



# Selected Summary of Current State Responses to Climate Change



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*July 1992*

*Prepared for:*

**Climate Change Division  
Office of Policy, Planning, and Evaluation  
U.S. Environmental Protection Agency**

# FOREWORD

This document is a selected summary of current state responses to climate change. It is an update of the January, 1991 publication of the same title. In addition to many new entries, all entries have been updated and revised for clearer presentation. While not intended to be a comprehensive summary of all climate change-related programs, the *Selected Summary of Current State Responses to Climate Change* is intended to provide an overview of the variety of state initiatives and legislative actions that address climate change. It was prepared in order to promote an exchange of ideas for responding to climate change among states and other interested parties. Many of the ideas described in this report were developed to meet goals other than climate change response, such as the promotion of utility demand-side management, pollution prevention, and economic competitiveness. Yet, they do have important climate change implications.

States are important players in the climate change arena due to their influence and authority over utilities, land use, transportation, taxation, and environmental programs and policies. The EPA Climate Change Division's State Outreach Program is designed to provide information and assistance in the understanding and evaluation of mitigation and adaptation policies. This publication is one of many tools to provide assistance to state and local governments. Another recent Climate Change Division supported project, by the University of Maryland's Center for Global Change, provides analytical discussion of state policies that will complement this report.

The *Selected Summary of Current State Responses to Climate Change* has five sections that list state mitigation efforts: broad-based climate change response, energy (cross-cutting measures, energy efficiency, utility regulations, renewables/alternative energy, and education/technical assistance), transportation, forestry, and CFC reduction. A separate section addresses adaptation measures. Wherever possible, the report identifies a person to contact for additional information. It also includes a list of resources for further information. Please note that some entries are taken from sources not listed in this section. Finally, the summary includes a state and a subject index.

We are interested in expanding the scope of this summary and are also preparing a comprehensive database of state responses to climate change. The database will build on the legislative database initiated in 1990 by the Center for Global Change. We would appreciate any comments or corrections that could contribute to either of these efforts. Information should be sent to:

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Katherine D. Sibold  
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# CONTENTS

	Foreword .....	i
	Acknowledgments .....	ii
I.	Broad-Based Measures.....	1
II.	Energy Sector Responses	
	1) Cross-Cutting Measures .....	5
	2) Energy Efficiency .....	9
	3) Utility Regulations .....	16
	4) Renewables and Alternative Energy Sources .....	19
	5) Education and Technical Assistance .....	21
III.	Transportation Sector Responses .....	29
IV.	Forestry Responses .....	33
V.	CFC Reduction Responses .....	37
VI.	Adaptation Responses .....	41

# **I. BROAD-BASED CLIMATE CHANGE RESPONSE MEASURES**

## ***Legislation***

### ***HCR 56, Alaska (1990)***

A House Concurrent Resolution supporting a nationwide effort to pursue policy options to effectively respond to global climate change. Contact: Lana Decker, (907) 561-1199.

### ***Chapter 1506, California (1988)***

Requires the California Energy Commission to study potential impacts of climate change on the state's energy supply/demand, economy, environment, agriculture, and water resources. A subsequent report, *Global Climate Change: Potential Impacts and Policy Recommendations*, was completed in December of 1991. Contact: Kari Smith, (916) 654-4568.

### ***AB 2360, Chapter 218, California (1989)***

Ensures Office of Planning and Research review on specific provisions/guidelines under the state Environmental Quality Act. The effort will determine whether these measures should be changed to respond to potential impacts of global climate change. Contact: Kari Smith, (916) 654-4568.

### ***An Act Concerning Global Warming, Connecticut (1990)***

Establishes a broad range of energy efficiency measures. Included are building code changes maximizing energy savings and calls for purchase of energy efficient appliances and vehicles. Also mandated: goals for improving public transportation and Connecticut Public Transportation Commission (CPTC) monitoring of progress toward these goals. The Act appropriates \$80,000 from the Special Transportation Fund for CPTC. It also allows the state Environmental Protection Agency (EPA) to require tree/grass planting in connection with air discharge permits. Another aspect of the Act weakens municipality plans that give tax breaks to multi-level parking garages (see also pgs. 5, 9, 29, and 33). Contact: Nancy Pitblado, (203) 566-2047.

### ***An Act Relating to Energy Efficiency, SF2403, Iowa, (1990)***

A consortium of Iowa scholars began research on climate change in 1990. As a result, the Center for Global and Regional Environmental Research at the University of Iowa was formed. SF2403 provides funding to sustain the Center's work (see also pgs. 7 and 23). Contact: Greg Carmichael, (319) 335-1399.

Beginning July 1, 1992, investor-owned, municipal, and cooperative utilities will be required to remit one-tenth of 1 percent of their revenues for support of the Iowa Energy Center and the Center for Global Warming. Eighty-five percent of these revenues will go to the Energy Center and 15 percent to the Center for Global Warming. SF2403 (1990) also directed the DNR to study "activities related to energy production and uses which contribute to global climate change and depletion of the stratospheric ozone layer." The DNR developed a strategy to reduce emissions (see also pgs. 7 and 23). Contact: Sharon Tahtinen, (515) 281-7066.

### **SB 576, Oregon (1989)**

Requires the Oregon Department of Energy (ODOE) to develop strategies to reduce greenhouse gas emissions. The study target is to cut 1988 emissions levels 20 percent by 2005. Priority is placed on conservation, renewable resources, and alternative fuels. The plan is published in the *Oregon Fourth Biennial Energy Plan*, (1991). Contact: Sam Sadler, ODOE (503) 373-1034.

## **Agency and Other Administrative Measures**

### **Global Climate Change Report, California**

The California Energy Commission published *Global Climate Change: Potential Impacts and Policy Recommendations*, Vols. I and II, a 1991 report focusing on methods for adapting to impacts of climate change, and least cost/zero net cost recommendations to reduce greenhouse gases. A follow-up report to outline CO<sub>2</sub> reductions was ordered by the Governor. It will be published later this year. Contact: Kari Smith, (916) 654-4568.

### **Climate Change Task Force, Eastern Regional Conference/Council of State Governments**

Task force activities include:

- Collecting data on the Northeast area greenhouse gas output.
- Tracking possible effects of climate change.
- Identifying state strategies to reduce greenhouse gas emissions and adapt to climate change. (A report, *Survey of State Global Warming Reduction Activities*, was distributed to 10 states and Quebec in August, 1990.)
- Planning cooperation in areas relevant to climate change.
- Model legislation.
- Recommendations.
- Regional hearing.

Task force recommendations cover energy efficiency, transportation, non-fossil energy resources, tree-planting/land resource management, greenhouse gas utilization, recycling, sea level rise, agriculture, forestry, and water quality. Contact: Russell Riggs, (212) 912-0128.

