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STATE SURVEY OF INNOVATIVE ENERGY PROGRAMS AND PROJECTS

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Abstract

We present in this paper the results of a survey of innovative energy programs and ideas in nineteen states outside California. This information was requested by California agencies for preparing energy proposals for funding from the Petroleum Violation Escrow Account (PVEA).

We examined energy conservation and renewable energy programs in the residential sector, small business, public buildings, local government, schools, transportation, and agriculture. We also reviewed energy data management systems, and energy information, education, and financing programs.

Residential energy programs included the building of energy efficient homes, energy retrofits (furnace or boiler), weatherization of existing homes, energy conservation programs for seniors, special assistance for low-income homes (weatherization and financing), neighborhood/community approaches for promoting energy conservation, special assistance for the multi-family sector (audits and financing), energy conservation in mobile homes, and energy rating systems.

Small business (small commercial and industrial) energy programs included financing, energy audits, technical support (training), data management, and information programs. Energy conservation programs for public buildings (state and municipal facilities) included energy audits, data management, financing, energy management, technical support (training), and information programs. Local government energy programs included energy management, fuel cooperatives, load management, street lighting, and energy ordinances (building and solar access codes). School energy programs included energy audits, data management, financing, technical support (training), energy management, transportation, and information programs.

Transportation energy programs included traffic signal optimization, ridesharing (vanpool and carpool), driver training, fleet management, bicycles, public transit (light rail), flextime, car care clinics (preventive maintenance), bus driver training, parking, and information programs. Agriculture energy programs included alcohol fuels, crop production, biomass, technical support (training), and information programs. Renewable energy programs included cogeneration, hydropower, waste heat recovery, wood heat, solar heating, and solar ponds.

Energy data management systems included data monitoring and collection. Energy information and education programs included workshops, seminars, conferences, hot lines, etc. for the residential and transportation sectors, schools, and small businesses. Energy financing programs included bonds, grants, loans, leases, shared savings, Third-party financing, and Solar Bank funds for promoting the use of energy conservation and renewable sources of energy.

Many of the projects were in the early stages of development and implementation so that we were unable to evaluate their efficiency and effectiveness. Nevertheless, we believe that many of these programs should be closely examined by policy makers in California to determine whether new programs should be created and/or existing programs should be expanded in order to incorporate some of the ideas, mechanisms, and structures developed in other states.

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I. INTRODUCTION

We present in this paper the results of a survey of innovative energy programs and ideas in nineteen states outside California. This information was requested by California agencies for preparing energy proposals for funding from the Petroleum Violation Escrow Account (PVEA). (See "California's Petroleum Violation Escrow Account (PVEA) Evaluation Report, Volume 1 - Overview," (LBL Report LBID-958, March 1985) for a discussion of this topic).

We attempted to obtain information on programs and projects that energy officials in other states considered to be "innovative" or "interesting" to energy decision makers. Because "innovative" is a relative term (i.e., what may be innovative for one state may not be innovative for another state), we relied on state respondents to select and describe their innovative energy programs and projects. We did not limit ourselves to energy projects per se. We were interested in innovative mechanisms and processes for financing projects, for educating people, for motivating local governments and communities, and for providing incentives for participating in projects. In some cases, we included projects nominated by a state for the U.S. Department of Energy's Awards Program for Energy Innovations.

Because most states have been suffering budgetary constraints, meeting basic program needs has generally been given a higher priority than innovative programs and ideas. However, the recent influx of new funds from the Petroleum Violation Escrow Account (PVEA) into state treasuries has motivated some states to initiate new and innovative projects and programs. Because many of these innovative projects were funded by oil overcharge money, we bounded our search using the federal guidelines affecting the allocation of petroleum overcharge money (Warner and Amoco funds).

Most of the initial petroleum overcharge money entering California and other states has been allocated according to the guidelines set forth by Congress and the U.S. Department of Energy (the Warner Amendment and the Amoco decision). The Warner funds are those oil overcharge payments mandated by the Warner Amendment (Public Law 97-377, or Section 155 of the Further Continuing Appropriations Act, 1983). These funds have primarily been used to expand and enhance efforts in five allowable program areas. These programs include:

* weatherizing dwelling units, particularly those where elderly or handicapped low-income persons reside (Energy Conservation in Existing Buildings Act of 1976);

* supplementing state energy conservation plans (Title III of the Energy Policy and Conservation Act);

* reducing energy consumption or allowing the use of alternative energy sources in schools and hospitals (Title III of the Energy Policy and Conservation Act);

* promoting energy conservation by small businesses and individual energy consumers (National Energy Extension Service Act);

Thus, many states have allocated these funds to existing programs in anticipation of reaching a greater number of people. These activities include:

* energy audits
* energy education programs
* television programs on home conservation
* energy management workshops and demonstrations for local governments as well as for commercial and residential structures
* home weatherization programs
* technical assistance

Some states, however, have developed unique programs that tie back to consumers' consumption of petroleum. This reflects the philosophy that the oil overcharge payments should serve as restitution to injured parties. The following programs are examples of this philosophy:

* traffic signal synchronization and management programs
* oil burner retrofit programs
* ridesharing programs

Guidelines for the allocation of more recent oil overcharge money (the Amoco funds) have emphasized transportation projects in order to benefit consumers of motor gasoline and/or middle distillates (the restitution issue). Amoco money could also be used to supplement, not supplant, any state or federal funds which were already budgeted for energy projects. However, some states have had their oil overcharge plans rejected by the U.S. Department of Energy because the states didn't propose enough transportation projects.

We did not survey all the states, nor did we cover all the programs within each state. Based on discussions with key energy officials at local, state, and federal levels, we limited our search of innovative projects and ideas in two ways. First, we discovered that there was relatively little flexibility in the low income weatherization and the institutional conservation programs (ICP - Schools and Hospitals). Any additional funds to these programs will

primarily go towards supplementing on-going programs which have historically been rather limited in scope and innovation. Accordingly, we concentrated on the State Energy Conservation Program (SECP) and the Energy Extension Service (EES) program where flexibility and innovation are permitted. Interviews with individuals managing and/or knowledgable about these programs covered energy conservation and renewable energy projects in residential, commercial, transportation, industrial, and agricultural sectors. Second, because of the absence of a national overview of transportation energy projects, and because many innovative transportation projects occur at the local level, we relied on local transportation officials for suggestions on innovative transportation projects in other states and communities. National transportation energy experts suggested additional innovative transportation energy projects.

We have also included information on the allocation of oil overcharge money (Warner and/or Amoco funds) by program and/or project level in other states in order to provide ideas to stimulate thinking on how these funds should be spent in California. We used several information sources for estimating the amount and allocation of oil overcharge funds in selected states: the U.S. Department of Energy's Office of Legal Counsel, the National Governors Association, and the Texas Energy Research Associates.

We describe briefly the purposes of each promising project or program we reviewed. Because many of the innovative projects are just being started or have a short history (one to two years), there is little documentation or evaluation material, and energy savings and program cost data are often missing. Consequently, we have attempted to provide as much material on these projects as feasible.

We surveyed 19 states during the summer of 1984: Arizona, Connecticut, Florida, Idaho, Illinois, Indiana, Iowa, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New York, Ohio, Oregon, Pennsylvania, Texas, and Wisconsin. We have included at least one contact person with a telephone number and relevant references for each state; a contact list is appended for those individuals and organizations interested in obtaining more information on these projects.

We would like to thank Paul Gertner, Steve Gold, Dave Moulton, and Mike Rothkopf for reviewing this paper.

II. STATE PROGRAMS

ARIZONA

Contact: Jim Westberg (602) 255-3632
References: "State Energy Conservation Plan for FY 1984-85," and "Energy Extension Service Plan for FY 1984-85," Office of Economic Planning and Development, Energy Office.

Some of the following programs are being conducted under the State Energy Conservation Program and the Energy Extension Service during FY 1984-85:

State Energy Conservation Program

Determination of financing alternatives to install energy savings measures in state facilities
Demonstration of energy savings measures in model houses
Driver energy awareness programs and ridesharing programs
Low-income residential programs for senior citizens, mobile homes, and energy innovations appropriate for low-income housing
Street lighting demonstration
Cogeneration and hydropower feasibility studies
Energy-water conservation study
Model solar access ordinance
Energy consumption data base and audits of state buildings
Neighborhood energy conservation pilot project
Manufactured housing (mobile homes) energy conservation demonstration project
School conservation programs (audits and energy cost cutting clinics)

Energy Extension Service

Consumer information center program
Publicity program
Workshop, education, and training program
Solar economic development strategies program

Program evaluation and impact assessment are components of all SECP projects and are "based on before and after observation when possible, and will include control group observation where appropriate and practicable to validate energy savings and program impacts."

