation, solar energy,
synthesizing report on possibilities for delivering existing systems to consumers
Want to take →s, review economics, management systems, legal, market
incentives

Seifert - UA program for renewable resource development, alternative energy
2nd priority
(BR - renewable resource institute) -
unresolved mandate by President
(BR - have leadership interested in creating Inst. at UA
large financial commitment)
Process - Council SPT + Pres of UA app for planning
Flo + Anch branches
could be done through existing Inst. - but need visible
work in renewable energy
+ UA Innovation Center)

Seifert - will need economist to work over data

Costs of study -

To do - coordinate with VIC

① list of tasks, breakdown, coordination

② timetable - work products, deadlines

③ available experts, areas of concern

(draw up as many contracts as possible)

coordination of study sections with whole

Talk to BR

- ISER contract
- other contracts
- Conway?
- 12/15 meeting on assumptions, new data?
- my hiring -

Call Energy Probe
Jerry Plunkett, MERDI

→ Scott Goldsmith - cooperation with this study
when can we get data
on population, housing stats

Seifert → need economist to put solar work, etc. into proper terms, comparisons

Fed → need engineer, ~~acct~~ can probably find people at UAFb.
Bob Seitz - electrical motor efficiency
need to know what Goldsmith/ISER is doing on this,

need to get California distributive energy system study]

Have Nancy send stack of leaflets to Glenda
c/o Leg GLOF Grenig

→ Scott Goldsmith, ISER, should have extra $ written in for consulting with Center for Policy Studies.

Thurs. - ISER - ~~Scott~~ Call Glenda Monday
L 8am

WHILE IN SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907)465-4925

HOME:
BOX K - COLLEGE
FAIRBANKS, ALASKA 99708
(907)456-2037

BRIAN ROGERS

Alaska State Legislature

POWER ALTERNATIVES STUDY

October 17, 1979

Chris Conway
Energy Probe
43 Queen's Park Crescent East
Toronto, Canada M5S 2C3.

Dear Chris:

Enclosed is the draft contract and scope of work for the University of Alaska Institute of Social and Economic Research power demand forecast. Also enclosed is a draft contract with the Alaska Center for Policy Studies for a study of the potential for conservation and renewable energy sources in the Railbelt area of Alaska. We have asked you to review the demand forecasts, and to be available to advise the principals in the study by the Center.

I have also included materials that should provide some information on the background and present status of the Susitna hydropower debate.

WE have asked you to come to Anchorage on November 9th to meet with the other participants in the Power Alternatives Study, and participate in the Alternative Energy Conference (brochure attached.) You will be able to arrange meetings with Institute personnel on Monday and Tuesday, at your convenience, following the conference.

You should contact Nancy Lee, at the Alaska Center for the Environment (907-274-3621) for details about your participation in the conference, housing/hotel, etc. She has promised to take good care of you and other Energy Probe members.

I expect to be leaving for Ohio and the East Coast on Tuesday, October 23rd. If you need to reach me, I will be at 216-759-0433 after Oct. 25th. For details on the study, you can contact Representative Rogers, or his aide Glenda Straube, in Fairbanks at 907-479-7692, Room 610F, Gruening Bldg., University of Alaska, Fairbanks 99708.

I look forward to reading your work proposal, and hope to have a chance to meet you soon.

Sincerely,

Mark Wittow

Mark Wittow
Study Coordinator

cc: Representative Brian Rogers
Nancy Lee

billing -
{ man-hours - fixed
{ travel, etc. - variable

Energy Probe / Enquête Energie

Mr. Mark Wittow,
Research Co-ordinator,
Alaska State Legislature,
727 N Street,
Anchorage, Alaska,
99501.

21 September, 1979

Dear Mr. Wittow,

Further to our telephone discussion, I would like to outline our understanding of the research your agency would like performed, and provide information about our organization.

During our conversation, we identified three study areas that might contribute to Alaska state energy policy objectives and your particular study program:

(a) an analysis of the electricity demand forecasts being used by the Alaska Power Administration and the Institute for Social and Economic Research;

(b) an examination of the options that could be undertaken at the state and local level to achieve certain conservation objectives;

(c) the development of an energy end-use data base for the state that would provide information on the potential for conservation and alternative energy supply strategies.

After discussions with my staff, we agreed that option (c) - the end-use data base - could not be developed within the time frame of your agency's present activities. Because an end-use data base requires extensive research (usually at the primary level), we could not foresee our undertaking the task within the time available. I would urge, however, that your agency examine at some future point in time, the possibility of developing such a data base.

cont'd.....

Energy Probe
43 Queens Park Cres. E.
Toronto, Ontario M5S 2C3
(416) 978-7014

A project of the Pollution Probe Foundation
This paper contains recycled post-consumer waste.

Home #
633-5805

Energy Probe remains interested, however, in participating in the other two study areas. I have enclosed a brief description of how I see each study developing, though I have not at this point assessed the costs of the research. As a ball park figure, I would estimate the first to require approximately $10,000. Costs for the second would vary directly with the scale of our involvement. On this point, I would require a fuller understanding of the project details and your objectives.

I have also enclosed the following, all contained within the blue folder:

(a) information about Energy Probe and its parent organization, The Pollution Probe Foundation;

(b) personnel profiles for those individuals who would be involved in the research.

The attached reports are samples of the research that Energy Probe has performed over the last few years.

If your agency is interested in having this research performed by Energy Probe, or if some related research is required, I would be happy to submit a detailed research proposal and budget for each of the studies. If you have any further questions, please feel free to call me at Energy Probe or at Ryerson Polytechnical Institute, (416) 595-5165. I look forward to hearing from you soon.

Sincerely,

Chris Conway

Chris Conway,
Policy Researcher
Enclosures

load forecasts
timeline for the 12th

When can they come up?

Glenda -

pay good attention,
because you're going to
end up handling a lot of
important details, such as
contracts, etc.

POST OFFICE BOX 158
HAINES, ALASKA 99827

HOTEL
HÄLSINGLAND
"Gateway to the Interior"

HILMA & CLARENCE MATTSON
TELEPHONE (907) 766-2641

Mark Wittow,

We discussed legislation for the appropriation of funds for research on synthetic energy. I'am sending resume to show involvement in solar hydrogen economy research. The research I have completed to date is not technical. The research was determine whether or not there is an economic base for the production of synthetic fuel in southeastern Alaska. Other involvments include lecturing and published articles about same. I personally feel that any legislation or necessary steps taken now concerning future energy sources will ultimately benefit future Americans. I would and have made this an objective, I am not aware of the means for completely involving myself politically in this issue, if you can in any way direct me to a group of people who are involved in this type of endeavor, or if I can be of any assistance to you, I would be helpful and would devote myself to synthetic fuel program.

Regards,

Gerard R. Kuenstler

Gerard R. Kuenstler
P.O. Box 72862 Fairbanks, A.K.
99707

Energy Planner

Occupational Goal

To participate in an energy related program, which will provide workable solutions to help alleviate increasing energy costs.

Educational Background

1970..... Metropolitan State College, concurrent enrollment Opportunity School completed one year Philosophy requirement for liberal arts degree, one semester fundamental electronics.

1971..... University of Mexico @ Mexico city, attended two week seminar in Epistemology and Epiphenomenalism.

1972..... Community College (Colorado) Completed one year Civil Engineering (Surveying) requirements, used Colorado School of Mines engineering and research facilities.

1973..... University of Northern Colorado, completed one years research work in Direct Energy Conversion, one year senior level electronics (electives).

1974..... Colorado State University, enrollment in Engineering Science program.

EXPERIENCE

1958..... Photovoltaic exhibition for community science fair. Lectured on density driven (thermosiphon circulation). Exhibited transitorized radio that operated on an array of photo-voltaic cells.

1972..... Attended energy conferences @ C.S.M., D.U, C.S.U. Worked on committee for Solar rights in Colorado. Helped perpetuate Solar oriented programs throughout Colorado. Lectured on residential applications of Solar at Real Estate Seminar.

1973..... Designed, constructed, monitered several prototype Solar Collectors while attending U.N.C. Designed and monitered a protype system that functioned on the concept of forced convection. The system operated at an overall higher efficiency as a result of integrating forced air and fluid circulation. The system minimized the problem of extreme temperature differential exhibited by some Solar systems commercially available at that time. This system is now operational and used for heating in Denver Colorado. Although no patents were applied for, this system was incorporated into several commercial and residential designs.

1974..... Guest lecturer University Northern Colorado. Discussed Sun Spot activity and economic prosperity.

1975..... Worked as research assistant @ Solar house one C.S.U. Our research efforts foscused on development and monitering of various heat exchangers to be used with Solar assisted agricultural equipment.

1976..... Organized a consulting firm, HELIO-TECH SYSTEMS DESIGN a non-profit organization. Completed a Solar feasibility study in Dec. of 76 for two locations in Alaska. Evacuated tubular collector was used for space heating program, thermal efficiency values exhibited by conventional hot water collector were used for D.H.W. study. Responsibilities included design recommendations, (residential and commercial) study of building and zoning codes, as well as coordinating comprehensive energy planning.

1977..... Worked as an instructor for Tanana Valley Community College @ Fairbanks. The program offered consisted of Solar engineering-design applications in urban and rural Alaska.

1978..... Photovoltaics and Lunar mining. Discussion of Boeings proposed photovoltaic project, environmental considerations, ultimate project costs to the tax payer, brief public lecture on the economics of Lunar mining.

1978..... Discussed the International Space Program with emphasis on the Solar Hydrogen Economy, applications in space transport, space shuttle, residential cooking and heating, air conditioning, automobiles.

PERSONAL INTERESTS

1977..... Research efforts, in the interest of perpetuating space technology, research efforts were concentrated on establishing an economic base for the electrolytical production of hydrogen at one of two prime locations in southeastern Alaska. The study is the result of the hearings of The Committee On Science And Technology, U.S. House Of Represenatives, 1976.

Age-32
Marital status- Single
Hobbies- Back packing in wilderness areas, astrophysical theory.

Military- FEB 20, 1964----DEC 13, 1967---- AIRMAN U.S. NAVY
2 years-H.T. 8 USNAS Helicopter Squadron Pensacola, Florida
1.8 years- Administration, USNAS Guantanamo Bay, Cuba.
Honorable Discharge

HOTEL
HÄLSINGLAND
Box 158 - Port Chilkoot
Haines, Alaska 99827

Gerard Kuenstler
P.O. Box 72862
Fairbanks, Alaska

AUG 18 1979

Mark Wittow
727 N
Suite No. 2
Anchorage, Alaska
99501

REPLY TO:
Rep. Brian Rogers
Box K -- College
Fairbanks, Alaska 99708
907-479-7692

Alaska State Legislature

POWER ALTERNATIVES STUDY COMMITTEE

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

October 29, 1979

Jerry Plunkett
Montana Energy Research and Development Institute
PO Box 3808
Butte, Montana 59701

Dear Dr. Plunkett:

Thank you for taking the time to explain the guiding philosophy and operations of MERDI. I very much enjoyed every minute of my time in Butte. I was extermely impressed with the range and quality of the issues that the Institute and its offshoots are tackling. Alaskans have much to learn from your efforts in Montaana. I hope I can help establish a relationship between those ngegaged in energy-related work in our two states.

I will be describing the work of the Institute in detail to Representative Brian Rogers. He and fellow DEmocrats in the State House are interested in establishing some sort of Alaskan institute to work on energy issues. I will pass along the substance of your thoughts on this, and encourage interested legislators to use MERDI expertise to help shape our ideas and plans. As we discussed, something like your Cneter for Innovation would be particularly valuable as a bridge between our northern technology grants program and the Alaska Renewable Resources Corporation.

The plans that MERDI has completed for renewable energy development and energy conservation in Montana are the best state-wide plans I have seen. Again, here we have much to learn from your work. I would expect that we will want to seek your adivce as our own studies progress. Your participation in the November 9th meeting in Anchorage will be ~~the initial~~ of great help in designing our study.

Representative Rogers is looking forward to talking with you. He will be ~~arrangin~~ trying to arrange meetings with you and Rep. Russ Meekins, House Finance chairman; Rep. Hugh Malone, co-chairman of the committee; and Phil Hubbard, a trustee of the Alaska Renewable Resources Corporation. Rep. Rogers would like you to try to contact him at the above number so that he can work out the details of your visit. You may also consult my previous letter for further details of your trip to Anchorage.

Again, thank you for your hospitality. Please thank John Orth, Ed O'Hair, Frank Fogarty, Terry Kirkland and all the other MERDI staff I talked with during my all-too-short stay. I hope to see all of you again, for there is much to learn. Take care.