### **Commission on Global Climate Change and Ozone Depletion, Missouri**

A special 14-member panel formed in 1989 to assess Missouri's contribution to ozone depletion and climate change and to form policy options to deal with the effects of these problems. The Commission's report suggests that action should be taken in diverse areas. The changes include: initiatives calling for a 20 percent reduction in state carbon emissions by the year 2005; a 30 percent reduction in energy consumption in public buildings over the next decade; statewide minimum energy standards for new construction or renovations; soil protection planning; mandating crops that will sustain weather change; a comprehensive statewide reforestation program; development of biomass programs to provide alternative fuels; educational

initiatives that teach sound ecology and energy efficiency to grade levels K-12; community education and public awareness programs; a University of Missouri Climate Change Center to study and monitor air quality, gather and disseminate climate data, and act as a clearinghouse for educational information; utilizing the Missouri Corporation for Science and Technology to foster the development, application, and growth of emerging energy technologies; and motor vehicle fee and fuel taxes to compensate for the environmental effects of transportation. Contact: David Bulletine, (314) 751-4666.

**The New Jersey Climate Change Initiative, *New Jersey (1989)***

Program's main focus is on energy conservation and CFC use. It includes lighting and air conditioner efficiency standards, increases in carpooling and mass transit, improved maintenance of existing state-owned vehicles, and expanded purchasing of recycled products. It also mandates the purchase of capture and recycling equipment for automobile and stationary air conditioner repair operations. Additional measures include use of non-CFC air conditioners and investigating the bulk purchase of natural gas to facilitate conversion from oil to natural gas at state facilities.

Other elements of the initiative include: Encouraging energy conservation and reduction in greenhouse gas emissions through regulatory and other means; considering regulatory steps to reduce CFC use including recycling of auto radiators; maximizing New Jersey's forestation (tree for tree replacement strategy); understanding and planning for sea level rise; using greenway policies (providing corridors for migration of plants and animals as sea level rises and climate changes); and improving public education about the causes and effects of climate change. Contact: Scott Weiner, (609) 292-2885.

**Task Force on Global Warming: Report to the Governor and Legislature, *Oregon (1990)***

A report examining the impacts of climate change on energy, water resources, and forestry in Oregon. Twelve state agencies took part in the study, which concluded that global climate change is a serious threat and that the state should act now to mitigate its effects. The work recommends adjusting policies to promote the development of flexible responses to climate change, to enhance resource resiliency to climate change impacts, to reduce greenhouse gas emissions, and to take climate change into account when forming state agency programs. Contact: Sam Sadler, (503) 373-1034.

**Global Warming Report, *Southern Growth Policy Board***

Twelve southern states and Puerto Rico have released a 1990 report entitled *The Global Warming Challenge: What States Can Do*. It includes a discussion of human impacts on climate, principles that may be helpful in making decisions about global climate change, and a four-pronged response strategy. Included are specific steps that states, localities, and businesses can take to help mitigate or adapt to climate change. One notable argument the report makes is that the South "may be more susceptible than other regions to many of the negative changes any global warming might cause, [and] may also be more affected by steps taken to minimize global warming." Contact: John Hodges Copple, (919) 941-5145.

**Evaluation of Strategies to Limit and Adapt to Climate Change, *South Carolina***

The South Carolina Water Resources Commission is evaluating various mitigation and adaptation options through the work of a state interagency task force. The state will conduct an analysis of the impacts of climate change on various resources, including agriculture, forests, energy, and water. The task force will evaluate options to reduce emissions of greenhouse gases and adapt to the impacts identified by the state research. Contact: D.J. Smith, (803) 737-0800.

**Integrated Policy Assessment of Climate Change for Vulnerabilities and Policy Options, *Texas***

The Texas Water Commission is developing an inter-disciplinary approach to assess potential impacts of climate change, evaluate adaptive responses, and design strategies to reduce state greenhouse gas emissions. The project cites over 50 businesses or public land lease candidates whose activities help mitigate potential climate change effectors. It outlines business practices that would help Texas pursue economic growth goals while preventing pollution and analyzes adaptive strategies relating to water supply and demand and freshwater inflows to estuaries. The final component is to use the results of these analyses and other studies to identify and analyze key greenhouse policy options for Texas. Contact: George Bomar, (512) 371-6382.

## II. ENERGY

Energy-related responses to climate change are not easily categorized. For example, utility regulations and education projects seek to increase energy efficiency. Similarly, state legislation may address many energy issues from renewable power sources to technical assistance programs. For organizational purposes, energy measures have been subdivided into five categories: cross-cutting measures, energy efficiency, utility regulations, education and technical assistance, and renewables and alternative energy sources. However, many programs, in addition to those listed under Cross-Cutting Measures, could fall into several categories.

### (1) Cross-Cutting Measures

#### *Legislation*

##### **Chapters 105, 106, *California* (1989)**

Increases the state gasoline tax from 9 cents to 14 cents per gallon in 1990, and to 18 cents per gallon in 1994. (\$10 million in revenue to be raised annually from the tax will go to mitigate environmental damage.) Contact: John Wolfson, (916) 654-5000.

**An Act Concerning Global Warming, *Connecticut* (1990).** Includes the following measures to improve efficiency and promote alternative energy sources:

- Revision of the state building code to require cost/energy-efficient building design that matches standards of the American Society of Heating, Refrigeration, and Air Conditioning Engineers.
- Requires an Office of Policy and Management (OPM) advisory group to dovetail these standards with plans for new and renovated buildings. As part of its mandate, the group must consider the above measures against effects on future generating capacity costs and factors identified by the National Institute of Standards and Technology. Group members include: the OPM Secretary, the Building Inspector, Chairmen of the Codes and Standards Committee, or their designees, and a representative from Northeast Utilities and United Illuminating. A report was released in January, 1992. Related regulations will be put into effect in early 1993.
- Prohibits providing electric power to new/renovated buildings using electric heat after January 1, 1993 unless the structure complies with energy efficiency standards adopted by OPM. Electric rates may increase for buildings that do not meet the standards. These requirements, however, do not apply to old buildings or additions of less than 800 square feet.
- Requires completion of a comprehensive energy plan to become effective by January 1, 1994. The plan must assess current energy resources and recommend ways to decrease dependence on fossil fuels through building design, alternative energy use, and home energy efficiency measures.

- Calls for reductions in average energy use in state buildings: 15 percent cuts by 1995, 30 percent by 2000, and 50 percent by 2010.
- Mandates the Department of Administrative Services to purchase energy-efficient appliances (see also pgs. 1, 9, 29, and 33). Contact: Nancy Pitblado, (203) 566-2047.

#### **An Act Relating to Energy Efficiency, SF2403, Iowa (1990)**

Addresses efficiency issues in all energy sectors of Iowa's economy. SF2403 also promotes research on and demonstration of energy efficiency and the use of alternative energy resources. The initiative enables the following measures: a building energy efficiency rating system; alternative fuels demonstration grants; the Iowa Energy Center; energy efficiency planning by all utilities; energy efficiency implementation and cost recovery by utilities; a global warming research center; alternative energy production purchase rates; a comprehensive state transportation efficiency study; car care clinics; and a proposal for new tailpipe emissions standards.

*Utility Regulation/Energy Efficiency:* Electric companies will have to spend 2 percent of their revenues on energy efficiency programs. Investor-owned gas utilities will spend 1.5 percent. This is expected to generate investments of at least \$38 million in energy efficiency. In addition, all utilities and rural electric cooperatives (RECs) will be required to submit plans to the Utilities Board detailing their energy saving efforts. Although the Board has no utility oversight responsibilities, the efficiency plans will help REC's and municipal utilities to better understand Iowa's energy needs.