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Contact: Larry Fallis (602) 255-4940
References: "Memo on Annual Report on Energy Impact: Capitol Complex Rideshare," and "State of Arizona Rideshare Program Workplan, FY 1983-84," Office of Economic Planning and Development. Energy Division.

The Arizona Energy Division is in charge of an extensive carpool program ("Capitol Complex Rideshare") for state employees (over 5,000 people). The project is funded by the Federal Highway Administration and the Arizona Department of Transportation. The program uses a computerized match program that reduces the time necessary to provide an employee with a list of potential carpool matches. In its first year (July 1, 1983 to June 30, 1984), this program saved 122,936 gallons of gas ($135,230) based on an average of 269 carpools per day and an average of 588 persons per day. Other positive attributes of the program were the reduction of roadway wear, vehicle wear/maintenance, congestion, parking spaces required, and air pollution. In addition, there was increased commuter disposable income, improved attendance and punctuality on the job, and, thus, productivity.

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Contact: Jim Westberg (602) 255-3632
References: "Consumer Refund Annual Report for FY 1982-83," "Arizona Projects for Utilization of Oil Overcharge Funds," Office of Economic Planning and Development, Energy Division.

Arizona received a total of $2,824,552 in oil overcharge money. Arizona received $858,552 from Chevron/Standard Oil of California and distributed the oil overcharge money to some of the following programs:

1. Driver programs that emphasized training, fleet management, and fuel emergency planning. For example, over 3000 drivers were given training in the Driver Energy Conservation Awareness Training (DECAT) program.

2. Municipal and community programs that provided technical assistance to local governments and community groups. For example, the "Seniors Helping Seniors" program trained 150 senior citizens to help their friends and neighbors save energy using no-cost/low-cost weatherization actions.

3. Information programs including directories, hot lines, and energy networking.

4. The low-income program received $181,000 for assistance with energy costs.

Arizona received $1,966,000 from the Warner funds and distributed the oil overcharge money in the following manner:

$835,000 - Low-Income Energy Assistance Program
$250,000 - Weatherization of low-income residences
$80,000 - Utility rate improvement projects (pending DOE approval)
$110,000 - Solar technology development
$106,000 - Institutional Conservation Program
$225,000 - Academic energy demonstration projects
$30,000 - Arizona Energy Data System
$275,000 - Local government/non-profit institutional grants
$55,000 - State building energy engineer

The grant program to local institutions resulted in 37 funded projects (e.g., street lighting demonstration, energy efficient buildings, driver training, training of service station dealers on automobile efficiency, and cogeneration feasibility).

CONNECTICUT

Contact: Allan Johnson (203) 566-8463

Connecticut's Office of Policy and Management-Energy Division (OPM) monitors monthly energy use and cost in state facilities for tracking and comparing the benefits of different energy conservation projects. The data are used by OPM during review of state agency annual energy budget requests and form the basis for staff-recommended budgets. Approximately $12.5 million of bond funds have been allocated to various state agencies for the implementation of 182 energy conservation measures. This program is partially incorporated in the Schools and Hospitals program.

A shared savings program is integrated into the state buildings program so that energy savings and cost reductions due to the implementation of energy conservation capital projects can be used for more energy conservation activities and/or for the purchase of equipment and supplies necessary for the operation and maintenance of facilities. Under this program, a state agency would enter into a 5 to 7 year contract with a private firm which would assume all costs of purchase and installation of all equipment and materials necessary to reduce energy consumption in a state facility. The contractor would also purchase, install and operate, at the contractor's cost, an energy management control system at the facility. The contractor's fee would be based on a percentage of the savings realized, with the remained of the savings accruing to the state. A pilot project at a state correctional institution has been selected as the first project in this program.

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Contact: Michael Sartori (203) 566-5765

As part of their residential conservation program, CONN SAVE (a non-profit corporation formed in 1980 by seven natural gas and electric utilities to assist residents in reducing their home energy consumption) works with towns to set up Community Insulation Programs (CIPs) to provide homeowners the opportunity to pool their bid requests for attic insulation and, thereby, benefit from economies of scale. Homeowners are offered CONN SAVE audits, and a town coordinator puts together a package of specifications for 10-15 homes and receives bids on the package as a whole. The low bidder is awarded the right to contract with the individual homeowners at the bid price. CONN SAVE inspects all CIP installations.

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Contact: Michael Sartori (203) 566-5765

Connecticut's low-income weatherization demonstration program was initiated to seek improved methods and procedures to weatherize low-income homes, particularly in multi-family buildings and group homes. The State Department of Housing (DOH) has solicited and received proposals from a variety of organizations to weatherize low-income residences in an efficient and timely manner. The program is funded with $3 million in Low Income Home Energy Assistance Program (LIHEAP) funds and $100,000 in petroleum violation escrow funds. A task force will analyze the results of the program and make recommendations to improve the delivery of services under the existing weatherization program.

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Contact: Michael Sartori (203) 566-5765

Several financial incentive programs are administered by the Department of Housing and implemented by the Connecticut Housing Investment Fund:

1. Energy Conservation Loan Program for 1-4 Unit Buildings. Loans ranging from $400 to $3,000 are available to owners of residential buildings with 1-4 units. Interest rates range from 0% to 9.25%, depending on family size and income. Loans may be used to finance insulation, alternative energy systems, and other energy conservation measures.

2. Multi-Family Energy Conservation Loan Program (MELD). Owners of apartment buildings containing 5 or more units may obtain loans for energy conservation improvements identified as the most cost-effective by an energy audit. Loan amounts are limited to $1,000 per unit up to $10,000; the interest rate is 4% unless 50% or more of the occupants have incomes less than 80% of the area median income, in which case there is no interest charge. There are no income limits for the property owner.

3. Lower Income Matching Grant Program. Qualifying owner occupants and tenants may receive grants of up to $1,250 for energy improvements to their residential buildings provided they contribute at least the same dollar amount to the conservation effort. Buildings containing 2-4 units may obtain an additional $750 for each additional unit. Applicants must have incomes no more than 80% of the area's median income to qualify for a grant.

4. Multi-Family Energy Conservation Cooperative Assistance (MECCA). Owners of multi-family buildings may obtain grants of up to 20%, or $400 per unit, to subsidize the principal or conventional loans for energy improvements to their buildings. There are no income limits for owners or tenants.

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Contact: Laura Inouye (203) 566-5803

OPM is hiring a consultant to research innovative methods of financing energy improvements for small businesses and apartment buildings and to develop a financial incentive program.

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Contact: Carol Wilson (203) 566-5803

Connecticut's energy education program (Student Technical Audit Team (STAT)) is modeled on the WATT (Wallingford Auditing Technical Team) program which saved over half a million dollars in energy costs for the Wallingford schools in two years with an investment of $12,000. In the STAT program, 24 teams of teachers and high school students are trained to do energy audits. Each STAT consists of one or two teachers and two or three students who audit a school or another town-operated building. At the completion of the audit, the teams meet with the people in charge of the buildings and present their findings. Twenty-three towns are now participating, and it is hoped that the

audit program will be institutionalized in the school system.

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Contact: Marilyn Hesse (203) 566-8467

Connecticut received $265,666 in Amoco funds to expand their private, non-profit ridesharing brokerages into new service areas. Ridesharing services are provided to employer-based markets and the general public and include car/vanpool matching and formation, vanpool vehicle procurement and financing, employer relocation and rideshare program development, and rideshare promotion and advertising.

Connecticut received $3,292,400 in Warner funds (and $274,659 in interest as of December 31, 1983) and distributed the money in the following manner:

$1,667,059 - State Energy Conservation Program
- $1,100,000 - State building technical audits
- $100,000 - Municipal building technical audits
- $150,000 - Electricity study in state buildings
- $40,000 - High school audit teams
- $12,500 - Outreach activities for Solar Bank
- $113,638 - Solar Bank contract for technical services

$160,000 - Energy Extension Service
- $60,000 - Small business audits
- $100,000 - Low income weatherization demonstrations

$1,740,000 - Institutional Conservation Program

FLORIDA

Contact: Tom Thayer (904) 488-6764
Reference: "Florida's Coordinated State Grant Programs: 1984," Florida Governor's Energy Office, January 1984.