Sincerely,
Mark Wittow
Mark Wittow, Study Coordinator

my address until 1/80: 5493 Sampson Dr.
Girard, Ohio 44420
216-759-8433

reply to:
Rep. Brian Rogers
Box K -- College
Fairbanks, Alaska 99708
907-479-7692

Alaska State Legislature

POWER ALTERNATIVES STUDY COMMITTEE

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

October 29, 1979

John McRide & Sherry Eisenbart
National Center for Appropriate Technology
PO Box 3838
Butte, Montana 59701

Dear John and Sherry:

Thank you for taking the time to talk with me about the Center and your work. I hope to make people in Alaska more aware of the services that the Center can provide. The amount of information and personal contacts that NCAT has developed should be of great help to anyone in Alaska working on solar technologies, weatherization and conservation,or agriculture.

I apologize for the limits of my quick visit. Please thank Toby Benson, Suzanne Merriam, Bill Wadsworth and Larry Palmiter for the time they spent with me.

Hope to see you again -- keep up the good work.

Sincerely,

Mark Wittow

Mark Wittow
Study Coordinator

HOUSE POWER ALTERNATIVES
STUDY COMMITTEE
610F GRUENING BUILDING
UNIVERSITY OF ALASKA
FAIRBANKS, ALASKA 99701

November 26, 1979

Chris Conway
Energy Probe
43 Queens Park Cres. E.
Toronto, Ontario M5S 2C3

Dear Chris:

Don't let your heart fail you on this, but enclosed is the contract between Energy Probe and the Committee. Please sign and date it and forward it to Juneau in the enclosed envelope.

You should have received my latest memo by now which explains all the deadlines involved in the study. Another interesting proposal has come from Arlon Tussing and if we decide to fund it, then I'll send you a copy. The proposal involves a report on the electric utility industry currently serving the Railbelt area; the state and federal governmental agencies that promote, plan, and regulate the generation and distribution of electricity here; the history and status of the proposed Susitna project and other related topics.

We quite possibly will be contracting with you separately, at a later date, for the cost-effectiveness study that we had discussed during your stay here.

Give my regards to Bob. I hope to see you all on your other visits to Alaska. And remember, stay away from Chicago.

Sincerely,

Glenda J. Straube

Glenda J. Straube
Administrative Aide

HOUSE POWER ALTERNATIVES
STUDY COMMITTEE
610 F Gruening Building
University of Alaska
Fairbanks, Alaska 99701

November 2, 1979

Mr. Bradford Tuck
1822 Cindylee Lane
Anchorage, Alaska 99507

Dear Mr. Tuck:

Enclosed is the contract between yourself and the House Power Alternatives Study Committee. If you are agreeable to the terms, please sign and forward to Myrton Charney as soon as possible.

The Committee will be holding a work plan meeting in Anchorage on Friday, November 9 at the meeting room in the University Student Center at UAA. It will begin promptly at 8:30 A.M. and should not go beyond noon. I hope that you'll be able to attend.

Rep. Rogers would like to bring together as many of the consultants as possible for this meeting so that we might work out a detailed plan of study. Chris Conway and Bob Crow from Energy Probe will be there. They too are involved in the demand critique.

If you are unable to attend, please call me at 479-7692.

Sincerely,

Glenda J. Straube

Glenda J. Straube
Administrative Aide

HOUSE POWER ALTERNATIVES
STUDY COMMITTEE
610F Gruening Building
University of Alaska
Fairbanks, Alaska 99701

November 5, 1979

Mark Wittow
5493 Sampson Drive
Girard, Ohio 44200

Dear Mark,

Brian received your 5 page memo concerning MERDI. However, page 2 was missing. Could you please send it to us soon. I haven't seen the memo yet, but Brian said that it's extremely interesting.

The committee meeting on the 9th is set up and the following people will be there, Seifert, Baumgartner, Goldmsith, Jamie and Eric, Vic, Marc Fryer, Chris Conway and Bob Crow, Tussing, Tuck, Van der Ryn, Plunkett, Brian and myself. Apparently noone had called Sim back, so it was nip&tuck as to getting him here. Everyth ng is OK now, though. He's going to speak at the Conference on energy conservation emphasizing the potential of state and local government involvement to encourage conservation. He'll speak about the Farrallones Rural Center and hopefully show some slides. He's agreed to do a 2 hour workshop Saturday morning or waste disposal issues.

We miss you!!!!!! There are many things in life that I feel confident with, but this is not one of them. ha. Technically, I know very little about alternative energy and conservation but I am interested in it. Oh--- never fear, though ----I am keeping on top of the organizational end of the study.

Here's the rundown on the status of the contracts: Tuck (BR signed and forwarded to Brad), TUSSING (AT & BR signed, sent to LAA), VAN DER RYN (BR signed, sent to Sim), ISER (Signed and sent to LAA), CENTER (signed and sent to LAA), ENERGY PROBE (being drafted with final draft being completed upon meeting with Conway in Anchorage), PLUNKETT (have seen no paper work concerning contract for his consultation services and cannot reach him -- he's in D.C. Can deal with that when we meet in Anchorage).

Mark, if there's anthing else you might want to keep informed about, don't hesitate to let me know. I'll send you a memo after next weekend's meeting and Conference.

Glenda Straube

I sent Malone a letter concerning 11/9 meeting.

HOUSE POWER ALTERNATIVES
STUDY COMMITTEE
610F Gruening Building
University of Alaska
Fairbanks, Alaska 99701

November 2, 1979

Mr. Sim van der Ryn
Van der Ryn and Calthorpe
Drawer F
Inverness, California 94936

Dear Mr. Van der Ryn:

I spoke with Ms. Laurie Thompson from your office today concerning the possibility of your professional consulting services for the Alaska State Legislature's House Power Alternatives Study Committee. We feel that information and suggestions provided by you concerning energy conservation would be quite beneficial to our studies.

The Committee will hold a meeting on Friday, November 9 at 8:30 A.M. in the meeting room of the University Student Center at the University of Alaska/Anchorage campus. This Center is reached by going through the gymnasium complex, the Sports Center. On Saturday, November 10 at 9 A.M. we would like you to make a 20-25 minute presentation at the 1st Alaska Alternative Energy Conference. This will be held at the Cuddy Center at the University campus.

If possible, we would like this presentation to include energy conservation with particular emphasis on the potential of state and local government involvement to encourage conservation. You might use examples of the kinds of local conservation applications for rural self-sufficient projects such as the Farrallones Rural Center. Any slides you may want to show would be helpful also.

You might address waste disposal issues followed by a 10:30-12:30 pm workshop on Saturday on these issues.

Enclosed is a contract covering two days' work and travel expenses. If you find this agreeable, please sign it and forward in the enclosed envelope.

I apologize for the late notice. Mark Wittow, the Study Coordinator, recently left town and we have been extremely busy and at times have been slow in reaching everyone. I certainly hope that we will have the benefit of your knowledge and can find ways to adapt certain ideas to a sometimes unique Alaskan environment.

If you have any questions, please call me at (907) 479-7692.

Sincerely,

Glenda J. Straube

Glenda J. Straube
Administrative Aide

WHILE IN SESSION:
POUCH V
JUNEAU, ALASKA 99811
(907) 465-4925

HOME:
BOX K - COLLEGE
FAIRBANKS, ALASKA 99708
(907) 456-2037

BRIAN ROGERS

Alaska State Legislature

November 5, 1979

Rep. Hugh Malone
House Power Alternatives
Study Committee
727 N. State, Suite 2
Anchorage, Alaska 99501

Dear Rep. Malone:

Brian Rogers has asked that I write you concerning the recent memo Mark Wittow sent regarding the Montana Energy Research and Development Institute. Brian is missing page 2 of the 5 page memo and he was wondering if Mark included page 2 in your copy. If so, could you please forward a copy to him soon?

The Power Alternatives Committee will be holding a work session with a large number of the consultants on Friday, November 9 in the meeting room at the University Student Center in the UAA/ACC building. This meeting will begin at 8:30 A.M. and should be over by noon at the latest.

I realize that you are working and might be unable to attend. However, if you can make it, I think you'll find it quite interesting as Jerry Plunkett from MERDI, Chris Conway of Energy Probe-Cananda, Sim van der Ryn from the Farrallones Institute, and the Alaskans who are working on the study will be attending.

Sincerely,

Glenda J. Straube

Glenda J. Straube
Aide

Original sponsor: Rules/Governor

Offered: 4/30/79
Referred: Rules

Funding Information

General Fund	$8,528,000
Other Funds	-0-
	$8,528,000

IN THE SENATE BY THE FINANCE COMMITTEE

HOUSE CS FOR SENATE BILL NO. 63 (Finance) am H

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making appropriations to the Office of the Governor, to the Alaska Power Authority for feasibility studies for the Susitna hydroelectric project, and to the Legislative Affairs Agency; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. (a) The sum of $8,178,000 is appropriated from the general fund to the Office of the Governor for the purpose of paying costs of a portion of the Phase I feasibility studies of the Susitna hydroelectric project. The governor may not spend or obligate the sum appropriated in this section unless either

(1) federal legislation is enacted providing in substance for an agreement to repay the sum appropriated

(A) if the report issued as a result of the studies demonstrates that the Susitna hydroelectric project is not feasible; or

(B) if the report demonstrates the project is feasible and the Alaska Power Authority is not able to borrow money to pay construction costs of the project, including the costs of the report, based on the security of the project or its revenue within three years of the completion of the report; or

(2) a plan is developed that the Alaska Power Authority considers a reasonable alternative program for accomplishing the work required to produce a complete application to the Federal Energy Regulatory Commission for a license to construct the project.

(b) The sum appropriated may be spent or obligated by the governor, if either of the events described in (a)(1) or (2) of this section occurs on or before January 1, 1980.

(c) The program to be developed under (a)(2) of this section shall include the specific site work and public involvement required to develop needed environmental, economic and technical information, and must include an independent analysis of seismic potential and related design factors.

* Sec. 2. The sum of $150,000 is appropriated from the general fund to the Alaska Power Authority for the purpose of paying the costs of developing the alternative program referred to in sec. 1(a)(2) of this Act.

* Sec. 3. The sum of $200,000 is appropriated from the general fund to the Legislative Affairs Agency to contract for an independent study, in consultation with the Alaska Power Authority, to analyze (1) existing assumptions and findings concerning the power needs and population growth projections of the railbelt area; and (2) possible energy supply alternatives, including the proposed Susitna hydroelectric project. The alternatives shall include but are not limited to smaller hydroelectric, coal and gas-fired plants. A report shall be submitted to the legislature by April 15, 1980.

* Sec. 4. The unexpended and unobligated portions of the appropriations made by this Act lapse into the general fund June 30, 1980.

* Sec. 5. This Act takes effect immediately in accordance with AS 01.10.-070(c).

SUGGESTED LANGUAGE FOR A LETTER OF INTENT TO ACCOMPANY SB 63

The objective of the study in section 3 is analysis of the likely costs to consumers of power from Susitna compared to the costs of power generated from other sources. This will involve a reexamination of the power growth projections for the Railbelt area, including factoring in the best estimates of population growth, the effect on per capita electrical use due to price increases and other trends, the likely usage by the military and industrial sectors, and the availability of power from sources which are expected to go on-line before the Susitna Project begins generation. The study will compare the economics of Susitna to possible alternatives including smaller hydro, coal, and gas, and draw conclusions about what power modes are best suited to the future needs of Alaskans. This will involve consideration of variance factors-- that is, comparisons between those modes the costs of which can be fairly well determined and those the costs of which might vary over a wide range. Environmental factors will not be considered except where they directly impact the economics. Existing data may be relied on where it exists, but original work will be required for determining future power needs and for examining the possibility of using natural gas on or from the North Slope, at the very least.

PROPOSED AMENDMENT TO COMMITTEE SUBSTITUTE FOR SENATE BILL NO. 63

Add a new section:

Sec. 3. The sum of $200,000 is appropriated from the general fund to the Legislative Affairs Agency for contracting for an independent study concerning the feasibility of the proposed Susitna Hydroelectric Project and possible alternatives to it.

Expanded language:

The Legislative Affairs Agency shall contract for an independent study which, with the full cooperation of the Alaska Power Authority, will analyze the assumptions and findings concerning the economic and financial feasibility of the proposed Susitna Hydroelectric Project and possible alternatives to it. These alternatives shall include but are not limited to smaller hydroelectric, coal, and gas-fired plants, including the use of royalty gas from the North Slope. A report shall be submitted to the legislature by April 15, 1980.

More explicit language may be desirable in a letter of intent, or the committee might prefer to establish an oversight committee to work with the Legislative Affairs Agency in determining the exact scope of the study.

CONTRACT BETWEEN

STATE OF ALASKA
LEGISLATIVE AFFAIRS AGENCY
Pouch Y, State Capitol
Juneau, Alaska 99811

and

ENERGY PROBE
43 Queens Park Cres. E.
Toronto, Ontario M5S 2C3

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, on behalf of the Alaska State Legislature's House Power Alternatives Study Committee, hereinafter referred to as the AGENCY, and ENERGY PROBE, hereinafter referred to as the CONTRACTOR.