*Alternative Energy Production (AEP):* The Act makes AEP more competitive through measures including clarification of terminology; granting the Utilities Board authority to set one uniform, statewide buyback rate, or to set individual rates for each utility; granting the Board power to consider environmental and economic factors in the determination of a buyback rate; and granting the Board discretion in setting state-wide rates (determined on a wide range of data).

*Energy Efficiency/Alternative Fuels:* The law seeks to improve efficiency through a wide range of measures:

- Vehicle purchases: State and local governments must purchase new automobiles and light trucks that meet minimum fuel efficiency standards.
- High-blend ethanol: The definition of gasohol has been changed to increase the allowable amount of ethanol from 10 to 13 percent. Gasoline with 13 to 25 percent will be known as high blend ethanol.
- Alternative fuel consortium: The Governor will explore inter-state plans to research, produce, and market alternative fuels.
- Comprehensive transportation study: Iowa DOT officials plan to review the relationship between transportation planning, systems development, management of urban and rural development, land use planning, and energy demand.

- **Traffic signals:** The DOT has compiled a traffic signal inventory. Its purpose is to identify energy efficiency, safety, and traffic service improvements.
- **Telecommuting:** An interest survey on telecommuting for state employees was conducted. Results show that almost 62 percent of the respondents believe telecommuting to be a workable alternative. Almost 75 percent of those surveyed would save 15 miles or less travel distance. Eighty-five percent of those questioned commute by automobile.
- **Car care clinics:** DNR sponsored a free program emphasizing energy efficiency oriented vehicle maintenance.
- **Tail pipe emissions standard study:** A report explored a potential DNR proposal to phase in automotive tail pipe emission standards similar to those in California.
- **Bus routing for schools:** DNR made recommendations to reduce fuel costs and other expenses incurred by school districts.
- **Driver education:** Department of Education courses will emphasize operation and maintenance for energy efficiency.
- **Energy Center:** The newly created Energy Center at Iowa State University will pursue energy efficiency programs and examine alternative energy systems and alternative fuels.
- **Center for Global and Regional Environmental Research:** Located at the University of Iowa, the Center will examine the regional impact of environmental change. (See also pgs. 1 and 23.) Contact: Patti Cale, (515) 281-8665.

#### **Chapter 1265 of the 1990 Acts, *Iowa***

Allocates \$6.8 million in oil overcharge funds to low income weatherization, other energy efficiency measures, and groundwater protection programs. Contact: Sharon Tahtinen, (515) 281-5145.

#### **Chapter 1246 of the 1990 Acts, *Iowa***

Mandates the Iowa Affordable Heating Program which receives \$4.8 million in federal Low Income Energy Assistance Program (LIHEAP) funds. The initiative is designed to provide additional energy bill payment assistance to qualified low-income households which participate in LIHEAP's weatherization assistance program. Contact: Iowa Energy Bulletin, (515) 281-7066.

### ***Agency and Other Administrative Measures***

**National Association of State Energy Offices (NASEO), *Arizona, California, Georgia, Iowa, Illinois, New York, Washington and Pennsylvania***

Consortium project to estimate the effect of a variety of energy conservation measures and renewable energy projects on greenhouse gas emissions. Contact: Bruce Schillo (EPA), (202) 260-1030 or Frank Bishop (NASEO), (202) 546-2200.

### **Reports, Iowa (1992)**

A newly formed DNR energy plan, *1992 Comprehensive Energy Plan: Toward a Sustainable Future*, addresses energy needs and appropriate responses. It also explores environmental and economic impacts of various energy options. DNR's findings have helped to shape much of Iowa's recent energy conservation legislation. Contact: Sharon Tahtinen, (515) 281-5145.

### **Alternative Energy: Solar for Schools, Massachusetts**

The State Division of Energy Resources' photovoltaic program produces 40 kWh daily while it educates Nantucket elementary school children. The on-site grid-connected system provides energy and a hands-on experiment in water pumping. The investor-owned Nantucket Electric Company maintains the device. Photovoltaic lights have also been added to illuminate the school's parking lot. Contact: David Dilts, (617) 727-4732.

### **Executive Order 118 *Establishing an Energy Planning Process, New York (1988)***

Charges the State Energy Office, Department of Public Service, and the Department of Environmental Conservation to plan, update, and put in force an integrated energy resource plan. The Order also requires a biennial report on implementation of these goals.

The 1991 Energy Planning Report outlines measures to lessen global warming, including: 1) actions to assure petroleum product supplies and environmentally sound petroleum product infrastructure; 2) changes to better align these priorities and available resources; 3) actions to combine transportation, energy, and environmental policies; 4) initiatives to assure natural gas supplies and pipeline capacity; 5) checking regulatory changes controlling sites for new natural gas pipelines and electric utilities; 6) actions necessary to assure affordable, reliable, and environmentally safe electricity; 7) required changes for utility competitive bidding; 8) ensuring environmentally safe energy plans and policy; 9) making decisions on energy and environmental taxes; 10) actions to speed up marketplace penetration of new, safe energy technologies; and 11) studying the effects of interaction among fuel types on energy security and economics. Contact: Brenda Magill, (518) 474-2218.

### **Toward a Secure Energy Future, New York**

The New York State Energy Research and Development Authority released a multi-year research, development, and demonstration plan (1988-1993) stressing energy efficiency and the contribution it can make to economic development, expansion of state energy resources, and reducing adverse effects of energy facilities on the environment.

The Energy Authority's research, development, and demonstration (RD&D) program is organized into three program areas: energy efficiency and economic development; energy resources and environmental research; and radioactive waste management. The purpose is to review/resolve/communicate state energy RD&D needs. Funding comes from an assessment on the intrastate sale of gas and electricity, a yearly contribution from the New York Power Authority and corporate contributions. This support is supplemented by co-sponsors including State and national energy research organizations, State and Federal government agencies, universities, and businesses. Contact: Gunner Walmet, (518) 465-6251 ext. 212.

### **State Energy Plan, Oregon**

The Oregon Department of *Energy's Fourth Biennial Energy Plan* includes a chapter on global climate change and an appendix with Oregon's 1988 greenhouse gas inventory and 2005 forecast. The plan places priority on conservation, renewables, and sustainable use of energy resources. It also contains a 2-year action plan to achieve state energy objectives. Contact: John Savage, (503) 378-8278.

### **Executive Order, Vermont (1989)**

In October, Vermont's governor committed the state to an aggressive program of energy conservation and use of renewable energy resources. The Order directed the development of a Department of Public Service/Agency of Natural Resources Comprehensive Energy Plan to protect the environment, increase energy efficiency, and reduce overall energy costs. The plan's objectives include reducing greenhouse gases by 15 percent and reducing per capita non-renewable energy consumption 20 percent by the year 2000.

The Order also calls for a task force to oversee energy efficiency/emission reduction strategies for state government; assigning monetary costs for use of electricity and various fuels; and use of life cycle costs in place of purchase cost for energy consuming items. Contact: Scudder Parker, (802) 828-2393.