One of Florida's most innovative energy programs is not a program but a process: the coordination and consolidation of energy conservation programs. In June 1980, DOE's Office of State and Local Assistance Program published proposed rules to establishing procedures to coordinate energy conservation programs, and DOE selected Florida to serve as the pilot state for this program. The "coordinated state grant program" coordinates the application and administrative procedures for energy conservation programs in the state in

order to obtain financial assistance for one or more coordinated state grant programs. Florida's Coordinated State Grant Programs includes projects in the residential, transportation, and governmental sectors as well as in the private sector, applied technologies, and public information coordination.

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Contact: Kate Nielson-Nunez (904) 488-6931

The Florida Governor's Energy Office's transportation program (funded by Warner oil overcharge money and the Florida Department of Transportation) is composed of seven projects:

1. Retiming of signals on the state highway system (traffic signal optimization)
2. Computerized traffic signal timing systems in Tampa and Jacksonville
3. Retiming of signals on local government roads (traffic signal optimization)
4. Comprehensive bicycle plans in 21 urbanized areas in Florida
5. Demonstration project of third-party vanpool services for localities
6. Statewide expansion of ridesharing program
7. Traffic operation studies in six Department of Transportation districts (work plans will be developed that will examine six different types of systems for improving traffic flow)

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Contact: Laura Firtel (305) 849-2333
Reference: "Orlando Urban and Core Area Growth Management Plan, Technical Report No. 18, Downtown Parking Overlay District Ordinance," Preliminary Draft DO-2-82, Bureau of Planning and Zoning, City of Orlando, Florida.

The City of Orlando has adopted an innovative downtown parking plan to encourage the use of public transit. As part of the Orlando Urban and Core Area Growth Management Plan, the City of Orlando has created a long-range parking concept for Downtown Orlando which emphasizes off-street facilities for transit parkers, with a gradual removal of curb parking, and peripheral off-street facilities for long-term, employee-type parkers all served by downtown shuttle bus circulation system. The focus is on giving preferential treatment for work trip parkers to multi-occupant vehicles. A stated goal of the plan is a 15-20% increase in transit ridership to downtown destinations. As an incentive for developers, the City of Orlando has developed a Parking Ordinance which provides for a maximum 20% bonus reduction of required parking when a developer makes a contribution to a Transportation System Management

Trust Fund. These funds shall be used only to acquire and/or develop transit capital equipments or systems, or to fund construction or improvement projects in the downtown which fall within the definitions of Transportation System Management strategies. These incentives are utilized solely at the discretion of the property owner and do not constitute regulations in the sense of standards and requirements which must be enforced. Thus far, no developer has contributed to the Trust Fund.

Florida received $9,105,800 in Warner funds and distributed them in the following manner:

$3,400,000 - Institutional building grants
$1,638,000 - Low-income weatherization
$4,067,800 - State Energy Conservation Program
- $3,112,500 - transportation
- $830,000 - state/local government
- $65,000 - solar/passive design
- $60,030 - commercial outreach

The "commercial outreach" program involves the active participation of sponsors in order to motivate interest in energy conservation and renewable energy projects. For example, the Florida Homebuilders Association was involved in the preparation of a manual for builders that identified new technologies and products to build energy efficient homes.

IDAHO

Contact: Karen Nelson (308) 334-4440
References: "Energy Development and Study Fund: Interest Buydown for Energy Projects through Commercial Lenders," "Oil-Heat Residential Loan Program," "Commercial Energy Improvement Program," "Residential Standards Demonstration Program: Questions and Answers," and "Residential Standards Demonstration Program: Gas Utility Cooperative Agreement," Idaho Department of Water Resources.

The Idaho Department of Water Resources' (IDWR) commercial energy improvement loan program provides low interest financing for commercial, industrial, agricultural or local government energy conservation and/or renewable energy projects. IDWR entered into an agreement with First Interstate Bank of Idaho (FIID) for $250,000 of the oil overcharge funds (Warner funds) which will generate over $7 million in loans. The projects must demonstrate a simply payback period of 10 years or less. The minimum loan is $1,000 and the maximum

loan is $200,000 (which can be waived). The term of the loan is 5 years or less. The interest rate is two points below FIID's prime rate.

IDWR's oil furnace retrofit or replacement loan program provides low interest (6%) loans to the residential sector using oil as a heat source. The minimum loan is $600 and the term of the loan is 3 years or longer. Loans can be used to improve oil burner efficiency as well as to purchase and install conservation measures. An agreement was signed with FIID for $90,000 (Warner funds) which will generate over $1 million in loans.

Home conservation low interest loans are available through the Idaho Housing Agency (IHA) to the residential owner who meets selected income criteria. IDWR executed an agreeement with IHA for $150,000 which will generate over $1.5 million worth of loans.

The Residential Standards Demonstration Program (RSDP), run by IDWR and funded by Bonneville Power Administration (BPA), is designed to demonstrate the additional costs, cost-effectiveness, and energy savings of building single and multi-family residences to the Northwest Power Planning Council's Model Conservation Standards. Under this program over 125 electrically-heated homes (115 single-family and 10 multi-family) will be built to the standards. The main goal of this program is to monitor the energy use of these homes for one year starting in the fall of 1984. A cash incentive of $100-300 will be given for the occupants' participation in the energy monitoring of the homes: water and space heating and total energy consumption will be metered, max/min thermometers are read in the house weekly, indoor air quality tests are conducted, and a one-time air infiltration test is taken. The incentive amount varies with the climate zone the home is located in and whether or not the owner uses wood heat. Oil overcharge money (Warner funds) is used to support this project: the state will provide $3,000 to builders for each house built in this project. In order to demonstrate the standards for gas heated homes, IDWR is entering agreements with the state's two gas utilities to construct gas heated homes in their areas. It is anicipated that eight homes will be constructed.

Idaho received $917,400 in Warner funds and distributed them in the following manner:

$250,000 - Low-income weatherization
$601,400 - State Energy and Conservation Program
$66,000 - Energy Extension Service (maintenance and operation of three regional offices and a boiler retrofit demonstration project)

ILLINOIS

Contact: Carol Cavanaugh (217) 785-3412

References: "Alternative Energy Bond Fund," Illinois Department of Energy and Natural Resources, June 1984.
"Decision and Order of the Department of Energy, Second Stage Refund Applications," May 1984, for the State of Illinois, by the U.S. Department of Energy.

The Illinois Department of Energy and Natural Resources' (ENR) Community Energy Management Planning Assistance (CEMPA) program is a highly visible, community-based approach to delivering energy information. It is designed to identify and address energy problems at the local level by working closely with citizens in the community. The CEMPA program offers energy planning and management assistance, energy information and technical expertise to homeowners/renters, small businesses and industries, schools, religious and public institutions.

ENR's Home Energy Loan Program (HELP) provides principal reductions for energy-efficient improvements. The program is funded through HUD's Solar Energy Conservation Bank Program. An applicant must be an owner or tenant of a 1-4 unit residential building constructed prior to January 1980, must have had an RCS audit, and must have a family income below 150% of median area income.

ENR's Alternative Energy Bond Fund (AEBF) program provides partial funding for alternative energy research and development projects using general obligation bonds. Since 1979, Illinois has supported 18 projects, including the following:

1. integrated alcohol fuel production facility
2. use of ethanol distillery by-products in aquaculture
3. on-farm anaerobic digester and fuel alcohol plant
4. integrated biomass energy system for Illinois agriculture
5. butanol production by fermentation of extruded corn
6. practical system for the use of alcohol in diesel engines
7. heat extraction from solar ponds for agricultural applications

ENR has a plan for distributing its oil overcharge funds (Beldrige Oil Co. and Amoco), a total of $2,864,689. Illinois plans to use $1,292,689 for three programs that provide energy conservation benefits to the residential and transportation sectors:

* $544,000 will be used to expand Solar Energy Bank funds which assist residential homeowners and apartment dwellings in home energy conservation; direct grants will be provided to accomplish furnace retrofits of approximately 650 1-4 unit dwellings and 300 multi-family dwelling units.

* $350,000 will be used for workshops and conferences on energy conservation issues (e.g., efficient use of transportation fuels and heating oils, ridesharing, and automobile fleet management techniques). Also, individualized computerized analyses of transportation costs will be developed and made available to motor gasoline customers to assess their current driving habits and the potential for savings through vehicle modifications.

* $398,689 will be used to expand the CEMP program to include a transportation energy efficiency component (e.g., transportation information hot line, recommendation of alternative routing patterns for local mass transits in high ridership areas, and the synchronization of traffic lights in urban areas).

In addition to the above programs, Illinois proposes to spend $727,000 for three programs to benefit non-profit organizations and small businesses that consume motor gasoline and middle distillates:

* $500,000 will be used for interest free loans up to $6,000 to assist small businesses which use large amounts of motor gasoline in their operations in developing energy conservation measures.