THE ABOVE PARTIES TO THIS CONTRACT, in consideration of the covenants hereinafter contained, hereby mutually agree to the terms and conditions hereinafter set forth:

CLAUSE I - STATEMENT OF WORK

(A) Scope of Work
Set out in Attachment A

(B) Schedule

1. Task 1(A) of Attachment A shall be completed by December 10, 1979.
2. Task 1(B) of Attachment A shall be completed by January 7, 1980.
3. Task 1(C) of Attachment A shall be completed by April 1, 1980.
4. Task 1(D) of Attachment A shall be completed by May 1, 1980.

CLAUSE II - PERIOD OF PERFORMANCE

The period of Performance shall be retroactive to November 1, 1979, and terminate on July 1, 1980.

CLAUSE III - TERMINATION

This contract may be terminated by either party upon 30 days notice to the other party.

CLAUSE IV - PROJECT DIRECTOR

The Project Director shall be the Honorable Brian Rogers, Co-Chairman of the House Power Alternatives Study Committee.

CLAUSE V - COMPENSATION AND METHOD OF PAYMENT

(A) Payment for Task 1(A) and 1(B) of Attachment A shall not exceed U.S.$4,000.00 and shall be payable immediately upon billing by the CONTRACTOR.

(B) Payment for Task 1(C) of Attachment A shall not exceed U.S.$4,000.00 and shall be payable immediately upon billing by the CONTRACTOR.

(C) Payment for Task 1(D) of Attachment A shall not exceed U.S.$2,000.00 and shall be payable immediately upon billing by the CONTRACTOR.

(D) Total compensation shall not exceed U.S.$10,000.00.

(E) The CONTRACTOR shall receive no payment in addition to that specified in Clause V(D) for travel and related expenses unless the Project Director requests that the CONTRACTOR travel between the CONTRACTOR'S place of business and Juneau.

CLAUSE VI - RECORDS, DOCUMENTS, AUDITS

The CONTRACTOR shall maintain accurate records, including detailed time records, as may be required by the AGENCY. The records are subject to inspection by the Project Director of the AGENCY at all reasonable times. All documents, reports and writings produced in the course of the work performed under this contract are, upon delivery to the Project Director or the AGENCY or at termination of this agreement, the property of the AGENCY, and/or in the public domain; provided that the CONTRACTOR will have the right to use any such materials for purposes of writing about or discussing the issues.

CLAUSE VII - ALL WRITING CONTAINED HEREIN

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on the dates indicated.

CONTRACTOR

Chris Conway — Date
Energy Probe

LEGISLATIVE AFFAIRS AGENCY

Myrton R. Charney — Date
Executive Director

Accepted:

Rep. Brian Rogers — Date
Co-Chairman, House Power
Alternatives Study Committee

Approved as to Form:

Agency Legal Counsel — Date

ATTACHMENT A

1. Scope of Work

A. Examine current state and structure of the ISER electricity demand forecast. Collect data and information in order to perform a more detailed investigation of the forecast in conjunction with ISER forecasting personnel.

B. Prepare report to ISER forecasting staff which states an evaluation of the current model, identifying areas in which it should be revised and improved. Outline any additional data requirement necessary for an in-depth analysis of the forecast.

C. Maintain an ongoing analysis and development of alternative coefficient and independent variable values and an ongoing analysis of structural adequacy of model.

Continue involvement and discussions with ISER personnel resulting in development and evaluation of alternative model structure and components.

Perform a sensitivity analysis on electricity demand as it relates to different market share and efficiency assumptions.

D. Examine normative context within which the ISER forecast will be introduced, with specific reference to the effects of proposed or potential policies on electricity growth and the impact of these policies on preferred model structure and interpretation.

Submit final report outlining: the revisions (if any) that were made to the ISER forecast during the course of Energy Probe's involvement and the rationale for these revisions, changes that were recommended by Energy Probe but which were not incorporated into the model and the effects (if any) of these, the appropriate role and interpretations of the model results given these revisions.

2. Other Considerations

A. CONTRACTOR may provide additional services upon the request of the Project Director.

B. Scope of Work will include travel for 4 round-trips between Toronto and Alaska.

9/25 H. FINANCE

ERIC YOULD Ak Power Auth.

- Finance project
- Finance + own project
- Finance, own, operate (e.g. Susitna)

Biggest service – capital intensive hydro + coal plants

Use revenue bonds, state seed money (recon study, detailed feasibility analysis ⇒ FERC. once ok ⇒ Rev Bonds).

Problem w/ small hydro, but revenue bonders will not invest for small communities

Cannot act timely on small generation.

⇒ Need ok for small projects w/o legislature

It's a matter of economics. A matter of what is feasible.

Are using coal gasification →

ROB SULLIVAN (? prez) Ak Mutual Savings

Board – AHFC

would prefer guarantee program

FLOYD JOHNSON – American Legion

SB 152 | HB 20

Personal, business loans lost in transition

ED KEARN AG LOANS

Year

University Student Center
- thru gymnasium complex
8:30 - 11:45

People to attend Susitna meeting on Nov. 9

* - notified

* Seifert - renewable resources - solar
* Baumgartner - energy conservation & end use
* Goldsmith - demand forecast
* Janice -
* Eric Myers - Policy develop
* Marc Fryer - oversee renew. resources
* Chris Conway } demand critique
* Bob Crowe }
* Arlon Tussing - overview
* Brad Tuck (?) - demand critique
* Jim Van der Myn (?) - energy conservation
* Jerry Plunkett - " "

(206) 447-0[illegible]
(415) 669-7155

General Concerns

(1) Integrity - conflicts of interest / a) demand studies, b) study can't build

(2) Adequacy of fishery studies / Acres-Horza battle

(3) Ability of demand to integrate varying assumptions projections, etc.

(4) Quality of study of alternatives esp. conservation

(5) Geotechnical -

√(6) Marketing of power - guarantees vs. presale / danger if work overruns

(7) Public participation (compliment Yould)

(8) Ice processes, etc. models need to be developed for Alask

---

Talk to APA about responsibility in guiding large projects - need to spend $ on information - pipeline experience, obj comparable

MIKE GRAVEL
ALASKA

Budget
Susitna

United States Senate

WASHINGTON, D.C 20510

WEEKLY SUMMARY

JUNE 25 - 29

(A review of activities in Washington, D.C., during each week the Senate is in session. Available without charge: write to 3121 Dirksen Building, U.S. Senate, Washington, D.C., 20510.)

WASHINGTON -- The Office of Management and Budget has finally seen the light and released its hold on the Susitna Hydroelectric Project. OMB conveyed the project to the Congress on Tuesday, thereby approving it for final design engineering. The action comes more than two years after the Corps of Engineers approved the site and requested the go-ahead for full project planning. OMB required further geologic and environmental research and provided an additional $3 million to perform the research. That work was finished early this year and again the Corps said full planning was justified. But OMB delays went on. I have been negotiating with OMB throughout the year to get the project released, while at the same time I introduced legislation which would have given direct Congressional authorization, thereby superceding the need for OMB approval.

Susitna would be a two-dam project, located on the Susitna River about halfway between Anchorage and Fairbanks. It can provide more than half the electricity needs of the "railbelt" area, including Anchorage, Fairbanks and Seward -- and it can do so at a relatively low cost, with a minimum of environmental consequence (especially compared to alternatives like coal and oil-fired plants). It would put Alaska solidly onto a renewable resource power base.

Susitna now enters the so-called Phase I stage. During this stage, final pre-construction work is completed: engineering design, cost/benefit analysis and final environmental impact statement. The decision to construct is not made until after Phase I work is completed -- probably between three and four years for Susitna. The estimated cost is around $2 billion. The project would involve a 635-foot concrete dam at Devil Canyon, with generating capacity of 775 megawatts (775 million watts); and an 810-foot earthfill dam at the Watana site 31 miles upstream with capacity of 792 megawatts. Together, they would generate an estimated 6.91 billion kilowatt hours per year, about 60 per cent of the estimated "railbelt" need in the early '90s, when they are to be completed.

The project is proceeding under the Hydroelectric Power Development Act of 1976, which I authored and which permits a state to use the Corps essentially as a contractor in building a dam. The state pays for the dam and owns it, along with the power it produces. But at the same time, the federal government guarantees the project, paying for Phase I work if it should produce a "no-go" decision. State funding also gets the project out of the Congressional appropriations process, which means no funding delays, and that in turn means quicker and less expensive construction.

At the same time, I am also working with the OMB on a proposal for

(3)

DRAFT

MEMORANDUM

TO: The Honorable Brian Rogers

FROM: Gregg Erickson

SUBJECT: A natural gas based electric economy in central and southcentral Alaska - hazards and prospects

SUMMARY

An important part of the legislature's study of alternatives to the proposed Susitna Hydroelectric Project will be an analysis of the prospects and possible risks associated with basing the electrical economy of the railbelt area of Alaska on natural gas fired generation. At your request, we submit here our preliminary study design for conducting this Analysis. We propose to carry out the work described below for a fixed fee contract price of $20,000 over a period of 3-1/2 months, commencing on 1 December 1979 and concluding on 15 March 1980.

BACKGROUND

Since you are already fully familiar with the background of the Susitna project itself, and the factors that caused the legislature to request a Study of Alternatives, we will discuss these matters only briefly.

Although questions remain concerning the railbelt electricity demand projected for the next decade and beyond, existing studies by the region's utilities and others anticipate average annual growth rates of 10% or more.

The Susitna project is being held out by its proponents as a means of meeting this growing demand, and simultanously insulating power consumers from the repetitive cycle of energy cost increases that have marked the past seven years. Whatever the promise of the Susitna Project may be, however, a judgment of its appropriateness must be made in the context of the various alternatives that are available to it. One of these alternatives is clearly an electrical economy based on natural gas. Such a development path would be an extension of what has already occurred in the Anchorage area, where natural gas has come to completely dominate the generation picture. A similar scenario may be plausably constructed for the interior, commencing with the completion of the Northwest Alaska Gas Pipeline.

Even if the Susitna Project is constructed, service reliability standards will require that new generation capacity be developed in the Anchorage/Kenai and Fairbanks intertie areas to handle both the load growth occurring between now and the time Susitna comes into service, and to serve as backup to Susitna once it

(12)

is built. Almost all of this interim and "backup" generation capacity is expected to be either gas fired or easily convertable to natural gas.

Given these expectations it is reasonable to review in depth the question of whether Alaska might be able -- or more importantly, well advised -- to dispense with Susitna entirely. An important component of the information necessary to answer this question will be elucidated in the study outlined below.

STUDY DESIGN

1. Historical Background: The choices raised by the Susitna project are not totally unprecedented, even in Alaska. For example, the decision to construct a MINE mouth power plant at Healy added, in the context of the Fairbanks power demand of that day, a comparable increment of capacity. The Rampart and Eklutna experiences also provide important insights to the kinds of issues posed by Susitna. We contemplate conducting this part of the project in association with an academic historian who has already written on and studied this particular sub-area of Alaska history.

2. Institutional Factors: Recent federal legislation (the power plant and industrial fuel use of 1978) sharply restricts the extent to which natural gas (and oil) may be used to fire new electrical generation facilities. A central part of this project will be an evaluation of whether this and other potential end use regulations effectively eliminate the natural gas alternative.

   At first blush, it would seem unwise for Alaska to pursue a power strategy that so clearly flies in the face of congressionally enunciated national policy. Nevertheless, several factors argue for careful consideration of whether this policy will pertain in the future, and -- if it does -- whether exceptions might be made for Alaska. For example, it is possible that a transfer of Alaska's royalty gas might be structured in a way that avoids the act's restrictions; a legal analysis of the act directed at this issue will be a part of this project.

   If the act cannot be circumvented, it is still possible that economic factors unique to Alaska or general to the nation will result in some sort of "amendment" of the current "policy." This has already happened to some extent in response to the administration's recent realization of a potential "near term" "surplus" of natural gas. Environmental protection factors or "unique hardship" arguments may also be possible.

In any event, even if Susitna is approved it seems certain that some sort of relief from the Act's restriction will have to be sought, since the demand growth expected between now and the earliest date Susitna could come on line can not realistically be met by coal fired generation (oil fired generation is also restricted).

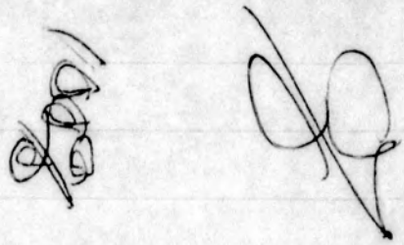
3. Economic Factors: The major economic hazard associated with expanded reliance on natural gas for power generation is that Alaska gas prices will continue to rise in response to world oil price increases. If world energy prices continue to rise, it is likely that the phasing out of federal regulation of natural gas prices would make those prices even more responsive to market forces than they have in the past.