## **(2) Energy Efficiency**

### **Legislation**

#### **Conservation and Load Management, Connecticut**

Orders the state Energy Division of the Office of Policy and Management, state agencies, and gas/electric utilities to pursue energy conservation and load management programs. The Act stresses the use and evaluation of conservation plans in industrial, commercial, residential, and agricultural sectors. Large petroleum vendors and gas and electric utilities are also required to participate. Residential Conservation Services are also mandated. There has been an additional focus on fusing energy conservation measures and state facilities. A separate bill, "An Act Concerning Global Warming," (see pgs. 1,5,29, and 33) stipulates reduction of average energy use in state buildings by 50 percent over the next 20 years. State college campuses have been used to perform energy management strategy and life cycle cost analyses. The Task Force on Energy Efficiency in State Buildings recommended a study on decoupling utility profits from sales in order to create incentives for conservation. Contact: Timothy Bowles, (203) 566-2800.

#### **Energy Bank Program, Iowa**

Calls for a two-phase attack on energy waste in government buildings. The state issued bonds to fund energy improvements in the Iowa facilities. The measure requires the aggregated payback to be accomplished in less than 6 years. Iowa reports significant cost, energy, and carbon dioxide savings.

The program's second phase finances energy audits/improvements in schools, hospitals, and local governments. Each agreement involves a lease-purchase contract for all devices installed. Qualifying time for each institution averages 2 weeks and must follow state approval of all technical work to be done. Loan amounts begin at \$15,000 and are derived from a \$200 million finance pool overseen by Norwest Bank, Financial Division. State energy officials draft and supply all necessary documents. Contact: Roya Stanley, (515) 281-6682.

#### **Statewide Energy Rating System, *Iowa (1990)***

Iowa legislation ordered DNR to develop a building energy efficiency rating system. It applies to new and existing residential, public, commercial, and industrial structures. As a result, real estate purchasers or leasees can request energy ratings of prospective purchases. Officials hope that by giving energy-efficient buildings a marketing advantage, owners/sellers will clear up energy problems before they become financial problems. Implementation schedules vary by type and building age. Energy Rated Homes of America offers a national rating system already in use by five states. Iowa plans to meet these specs. Contact: Iowa Department of Natural Resources, (515) 281-5145.

#### **LD 527, Chapter 75, *Maine (1989)***

Requires utilities to purchase all electricity offered for sale by area cogenerators. The Public Service Commission sets purchase rates equal to the utility's full avoided costs.

The law also forces new construction or renovation of multifamily structures to comply with ASHRAE 90 standards. Areas covered include building envelope, heating, ventilating and air conditioning systems, water heating and lighting power limits, and controls. Contact: Patrick Norton, (207) 289-1670.

#### **Loan Program, *Missouri (1992)***

Puts in place an industrial/commercial loan program for energy conservation measures and use of alternative fuel vehicles in state fleets. Contact: Bob Jackson, (314) 751-4000.

### ***Agency and Other Administrative Measures***

#### **Analysis of Demand Side Technologies, *California***

The California Air Resources Board is analyzing the potential of demand side measures to reduce emissions of greenhouse gases in California's South Coast Air Quality Management District and in Vermont. It is employing economic end-use modeling to identify cost-effective technological options for reducing energy demand in the residential, commercial, and industrial sectors in the two study areas. It will also identify policies to overcome obstacles to the widespread use of these technologies. Contact: Marla Mueller, (916) 323-1529.

### **Expanding State Energy Efficiency Agriculture Programs, *Georgia***

Includes two plans: 1) an irrigation efficiency initiative to save farmers more than \$3.5 million annually while eliminating 50,000 tons of CO<sub>2</sub> and 2) a dairy farm energy efficiency measure that should allow owners to spend less by using “waste” heat in fresh milk to heat wash water. The average dairy recoups its costs through energy savings in about 2 years.

A state technical assistance program also helps improve energy efficiency by evaluating irrigation systems for the Cooperative Extension Service of the University of Georgia’s College of Agriculture. Farmers use these evaluations to reduce fossil fuel consumption. Energy efficiency programs have also been instituted for poultry farms. Contact: Paul Burks, Director of Energy Resources, (404) 656-5176.

### **Improved Building Energy Efficiency Standards, *Illinois***

The state Home Energy Loan Program provides grants and low-interest loans for home energy efficiency improvements. Participating dwellings have cut their heating bills by an average of 22 percent. Contact: Henry Kurth, (217) 785-5222.

### **Performance Study of Energy Conservation Measures, *Iowa***

The Iowa State Department of Mechanical Engineering has studied energy conservation measures (ECMs) installed in Iowa schools and hospitals between 1983 and 1985. It claims that 87 percent of predicted savings are being achieved. As part of its energy reduction push, the DNR will emphasize quality engineering analyses, ECMs, and improved facility management. Contact: Vada Gratham, (515) 281-8094.

### **Evaluating Market Barriers to the Acceptance of New Lighting Technologies, *Kentucky***

The state Division of Energy of the Natural Resources and Environmental Protection Cabinet is evaluating various delivery mechanisms to overcome market penetration barriers to compact fluorescent light bulbs and other high efficiency lighting technologies in the residential, institutional, and small commercial sectors. The project is also analyzing the potential for energy savings in commercial lodging and conference facilities. Contact: Greg Guess, (502) 564-7192.

### **Residential Relamping Pilot Project, *Maryland***

One hundred and fifty weatherization assistance homes will receive new, energy-efficient fluorescent lighting supplied by two major Maryland Utilities. Maryland Energy Assistance and the Weatherization Assistance Program sponsor the initiative, which will provide technical support and data analysis over a 12-month period. The project began in September, 1991. The final report is due in September, 1992. Contact: Scott Layne, (410) 974-3751.

### **Commercial Lighting Pilot, *Michigan (1990)***

The State Office of Energy Programs (OEP) sponsored a lighting rebate program. Thirty-one of 650 eligible businesses took part. They received 30 percent rebates on purchase and installation of energy efficient lighting technologies with a payback of 7 years or less. Included were: fluorescent tubes, daylight controlled dimmers, screw-in florescent lamps, reflectors, electronic ballasts, occupancy sensors, total fixture replacement, fluorescent static controllers, and custom lighting. Rebates varied by equipment type. The maximum per building did not exceed \$4,000. A

large state utility also offered some customers free on-site evaluations and written recommendations for further improvements. OEP compared costs, participation level and actions of groups receiving lighting analysis/rebate with those who received lighting analysis only. In addition, two marketing approaches for the rebates were evaluated. Of the nearly \$400,000 spent, \$326,245 went to retrofits. The rebate offer ran from August 1 through November 1, 1990. Contact: Rose Hughs, (517) 334-6261.

#### **Community Based Programs, *Minnesota***

Minnesota supports community utility energy efficiency programs. Each is locally designed and provides services selected by the community. Participating electric or gas utilities fund inspections. Major energy rehabilitation money comes from a state loan program. The overall program is funded by oil overcharge levys. Heating, lighting, and air conditioning efficiency improvements are identified for owners and renters in residential and medium sized commercial structures. Contact: Mark Schoenbaum, (612) 297-3602.

#### **Paper to Trees Project, *Missouri***

Program swapped 3-foot newspaper stacks for a native tree. Information on plans to reduce energy consumption through strategic tree planting was included. Ten to twelve thousand people participated, creating waiting lists for swaps. Sixteen thousand five hundred trees were given away in eight Missouri cities. Contact: Cindy Carroll, (314) 751-5953.