* $127,000 will be used to provide energy audit services to small businesses and owners of multi-family rental dwellings.

* $100,000 has not been allocated yet.

Illinois plans to use $200,000 to fund an Alternative Transportation Fuels Program which would involve conducting studies on the use of fumigated alcohols and vegetable oils as diesel fuel supplements and substitutes, and tests on the use of methanol as transportation fuel.

Illinois also plans to use $90,000 to supplement funding for the Agricultural Energy Management Program to provide farmers with energy management and alternative energy information through a series of on-site training demonstrations and technical assistance programs which are designed to reduce energy consumption in grain production, conditioning and marketing, and livestock production and marketing.

INDIANA

Contacts: Bob Hedding (317) 232-8995
Joe Griffiths (317) 232-8940
Pat McCauley (317) 232-8800

References: "Guide to Energy Efficient Procurement for Purchasing Agents (1982)," "1983 Annual Report," "Energy Management Planning: A Guide for State, County and Municipal Governments," and "A Guide to Energy Management for Religious Buildings," Indiana Department of Commerce, Division of Energy Policy; "Rural Energy Conservation Program: Final Report, (1983)" Cooperative Extension Service, Purdue University.

Indiana's Energy Division combined funds from the State Energy Conservation Program (SECP) and the Energy Extension Service (EES) to support several energy programs. For example, the Energy Information Center is a one-stop shopping area in which an energy library (funded by SECP money), an energy hot line (funded by EES money), and an energy engineer (funded by SECP money) are available to answer questions and conduct computer searches. The program target audience is primarily residential energy consumers, with special attention given to farmers, rural and small town residents, small business owners/operators, senior citizens, and low income households. In another program, EES and SECP funds are combined to assist small utilities to conduct sophisticated residential, RCS-type audits for their customers who comprise 25% of the state.

Indiana is one of the few states to include an energy element in its HUD-funded Small Cities CDBG Program. In the Energy Division's Residential Energy Management Program (REMP), county governments and non-entitled cities and towns (under 50,000 population) apply for grants (minimum is $40,000, maximum is $100,000) to audit, weatherize, and educate low and moderate income households. Community Development Block Grant (CDBG) funds are used by communities to use this program. This program began in 1982; in 1984, $2.5 million is expected to be distributed to communities. Evaluation of this program is about to begin; the Department of Commerce will be collecting fuel data before and after weatherization.

Indiana's extensive agricultural energy management program (in coordination with the Cooperative Extension Service at Purdue University) is composed of many small-scale projects (e.g., biomass and alcohol fuels). This outreach program uses seminars and "Energy Management in Agriculture" pamphlets to educate farmers on new and innovative energy technologies (e.g., "Solar Heat for Grain Drying," "Methane Generation from Livestock Waste," "Natural Ventilation for Livestock Housing," and "Dryeration and Bin Cooling Systems for

Grain").

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Contact: Jeff Quyle (317) 232-8983

Almost all of Indiana's transportation energy projects are funded by oil overcharge money (Amoco funds). Indiana promotes ridesharing, carpooling, and vanpooling for new car buyers and is currently preparing a community transportation workbook that will contain material on flextime, bike routes, carpools and vanpools. Indiana encourages experimentation by fleets with alternative fuels, especially compressed natural gas (CNG). With state standards for CNG installation in place, several school corporations in Indiana are investing in CNG for their bus fleets.

Indiana received $4,717,400 in Warner funds and designated all of its money to supplement Low Income Home Energy Assistance Block Grant funds. Indiana has just submitted a plan for the use of its Amoco funds.

IOWA

Contact: Larry Bean (515) 281-4420

The Iowa Energy Policy Council conducts energy projects within one community as a model for the rest of the state: e.g., ridesharing, a superinsulation demonstration project, and a retrofit demonstration project. The Council has hired an energy management technician to serve school districts for conducting walk-thru audits and for monitoring the performance of audits.

Iowa received $2,462,200 in Warner funds and distributed the money into building energy management programs for government buildings in three areas:

$575,000 - to the State Board of Regents buildings for capital energy conservation expenditures
$500,000 - energy management in state buildings (60% of these funds must be used in counties with high rates of unemployment)
$1,387,200 - local government energy management

MASSACHUSETTS

Contact: Jack Bevilacqua (617) 727-4732
References: "Warner Local Government Energy Financing Demonstration: Scope of Services," Massachusetts Executive Office of

Energy Resources, 1984.
"Fuel Purchasing and Planning for the Commonwealth of Massachusetts Task II: New Contractual Pricing Systems," The Energy Futures Group, Inc., 1984.

The Massachusetts Executive Office of Energy Resources (OER) is conducting two innovative demonstration programs in Massachusetts: a local financing demonstration project and a municipal fuel cooperative. In the Warner Local Government Energy Financing Demonstration project, OER hired a consultant to analyze innovative financing options available for energy efficiency improvements by local government. These options include shared savings, guaranteed leases, lease purchase agreements, tax-exempt bond financing, and all federal and state grant programs. The consultant will develop a profile of the typical local governments that would most benefit from each financing mechanism, and will help select a minimum of six local governments to sponsor demonstrations. After identifying projects in each selected community, the consultant will assess each project's technical and economic feasibility. The consultant will also help develop a Request for Qualifications and a Request for Proposals and will help choose which projects to pursue and which energy service company to select. A final report will be prepared which will include case studies of the demonstrations and lessons learned from each project, and information which can be used as a guide for the financing of energy efficiency measures at other sites.

The municipal fuel cooperative project arose because of the general inability of purchasing governments to impose requirements for price restraint on their suppliers. Fuel distribution is currently in a period of great uncertainty. Inconsistent and unrestrained pricing and widely varying operational requirements indicate the need for a better system of fuel procurement. The goal of this program is the sharing of the responsibility for price restraint between buyers and sellers. This would contrast sharply with the currently frequent practice of passing through to the buyer all price increases without any determination that the seller had sought to obtain the lowest price. The program is based on a pilot project in the City of Springfield in which a bid for fuel oil was prepared that contained a price adjustment clause which defined the base price, provided a fixed cent-per-gallon markup over the base price, and utilized a percentage of escalation as the single bid variable. Thus, instead of a 100% escalation contract formula (full pass-through of fuel costs), a percentage of price escalation is used. This program partially protects the buyer from price increases and gives the distributors an incentive to either seek improved prices themselves or make their own operations more effective. Also, larger bidding units are recommended for cost reductions with municipalities bidding as collectives and state/local collective combinations in order to attract vendor interest in a fixed price contract.

Massachusetts received $6,645,800 in Warner funds and distributed them in the following manner:

$4,935,000	State Energy Conservation Program
$2,425,000	Residential division
$35,000	Policy development
$100,000	Legal interventions
$500,000	Institutional conservation division
$500,000	Renewable resources division
$1,350,000	Commercial/industrial division
$25,000	Vanpooling ride service
$1,150,800	Weatherization Assistance Program
$560,000	Energy Extension Service
$70,000	Solar Bank marketing
$50,000	Elementary education
$70,000	Publicity on energy conservation
$25,000	Local government technical assistance
$25,000	Farmer's home loan program
$40,000	Bulk/buying coop marketing
$150,000	Energy conservation jobs training
$60,000	Information/education to state programs
$70,000	Elderly advocacy program

MICHIGAN

Contact: Charles Millar (517) 373-4277
References: "Community Energy Management Program," "Small Business Energy Analysis Program," "Michigan's Energy Efficiency Financing Program," and "What is TSEP?" Michigan Energy Administration.

The Michigan Energy Administration's Community Energy Management (CEM) program is a state/local partnership designed to produce visible reductions in local energy costs quickly while at the same time establishing better energy management practices that will have a continuing impact on community energy costs. Communities are selected to participate based on their willingness to undertake energy efficiency improvements and to commit resources to an ongoing energy management program. There are three sub-programs within CEM: residential, small business, and municipal operations. The Small Business Energy Analysis Program (SBEAP) provides walk-through energy analysis services for small commercial and industrial businesses in CEM communities. Each community must show its commitment to carry the program on beyond the 12 to 18 months of the Energy Administration's direct involvement in the community

through the CEM program.

The Energy Efficiency Financing Program, run by the Michigan Department of Commerce's Energy Administration, was established to demonstrate innovative financing (e.g., leasing, joint ventures, shared savings, and energy service contracts) for schools, municipal buildings, multi-family housing units, and small businesses. In each of these sectors, a facility will be selected to demonstrate the applicability of innovative financing. Consultants working with the Energy Administration will provide financial, legal, and engineering guidance and assist each facility owner in putting together a financial package for an energy saving project. Simultaneously with the demonstration projects, the Energy Administration will coordinate a program to develop information explaining in detail how to obtain and use innovative financing--tailored to the specific needs of each sector. This program is expected to be completed in early 1985.