On the other hand, major discoveries of new gas in the state or pipeline investments which make existing reserves accessible to Alaska markets may restrain the rate of price increase. An analysis of these and related issues is essential to assessing the "natural gas option."

4. Engineering Factors: The efficiency of gas fired generation facilities will be examined in order to move from expected gas prices to expected "bus BAR" power costs. although not directly related to the question of a gas based electric economy, we would also propose to evaluate in substantial detail (at $5,000 additional cost) the potential for substitution of natural gas for electricity in direct consumer applications as a means of moderating the growth of electrical demand. There is obviously great potential for this sort of substitution in the interior, but quantitative data, and data on the extent of natural gas market saturation in southcentral would need to be obtained.

5. The Decision Making Structure: The decision to build Susitna is effectively a government decision, although one in which the utilities and others will be extensively consulted. If Susitna is <u>not</u> built, the decision as to what alternatives are to be pursued may be taken in a much more decentralized context, a context in which the individual utlities would be expected to play a more leading role. If a decision was reached by the legislature to opt for natural gas fired generation, the means of implementing that decision would need to be carefully considered. We intend to ADDRESS this matter carefully, with particular attention to the institutional structures (such as the Alaska Power Authority) which might be used or fashioned to implement it.

For me to do before I leave



(1) finalize ISER contract

(2) finalize Contr for Poling Studies contract
" " Tuck "

(3) Prelim work on other contracts

(4) Gather material for various sections
both in-state & out-of-state -
☆ compile Bibliography

(5) Review most important existing studies

(6) Continue contacting possible consultants

(7) ~~Do~~ Keep interested parties posted on progress of study.

(8) Help get Conservation section going properly.

SR Box 1791K
99501

oni Associates

1717 N Street, N.W.
Washington, D.C. 20036
(202) 833-2131

Suite 218
520 Commonwealth Avenue
Boston, Massachusetts 02215
(617) 232-2513

reply to: 57 Westbourne Terrace
Brookline, MA 02146

September 25, 1979

Mr. Mark Wittow
Alaska Legislature
727 N Street
Anchorage, Alaska 99501

Dear Mark,

I enjoyed our discussion Monday evening on approaches that might be used to evaluate the hydroelectric facility that you described. I welcome the opportunity to submit some preliminary thoughts on the topic to you and to members of the Alaska Legislature. As I mentioned during our telephone conversation, several senior members of Massoni Associates have spent a considerable amount of time studying and anlyzing energy policy and technology. I understand that you are concerned with assessing policies as well as technical dimensions. In the following paragraphs, I have outlined some considerations for structuring an appropriate evaluative framework.

Basic to this type of study is the premise that the concern is not simply energy, rather it is energy as part of a state's development policy. Thus, the real decision that must be made must necessarily reflect the style and quality of life that Alaskans prefer. There are considerations directly related to the energy facility--for example, siting, mode of production, environmental impacts, costs. However, more important, though generally overlooked, are the reasons (or the objectives) for creating any additional energy capacity--that is, why is more energy needed? To what use will it be applied? Too frequently, assessments of alternative energy sources focus solely on a comparison of technologies, rather than on more important questions about near- and long-term uses of energy and the effects of these particular uses on the development of the area(s) to be served. Benefit/cost studies can be quite useful, but, by themselves, tend to be flawed since such studies generally assume that the issues are primarily technical; they also presuppose the acceptability of any energy supply. Further, there is the danger of being seduced by the simplicity of the dollar as a single, summary measure. Accepting the dollar as an inclusive measure masks the assumptions about what values the dollar represents, which, under the best of circumstances, are complex and often conflicting.

An evaluative framework which allows the assessment of a proposed energy facility within the context of a broad development policy must be concerned with at least the following questions:

1. What development issues are at stake?
2. What evaluative criteria should be applied?

3. What data are required to apply such criteria?
4. What analytic techniques are appropriate?
5. What range of conclusions is it possible to draw?
6. What will be the mode of presentation of the evidence and the conclusions?

Such an approach must assess both direct and indirect factors.

While the consideration of direct factors will be influenced by various regulatory requirements, the evaluative framework just described places these requirements within a broader context, allowing the comparison of alternative sources in such areas as:

*technological development--principles of operation, major components, operating experience, reliability, ability to meet schedules and to fill needs;

*economics--capital costs, operating costs, funding sources, pricing of power; and

*environmental consequences--air, water, and land use impacts.

Comparisons necessarily consider the effects of energy provision at the proposed site; however, the implications of not building the proposed facility at all, or of delaying provision of more energy, or of providing power through multiple sources (perhaps at one other site or on a dispersed-site basis) must also be considered. The study of direct factors tends to emphasize energy needs and definitions.

The evaluation of indirect factors incorporates broader development issues, especially issues which are specifically linked to Alaska's development policies. We suggest creating a Program Budget for Energy, connecting energy provision with energy use--relating outputs to inputs. Thus, the preferred ends--the objectives of increasing the energy supply--dominate this aspect of the evaluative framework. The extent to which efficiencies might create inequities can be determined; the ability of alternative sources to serve near- and/or long-term development goals can be quantified. For instance, the choice between a central power solution and a dispersed-site generating solution might best be based on a standard of acceptability for the state development policy which would take into account population dispersion, industrial location, impact on employment, and so on.

I hope this letter clarifies the approach we would utilize to structure an evaluative framework for assessing the desirability of a proposed hydro-electric facility. We are, of course, cognizant that any study must be undertaken within a regulatory context; we would, however stress, the value--particularly to legislators--of placing any discussion of energy within a framework which makes the central consideration the energy facility's short- and long-term impacts on Alaska and its development.

I enclose my resume along with information on Massoni Associates. The firm has the capability to undertake the work described here as well as

to conduct followup studies. It is our practice to assemble teams of Massoni staff tailored to meet the needs of specific clients and to conduct specific projects. When it is appropriate, we involve talented professionals from other organizations with which we have working relationships.

A rough estimate is that preparation of an evaluative framework would require twenty to thirty professional days; professional (staff) costs plus direct costs (travel, reproduction, and so on) would total between $10,000 and $15,000.

We would welcome the opportunity to work with you.

Sincerely,

Thomas E Nutt-Powell

Thomas E. Nutt-Powell, AICP
Senior Associate

Enclosures

DEPARTMENT OF ECONOMICS
EDMONTON, Alberta, Canada
T6G 2H4

THE UNIVERSITY OF ALBERTA
Tels: Office (403)-432-2544
Eco. Dept. Office (403)-432-3406
Home: (403)-436-6904

September 27, 1979

Mr. Mark Wittow
Alaska Legislature
727 N Street
Anchorage, Alaska 99501
USA

Dear Mr. Wittow:

Pursuant to our phone conversation, I am enclosing a cv which I prepared two years ago. Since that time I have had accepted for publication an article, "Class and Oil in Alberta," which is to appear in a book of readings, Oil and the Class Struggle, edited by P. Nore and T.Turner. The book, which will be published by ZED Press, London England, is scheduled to appear at the end of October.

I was invited to give a paper at the International Seminar on Energy, held in Hyderabad, India in January, 1979. While there, I was also invited to have a private tea with then Prime Minister Desai and discuss energy matters with him.

In January 1978 I signed a contract with the British publishing firm of Croom-Helm to write a book on The Political Economy of North American Oil. I am writing this book at the present time.

I have also developed for the Faculty of Extension of the University of Alberta a TV series on beginning economics.This TV course has turned out to be quite popular. In addition the Canadian Broadcasting Company asks me quite frequently to comment on energy-related matters. On Monday, October 1 the CBC will film my comments on the economics of the tar sands. This film will appear some time in October on a very popular national program, "The Nature of Things".

In May, 1979 I appeared as an intervenor in hearings of Alberta's Energy Resources Conservation Board on the application of Esso Resources to substitute natural gas for coal in its proposed heavy oil plant at Cold Lake, Alberta. I gave an analysis of the economics of oil and gas and urged that Esso's application be denied. The Board denied the application.

I trust that you have sufficient information about me to make a decision on whether you want me to work for you. If you desire any elaboration, please call me. If you want to call, please remember that on Monday, Wednesday and Friday I will not be able to be reached between noon and 3 PM, Edmonton time and that I have classes on Tuesdays and Thursday evenings from 6:30 to 10. I usually spend Tuesdays & Thursday afternoons at home working on my book. If you are interested in me, please send me the proposal so that I can see whether I am in a position to work on it.

Sincerely
Edward H. Shaffer

Edward H. Shaffer, PhD
Associate Professor

CURRICULUM VITAE

Edward H. Shaffer

September 1, 1977

1. Date of Birth: January 26, 1923

2. Education:

School	Years Attended	Degree
Columbia	1963-1966	Ph.D.
Michigan	1951-1955	
Michigan	1948-1949	M.A.
Michigan	1946-1948	B.A. (with Honors in Economics)
Maryland	1942-1943	
Frostburg State (Md.)	1940-1942	

3. Employment:

ACADEMIC

Alberta	1971 to date	
Alberta	1970-1971	Visiting Associate Professor
Occidental College	1968-1970	
Western Washington State College	1965-1968	

NON-ACADEMIC

W. J. Levy, Inc. NYC	1962-1963	
Economic Consultant (Self-Employed)	1957-1962	

4. Course Taught:

ALBERTA

Government and Business	Business 312
Business Economics	Business 323
Economic Problems	Business 441
The Energy Industry, Public Utilities and Regulation*	Business 442
Energy Industry Policy*	Business 569
Canadian Economic Development	Extension

*I instituted these courses.

Curriculum Vitae Edward H. Shaffer

4. Courses Taught; cont'd,

OCCIDENTAL

Economic Development
Economics of Government
Intermediate Economic Theory
Introduction to Price Theory
History of Civilization
International Trade and Commercial Policy
Institute on Urban Immobilities

WESTERN

Introduction to Economics
Principles of Economics
Intermediate Price Theory
Statistics
History of Economic Thought
Government and Business
General Education
Humanities

5. Graduate Dissertations:

William J. Gallivan, M.A. Economics
Andre Bourassa, M.A. Economics
Richard Arthur Preece, Ph.D. Economics
Leonard H. Landry, M.A. Economics
Randy G. Morse, Ph.D. Political Science
Robert A. Funnell, M.A., Dept. of Rural Economy

6. Other Teaching:

Year	Bus. 445-9	Bus. 599
1975	1	-
1974	3	1
1973	1	2
1972	1	-

7. Publications;

The Oil Import Program of the United States: An Evaluation. New York: Praeger. 1968.

"Economics of Oil and Gas" in Canadian Perspectives in Economics. Toronto: Collier-Macmillan Canada. 1972 (co-authored with E, Hanson).

"A Global Perspective on Energy", Canadian Dimension, October 1975.

7. Publications; cont'd.

Industrial Organization in Canada; Selected Readings, Edmonton: University of Alberta, (4 editions). (Co-edited with Profs. S. McFadyen & G. Reschenthaler)

"Interlocking Directorships" in ibid., 4th ed., pp. 15-6.

"Canada's Energy Policy" in ibid., pp. 468-80.

"Introduction: the State in the Modern Industrial Society" in ibid., 2nd ed., p. 1.

"Energy Conservation Boards" in The Performance of Selected Independent Regulatory Commissions in Alberta, Saskatchewan and Manitoba. G. B. Reschenthaler, editor. Prepared for the Canadian Consumer Council. 1972.

"Marketing Prospects Fairly Good for 1971", The Edmonton Journal, January 25, 1971, p. 5.

"Economic Prospects of Alberta and NWT", The Roundup, June 1971.

"The Empire of Exxon" in James Laxer and Anne Martin (eds.), The Big Touch Expensive Job. Toronto, Press Porcépic, 1976.

"Dynamics of Economic Warfare". NeWest Review, March 1976 (book review).

"The Political Economy of Alberta-Synthetic Crude", Canadian Dimension, Vol. 12, No. 1 (1977) (book review).

8. Articles accepted but still not published:

Review of Edgar J. Dosman, The National Interest: The Politics of Northern Development, 1968-75. Submitted to Canadian Dimension.

"The Political Economy of Oil in Alberta" in David Leadbeater (ed.), The Political Economy of Alberta.

9. Research Grants Received:

Department of Energy, Mines & Resources for Research on the Impact of Oil Exports on Alberta's Economy, $4,000, 1971.

University of Alberta. General Research Grant for Research on International Concentration Ratios, $60, 1971.

University of Alberta. General Research Grant for Research on International Concentration Ratios, $150, 1975.

10. Other Scholarly Activity:

Presented paper, "International Trade, Capital Movements and Competitive Policy" to Western Economic Association, August 25, 1972. Paper is currently being revised.

Discussant, Western Economic Association, August 30, 1971.

Reviewer for Dickenson Publishing, Co.