#### **Dairy Energy Management Program, *New Mexico***

Seeks to help energy-intensive dairies reduce operating costs through related conservation measures. Provides on-site audits, follow-up, and technical assistance. State-of-the-art computer software is provided by Pacific Gas & Electric Co. The effort is jointly sponsored by the state university and utilities. Contact: JoAnn Emmel, (505) 646-3425.

#### **Energy-Efficient Construction, *New Mexico***

Southwestern Public Service Company (SPS) gives rebates for energy-efficient home construction in eastern New Mexico. Roughly \$600 goes to builders whose homes meet SPS criteria (which exceed state energy code requirements). Officials report 90 percent market penetration in 1989. The Energy, Minerals, and Natural Resources Department (EMNRD) and the U.S. Department of Energy's Western Area Power Administration also provide funding to Plains Electric Generation and Transmission Cooperative which adapts SPS's rebate program for use in rural New Mexico. Contact: James Gauge, (806) 378-2100.

#### **Low Cost Weatherization, *New Mexico***

A 1988 alternative to DOE's Residential Conservation Service (RCS) Program developed by EMNRD and Public Service Company of New Mexico. The plan allows installation of about \$120 worth of weatherization materials in low income households. The work is done by local civic organizations. EMNRD is expanding the program by offering to cost-share with other utilities. DOE also pays for a similar initiative with the Arizona Energy Office's Seniors Helping Seniors Program. Contact: Ingrid Kelley, (505) 827-5973.

### **Energy Star Program, *New York***

Developed to help home buyers compare new home efficiency levels. Provides the latest ideas/research on energy-wise construction methods. Officials say this program will prove to be a valuable buying guide while putting pressure on builders to bring the latest technology to bear on their product. Homes meeting NYSR-STAR thermal requirements will average 25 percent higher efficiency than those meeting normal New York code. Builders meeting specs on this new rating will receive New York state certification. Contact: Michael Gorman, (518) 473-8593.

### **Energy Advisory Service to Industry (EASI), *New York (1984)***

A plan providing free on-site energy surveys to small and medium-sized commercial and industrial firms. Of 8,500+ audits, experts claim over 4 million therms of natural gas and more than 600 million kWh of electricity saved. Contact: Charles Guinn, (518) 473-4377.

### **University-Industry Energy Research Program, *New York***

Planned and supported by the state Energy Authority, the program combines strengths and resources of academia and industry. Faculty and students team up with business to find energy-efficient solutions to industrial problems. The result: reduced energy consumption, industrial and economic gains, and real world learning for students. Eligible research projects generally fall within the following development or demonstration areas: optimizing industrial processes, pursuing innovative energy technologies/products/processes, and alternative fuel use. Contact: Edward Kear, (518) 465-6251.

### **Conservation Report, *Oregon***

The Public Utilities Commission and ODOE are gauging investor-owned electric and natural gas utility conservation efforts. Their reports focus on the advisability of recapturing wasted energy and the need to deliver other conservation savings. The studies should help shape policy on older utilities and provide a framework for reviewing least-cost plans. Contact: Phil Carver, (503) 378-6874.

### **Oregon Residential Energy Efficiency Project, *Oregon***

The state has upgraded conservation standards for the construction industry. Officials estimate the January, 1992 building code changes will reduce energy use by 30 to 40 percent in new homes and save 50+ megawatts (MW) electric and 20 million therms natural gas annually in the next 20 years. The measure concentrates on reducing energy waste due to windows, assessing building/design costs on affordable energy efficient housing, ascertaining whether emphasis should be placed on gas or electricity for space heating, and evaluating whether there should be subsidies or payments to support the above measures. Contact: Peggy Collins, (503) 373-1238 or John Kaufmann/Gary Curtis, (503) 378-4040.

### **Energy Efficient Manufactured Housing, *Bonneville Power Administration, Oregon***

Because most mobile homes are HUD-code preapproved, states have a hard time putting in place local energy improvements. The Bonneville Power Administration (BPA) has been mixing experimental, demonstration, and marketing approaches to promote construction of more energy-efficient manufactured housing. Public and private utilities, along with BPA, are providing cash incentives (\$2,500/unit) to manufacturers so that every new mobile home in the

Northwest will be built to high efficiency standards. BPA is also pursuing information exchanges with other utilities and the Pacific Northwest Laboratory. Contact: Allen Lee, (503) 230-7584.

#### **Expanding State Government Energy Efficiency Programs, *Pennsylvania***

Pennsylvania's "Critical Needs" Program is researching advanced weatherization technologies by applying them in low-income homes. Energy savings average 29 million Btu's—or about 34 tons of CO<sub>2</sub> per household projected over 20 years. Contact: Dan Desmond, (717) 783-9981.

#### **Improved Building Energy Efficiency Standards, *Vermont***

The state offers technical assistance through the Vermont Industrial Conservation Advisory Program (VICAP). Energy savings estimates run 20 percent for fossil fuels and 10 percent saving for electricity use. More than 700 industries have been visited since 1980. Annual CO<sub>2</sub> output has been reduced by roughly 3,600 tons. Contact: Larry Ogden, (802) 878-8728.

#### **Electric Motor Research, *Washington***

A Washington State Energy Office project for the Bonneville Power Administration. WSEO has developed what may be the most comprehensive motor database in the United States. More than 2,700 motors are listed. Information includes size, speed, enclosure, full and part-load efficiency, power factor, and list price. As a result, Bonneville may offer high-efficiency motor rebates in its industrial energy conservation activities throughout the Pacific Northwest. Contact: Todd Litman, (206) 956-2081.

#### **Energy Codes, *Washington***

One of the most aggressive new residential construction energy codes in the country. It is said to be about 30 percent more effective than the ASHRAE Standard 90. The new code covers more efficient doors/windows, increased levels of floor/wall/ceiling/duct insulation, and more efficient heating/cooling systems. The state has also passed a major upgrade of the energy code for new commercial construction. Contact: Jim Erickson, (206) 956-2039 or Dick Byers, (206) 956-2022.

#### **Energy Edge and the Governor's Energy Team, *Washington***

These initiatives are targeted at the commercial building sector. Energy Edge is a competitive design contest to encourage installation of cost-effective energy conservation measures in new commercial buildings. The Energy Team identifies ways to reduce energy use and costs in state facilities, such as prisons, state hospitals, and colleges. The BPA program is offered state-wide. Contact: Tony Usibelli, (206) 956-2125.

#### **Energy Partnerships, *Washington***

Funds measures to reduce energy use in schools and state facilities—potential reductions of 30 percent are forecast. The state energy office will provide low-cost, up-front financing using funding from bond sales. Affected facilities will keep the net savings they realize from each project. Contact: Victoria Lincoln, (206) 956-2079.

**Energy Savings for Non-Profit Organizations, *Washington***

The Washington State Energy Office (WSEO) helps non-profit human service agencies lower their energy expenditures through technical and financial measures. Contact: Tony Usibelli, (206) 956-2125.

**Energy Savings for Schools, *Washington***

A WSEO initiative identifies energy efficiency measures and funding sources. Other initiatives include a school energy free accounting software program and new school design reviews. Contact: Cynthia Putnam, (206) 296-5637.

**Lighting Design Lab, *Washington***

Seattle City Light and WSEO have developed a unique lighting design lab. It markets no specific product line, but instead focuses on energy-efficient designs/products and natural light uses. In addition to providing information on energy-efficient lighting, the lab provides a place where designers can experiment and demonstrate lighting alternatives. Contact: Tony Usibelli, (206) 956-2125.