The Total School Energy Program (TSEP) provides technical support to school districts interested in implementing a comprehensive energy management system. The objectives of the TSEP are: (a) to develop an energy management program within the participating school districts by identifying school energy users and establishing a management program to meet the identified needs; (b) to effect a 10 to 30 percent reduction in energy use within participating school facilities through management commitment and planning and use of specific operation and maintenance procedures; and (c) to assist participating districts to develop a building-level energy data base through recording information on types and amounts of energy used, identifying energy sources and problems, and developing expertise to deal with the energy information needs of schools. To accomplish these objectives, seminars are held for all participating districts in which consultants meet with key officials to discuss the specific tasks needed to be conducted.

Michigan received $6,558,000 of Warner funds and used all of them for its low-income weatherization program.

MINNESOTA

Contact: Vickie Reph (612) 296-4874

References: "Legislative Advisory Commission Request for Amoco Oil Overcharge Funds," Minnesota Department of Energy and Economic Development, Energy Division.

Minnesota received $1,001,339 in Amoco funds to support nine energy conservation programs (approved by the Office of Hearing and Appeals on June 7, 1984), including the following:

1. Agricultural Crop Production Efficiency Project ($87,500). A demonstration project to promote use of three technologies for improving energy efficiency in crop production (conservation tillage, dryeration and in-storage cooling, and residual soil testing).

2. Total Energy Management for Commercial, Industrial, Institutional Sectors ($78,789). This project is an expansion of existing efforts to reach commercial energy users and includes steam trap maintenance, fiber fuel boiler conversion training, alternative energy data collection, materials and resources on building processes, envelope management, energy accounting, and employee training.

3. Rideshare and Transit for the Metropolitan Area ($122,500). This program provides the resources to coordinate and implement rideshare marketing and outreach activities and serves employers and community groups/organizations in high potential target markets in the Minneapolis-St. Paul metropolitan area. This program also funds limited transit services (including special van services) to meet the needs of persons 60 years and older and handicapped persons in the metropolitan area.

4. Community Energy Councils ($200,000). This program provides grants to fund the delivery of local transportation programs by Community Energy Councils as well as other local energy use sectors. Councils must agree to plan and implement a community transportation energy conservation work program comprised of projects from the following list:
   a. Public transit or rideshare promotions
   b. Car care clinics
   c. Driver education for energy efficient driving habits
   d. Bike and hike days
   e. Traffic flow synchronization

   In addition to transportation energy conservation projects, Councils may also plan and implement the following projects: residential energy conservation activities, community energy planning, energy management for small businesses, or energy-efficient land use planning.

5. Optimal Low Income Weatherization Project ($176,311). This project is a pilot fuel purchasing cooperative for reducing energy bills for low income households.

Minnesota also received $3,283,000 in Warner funds and distributed them in the following manner:

$2,000,000 - Weatherization Program
$943,000 - Institutional Conservation Program
$340,000 - Energy Extension Service

MISSISSIPPI

Contact: Bill Lunceford (601) 961-4733
References: "The Energy Circuit," October 28, 1983 and January 11, 1984, and the "1983 Annual Report," Mississippi Department of Energy and Transportation.

The Mississippi Department of Energy and Transportation conducts the State Energy Management Program (SEMP) which provides assistance to all state agencies and institutions in preparing and implementing energy management plans, followed with a computer analysis report on the results of each energy management program. Total cost avoidance for FY 1982 was $1.64 million and for FY 1983 was $3.8 million. Activities for FY 1984 include the following: balancing and tuning the building HVAC systems for maximum energy efficiency and optimum comfort level control, checking boiler combustion efficiency and general boiler room conditions, and analyzing rate schedules and contracts to determine if everyone is on the best rate contract and to check billing accuracy.

During the previous year (FY 1983), the Mississippi Department of Energy and Transportation conducted energy audits in the industrial and commercial sector. Energy audits of 15 industries identified a potential energy savings of $200,079 annually. Thirty more industries will be audited in FY 1984. Energy audits of 20 commercial establishments (hotels, banks, automobile dealers, and office buildings) identified a potential energy savings of $127,433 annually. Thirty more commercial buildings will be audited in FY 1984.

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Contact: Skip Owen (601) 961-4733

Oil overcharge funds (Warner money) were used to loan Mississippi school systems (kindergarten thru 12th grade) necessary funds to meet matching fund requirements for energy audits, technical assistance, installing energy conservation equipment, and for the transportation management system (see above). Schools were loaned 50% of the matching money at no interest for up to five

years, and loan repayments were based on the payback periods of the energy conservation measures installed. Schools obtained the other 50% of the matching money from grants from the Institutional Conservation Program. The schools also used this money for boiler studies and for writing energy management system specifications for preparing bids by contractors.

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Contacts: Susan Lloyd (601) 961-4733
Dolores Mears (601) 961-4733
Reference: "Transportation Management Program: Handbook for School Administrators (August 1984)," Department of Energy and Transportation, Energy Division.

The Mississippi Department of Energy and Transportation is very active in transportation energy programs. It's comprehensive statewide Transportation Management Program for public schools is the only one in the United States. This program includes administrative conferences, bus driver training (for both transportation system managers and drivers), preventive maintenance, and bus optimization. School districts will be surveyed to find out their needs and to develop programs based on these needs. It is expected that this program will save the state at least 10% in pupil transportation costs ($5.5 million).

A traffic signal optimization project in Jackson, Mississippi is estimated to save an average of 10,524 gallons of fuel annually per intersetion. Also, mass transit in three urban areas are extensively promoted by public service announcements, promotional billboards, exhibits, and displays which resulted in an energy savings of 7,366 gallons of gasoline per day, or an annual dollar savings of $1,767,840.

Mississippi received $2,379,200 of Warner funds and primarily used this money to continue in-place programs:

$314,667 - Weatherization Program
$835,200 - State Energy Conservation Program
$300,000 - Institutional Conservation Program
$300,000 - Energy Extension Service
$629,333 - Low Income Home Energy Assistance Program

MISSOURI

Contact: Don Barnett (314) 751-4000

The Missouri Department of Natural Resources has combined their State Energy Conservation Program money and Energy Extension Service money to hire energy coordinators (10 in 1982 and 6 in 1983). Also, an Energy Extension Service program ("Master Conserver") has been used extensively to reach 250,000 people per year in delivering a wide range of energy conservation information and practices.

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Contact: Pam Trube (314) 751-4000

References: "Missouri Proposal for use of Amoco and Belridge Oil Company Overcharge Funds," Missouri Department of Natural Resources, Division of Energy, Feb. 1984.
"Preliminary Engineering for a Computerized Traffic Signal System: Executive Summary," PRC Voorhees and Johnson, Brickell, Mulcahy and Associates, Inc., prepared for City of Springfield, Missouri Sept. 1982.
"Kansas City Traffic Signal Improvement Study: Executive Summary," PRC Voorhees and Johnson, Brickell, Mulcahy and Associates, Inc. prepared for City of Kansas City, Missouri July 1981.

The State of Missouri has used their oil overcharge funds (AMOCO and the Belridge Oil Company) to "reduce the amount of gasoline consumed by unnecessary traffic delays and by providing alternate means of transportation to the single-occupant vehicle." Their proposed projects include preliminary engineering for a light rail transit project in St. Louis and traffic signal computerization projects for Kansas City and Springfield, Missouri. The amount of money Missouri received ($931,697) was distributed in the following way: $400,000 to St. Louis, $300,000 to Kansas City, $185,000 to Springfield, and $46,697 in administrative funds.

The St. Louis light rail system is expected to be completed in 1987. The projected use of the light rail system is 46,000 average trips per day. The total average daily trips for bus and rail will be 175,000 versus 110,000 now for bus only. Savings are estimated to be over $20 million annually in commuting costs for the ridership after the light rail system is operational. Parking needs and traffic congestion will also be reduced.

Traffic signal computerization is an interconnected system of traffic signals operated by microprocessors connected to a central computer. The microprocessors located at the intersections are activated by loop controllers or vehicle detectors located in the traffic lanes which change the cycle of the signal on demand rather than by pre-timing. The central computer can

change the traffic signal operating mode along corridors to manual, time-of-day, or traffic responsive modes, depending on traffic volumes and flow patterns. The benefits of the traffic signal computerization project are estimated to exceed implementation costs by twice the amount invested. Benefits of the reduction of motorist delay at intersections include: reductions in fuel consumption, traffic congestion, road improvements, and auto emissions.