Acknowledgements from:

Dr, Ernest Dale, "Management Must Be Made Accountable", Harvard Business Review, March-April 1960, p. 49.

Dr. R. H. Scott, "Avarice, Altruism, and Second Party Preferences", The Quarterly Journal of Economics, February 1972, p. 1.

Dr. R. E. Hamilton, "Natural Gas and Canadian Policy" in Erickson & Waverman (eds.) The Energy Question, Vol. 2, p. 164.

Dr. L. Pratt, The Tar Sands: Syncrude and the Politics of Oil, p. 10.

Dr. Edgar J. Gunther & Mr. Frederick A. Goldstein, Current Sources of Marketing Information.

Dr. Ernest Dale, Management: Theory & Practice, pp. VIII-IX.

Discussant, Work and Leisure Conference, University of Alberta, April 5, 1971.

Resource Person, Conference on War and Welfare, University of Washington, January 17, 1968.

Referee for Professor R. E. Hamilton, Department of Economics, York University, 1973.

Presented paper, "The Political Economy of Canadian Energy" to Seminar, Energy Studies Program, Economisch-Geografisch Institut, Erasmus Universiteit, Rotterdam, Holland, March 31, 1977.

Presented paper, "The Employment Impact of Oil and Natural Gas in Alberta, 1961-1970", to Class in Regional Economics, Geografisch Institut, Erasmus Universiteit, Rotterdam, Holland, March 30, 1977. Paper is currently being revised.

Presented Talk, "The Economics of Energy" to Department Linguistique, Institut Francais De Gestion, Paris, France, April 25, 1977.

10. Other Scholarly Activity: cont'd.

Presented paper, "The Employment Impact of Oil and Natural Gas in Alberta, 1961-1970" to Pacific Northwest Regional Economic Conference, Victoria, May 7, 1976. Paper is currently being revised.

Presented paper, "Canadian Energy Policy", Loyola College, Montreal, March 8, 1973.

Presented paper, "Man, Oil and Society" to faculty and students, University College, University of Manitoba, November 8, 1974.

Presented paper to Seminar, Department of Economics, University of Alberta, "The Employment Impact of Oil and Natural Gas in Alberta, 1961-1970", Sept. 26, 1975.

Presented paper to Seminar, Department of Sociology, University of Alberta, "The Employment Impact of Oil and Natural Gas in Alberta, 1961-1970", Oct. 22, 1975.

11. Honours and Awards:

Graduated University of Michigan with Honors in Economics, 1948.

Appointed President's Fellow, Columbia University, 1964.

Named to Omicron Delta Epsilon, International Honor Society in Economics, 1970.

Listed in Contemporary Authors.

Listed in American Men & Women of Science.

Listed in Who's Who in the West.

12. Committees at the University of Alberta:

Member, Staff Travel Committee, 1972-4
Chairman, Staff Travel Committee, 1972-3
Member, Graduate Studies Policy Committee, 1974-6
Member, Admissions Requirements Committee, General Faculties Council, 1973-5
Appointed to subcommittee of GFC Committee on Research, 1973. Because of lack of funding, subcommittee has never met.

13. Other University Service:

Brought Tom Collyer, Provincial Liaison Officer, DBS to Campus, 1970.

Was a speaker at Student Activity Day, 1973.

Brought prominent speakers to Bus. 441 class.

Helped organize Conference on Foreign Ownership, 1971.

Addressed Met E 590 - Seminar, Department of Mining and Metallurgy.

Brought Professor Donald MacKay, University of Aberdeen, Scotland, to Campus to lecture on "The Political Economy of North Sea Oil", May 5, 1975.

Invited to lecture to class of Prof. L. Pratt, Department of Political Science, Jan. 20, 1976 and Sept. 30, 1975.

Invited to give talk on Government Regulation of Business before student seminar, Faculty of Business Administration and Commerce, Feb. 26, 1976, held in Banff.

14. Community Services:

Member, Management Development Advisory Committee, Faculty of Extension.

Addressed Glendale Chamber of Commerce, Glendale, Cal., February 26, 1969.

Addressed the Westside Jewish Community Center, Los Angeles, April 7, 1969.

Participated in College Urban Affairs Workshop, University of Southern California, May 14, 1970.

Helped organize and participated in Seminar on Competition Policy, Edmonton, November 17, 1971.

Introduced Speaker (Dean Chambers), Graduation Dinner, Department of Extension, June 13, 1972.

Was invited to address Parliamentary Caucus, NDP, Edmonton, December 7, 1973. I advocated the creation of a National Petroleum Company. Such a company, PetroCan, has since been created.

Addressed the "Real Energy Conference", Winnipeg, Manitoba, March 8, 1974.

Addressed students of Strathcona High School on "Will We Make It?" on Earth Day, March 23, 1975.

Spoke to National Study Conference, Student Christian Movement on "Energy and the Multinationals", Pigeon Lake, Alberta, May 8, 1975.

14. Community Services; cont'd.

Spoke on Alberta Energy Company to Seminar, Northern Alberta Institute of Technology, February 3, 1976.

Was respondent in Conference on Anti-Combines Legislation sponsored by Department of Consumer and Corporate Affairs at the University of Alberta, May 12, 1976.

Spoke at Conference on Alberta Heritage Trust Fund sponsored by Alberta NDP at University of Alberta, Jan. 30, 1976.

Spoke on "Multinationals in Today's World" to Cross Cultural Center, Edmonton, February 5, 1976.

Spoke on "Multinationals in Today's World" to National Convention, AIESEC, held at University of Alberta, February 6, 1976.

Spoke at Public Conference on Imperial Oil held by Public Petroleum Association of Canada at Chateau Laurier Hotel, Ottawa, May 8, 1976.

Spoke before English Language Class, Paris Bourse (Stock Exchange) on "Problems of Energy", Paris, France, April 27, 1977.

Invited back for Second Lecture on "Problems of Energy" to English Language Class, Paris Bourse, May 10,1977.

Chaired session on "Metropolitan Quality of Life" at Conference of Learned Societies held at University of Alberta, May 29, 1975.

Appeared as an expert witness before House Finance Committee, State of Alaska, Juneau, Alaska on April 12, 1977 in hearings on oil tax policies.

15. Radio & TV Broadcasts:

Appeared on MEETA TV Program as panelist, 1972.

Interviewed on "This Country in the Morning", CBC Radio, April 24, 1974.

Interviewed on "Hourglass" CBC-TV, October 23, 1974.

Interviewed on Phil Fraser Show, ITV, October 28, 1974.

Interviewed on CBC-AM Radio Show, November 6, 1975.

Interviewed on CBC-Calgary, Jan. 8, 1976 (Radio).

Interviewed on CBC-Edmonton AM Show, Feb. 12, 1976 (Radio),

APPENDIX

INDICATORS OF OUTSIDE RECOGNITION

Comments on Oil Import Program of the U.S.

"All parties interested in these complex issues should be grateful to find in Professor Shaffer's excellent book a most welcome picture and an analysis in depth of the import regulations and their effects upon the economy of the U,S.A."-Charles A. Heller, World Petroleum, March 1969.

"This is one of the most thorough studies of the subject that I have come across."-unsolicited letter from Edward Symonds, Senior Economist, First National City Bank, New York, October 7, 1969.

"Another study, commissioned by the Cabinet Task Force and broadly reflected in its findings, might be grouped with those reviewed here: The oil import program of the United States: An Evaluation, by EDWARD H. SHAFFER"-Arlon R. Tussing, Journal of Economic Literature, September 1971, p. 858.

Though Dr. Tussing was in error when he claimed that my book was commissioned by the U.S. Cabinet Task Force on Oil Import Control, he was correct that the Task Force's analysis in many ways paralleled my own. I might point out that my book was written and published several years before the Task Force was established. The Task Force was chaired by Professor George P. Schultz, University of Chicago, who was then Secretary of Labor. Apparently Dr. Tussing thought that my book was of a quality that would be commissioned by a Task Force headed by Dr. Schultz.

CITATIONS OF BOOK

Listed below are citations of which I am aware. There may be others of which I am not aware.

C. W. J. M. Corssmit, "The Oil Import Quota System: Time for Reform", Intermountain Economic Review, Fall 1971, pp. 35, 40, 44.

Kaj Areskoug, "U.S. Oil Import Quotas and National Income", Southern Economic Journal, January 1971, pp. 308, 316.

Kenneth Dam, "Implementation of Import Quotas: The Case of Oil", Journal of Law and Economics, April 1971, pp. 6, 8.

James Laxer, The Energy Poker Games, Toronto & Chicago: New Press, 1970, p. 71.

CITATIONS OF BOOK con'td.

James Laxer, Canada's Energy Crisis, Toronto: James Lewis & Samuel, 1974, p. 20.

Peter R. Odell, Oil and World Power, Middlesex, England: Penguin 3rd ed,, 1974, pp. 232-3.

U.S. Federal Trade Commission, Concentration Levels and Trends in the Energy Sector of the U.S. Economy. Washington. 1974, p. 277.

Larry Pratt, The Tar Sands: Syncrude and the Politics of Oil. Edmonton: Hurtig, 1976, p. 10.

Edgar J. Dosman, The National Interest. Toronto: McClelland and Stewart, 1975, p. 26.

Comments on Industrial Organization in Canada

Letter from Professor K. Weiermair, York University, stating that he "would like to use this book for our course, Industrial Organization in Canada". October 29, 1973.

Letter from Professor Paul G. Bradley, University of British Columbia, stating that he and Professor Gideon Rosenbluth have examined the book and would like to use it for their course. May 6, 1975.

OTHER CITATIONS

My article, "Energy Conservation Boards", was cited by Dr. Richard Hamilton in his article, "Natural Gas and Canadian Policy", which appeared in Edward Erickson and Leonard Waverman (eds.), The Energy Question, Toronto, University of Toronto Press, 1974, Vol. 2, p. 165.

My article, "A Global Perspective on Energy" was cited by Cy Gonick, Inflation and Depression, Toronto: Lorimer, pp. 253, 418.

My article, "Canada's Energy Policy" was cited by Edgar J. Dosman, The National Interest, Toronto: McClelland and Stewart, 1975, p. 26.

OTHER FORMS OF RECOGNITION

Letters from Peter Newman, author of The Canadian Establishment requesting help in writing chapter on Canadian Oil Industry in Second Volume of The Canadian Establishment (Feb. 4, 1976 and Feb. 23, 1976).

Letter from J. Rosemary Vanderkamp, Assistant Editor, Canadian Public Policy, asking me to appraise a paper submitted for publication (Oct. 29, 1976).

CURRICULUM VITAE

THOMAS E. NUTT-POWELL

Born: August 15, 1944

57 Westbourne Terrace
Brookline, MA 02146
Telephone: (617) 232-2513

EDUCATION:

The Pennsylvania State University
B.A., 1965

Harvard Graduate School of Design
M.C.P., 1970

Harvard Divinity School
M.T.S., 1970

Massachusetts Institute of Technology
Department of Urban Studies and Planning
Ph.D., 1973

PROFESSIONAL EXPERIENCE

Present	* Research Associate, MIT-Harvard Joint Center for Urban Studies
	* Senior Associate, Massoni Associates, Washington/Boston
	* Principal Investigator, Institutional Analysis element, "Planning and Analysis for Development of Photovoltaic Energy Conversion Systems," MIT Energy Laboratory, funded by US Department of Energy (April 1977 to September 1979)
1971-1979	* Assistant Professor of Urban and Regional Planning, Massachusetts Institute of Technology

* Other MIT Responsibilities:

Head, MCP Program (1974-1977)
DUSP Graduate Registration Officer (1973-1977)
Faculty, Harvard GSD/MIT Continuing Education Program (1977, 1978, 1979)
Field Work Coordinator (1976-1977)
Member, MIT Committee on Graduate School Policy (1973-1977)
Member, MIT IAP Policy Committee (1974-1975)
Coordinator, DUSP Independent Activities Period (1974, 1975)
Coordinator, Minority Student Recruiting, School of Architecture and Planning (1972-1974)
Instructor (1971-1973)
Director, Minority Intern Program (1971-1972)

1978 * Consultant, Massachusetts Mobile Homes Commission (to present)

1977 * Visiting Overseas Professor, Department of Town and Country Planning, Trent Polytechnic, Nottingham, England (January)

* Director, Downtown Development study for Massachusetts Department of Community Affairs contract to MIT Department of Urban Studies and Planning (to September, 1978)

1976 * Consultant, Department of Community Affairs, Bureau of Urban Renewal, Commonwealth of Massachusetts

* Consultant, U.S. Department of Housing and Urban Development

1975 * Research Associate, MIT Division for Study and Research in Education, "Knowledge in Practice" project (to June 1976)

* Consultant, Governor's Office, State of Rhode Island (to December 1976)

1974 * Partner, New Community Planning Associates, Boston (1969-1974)