**Energy Efficient Appliances, *Washington***

The Energy Office is managing a consortium of utilities, state energy offices, and Bonneville Power Administration to make energy-efficient appliances available to consumers and encourage appliance manufacturers to meet or surpass new federal efficiency standards. Contact: Liz Klump, (206) 956-2071.

**Energy Efficient Manufactured Housing Demonstration, *Washington***

Bonneville Power Administration and the Northwestern states are working with area manufacturers to improve mobile home energy performance. A new program demonstrates production and promotes sales of 150 trailer designs. It also monitors related monetary costs/savings. Contact: Tom Hewes, (503) 373-7875.

**Direct Use of Waste Heat and District Heating, *Washington***

Numerous statewide projects demonstrate the use of industrial waste heat and low-temperature water-wells. Software has been developed to help evaluate district heating potential for residential, commercial, and other heating applications. Contact: Gordon Bloomquist, (206) 956-2016.

**Cogeneration of Electricity at State Owned Facilities, *Washington***

Assesses cogeneration potential at large state-owned operations (Washington State University and others). Excess heating plant capacity will be used to generate electricity for sale and for use within the facility. Contact: Dick Byers, (206) 956-2022.

**Washington Environment 2010, *Washington***

A multi-agency environmental project coordinated by the Department of Ecology. As part of WSEO's participation, it evaluated energy conservation, CO<sub>2</sub> reduction, and air quality proposals for technological, economic, and institutional feasibility plans. Additionally, the state energy office plans to develop/evaluate tools and methods to assess natural resources and the environmental costs of energy development. Contact: John Lesser, (206) 956-2007.

### **Puget Sound Telecommuting Demonstration Project, *Washington***

Pilot state agency program, to help ease the effects of urban growth and traffic congestion in the Puget Sound and King County areas. The effort will document motor fuel savings and study workplace benefits and problems. Contact: Dee Christianson, (206) 956-2024.

## **(3) Utility Regulations**

### ***Legislation***

#### **HB 7325, *California* (1989)**

Requires gas utilities to submit yearly conservation plans to the Public Utility Commission. These must include: measurable conservation and load management targets, conservation options, analyses and evaluation methods, and cost/benefit findings. The options should be selected using integrated supply and demand planning. Contact: Les Johnson, (916) 322-0704.

#### **HB 1491, *Missouri***

HB 1491 proposed legislation requires utilities to place 4.5 percent of annual gross operating revenue into energy conservation and renewable energy projects. Contact: Bob Triplett, (314) 751-2979.

#### **HB 1639, Act 114, *Pennsylvania***

Mandates utilities to file yearly power demand and use projections. Included are alternative scenarios for demand growth in residential, commercial, industrial, and utility sectors. Also required each year: filing of all available supply sources, including cogeneration and renewable energy resources; an assessment of potential/existing conservation sources; reports showing links between demand/supply side options that meet customer energy requirements; and comparisons showing customer and company costs as they pertain to the above mentioned requirements. Contact: Pennsylvania Bill Status and Legislation, (717) 787-2342.

#### **HB 2198, Chapter 2, *Washington* (1990)**

Adopts the Northwest Power Planning Council's energy conservation standards for new residential construction. Requires electric utilities to make payments to homes (\$900) and apartments (\$390) to offset up-front costs of upgrades. The Public Utility Commission must consider policies that allow power companies a return on their investment to protect them from short-term financial losses. Contact: Amy Bell, (206) 956-2001.

### ***Agency and Other Administrative Measures***

#### **California Polytechnic Institute-Pacific Gas & Electric Energy Conservation, *California***

Institutional energy saving program. Upon completion of Cal-Poly's study to build a gas turbine, the university agreed to put off installation plans in lieu of PG&E incentives. Rather than lose income from the plant, the utility put in place just under \$600,000 to fund Cal-Poly chosen (and California Public Utility Commission approved) energy conservation measures. Anticipated school savings: \$3.8 million in projected construction fees and substantial monetary gains from resulting energy reductions. Contact: Wayne A. Rechnitz, (415) 973-8494.

#### **Utility Sponsored Conservation Project, *Connecticut***

Comprehensive energy saving project pursued by Northeast Utilities and supported with funds by the U.S. Department of Energy Institutional Conservation Program. To help defer construction of new power plants, Northeast Utilities' "EnergyCHECK" conservation initiative focuses on Connecticut school systems, hospitals, and non-profits. Resulting installation of energy efficiency measures realized significant marginal savings. One school cited roughly \$35,000 and 150,000 kWh worth of annual cash/energy saving with 60 to 80 kW of demand reduction from the winter peak. Efficiency measures include: reducing water temperature in domestic water heaters; replacing incandescent with fluorescent, metal halide and high-pressure sodium lighting; more efficient lighting fixtures and lamps; storm window/weather stripping installation; cleaning/servicing/replacing heating equipment; roof/ceiling insulation projects; energy-saving ballasts; and infrared sensor lighting controls. Contact: William Leahy, (203) 245-5232.

#### **State Guide to Purchasing Renewable Energy Technologies, *Interstate Solar Coordination Council***

This project develops and evaluates the effectiveness of a handbook for use by state procurement officials in selecting renewable energy systems for their facilities. The handbook will serve as a catalog of cost-effective renewable energy technologies and will be distributed to approximately 75 officials in 50 states. A follow-up survey will determine the number of systems installed and avoided greenhouse gas emissions. Contact: Judy Carroll, (512) 463-1871.

#### **Development of a Consistent Environmental Externalities Cost Methodology for New England States, *Massachusetts***

The Department of Public Utilities (DPU) is assessing environmental externality approaches that account for CO<sub>2</sub> emissions. It will also evaluate other environmental impacts while factoring the cost-effectiveness of new resources. The DPU is conducting a regional conference and a series of working group meetings with the six state utility departments and commissions to discuss their analyses. Contact: Paul Hibbard, (617) 727-9748.

#### **Considering Environmental Externalities, *Massachusetts (1988)***

Under a 1988 initiative, the Department of Public Utilities ordered electric companies to identify and consider environmental externalities in cost and environmental impact planning—where possible, practicable, and quantifiable. Subsequent hearings, technical sessions, and planning discussions have also included greenhouse gases. Work to develop regional plans is underway. Contact: John Cosmas, (617) 727-4732, ext. 32.

#### **Utility Conservation Program, *Michigan***

In response to a 1988 Public Service Commission order, eight utilities filed energy conservation reports describing current related programs and projected costs/benefits. A non-adversarial review process led to approval of plans with all respondents. As a result, plans for 58 separate conservation programs have been approved. These address the needs of residential, commercial, and industrial customers. Each utility offers an energy audit and some type of incentive program. Incentives for efficient lighting, climate control equipment, temperature controls, insulation, industrial applications, and cooking fryers/griddles are also offered. Office of Energy Programs

staff will work closely with the utilities to monitor and evaluate related costs and benefits. The annual utility costs are roughly \$18 million. Program descriptions are available on request. Contact: Rose Hughes, (517) 334-6258.