The eventual overall traffic signal computerization project in the City of Kansas City will include 567 of the 605 signals in the city. Estimated benefits to road users will be $3.8 million per year by reducing stops and unnecessary delay at traffic signals. Motor fuel savings are estimated to be 728,000 gallons annually. The traffic signal computerization project in the City of Springfield will involve 138 intersections, and it is estimated that over 450,000 gallons of fuel will be reduced per year. A study evaluating this system determined a benefit/cost ratio of 6:1.

Missouri received $3,731,800 in Warner funds and distributed them in the following manner:

$2,231,800 - Weatherization Assistance Program
$1,000,000 - Institutional Conservation Program
$500,000 - State Energy Conservation Program

NEBRASKA

Contact: Skip Laitner (402) 471-2867

The Nebraska Energy Office established the Nebraska Community Energy Management Program (NCEMP) as a tool to increase energy efficiency and maximize the economic development in towns and cities in Nebraska. Local energy strategies become the cornerstone of renewed economic development as funds obtained from energy savings are spent within the local community. NCEMP is designed to help communities create a localized energy management plan to reduce the economic impacts of higher energy costs. The NCEMP program grew out of a pilot study with three towns (Fremont, Lexington, and Bayard), and seven more communities have just been selected. Under this program, the Nebraska Energy Office offers to communities under 50,000 people the following assistance:

1. Assist the local people in a community to form an Energy Committee to help begin the planning process in the community.
2. Prepare a detailed energy profile on how energy is used in their

area and what that use means for their particular economy.

3. Help in convening a town meeting to discuss the results of the energy profile and to set early priorities for the community energy management plan.
4. Support initial efforts to implement the loacl energy plan. The Energy Office acts as a resource broker and finds resources to help implement the plan.

So far, most communities have chosen a weatherization project because of the excellent return to the community in increased economic activity. For FY 1984-85, the NCEMP was supported by $310,000 in State Energy Conservation Program money and oil overcharge funds (Warner funds).

The Nebraska Municipal Power Pool provides money to local communities to reduce their peak loads. The savings from load management are then diverted into energy management activities in the community. For example, the town of West Point is expected to save $40,000 per year after installing 400 radio control devices.

Nebraska received $1,377,400 in Warner funds and distributed them in the following manner:

$577,400 - State Energy Conservation Program
$800,000 - Energy Extension Service

NEW YORK

Contact: Charles Harris (214) 264-3311)

The New York Energy Office established the Energy Advisory Service to Industry (EASI) to help small industrial and commercial facilities in New York State identify and implement energy conservation opportunities. This program provides on-site energy surveys of these facilities by specially trained EASI advisors at no cost to the industries, as well as follow-up technical assistance and specialized training workshops. The Energy Office established 15 EASI Regional Management Offices serving all 62 counties of the State. Over 3,000 surveys of small and medium-sized industrial and commercial facilities have been conducted as of January 1984. The Energy Office plans to provide 1,200 energy surveys of industrial/commercial facilities in 1984-85. Firms making energy conservation improvements as a result of an EASI survey are saving an estimated average of 15% of their energy consumption or about $20,000 a year in energy costs.

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Contacts: Peter Spaulding (518) 474-7616
J. William Rodman, Executive Director, Island Rides, Inc. (516) 423-2277

References: "Island Rides, Inc.: Long Island's Commuter Ridesharing Company," by New York State Energy Office, June 1984.

Island Rides, Inc. is a private, not-for-profit ridesharing corporation sponsored by the New York State Energy Office and private corporations on Long Island. Island Rides offers both vanpooling and carpooling for commuters on Long Island. Island Rides' service-related activities include promotion, computerized ridematching, technical assistance to employers, and vehicle provision for vanpooling. The bulk of the marketing efforts are focused on the employer, the most effective avenue taken to reach the working public. In the vanpool, Island Rides provides a completely equipped, maintained, and insured, new van to a group of commuters who share the cost of commuting to and from work. Island Rides' annual budget is approximately $250,000. The entire operation is currently funded with petroleum overcharge funds. Island Rides was incorporated in April 1984 and, by September 1984, it is estimated that Island Rides will have placed at least 10 vanpools on the road and 1,000 of 4,000 applicants into carpools or public transit. In its first three years, it is estimated that 27,000 commuters will be placed into various ridesharing arrangements, including over 200 vanpools. The potential gallons saved for 1984-85 as a result of carpooling and vanpooling could reach 648,000 gallons with an estimated dollar savings of $775,000. On an annual basis, these first year accomplishments will continue to save commuters fuel and money at rates of 1.7 million gallons, and $2.04 million annually. In addition to reduced traffic congestion, air pollution, parking demand, other expected benefits include increased productivity for employers by reducing absenteeism, tardiness, and fatigue. Finally, a ridesharing program broadens an employer's labor pool to those who may not otherwise have a means of getting to work as well as those that are located further away but could not otherwise afford to commute that distance. Island Rides represents the introduction of a number of innovations relating to organizational structure, funding, and service activities:

1. It is truly a public/private partnership: the Energy Office has provided seed funding to establish and operate Island Rides until the funding base can be expanded to both private and additional public sources.
2. A for-profit company (consulting firm) manages the not-for-profit organization.
3. Island Rides is the first ridesharing organization in the country financially supported with petroleum overcharge funds.

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Contact: Peter Spaulding (518) 474-7616
References: "Conserving Energy in Fleet Operations," and
"Fleet Energy Management Program: On-Site Assistance,"
(November 1983 RFP) New York State Energy Office.

The New York State Energy Office implements a Fleet Energy Efficient Transportation (FLEET) program designed to assist local municipalities, school districts and commercial fleets in achieving motor fuel savings in their fleet operations. Fleet operators of gasoline and diesel fueled passenger vehicles, light duty trucks, delivery trucks, and school buses are provided information and instruction on the operation and economic benefits of engine diagnostic equipment, driver efficiency training, preventive maintenance, alternative fuels, life cycle costing, route planning, recordkeeping, and diesel engine maintenance. FLEET began in May 1984 and is funded by petroleum overcharge money. Material describing the fuel savings of these actions has been tested in case studies with selected fleets. Information and instruction has been, and continues to be, provided to fleets across New York State through an "Energy Conservation in Fleet Operations" workbook and a one-day seminar series conducted repeatedly across the State from June 1982 through June 1983. The State is currently contracting with ten contractors in ten regions of the State to implement an on-site fleet management assistance program to determine the most appropriate and best method to implement actions that save motor fuel and energy costs. Fleet assessment includes the review of the following actions and activities: fuel consumption monitoring practices, vehicle and driver mileage performance, vehicle routing and scheduling methods, preventive maintenance programs and intervals, inventory of fuel efficiency equipment, vehicle replacement policies, fleet service area and trip characteristics, and fuel purchases and storage practices.

New York received $15,363,400 in Warner funds and distributed them in the following manner:

$4,000,000 - Energy Extension Service
- $2,600,000 - Industrial, commercial, transportation energy conservation programs
- $65,000 - Energy conservation outreach
- $835,000 - Residential energy conservation programs
- $500,000 - Public buildings

$1,500,400 - State Energy Conservation Program
- Residential energy conservation programs

$5,000,000 - Institutional buildings energy conservation program
$3,363,000 - Home Energy Assistance Program

$1,500,000 - Weatherization program for low-income households

OHIO

Robert Garrick (614) 466-6797

The Ohio Office of Energy Conservation has a comprehensive residential energy conservation program for moderate income households. The program was initially funded with money from the HUD Solar Bank program and currently uses oil overcharge funds. Once receiving an energy audit, a household applies for a subsidized loan. The subsidized loan program is funded by oil overcharge money. As part of this program, grants are given to local non-profit organizations which provide technical assistance and weatherization. The grantees contact homeowners, perform audits, review the audit results, help write out bids for energy conservation work, and go to the bank for financing. Thus far, the average loan size has been $2100, the average loan period has been 3-5 years, and energy reductions have reached 25%.

The Ohio Office of Energy Conservation funds cities (with 50,000 or more people) to create a municipal energy manager position who is in charge of planning energy audits and developing an energy management plan. A revolving loan fund is established to pay for operations and maintenance of city buildings. The purpose of this project is to institutionalize energy conservation as much as possible in local government.

Ohio received $7,117,000 in Warner funds and distributed them in the following manner:

$2,500,000 - State Energy Conservation Program
$3,612,000 - Home Weatherization Assistance Program
$1,005,000 - Energy Extension Service

OREGON

Contact: Larry Gray (503) 378-4040
References: "Announcement of Oregon energy projects for DOE's Awards Program for Energy Innovation," Office of the Governor, State of Oregon.