* Project Director, Rhode Island Development Strategy Study, MIT Laboratory for Architecture and Planning (to June, 1975)

* Lecturer, Urban Affairs Program, Metropolitan College, Boston University

1973	*	Consultant, Southwest Corridor Land Development Coalition, Boston
1972	*	Co-Principal Investigator, "The Characteristics of Trans-Racial Adoptive Parents," a joint research project of Families for Inter-Racial Adoption, Boston, Massachusetts and Michigan State University, funded by NIMH
1971	*	Consultant, Department of Urban and Regional Planning, University of Wisconsin, Norton Shores, Michigan, Industrial Development Project
1970	*	Consultant for Regional Analysis, Muskegon County, Michigan, Metropolitan Planning Commission
	*	Planning Consultant, Bauer Engineering Co., Chicago
	*	Project Supervisor, Urban Field Service, Harvard University
1969	*	Consultant for Community Services and Facilities, MIT Urban Systems Laboratory, Harbor Islands and New Community Projects
1968	*	Community Development Worker, Cooper Community Center, Roxbury (to June, 1969)
	*	Consultant and Board Member, Lower Roxbury Community Corporation, for Housing, Social Services, Education and Community Development (to 1974)
	*	Social Planning Consultant, Cambridge Economic Opportunities Committee
1967	*	Press Secretary, Alexander/Fox/Rogers for City Council, Baltimore (June-September)
1965	*	Community Organization Advisor, Baltimore Urban Renewal and Housing Agency (to June, 1967)
	*	Psychiatric Social Worker, Hollidaysbury, (Pennsylvania) State Hospital (to September, 1965)

Guest Lecturer at a number of universities in the United States and the United Kingdom including: Brandeis, Suffolk, Harvard, Wisconsin, Illinois, Arizona, Penn State, Sheffield, Birmingham Polytechnic and Oxford Polytechnic

PROFESSIONAL AND HONORARY AFFILIATIONS AND AWARDS:

Chairperson, National Student Steering Committee, Planning/Network. 1969-1971

President, Student Senate, Harvard GSD, 1969-1970

Member, Committee on Governance, Harvard University, 1969-1970

HUD Urban Studies Fellowship, 1969-1970

NDEA Fellowship, 1970-1973

American Society of Planning Officials

American Institute of Planners

Pi Gamma Mu, National Social Science honorary

AIP Ad Hoc Committee on Planning Education, 1972-1973

AIP Confer-In '72 Conference Committee

AIP New England Chapter Executive Committee, 1971-1972

Board of Governors, American Institute of Planners, 1973-1976

Chairperson, AIP Associate Member Status Committee, 1974

Lilly Teaching Fellowship, 1975-1976

Chairperson, AIP-ASPO-ACSP Planning Education Legislative Committee, 1975-1977

AIP Service Award, 1977

UBLICATIONS AND PRODUCTIONS:

"Residents and Rents: A Study of Cambridge, MA," CONNECTION, Fall/Winter, 1968-1969 (with Lawrence E. Susskind).

"Prospects for Urban Planning Education," JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS, July 1970, (with Lawrence E. Susskind and Nicholas P. Retsinas).

Planning and Ethics, unpublished, joint MCP/MTS thesis, Harvard Graduate School of Design and Harvard Divinity School, June, 1970.

"Toward a Logical Justification for Planning Theory," DIALOG, Fall, 1970 (with Ronald S. Laura).

"A Profile of Trans-Racial Adoptive Parents," (with John A. Snyder) in PROCEEDINGS, Second International Conference on Trans-Racial Adoption, November 13-15, 1970, Boston, Massachusetts Open Door Society.

A SAFE PLACE TO LIVE: SECURITY IN MULTI-FAMILY HOUSING, (with Philip Clay and William Allan, et.al.) report by Lower Roxbury Community Corporation, April, 1972).

"A Safe Place to Live: Security in Multi-Family Housing," (with Philip Clay and William Allan), paper presented to AIP Confer-In '72, Boston, October, 1972.

BOSTON: A PRIMER FOR PLANNING, special 32-page supplement, Boston Globe, October 8, 1972.

"The Current State of Planning Education," (with Stefania A. Denbow) JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS, May, 1973.

TRANS-RACIAL ADOPTIONS (with John A. Snyder), report for NIMH, February, 1973.

"Housing in Cambridge: A Case Study of Underlying Problems of Advocacy Planning," PLANNING COMMENT, Spring/Summer, 1973.

"On Linking 60 Discovered Wheels," ACSP Bulletin, Summer, 1973.

Adopting the Hard-to-Place: System Change in a Public Service Bureaucracy, unpublished Ph.D. Dissertation, MIT Department of Urban Studies and Planning, September, 1973.

"Issues of Supply and Demand in Adoption," paper presented for Fourth North American Conference on Adoptable Children, Washington, DC, March 14-17, 1974.

"Foster Family Care: Myth and Reality," (with Martin Rein and Heather Weiss), in Alvin Shcorr (ed.) CHILDREN AND DECENT PEOPLE, Basic Books, 1974.

"The Department of Urban Studies and Planning at MIT: 1953-63, Ten Years Makes a Lifetime," paper prepared for Planning Education Symposium, Chapel Hill, NC, April, 1974.

"Endemic Turbulence: The Future of Planning Education," (with Donald A. Schon) in David Godschalk (ed.), PLANNING IN AMERICA: LEARNING AMID TURBULENCE, (Washington, DC: American Institute of Planners, 1974).

RHODE ISLAND DEVELOPMENT STRATEGY STUDY, (Cambridge: MIT Laboratory for Architecture and Planning, 1975).

"Development Policy for Rhode Island: Some New Ideas for Land Use Planning," NEWSLETTER: MIT SCHOOL OF ARCHITECTURE AND PLANNING, December, 1976.

THE ECONOMIC DEVELOPMENT POTENTIAL OF 121B, (Boston: Massachusetts Department of Community Affairs, July, 1977).

BUILDING AUDITS FOR ENERGY CONSERVATION, a video-based educational package, (Executive Producer), July, 1977, Distributed by "Center for Advanced Engineering Studies, Video Instruction Program.

"Making Fieldwork Work: A Conceptual Framework for Field Education," (with Bonnie R. Nutt-Powell), paper presented at AIP Conference, KAnsas City, October, 1977.

Review of Martin Rein, SOCIAL SCIENCE AND PUBLIC POLICY, (with Bonnie R. Nutt-Powell), JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS, April, 1978.

"Modes of Action: Toward a Theory of Planning Practice," (with Bonnie R. Nutt-Powell), Trent Polytechnic Planning Paper Series (forthcoming).

TOWARD A THEORY OF INSTITUTIONAL ANALYSIS, (with Stewart Landers, Bonnie R. Nutt-Powell, and Levi Sorrell), (Cambridge: MIT Energy Laboratory, May, 1978).

INSTITUTIONAL ANALYSIS OF DAYTIME RADIO: A PRELIMINARY EXPLORATION, (with Ellen G. Hendrickson), (Cambridge: MIT Energy Laboratory, January, 1979).

INSTITUTIONAL ANALYSIS OF GOVERNMENTAL INVOLVEMENT IN HOUSING: A PRELIMINARY EXPLORATION, (with Patricia McDaniel), (Cambridge: MIT Energy Laboratory, January, 1979).

INSTITUTIONAL ANALYSIS OF HOUSING PRODUCTION: A PRELIMINARY EXPLORATION, (with Carole Swetky), (Cambridge: MIT Energy Laboratory, March, 1979).

INSTITUTIONAL ANALYSIS OF RESEARCH AND SOCIALIZATION IN HOUSING: A PRELIMINARY EXPLORATION, (with Michael Furlong), (Cambridge: MIT Energy Laboratory, Marcy, 1979).

INSTITUTIONAL ANALYSIS OF STANDARD SETTING IN THE UNITED STATES: A PRELIMINARY EXPLORATION, (with Barbara Parker), (Cambridge: MIT Energy Laboratory, April, 1979).

INSTITUTIONAL ANALYSIS OF THE NATIONAL PARK SERVICE: A PRELIMINARY EXPLORATION, (with Peter Siczewicz), (Cambridge: MIT Energy Laboratory, April, 1979).

INSTITUTIONAL ANALYSIS OF ENERGY PROVISION IN HOUSING: A PRELIMINARY EXPLORATION, (with Steven Heim and Andrew Reamer), (Cambridge: MIT Energy Laboratory, May, 1979).

PHOTOVOLTAICS AND THE NEBRASKA AGRICULTURAL COMMUNITY, (with several authors), (Cambridge: MIT Energy Laboratory, forthcoming).

CENTER PIVOT IRRIGATION AND THE NEBRASKA AGRICULTURAL COMMUNITY, (with Stewart Landers), (Cambridge: MIT Energy Laboratory, forthcoming).

INSTITUTIONAL ANALYSIS OF THE ACCEPTANCE OF PHOTOVOLTAICS IN DAYTIME RADIO BROADCASTING, (with Judy Wagner), (Cambridge: MIT Energy Laboratory, forthcoming).

RESEARCH DESIGN FOR INSTITUTIONAL ANALYSIS OF HUD'S SOLAR HEATING AND COOLING DEMONSTRATION PROGRAM, (Cambridge: MIT Energy Laboratory, forthcoming).

PHOTOVOLTAICS AND THE NATIONAL PARK SERVICE: AN INSTITUTIONAL ANALYSIS (with Levi Sorrell and Peter Siczewicz), (Cambridge: MIT Energy Laboratory, forthcoming).

SOLAR HEATING AND COOLING OF HOUSING: FIVE INSTITUTIONAL ANALYSIS CASE STUDIES, (with Michael Furlong, Patricia McDaniel, Barbara Parker, and Andrew Reamer), (Cambridge: MIT Energy Laboratory, forthcoming).

DUBIN-BLOOME ASSOCIATES, P.C.

ENERGY CONSERVATION PROJECTS

- DEPARTMENT OF JUSTICE OFFICE BUILDING
- BECTON-DICKINSON, NORTH CANAAN, CT.
- U.S. NAVAL ORDINANCE STATION. INDIAN HEAD, MARYLAND
- CONNECTICUT GENERAL LIFE INSURANCE COMPANY HOME OFFICE, BLOOMFIELD
- GSA FEDERAL OFFICE BUILDING, MANCHESTER, NEW HAMPSHIRE, ENERGY CONSERVATION DEMONSTRATION PROJECT
- ARGONNE NATIONAL LABORATORY, ENERGY CONSERVATION FEASIBILITY STUDY FOR ENVIRONMENTAL EVALUATION LABORATORY AND ENERGY AND ENVIRONMENTAL SYSTEMS, CHICAGO, ILLINOIS
- RESEARCH FACILITIES FOR UPJOHN CO., KALAMAZOO, MICHIGAN
- SUFFOLK COUNTY DEPARTMENT OF ENVIRONMENTAL CONTROL
- UNION CARBIDE TECHNICAL CENTER, SOUTH CHARLESTON, W.V.
- OAKRIDGE NATIONAL LABORATORIES, TENNESSEE
- PENNSYLVANIA AVENUE DEVELOPMENT PROJECT, WASHINGTON, D.C.
- ENERGY CONSERVATION STUDY FOR THE U.S. MERCHANT MARINE ACADEMY, KINGS POINT, N. Y.
- ENERGY CONSERVATION ANALYSIS FOR ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS (DOE PROJECT)
- OAKRIDGE NATIONAL LABORATORIES, TENNESSEE
- BROOKHAVEN NATIONAL LABORATORIES, BROOKHAVEN, N. Y. (CHEMISTRY BUILDING)
- BROOKHAVEN NATIONAL LABORATORIES, BROOKHAVEN, N.Y. (PROPOSED FIVE-YEAR ENERGY CONSERVATION AND LOAD MANAGEMENT DEVELOPMENT PLAN).
- KERR BUILDING, DENVER, COLORADO
- ENERGY CONSERVATION STUDY FOR THE U.S. MERCHANT MARINE ACADEMY, KINGS POINT, N.Y.
- UPJOHN CO. LABORATORY, KALAMAZOO, MICHIGAN
- ARGONNE NATIONAL LABORATORY
- MYRIAD GARDENS, OKLAHOMA CITY, OKLAHOMA
- PREPARATION OF ENERGY CONSERVATION GUIDELINES FOR THE GENERAL SERVICES ADMINISTRATION FOR ALL NEW FEDERAL BUILDINGS IN THE UNITED STATES

ENERGY CONSERVATION PROJECTS CONTINUED:

- PREPARATION OF TWO MANUALS FOR ENERGY CONSERVATION IN EXISTING BUILDINGS FOR THE FEDERAL ENERGY ADMINISTRATION.

- FEASIBILITY STUDY AT I.B.M., EAST FISHKILL BUILDING, 300 FACILITIES UPGRADE

- INTERNATIONAL HEADQUARTERS, UN ENVIRONMENTAL PROGRAM, NAIROBI KENYA

- SOLAR ENERGY RESEARCH INSTITUTE (SERI), DENVER, COLORADO.