#### **Utility Competitive Bidding Program, Opinion #8815, *New York (1988)***

Scheme to help control and track external environmental costs. The process adds an additional penalty cost to the projected cost of coal plant combustion. This accounts for the environmental impact of unregulated pollutants such as CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and particulate matter. The coal plant's costs are then compared with alternatives. The bidding process assists in the evaluation of more environmentally sound-efficient energy or alternative energy supply systems. Contact: Anthony Joseph, (518) 473-8045.

#### **Consumer Assistance, Audits and DSM Planning, *New York***

Since 1982, state investor-owned public utilities have worked with New York to pursue energy savings. One result is the Energy Conservation Bank's Low Income Grants and Zero Interest Loan program. These are administered by the State Energy Office and Utilities' Savingpower Energy Audit and Loan (RCS) Program. Several state utilities have also coordinated their Savingpower audit services with New York's Weatherization Assistance Program.

In 1989, the Public Service Commission ordered electric power companies to start several demand side management customer programs. One result has been greater emphasis on coordinating and augmenting existing conservation services. For example, joint state/utility efforts are underway to promote appliance efficiency and industrial/commercial conservation audits. Contact: Kevin O'Brien, (518) 474-3393.

#### **Environmental Externalities, *Oregon***

The Public Utility Commission (PUC) is holding a public process to set the environmental cost adders that utilities will have to use in least cost planning. Contact: Phil Carver, (503) 378-6874.

#### **Least Cost Planning, *Oregon***

The Public Utility Commission (PUC) requires investor-owned natural gas and electric utilities to submit a long-range/least-cost plan and 2-year action plans. These plans must consider external environmental costs and include energy conservation plans. Contact: Lee Sparling, (503) 378-6137.

#### **Ratemaking Incentives, *Oregon***

The PUC is evaluating the impact of utility incentives on conservation. The goal is to ensure that utilities have incentives for resource acquisitions that are consistent with least cost planning. Contact: Marc Hellman, (503) 378-6355.

#### **Utility Regulatory Reforms, *Vermont***

When evaluating alternative energy supply systems, Vermont uses competitive bidding systems that account for external environmental costs. Contact: Scudder Parker, (802) 828-2393.

### **Utility Regulation, Wisconsin**

The Public Service Commission ordered major electric utilities to pursue least-cost plans that employ 15 percent credits for buying/using noncombustion options, programs and plans. The credit recognizes avoided cost of acid deposition, global climate change and health care. Utilities will also have to develop estimates of the economic costs of reducing CO<sub>2</sub> to 85 percent of 1985 levels by the year 2000. The initiatives will be reviewed and used to develop the next set of long-range least-cost plans; among them, energy use projects. Methods to assess costs of non-renewable resources will also be addressed. Contact: Nancy Korda, (608) 267-3599.

**Additional energy efficiency measures compiled from utility conservation programs across the country are listed below.**

Source: Institutional Manager's Guide to Utility Conservation Programs, U.S. Department of Energy.

Raising A/C temperature point; converting HVAC to variable air volume; chilled water reset; use of clock thermostats; boiler adjustments; heat pumps; energy surveys; water heater wraps; efficient shower heads; contracted demand reduction (choice) that includes interruptible service; heat recovery; glass area/window reduction; ventilation systems improvement; daylighting sensors; occupancy sensors; current limiters; window film; low temperature dishwashers; load control receiver; delamping with reflectors; do-it-yourself non-demand-billed customers; appliance rebates; roadway and protective lighting; new construction and retrofits; chiller rebates; easy energy financing; customers needing financial assistance to implement conservation measures; cool storage; limited off-peak service rate; electric work vehicles; ground source heat pumps; dual fuel heating systems; air-to-air heat pumps; off-peak water heaters; air-to-air heat exchangers; efficient building envelope design; natural gas air conditioning or heat pumps; custom load management; solar assisted electric water heaters; and self-contained heat recovery heat pump system for water heating.

## **(4) Renewables and Alternative Energy Sources**

### **Legislation**

#### **Legislation, Arizona**

Two related 1991 bills have been signed into law. The first (chapter 65) of the Arizona Revised Statutes mandates solar energy features on public buildings where cost effective and expands related design/engineering roles for state energy officials. The second bill (chapter 176) commits the state to use more alternate fuel vehicles in state fleets. It also places emphasis on fuel saving by promoting car pooling, exemption of qualifying solar devices from state sales tax, funding for solar projects and consumer protection projects to assure quality of devices and installation. Contact: Stephen Ahearn, (602) 280-1420.

## ***Agency and Other Administrative Measures***

### ***The Arizona Renewable Energy Program, Arizona***

The State Energy Office program promotes renewable energy technology. The National Governor's Association (NGA) will do a study on the energy savings for this and other state projects. Contact: Maxine Robertson, (602) 280-1440.

### ***Solar Energy Troubleshooting, Colorado***

Since 1988, institutional and residential solar system owners have received technical/maintenance advice from the Colorado Office of Energy Conservation. Although federal taxpayers received credits for installing these devices in past years, no provision was made to help users keep their systems in good repair. Homeowners will also receive results of a statewide survey that identifies and helps to correct persistent solar device problems. Contact: Andy Walker, (303) 620-4292.

### ***Alternate Fuel Research, Development and Demonstration Project, Florida***

The Florida Energy Office, through the Florida Solar Energy Center, will evaluate the potential use of a mixture of hydrogen and compressed natural gas as a fuel for conventional passenger vehicles. The project involves testing of the mixed fuel and an assessment of the economic and logistical problems associated with the introduction of a new mixed-gas fuel. The mixture is 12 percent methyltetrahydrofuran (MTHF) and 88 percent gasoline. MTHF levels will increase to 75 percent in the future. Contact: Jan Rickey, (904) 488-2475.

### ***Amorphous Silicon Semiconductor Project, Iowa***

Iowa State University is producing photovoltaic cells on flexible plastic film using amorphous silicon. Low cost, high capacity, flexible solar electric generation is expected. Contact: Ed Woolsey, (515) 281-7015.

### ***Passive Solar Workshop, Kentucky***

The state Division of Energy offered "Cost Effective Energy Design Strategies for Kentucky Homebuilders," a workshop teaching builders and architects cost-effective energy conservation and passive solar design measures. Sponsors for the fall 1990 workshop included: natural gas and electrical utilities and the state Public Service Commission and Homebuilders Association. Materials were provided by Solar Energy Research Institute, the Passive Solar Industries Council, and the Florida Solar Energy Center with funding from the U.S. Department of Energy. Many of the teaching aids used resulted from long-term studies by the National Association of Homebuilders. A final report on the workshop communicated the costs and benefits of the energy-saving and passive solar products studied. A manual is available. Contact: John Stapleton, (502) 564-7192.

### ***Renewable Energy Initiatives, Massachusetts***

Current initiatives include: a federal oil overcharge funded Alternative Fuels Demonstration Project; local zoning controls to preserve/protect solar access; photovoltaic system placement in state facilities; development of a Center for Excellence in Photovoltaics through a state/university/business partnership; streamlining of the hydropower permitting process; and active redevelopment of old hydropower sites. Contact: Nils Bolgen, (617) 727-4732.

### **Clean Power Rules, *Nevada***

The State Public Service Commission recently put into effect rules that give preference to clean alternative energy over fossil fuel generated electrical power. The plan also encourages wind, geothermal, and solar approaches. It requires utilities to consider environmental costs when planning new facilities or purchasing power from other producers. Contact: Tom Henderson, (702) 687-6004.