Oregon nominated ten energy projects for the U.S Department of Energy's Awards Program for Energy Innovation, including the following:

1. Groundwater heat pump system at the Albany General Hospital. This system precools summer air and preheats winter air using 59° water and includes a new heating, ventilating and air conditioning system with heat recovery capability, controlled by an electronic management system. The project resulted in annual energy savings of 52%.
   Contact: John Henderson, Director of Plant Services (503) 926-2244

2. Adoption of a comprehensive set of solar access amendments to the zoning and subdivision ordinances of Deschutes County, Bend and Redmond.
   Contact: Laurence A. Tuttle, Deschutes County Commissioner (503) 388-6570

3. The Small Scale Energy Loan Program (SELP). SELP issues state general obligation bonds to provide low-cost, long-term loan funds to help finance renewable resource and energy conservation projects. Projects that have been built or are being built include hydropower facilities, wood waste and cogeneration projects, residential and commercial solar heating, and groundwater heat recovery. By the end of June 1984, SELP had loaned $58 million for 69 projects which produce or conserve energy equivalent to the needs of 6,700 homes.
   Contact: David White, Program Manager (503) 378-3637

4. The Portland Public Schools Energy Studies Center. The Center is the only district-supported, full-time energy education center in the State of Oregon. The Center works with kindergarten through 12th grade educators to provide, support and implement energy curriculum, materials and events designed to increase the energy literacy of students.
   Contact: Richard A. Donin, Project Director (503) 236-2601

5. Waste heat recovery system. Publishers Paper Company of Oregon City installed a heat recovery system to recover heat energy from waste steam generated by thermomechanical pulping at a newsprint mill. The system was designed by a Swedish company and is one of the first of its type in North America. The system salvages heat energy in contaminated waste steam exhaust and produces clean steam suitable for use in drying paper. The system has resulted in cost savings of approximately $1 million per year.
   Contact: R. A. Schmall, Corporate Manager, Environmental and Energy Services (503) 926-2281, Ext. 205

An advisory committee, working with the Oregon Department of Energy, also recommended nine other projects, including the following:

1. The Rossman's Landfill Gas Recovery project. This project will recover up to 2 million standard cubic feet per day of methane gas from a landfill near Oregon City. It will produce a pipeline quality methane product which can be introduced into the Northwest Natural Gas Company pipeline

system. It is expected that the plant will produce enough gas to supply the annual requirements of 3,720 homes.
Contact: Carl N. Petterson, Supervising Engineer (503) 226-4211, Ext. 4303

2. The State Home Oil Weatherization Program (SHOW). SHOW is a weatherization program for homes heated with oil that is comparable to utility programs for homes heated with electricity and natural gas. The program consists of free home audits, low-interest financing through subsidized bank loans, and 50% cash rebates for homeowners and renters who fall within eligible income limitations. The program is operated with the full cooperation of the fuel oil industry. More than 12,000 households have received audits. The SHOW program is saving more than 920,000 gallons of fuel oil annually and saving homeowners about $1 million annually.
Contact: Deanna Mueller-Crispin, Program Manager (503) 378-8722

3. The Hood River Conservation Project. This project will identify and document the effects of intensive residential conservation when implemented at high levels in a limited area over a short time. It is a study that will identify what can be achieved by a vigorous marketing of residential conservation services and measures. To date, more than 67% of the eligible households have requested an audit and more than 99% of audited customers have requested weatherization.
Contact: Don Peters, Director of Weatherization Services, Pacific Power and Light Company (503) 243-3097

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Contact: Greg Jones (503) 796-7704
References: "Arterial Streets Classification Policy (October 1983)," "Evaluation of the City of Portland Flexible Working Hours Program (March 1984)," "Downtown Parking and Circulation Study (October 1980)," Office of Transportation, City of Portland.

The City of Portland, Oregon has made several efforts to conserve energy and balance their various transportation modes. Guiding their efforts to manage transportation demand and system balance are the Arterial Streets Classification Policy and the Downtown Parking and Circulation Policy of the city's Comprehensive Plan. The Plan also includes an energy transportation policy. Portland has primarily used the land use permit process to implement transportation/energy goals and policies. Regulating the conditional use permit in particular has been the most effective method of implementing transportation management policies. Annual updates by applicants are required in management plans to insure that they are progressing towards the achievement

of the goals outlined in the plans. With financial support from the Federal Highway Administration, the City of Portland undertook the Flexible Working Hours Program to determine the potential for management of the transportation system through the increased use of flex-time by Portland firms. It was found that 42% of the employees involved in this project commuted outside the peak traffic hours. Other benefits to individuals and firms included increased morale and productivity.

Oregon received $1.96 million of Warner funds and distributed them in the following manner:

$445,661 - Waste oil, recycling, wood-burning stoves and solid waste
$259,933 - Evaluation of small hydroelectric projects and low-temperature geothermal wells
$171,020 - Energy conservation programs in the City of Portland
$165,101 - Energy resource exploration studies
$25,887 - Low-income residential weatherization program
$81,000 - Low-income residential weatherization program for Portland
$803,598 - Energy efficiency improvements in public buildings

PENNSYLVANIA

Ed Snyder (717) 783-7164

The Pennsylvania Governor's Energy Council established Energy Centers 3-4 years ago with funds from the State Energy Conservation Program and the Energy Extension Service. The centers conduct energy surveys, workshops, and special activities. These centers represent an innovative delivery mechanism in the way energy money is distributed throughout the state. For example, of the $800,000 distributed by this program to the centers, $200,000 was allocated on the basis of the performance (energy saved) of the centers as an incentive to motivate the energy conservation activities of these centers.

The Governor's Energy Council is also involved in the following activities:

1. Development of a home energy scorecard to rate the energy efficiency of homes.
2. Development of computer tools (e.g., energy models) for energy managers
3. Development of performance based regulations for utilities to determine how efficiency of utilities.

4. Third-party financing for state facilities and for local government.

5. Evaluation of weatherization programs to see how effective they are and to determine which agencies perform well.

6. "House doctor" program for low income households.

Most of these programs receive some money from the oil overcharge funds.

In addition, Pennsylvania has an extensive transportation energy program which includes car care clinics, fleet management and gas conservation for business owners, time signal optimization studies, and ridesharing efforts.

Pennsylvania received $9,166,000 in Warner funds and distributed them in the following manner:

$3,533,000 - Low Income Home Energy Assistance Program
$3,533,000 - Institutional Conservation Program
$850,000 - Energy Extension Service
$750,000 - State Energy Conservation Program
$500,000 - Low Income Energy Assistance

TEXAS

Contacts: Larry Morgan (512) 458-0303
Christina Roitsch (512) 458-0315
Reference: "An Evaluation of 1983 Energy Savings of the State Energy Conservation Plan," Public Utility Commission of Texas, Energy Efficiency Division.

State and local programs that are being conducted in Texas in 1984-85 include the following:

1. Comprehensive energy management
2. Vehicle fleet management
3. Outdoor/street lighting
4. Traffic light synchronization
5. Public building energy management
6. Refuse derived fuels
7. Transportation
8. Land use planning
9. Renewable resources
10. Wastewater treatment
11. Water distribution
12. Life cycle cost-benefit analysis

13. Building codes (Model Energy Code for new building construction)
14. Energy conservation management systems
15. Creative financing options of energy measures for local governments

In addition, the Energy Extension Service will offer the following services in its residential instruction program for homeowners and rural residential customers: solar water heater workshops, a buyer's guide to purchasing energy efficient homes, agricultural extension service agent training, fuel efficiency workshops, and energy efficiency workshops for low income homeowners and renters.

The Energy Efficiency Division of the Public Utility Commission has prepared an extensive analysis of 1983 energy savings of the state's energy programs. The report contains assumptions and references for the energy saving calculations.

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Contact: Malcolm Verdict (512) 458-0316

The Public Utility Commission of Texas has spent a great amount of effort on the auditing of state-owned buildings and has emphasized the training of budget examiners and building managers of all state buildings. Energy consumption data for the previous three years has been collected, and audits have been performed on at least 200 buildings (7.5 million square feet of space). Retrofit measures with payback periods of 4 years or less are examined. In 1984-85, 60 surveys of government buildings are planned. During 1984-85, follow-up evaluations will be conducted to determine how many governments have implemented audit recommendations as well as what savings have accumulated.