- GRACIE MANSION (OFFICIEAL RESIDENCE/MAYOR OF NEW YORK)

- RESEARCH TRIANGLE INSTITUTE, ENGINEERING BUILDING INCLUDING OFFICES AND LABORATORIES.

- ASPHALT PLANT converted to COMMUNITY CENTER AND ENVIRONMENTAL EDUCATION FACILITY FOR NY STATE ERDA, NY, NY.

- CATHOLIC MEDICAL CENTER, MANCHESTER, N.H.

- WILLOW LAKES PROJECT, ST. PAUL, MINNESOTA. CORPORATE RESEARCH FACILITY, H.B. FULLER CO.

- SOLAR ENERGY RESEARCH INSTITUTE (SERI), PERMANENT FACILITY, CENVER, COLORADO.

Massoni Associates

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Washington, D.C. 20036
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520 Commonwealth Avenue
Boston, Massachusetts 02215
(617) 232-2513

Mark -

Though from a business sense I shouldn't be touting competitors, here are some possible sources for an econometric approach, as we discussed.

Meta Systems,	Cambridge MA
Bechtel Corp	San Francisco, CA
Rand Corp	Santa Monica, CA

The latter two have done modeling work on energy supply, demand + prices. Meta Systems has done alternative energy assessments.

We would be working with people on MIT's Energy Lab staff and/or staff at Technology + Economics. T+E has a major DOE services contract on policy issues / They are, with strong economic capabilities.

Tom

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MASSONI ASSOCIATES is a group of experienced, highly skilled consultants offering legislative consultation, policy analysis, and Washington representation to our clients. With over a decade of experience, the ASSOCIATES understand both the formal and informal aspects of processes and institutional arrangements unique to our national government; we are familiar with key officials and executive department staff. With these tools, we feel that we can function as a specialized extension of a client's own resources that will establish for them a personal or organizational presence before executive and legislative bodies as well as provide them with an early warning system and an ability to respond quickly to developing policy trends.

Because MASSONI ASSOCIATES recognizes that each client has different objectives in seeking specialized Washington representation, the ASSOCIATES place particular importance on developing a program uniquely tailored to each client's special needs. Programs may include services such as research, analysis, government liaison, and monitoring of funding, legislation, policy and rule-making. The ASSOCIATES will also design client programs, facilitate negotiations with Federal agencies, and serve as advisors helping the client to identify, develop, and use resources uniquely available to Washington.

MASSONI ASSOCIATES has developed a direct, personalized approach for setting up programs. With the client, we establish short and long range goals. A specialized team of ASSOCIATES is formed to effectively and efficiently handle the client's needs. Subsequently, needs and the specific course of action are outlined. With close ASSOCIATE/client consultation, an effective program can be constantly maintained and, when necessary, adjusted. Programs can be designed on a single project basis or with a full or part time retainer structure.

It is the goal of MASSONI ASSOCIATES to provide a diverse group of clients with flexible, personalized, technical service that will improve their access to, presence before, and understanding of the institutions and personalities affecting them and their business at the national level.

OUTLINE OF POTENTIAL SERVICES AND ACTIVITIES

MASSONI ASSOCIATES can provide the following services:

- Assist the client identify problems of mutual interest and common concern;

- Develop work program to address priority concerns;

- Convene information exchange meetings and provide secretarial and consultant services to such meetings;

- Provide information clearinghouse function for client to access national sources of experiences relevant to particular problems;

- Coordinate wide variety of opportunities for client members to participate in intergovernmental relations processes;

- Afford the client a Washington, D.C. office for briefings and seminars with Federal officials from the myriad of domestic agencies and departments;

- Assist client's individual and collective members' access to Federal resources, information and technical assistance;

- Provide each member of the client group with a copy of a twice monthly national policies and legislation assessment newsletter;

- Plan, organize and conduct annual national/local workshops addressing the administration of Federal grant-in-aid programs and the transfer of example technologies and information sources that will assist client's daily work;

- Inform client of national policy trends and changes concerning administrative rules and regulations as well as major sources of Federal funds tailored to the actual needs of the local jurisdictions;

- Inform client of special demonstration projects which will assist in developing services as well as contribute to the national recognition of the client's leadership;

- Assist in tracking grants submitted by client through the maze of the Federal bureaucracy;

- Provide technical capability to respond to substantive questions on grant and contract applications;

- Schedule meetings with national policy makers on specific programs, issues and "breaking" news;

- Secure potentials for national documentation, conference opportunities and publicity relative to client's special accomplishments;

- Communicate and open professional development opportunities for client's personnel;

- Provide support staff for at least cursory research on specific problems within the priority annual agenda focused on policy analysis and program development on a range of planning and development topics;

- Construct appropriate quantitative and qualitative methodologies to assess substantive, attitudinal, and institutional elements of programs and organizations.

MASSONI ASSOCIATES CLIENT LIST

GOVERNMENT RELATIONS CONSULTANTS TO:

The Knoxville/Knox County Metropolitan Planning Commission
The City of Houston, Texas
American Society of Consulting Planners, Washington, D.C.
Partners for Livable Places, Washington, D.C.
Knoxville International Energy Exposition
Henshaw, Hartt, and VanPetten, Inc., Ohio (community development)
Hall Associates, South Carolins (housing)

POLICY CONSULTING PROJECTS FOR:

The U.S. Department of Housing and Urban Development:
- State and Regional Strategies, Incentive Program Analysis

The Old West Regional Commission:
- Growth Policy Process Development

The U.S. Department of Commerce:
- Growth Policy Process of the United States, 1977
- Program to Implement Urban Intitiatives in the Office of the Secretary, 1978
- Analysis of the Department of Commerce's Urban Growth Programs, 1978-79

The White House Conference on Balanced National Growth and Economic Development, 1977-78

The National Endowment for the Arts:
- Through the Partners for Livable Places, two projects on the national built environment programs, 1978-79

The Department of Energy
- Through the MIT Energy Laboratory, "Planning and Analysis for Development of Photovoltaic Energy Conversion Systems," 1977-78

The New England Staff for Coordinated Air Use Management (NESCAUM):
- Series of Reports on the Planning Process and Pollution, 1977-78

The Massachusetts Deaprtment of Community Affairs:
- Downtown Development Study, 1977-78

Massachusetts Mobile Home Commission:
- Policy Development, Organization Direction and Implementation Strategies

PUBLISHERS OF:

Planners ROLLCALL, a national, bi-weekly, legislative and policy analysis newsletter.

FRED S. DUBIN. P.E.



EDUCATION

Bachelor of Science Mechanical Engineering, 1935, Carnegie Institute of Technology, Pittsburgh, Pa.

Master of Architecture, 1978, Pratt Institute of Technology, New York.

PROFESSIONAL ENGINEER REGISTRATIONS

24 States plus Five Foreign Countries

MILITARY DUTY

1942-1946 Active Duty, US Navy (retired Lt. Commander)

EXPERIENCE

Fred Dubin is President of Dubin-Bloome Associates, PC founded in 1946 and a partner in Fred S. Dubin International, Rome, Italy.

COLLEGE OF FELLOWS

Fellow American Consulting Engineers Council - National Chairman Energy Conservation Committee
Fellow American Society of Heating, Refrigeration & Air Conditioning Engineers
Fellow Scientists Institute for Public Information

PROFESSIONAL AFFILIATIONS

National Academy of Engineering & Science Modular Integrated Utilities Board
National Academy of Engineering & Science Solar Heating & Cooling Board
Federal Energy Administration-Environmental Committee Advisory Board
Alliance to Save Energy Advisory Board
State of Florida Solar Energy Centre Advisory Board
American Section of ICES Advisory Board of Directors--Passive Division
Consulting Engineers Association of Connecticut Inc Director and Past President
Citizens Action Now, Board of Directors
Energy EXPO '82, Knoxville, Tennessee-National Advisory Committee
Mid-Atlantic Solar Energy Association, Director 1977
Solar Energy Institute of America, Board of Directors
National Society of Professional Engineers-member
Building Research Institute-member
Institute of Environmental Sciences-member
American Society of Mechanical Engineers-member
New England Solar Energy Association Board of Directors
American Wind Energy Association-member

CONSULTANT TO GOVERNMENTAL AGENCIES

Federal Energy Administration, Department of Energy, General Services Administration, National Science Foundation, National Bureau of Standards, American Institute of Architects, California State Energy Commission, Member President Carter's Committee on Energy, Housing and Urban Development Administration, Energy Research & Development Administration
Solar Energy Research Institute

ACADEMIC ACTIVITIES

Adjunct Professor of Architecture, Columbia Univ. 1969-1974
Visiting Professor of Architecture Univ. of Southern California 1966-1968
Member of the Univ. of Southern Calif. Building Research Institute-Doctoral Program
Visiting lecturer at the Massachusetts Institute of Technology, Yale, Cornell, Pratt Institute, Rice Institute, University of Miami, Univ. of California-Berkeley, North Carolina State University, Washington University in St.Louis, University of Oregon, University of Minnesota, Calgary University, Carnegie-Mellon University, University of Patras and University of Thessaloniki in Greece, Technical Univ. of Copenhagen, Denmark, University of Technology in the Netherlands, University of Trondheim in Norway, Tehran University, Faculty of Fine Arts and ARYA MEHR University of Iran, and other institutions of higher education.

PUBLICATIONS

Books- "Energy Conservation Standards for Building Design, Construction and Operation", by Fred S. Dubin and Chalmers G. Long Jr., McGraw Hill, New York, 1978

"The Energy Efficient Home", by Steven Robinson and Fred S. Dubin, Plume Books, New York, 1978

ECM 1 and ECM 2 "Energy Conservation for Existing Buildings" for the Federal Energy Administration, 1975

Total Energy TR2 Ford Foundation, NY

"Energy Conservation Guidelines for New Buildings" for the General Services Administration, Washington, D.C.

Editorial Boards-
Solar Age magazine
Environment magazine
Specifying Engineer magazine

Presented papers and has been guest speaker at more than 200 seminars and conferences including the Roundtable on Energy Conservation in Public Buildings jointly sponsored by the General Services Administration (GSA) and the National Bureau of Standards (NBS) 1972.

"Energy Conservation Studies" - Guest Speaker. I.H.V.E. Energy Conference - Westminster Abbey, London - 1977

Guest Editor- "Available Now, Systems that Save Energy", "Which Waste Disposal System", Progressive Architecture, October 1971

HONORS

- Named by "Engineering News Record" as "Engineer Who Has Made His Mark in 1975", for work in energy conservation.
- 1974 & 1975 selected "American Specialist" by the US State Department, travel grant to deliver lectures on energy conservation and solar energy. 1974--visited Greece, France, Holland, Norway, Denmark & Sweden. In 1975 visited Spain, Portugal, England, Iran and Israel.

JURIES

1979 Annual Progressive Architecture Awards
1978 California State Energy Agency Headquarters
1978 AIA-EXXON Student Awards-Energy Buildings
1971-74 Actual Specifier Engineer magazine awards

MAJOR DESIGN PROJECTS

Master utilities engineering plans and design of the central 50,000 ton Refrigeration Plant at the State University of New York of Buffalo (Amherst Campus)

Salk Institute for Biological Studies. La Jolla, California

Energy Conservation consultant and solar energy systems designer, Energy Conservation Demonstration Building. Manchester New Hampshire General Services Administration, Washington, D.C.
3,000 ton refrigeration plant, National Institute of Health, Bethesda, Maryland for HEW

Energy conservation and solar energy systems, Cary Arboretum, Millbrook, NY

Solar-assisted heat pump studies for United States Air Force housing.

Management Consulting Contract for HUD's Solar Energy Demonstration project.

Solar energy heating and cooling system for the George A Towns Elementary School, Atlanta.

Phytotrons at Duke University, Durham, and North Carolina State Univ., Raleigh

Biology Laboratory at the Univ. of Pennsylvania, Philadelphia

Standards and design guidelines for all existing Veterans Administration Hospitals for the Veterans Administration, Washington, D.C.