Texas received $17 million of Warner funds and distributed them in the following manner:

$4,000,000 - Energy crisis intervention program
$4,000,000 - Weatherization of public housing units
$4,000,000 - Low-income Weatherization Program
$5,073,600 - Institutional Conservation Program and State Energy Conservation Program

In June 1984, Texas hired an engineering firm to give general oversight and assume project management to programs funded by oil overcharge money. This oversight will include assistance with program design; development of project selection criteria; orientation and leadership of additional energy consulting firm expertise; project selection; project prioritization; and presentation of the engineering analysis to the Governor's budget director and

the director of the Legislative Budget Board.

WISCONSIN

Contact: Donna Paske (608) 266-3427
References: "1983 Wisconsin State Energy Conservation Plan" and "Energy Extension Service - Summary (October 1983)," Wisconsin Division of State Energy.

Previously, the Wisconsin Conservation Program received $225,000 from the State to support the Energy Development and Demonstration Program for a two year period. Recently, the state could provide only one-half of this money. Money from the State Energy Conservation Program and the Energy Extension Service program has been used to support the remaining half of the program for the next two years.

The Wisconsin Division of State Energy is conducting the following new programs for FY 1984:

State Energy Conservation Program (SECP)

Energy development and demonstration program
- Demonstration of superinsulation panels.
- Feasibility study of gas production from a landfill.
- Assessments of energy savings associated with the installation of automated controls on an institutional wood burning boiler.

Commercial/industrial energy management workshops for (1) building operators and (2) for financial executives and building owners.
Updating the Wisconsin Solar Collector Table.
Offer estimated energy savings service (F-chart) to potential solar collector buyers.
Study of solar system installer training effectiveness.
Develop a home energy efficiency rating system.
Market the low income weatherization program.
Perform on-site operations and maintenance monitoring visits to local government recipients of Institutional Conservation Program grants.

Energy Extension Service (EES) Program

Energy development and demonstration program
- Demonstration of the production of gas from vegetable waste.

Development of curriculum materials for the vocational, technical, and adult education schools about residential low energy use methods and plans including blueprints, guidebooks, slides, and other audio visual materials.

Evaluation of the effectiveness of an energy management program in a school.

Local government energy conservation workshop.

Public service announcements on energy conservation techniques.

Production of a film on renewable resource technologies especially appropriate in Wisconsin.

Production of slide sets describing energy conservation techniques.

Development and publication of a model solar system warranty.

Solar technology transfer publications.

Wisconsin received $3,341,000 of Warner funds and distributed most of the money in the following manner:

$2,900,000 - Low Income Home Energy Assistance Program

$270,000 - Installation of energy conservation measures in six additional schools (Institutional Conservation Program)

$100,000 - Evaluation of low income weatherization projects

$70,000 - Salary for two years of a renewable energy engineer for state facilities

III. SUMMARY

There are a number of interesting and innovative energy projects and programs occuring in the United States. Many of the projects examined were in the early stages of development and implementation so that we were unable to evaluate their efficiency and effectiveness. Nevertheless, we believe that many of these programs should be closely examined by policy makers in California to determine whether new programs should be created and/or existing programs should be expanded in order to incorporate some of the ideas, mechanisms, and structures developed in other states. To assist the review of these state programs and projects, we summarize in Table 1 types of projects by state and include an appropriate contact person. Project types (column headings) were grouped in the following way:

R Residential includes energy efficient homes, retrofits (furnace or boiler), weatherization, programs for seniors, low-income homes (weatherization and financing), neighborhood/community approaches, multi-family sector (audits and financing), mobile homes, and energy rating systems (scorecards).

SB Small business (small commercial and industrial) includes financing, audits, technical support (training), data management, and information programs.

PB Public buildings (state and municipal facilities) includes audits, data management, financing, energy management, technical support (training), and information programs.

LG Local government includes energy management, fuel cooperatives, load management, street lighting, and ordinances (building and solar access codes).

S Schools includes audits, data management, financing, technical support (training), energy management, transportation, and information programs.

T Transportation includes traffic signal optimization, ridesharing (vanpool and carpool), driver training, fleet management, bicycles, public transit (light rail), flextime, car care clinics (preventive maintenance), bus driver training, parking, and information programs.

A Agriculture includes alcohol fuels, crop production, biomass, technical support (training), and information programs.

RE Renewable energy sources includes cogeneration, hydropower, waste heat recovery, wood heat, solar heating, and solar ponds.

DM Data management systems includes data monitoring and collection.

I Information/education includes workshops, seminars, conferences, hot lines, etc. for the residential and transportation sectors, schools, and small businesses.

F Financing includes bonds, grants, loans, leases, shared savings, Third-party financing, and Solar Bank funds.

Table I. Summary of State Innovative Projects and Contacts

		R	SB	PB	LG	S	T	A	RE	DM	I	F
ARIZONA												
Larry Fallis	(602) 255-4940						x					
Jim Westberg	(602) 255-3632	x		x	x	x	x		x	x	x	x
CONNECTICUT												
Marilyn Hesse	(203) 566-8467	x	x	x		x	x				x	x
Laura Inouye	(203) 566-5803	x	x									x
Allan Johnson	(203) 566-8463			x						x		x
Michael Sartori	(203) 566-5765	x										x
Carol Wilson	(203) 566-5803					x					x	
FLORIDA												
Laura Firtel	(305) 849-2333						x					
Kate Nielson-Nunez	(904) 488-6931						x					
Tom Thayer	(904) 488-6764	x	x	x	x	x	x				x	
IDAHO												
Karen Nelson	(308) 334-4440	x	x		x			x	x	x		x
ILLINOIS												
Carol Cavanaugh	(217) 785-3412	x	x	x	x	x	x	x	x		x	x
INDIANA												
Joe Griffiths	(317) 232-8940	x	x		x			x	x	x	x	x
Bob Heading	(317) 232-8995	x	x		x			x	x	x	x	x
Pat McCauley	(317) 232-8800	x	x		x			x	x	x	x	x
Jeff Quyle	(317) 232-8983						x		x			
IOWA												
Larry Bean	(515) 281-4420	x		x	x	x	x			x	x	
MASSACHUSETTS												
Jack Bevilacqua	(617) 727-4732				x							x
MICHIGAN												
Charles Millar	(517) 373-4277	x	x	x		x				x	x	x
MINNESOTA												
Vickie Reph	(612) 296-4874	x	x	x	x		x	x	x	x	x	
MISSISSIPPI												
Susan Lloyd	(601) 961-4733					x	x				x	
Bill Lunceford	(601) 961-4733		x	x						x	x	
Dolores Mears	(601) 961-4733					x	x				x	
Skip Owen	(601) 961-4733					x	x				x	x
MISSOURI												
Don Barnett	(314) 751-4000										x	
Pam Trube	(314) 751-4000						x					

		R	SB	PB	LG	S	T	A	RE	DM	I	F
NEBRASKA												
Skip Laitner	(402) 471-2867	x			x					x		
NEW YORK												
Charles Harris	(212) 264-3311		x								x	
William Rodman	(516) 423-2277						x				x	x
Peter Spaulding	(518) 474-7616		x		x	x	x			x	x	x
OHIO												
Robert Garrick	(614) 466-6797	x			x						x	x
OREGON												
Deanna Mueller-Crispin	(503) 378-8722	x									x	x
Richard Donin	(503) 236-2601					x					x	
Larry Gray	(503) 378-4040	x		x					x			
John Henderson	(503) 926-2244								x			
Greg Jones	(503) 796-7704				x		x					
Carl Petterson	(503) 226-4211								x			
Don Peters	(503) 243-3097	x			x					x	x	x
R.A. Schmall	(503) 926-2281		x						x			
Laurence Tuttle	(503) 388-6570				x							
David White	(503) 378-3637	x	x						x			x
PENNSYLVANIA												
Ed Snyder	(717) 783-7164	x			x		x				x	x
TEXAS												
Larry Morgan	(512) 458-0303	x		x	x		x	x	x	x	x	x
Christina Roitsch	(512) 458-0315	x		x	x		x	x	x	x	x	x
Malcolm Verdict	(512) 458-0316			x						x		
WISCONSIN												
Donna Paske	(608) 266-3427	x	x		x	x		x	x	x	x	

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R Residential
SB Small business
PB Public buildings
LG Local government
S Schools
T Transportation
A Agriculture
RE Renewable energy sources
DM Data management systems
I Information/education
F Financing

See text for definitions of category headings.

APPENDIX A

STATE GOVERNMENT CONTACTS

ARIZONA

Larry Fallis	(602) 255-4940	Transportation Planner
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Jeff Quyle	(317) 232-8983	Manager, Transportation Program

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Dolores Mears	(601) 961-4733	Coordinator, Transportation Management Program
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