United Nations Environmental Headquarters, Nairobi, Kenya

Mechanical, Electrical, Solar, Wind and Energy Management services, Solar Energy Research Institute, Golden, Colorado

Justice Dept. Building, Sacramento, California

School of Engineering, Univ. of Tel Aviv

Master engineering and energy plan, Minnesota Mining and Manufacturing, Minneapolis
10,000,000 sq. ft. of space

MAJOR ADDRESSES

"New Energy Conservation Ideas for Existing and New Buildings"
delivered at energy symposium sponsored by U.S. Department of Energy
Research & Development Agency, Albuquerque, N.M. 1976

"Passive Solar Heating and Cooling - the Role in New Community Design"
and "An Energy Efficient Community on Crete International Corporation",
delivered at First International Conference on Energy and Community
Development - Athens, Greece, July 10-15, 1978, sponsored by the
National Energy Council of Greece and the U.S. Department of Energy

"Sharing the Sun '76" A joint conference of the American Section of the
International Solar Energy Society ond the Solar Energy Society of Canada,
Inc. at the Winnipeg Convention Center, Winnipeg, Manitoba, Canada,
August 15, 1976

"Energy, Technology, Buildings and Policy", Keynote speaker at Solar II
Conference at the Technological Institute at Northwestern University,
Evanston, Illinois - April 10, 1976

"Energy Alternatives for Alaskan Building Design" Alaska Chapter A.I.A.
- Fairbanks, Alaska, October 17, 1977

"Energy Conservation in Buildings", Duke University, Durham, North Carolina -
US/Australia Seminar, June 8, 1975

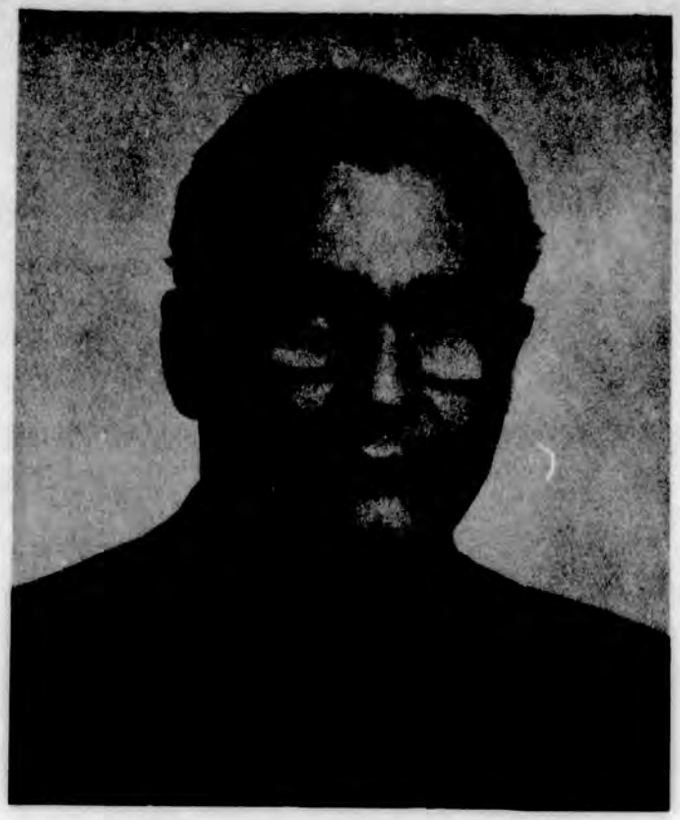
"World Competition in Engineering and Construction", 1st and 2nd Institutes
of International Engineering, Boulder, Colorado, January 1963 and September,
1964, Guest Panelist

"Anatomy of Architecture", 48th Annual AIA Convention, St. Petersburg,
Florida, November, 1962, Guest Speaker

"Controlled Environment, Gould Lecture Series, Pratt Institute, Brooklyn,
New York, April, 1965, Guest Lecturer

"Architecture/Engineer Relationship", Yale University Department of Engineering
and School of Architecture, New Haven, Connecticut, February 1959, Guest Speaker

SELWYN BLOOME, P.E.
EXECUTIVE VICE PRESIDENT, DBA



Education:
BSME, Pratt Institute, 1948
Advanced Engineering, Cornell University
Advanced Engineering, Ohio State University
Photovoltaic Solar Energy, Uni. of New Mexico
Thermal Solar Energy, Trinity University
Continuing Education

Experience:
Selwyn Bloome joined Fred Dubin & Associates in 1956, previously having been a designer of mechanical systems in other consulting engineering offices and for power plant constructors in New York City. He became an Associate in 1958, and is currently Executive Vice-President and Secretary of Dubin-Bloome Associates, P.C. and Partner, Fred S. Dubin Associates International. He is responsible for management of mechanical and electrical projects in the New York and Hartford, Connecticut offices.

He has been a consulting engineer since 1948. He has served as guest lecturer and acted as Design Critic at the Schools of Architecture at Pratt Institute. Mr. Bloome is a member of Connecticut Building Congress, New York Building Congress, New York Association of Consulting Engineers, National Council of Engineering Examiners, American Consulting Engineers Council, Association of Energy Engineers, American Arbitration Association, and the Technical Advisory Committee of "Citizens for a Quieter New York City." He has directed and participated in over 50 Energy Conservation and Solar Energy Seminars and is the author of several articles on mechanical engineering, a contributing author on Solar Energy and Energy Conservation Text Books; prepared and was featured in a HUD film on Solar Energy Techniques.

Professional License:
Registered Professional Engineer in 10 states.

Mr. Bloome's major construction projects and studies include:

-Technical manager of the HUD Solar Heating and Cooling Demonstration Program and energy auditor of the HUD Passive Solar Energy Program.

-Concept, investigation and application of energy saving fume hood exhaust systems for Upjohn Co., 3M co., and Brookhaven National Laboratory. The concept provides safety to the operator while eliminating the use of 100% air conditioned outside air systems resulting in major reductions in operating costs and fuel consumption. Additonal provisions include recovery of waste heat from the exhaust air stream.

-Project Manager for multiple laboratory and hospital projects including Long Island Jewish Medical Center Research Laboratory Building, Beckley Memorial Research Building, University of Connecticut Biological Sciences Building, Kessler Institute of Rehabilitation, Helen Hayes Hospital, Carnegie-Mellon University Research and Computer Center, N.I.H. Research Facility Puerto Rico Medical Center, and Total Energy Plant-Medical Hygiene Facility, Fresh Creek.

Selwyn Bloome, P.E.
Executive Vice President, DBA

-Partner in charge of energy conservation study for 140,000 square feet Chemistry Building at Brookhaven National Laboratories, Upton, N.Y.

-Principal investigator for heat recovery study for High Flux Beam Reactor at Brookhaven National Laboratories, Upton, N.Y.

-Partner-in-charge for master utilities engineering plans and the design of the central 50,000 ton Refrigeration Plant at the State University of New York of Buffalo (Amherst Campus)

-Developed building systems for laboratory use and flexibility, at National Institute of Health Research Facility, San Juan, Puerto Rico. Service shaft developed for off-site fabrication. Individual treatment of exhaust gases with dilution of exhaust into atmosphere and/or air washing or filtration before discharge into atmosphere.

-Developed method and staging of construction for major expansion and addition of Long Island Jewish Medical Center, New Hyde Park, N.Y., while hospital was occupied; evolved a mechanical system and coordinated different existing systems into one entity; maintained clean areas by air pressure flows.

-Preparation of support data for the Federal Energy Administration Manuals ECM-1 and ECM-2 Guidelines for Saving Energy in Existing Buildings.

-Life cycle cost benefits analyses for projects including the study for air conditioning of existing Veterans' Administration Hospitals, comparing owning and operating costs of applicable mechanical systems.

-Mechanical concept applications and economic analyses for the 3M Company Research Laboratory Facilities, Minneapolis, Minnesota. Preparation of design vocabulary for master mechanical planning and energy conservation. On-site investigation of existing facilities for waste heat recovery opportunities.

-Development of a prototype mobile refrigeration unit for on-the-road or at-sea operation for Sea Land Corporation, Port Newark, N.J. Determination of refrigerant characteristic for minimal energy consumption at low temperatures. Preparation of guidelines for insulation retrofit to minimize cooling requirements for trailers.

-Partner-in-charge of Energy Conservation Study for the U.S. Merchant Marine Academy, Kings Point, N.Y. Application and concept of energy conservation guidelines and economic analyses for total campus including cost benefits analysis.

-Project Manager and Concept Analyst for the Cheney School District, Spokane, Washington. This project involved energy conservation measures in building envelope, orientation, application of solar collector array for space heating and domestic hot water, and a 100-ton, water-to-water heat pump. Conservation efforts predicted reduced heat loss and heat gain energy of 50%.

-Hydronic Analyst of a solar heating and cooling system for the George A. Towns Elementary School, Atlanta, Georgia. Application of flow and control measures for 10,000 square feet of solar collector retrofit to existing system.

Selwyn Bloome, P.E.
Executive Vice President, DBA

-Project Manager for Helen Hayes Hospital, West Haverstraw, New York a combination of existing and new construction totalling 300,000 square feet, mechanical and electrical systems, including: central steam plant, central emergency power generating plant. Project was staged on a "fast track" basis. Developed mechanical design concept and energy audit, planning for future waste heat recovery measures.

-Industrial installations for newspaper plants including: Fort Lauderdale News, Hartford Courant, Newark Star Ledger, Staten Island Advance, Harrisburg Patriot-News, New Brunswick Home News, Youngstown Vindicator and 12 other plants.

-Laboratory building design projects: L.I. Jewish Medical Center Research Building; Beckley Memorial Hospital Research Building; University of Connecticut Biological Sciences building; Upjohn Company Laboratory Building; Salk Institute for Biological Sciences; University of Pennsylvania Biology Building; Agfa Gevaert Photo-Laboratory and Cold Storage Facility; N.I.H. - San Juan Research Building.

-Laboratory and Industrial projects designed prior to joining Dubin-Bloome Associates:

-Bakelite Company, Boundbrook, N.J. $30,000,000 Laboratory and Office Building, Pilot Plant, Manufacturing Area.

-Esso Research - Linden N.J. Laboratory and Office Building.

-Quaker Oats - Battle Creek, Michigan Laboratory and Office Building.

-Steam Power Plants

-AEC Savannah River, Aiken, S.C.

-Creole Petroleum Company, Maracaibo, Venezuela

-Taiwan Power Company, Taiwan, R.O.C.

-Pennsylvania Railroad, Altoona, P.A.

-West Virginia Pulp and Paper Company, Covington, V.A.

H. Robert Sparkes, PE
Senior Associate, DBA

Project Engineer
Integrated Utilities

Education:
Boston Technical School
Engineering, Northeast University
Engineering, Wentworth Institute

Experience:
H. Robert Sparkes is a Senior Associate and District Manager of the West Hartford office of Dubin-Bloome Associates, P.C. and has acted as Project Manager in many of the energy conservation and solar energy projects. Sparkes has overseen and participated in most of the projects as they relate to energy conservation and solar energy.

Sparkes is a member of the Consulting Engineering Council, Consulting Engineers in Private Practice, and the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. Sparks has thirty years of cost estimating experience while working on engineering and construction projects.

He was advisor on energy conservation opportunities and associated general contracting for the study of the 140,000 SF existing chemistry building at Brookhaven National Laboratories, Upton, New York. Particular attention was devoted to the extensive laboratory hood exhaust systems which were substantial contributors to energy use.

He was mechanical project team captain for Helen Hayes Hospital, West Haverstraw, New York: a combination of existing and new construction totalling 300,000 SF: mechanical and electrical systems, including central steam plant, chilled water plant, and central emergency power generating plant.

He was project manager in the conceptual design, instrumentation and operation of the Solar Energy System, George A. Towns School, Atlanta, Georgia, with interfacing of the existing mechanical and electrical systems, and hydraulic balance as they relate to various modes of operation.

He was project manager for master planning the 3M Company in Minneapolis, Minnesota, for the development of a new facility of 11,000,00 SF on 615 acres of site, with emphasis on evaluation and preparation of energy conservation guidelines. He analyzed by computer the effect of each building component on yearly energy use, and the development and selection of the mechanical and electrical systems to achieve the desired results. In addition, an energy analysis and life cycle costing was developed for the central utility plant evaluating purchase, power, total energy, peak shaving, analysis of fuels and selections of the prime energy source equipment.

In addition, Sparkes has served as project manager on the following significant energy-conscious projects: the addition to the Central Refrigeration Plant, National Institute of Health, Bethesda, Maryland; the solar heating and cooling installation for the GSA Building, Manchester, N.H.; the design studies concerning energy conservation and solar utilization at the Argonne National Laboratories, and the Connecticut General Life Insurance Company energy conservation program. In regard to the latter, he developed and directed a program of maintenance and operation of existing systems to reduce energy consumption of the facilities by 33% without capital expenditure, and conducted budgeting of capital, operating and maintenance expenses.

He participated in the government-sponsored energy and life cycle analysis of the alternative mechanical systems concepts as they relate to energy conservation application. These have been used in the GSA Energy Conservation Guidelines for Office Buildings.

Sparkes surveyed and participated in the energy analysis, site distribution, and life cycle costing of existing facilities for the U.S. Merchant Marine Academy, Kings Point, New York.

Currently he is preparing an energy conservation evaluation for Brookhaven National Laboratory, Upton, New York, including central power plant and distribution systems to be developed for the five year long-range energy conservation program.

Professional License:
Registered Professional Engineer, 1960