### **Solar Seminars for Builders, *New Mexico***

This initiative offers solar design seminars for home builders. El Paso Electric Company and Public service Company of New Mexico also sponsor this one-day presentation by the Passive Solar Industries Council of Washington, D.C. Four additional seminars are set for 1992. Contact: Ingrid Kelley, (505) 827-5973.

### **Solar Home Design, *New Mexico***

Provides blueprints for energy-efficient passive solar homes. EMNRD cost-shares with Public Service Company of New Mexico and El Paso Electric Company. The utilities also provide follow-up assistance to builders. Contact: Charles Wood, (505) 827-5973.

### **Renewable Energy Initiatives, *Vermont***

Includes assistance in developing a manure digester and wood gasification generating turbine. The digester produces 1 megawatt of energy from methane. It has been in operation for three years. The wood gasification generator reduces chips to a gas which in turn powers a jet engine-propelled generator. The device produces 20 megawatts of electricity. Contact: Norm Hudson, (802) 828-2393.

### **Bioenergy, *Washington***

As part of the regional Biomass Energy Program, WSEO seeks to determine the economic and environmental costs/benefits of using biomass as an energy source. The Biomass Program examines the availability, energy potential, and environmental impact of using biomass as a fuel. Biomass workshops are also offered to legislative, state, and private sector workers. Contact: Barbara Smith, (206) 867-7000.

### **Alternative Fueled Vehicles, *Wisconsin***

A 2-year pilot program to test costs/benefits of these vehicles. Eleven communities around the state have received \$120,000 grants to pursue reduced dependence on foreign oil/improve air quality. Contact: Jeff Knight, (608) 267-7693.

## **(5) Education and Technical Assistance**

### ***Legislation***

#### **Energy Educational Programs, Chapter 1252 of the 1990 Acts, *Iowa***

Establishes energy efficiency as a learning priority. The law calls for a plan to develop, recommend, and implement education and communication programs in energy efficiency,

conservation, and conversion to alternative sources of energy. Developing responsive industry and effective public information/education is crucial to the plan's success. To achieve these objectives, Iowa's Division of Natural Resources (DNR) will rely on seminars given at local colleges. The law requires DNR to work with state engineering boards, land surveyors, and architectural examiners to offer design courses and interdisciplinary cooperation/education on energy efficiency strategies for construction professionals. For example, Iowa State University plans to train consultants and to offer technical analyses. The anticipated result is a trained set of state energy efficiency professionals (see also pgs. 1 and 6). Contact: Roya Stanley, (515) 281-6682.

DNR will also establish a central depository of energy data. Uses will include forecasting future energy demands. A resulting clearinghouse will provide information on slated efficiency practices. Areas covered include design, construction, retrofitting, and maintenance of buildings for state and local governments. Contact: Sharon Tahtinen, (515) 281-7066.

## ***Agency and Other Administrative Measures***

### ***Energy Education Services, Arizona***

The Energy Office and National Energy Foundation provides teacher workshops and classroom materials to Arizona educators. Over 300 teachers and 22,000 students have benefited by the offering. The kindergarten-level "Offalot" teaching aid is similarly sponsored by The General Federation of Women's Clubs-Arizona. It offers stickers, kits, flash cards, audio cassettes, and a teacher's guide on energy efficiency. Contact: Jack Haenichen, (602) 280-1402.

### ***Residential Retrofit, Arizona***

Arizona's Corporation Commission and the state Energy Office will conduct a 2-year residential retrofit program to determine energy-saving measures that reduce peak summer utility demand. Two hundred homes will be monitored to evaluate which new products and services best reduce energy demand. Phoenix utilities are especially interested after experiencing a record 122 °F day, causing them to reach near maximum generating capacity. Contact: Kirk Rossi, (602) 280-1430.

### ***Seniors Retrofit, Arizona***

The Seniors Helping Seniors energy conservation program has weatherized more than 10,000 homes statewide since 1982. This free service is sponsored by South Gas Corporation, the Retired Senior Volunteer Program, and Arizona's Energy Office. Training to install water heater jackets, wall and switch plate gaskets, caulking, weather-stripping, and pipe insulation is included. The service has saved Arizonans an estimated \$2 million in utility costs. Contact: Kirk Rossi, (602) 280-1430.

### ***School Initiatives, California***

Indian Retrofit Program: Project SPECTRUM teaches students technology/installation of lighting retrofits, weatherization and renewable energy applications. One hundred and fifty homes, 28 schools and 12 tribal buildings have benefited so far. A "California Indian Energy News" letter has featured photovoltaic projects, energy-efficient lighting, and California Energy Extension Service funded projects.

**Energy Management:** 40 percent of California schools have acted on low/no-cost conservation recommendations supplied by the state's ENACT program. An average \$1,750 annual saving was realized on participating school utility bills.

**Energy Dividend Program:** Schools receive a percentage of energy they save to invest in local activities. Substantial energy and cash earnings were realized thanks to such initiatives as student energy patrols and staff supervision of other energy-efficient practices. Contact: Bonnie Cornwall, (916) 323-4388.

#### **Technical Assistance and Training to Local Governments, *California***

The state Energy Commission has funneled over \$4 million toward an Energy Partnership Program—a one-on-one energy efficiency consulting effort to towns and cities. Identifying needs, planning, design, and bid specification development are central aspects of the initiative. Training to reduce energy use in building systems is also included. Also offered: advice on energy auditing, fleet management, legal/financial aspects of energy projects, new construction energy design planning, energy project monitoring, special projects, technical training, and waste/fresh water treatment. A low interest loan program to finance the above is available. Contact: Daryl Mills, (916) 654-5070.

#### **Farm Technology Assistance, *California***

The state Energy Commission is funding low interest loans/grants for energy related on-site demonstrations, technical assistance, and training. Three million dollars will go to support low-volume irrigation, greenhouse roofing, electrostatic low-volume pesticide sprayers and solar energy pumps. Demonstration projects include: water management, biological pest control, organic soil fertility methods, conservation tillage, and improved range management practices. Irrigation education is also planned. Contact: Tony Wong, (916) 654-4015.

#### **Illumination Program, *California***

A joint state Energy Commission and utility funded degree program at California State Polytech University, Pomona. Contact: Energy Efficiency and Local Assistance Division, (916) 654-4015.

#### **Residential Conservation Videotapes, *District of Columbia***

The City's Far Southeast Community Organization has produced four 60-minute features on window replacement, plumbing repair/insulation, electrical outlet insulation, and installation of set back thermostats. Contact: Carl Williams, (202) 727-1800.

#### **Iowa Energy Center, *Iowa***

Iowa State University will be the home of a new center for energy-efficient research and demonstration programs. Designed after the Leopold Center for Sustainable Agriculture, the Center will focus on state efforts to decrease dependence on imported fuels. The Center will provide support for education, technical assistance to energy professionals, and advice on alternative energy systems. One program offshoot: an advisory council representing state colleges, government and the utility industry (see also page 6). Contact: Jim Cain, (515) 294-0589.

### **Energy Audit Training, *Kentucky***

Weatherization education aimed at vocational schools. Since 1987, 5-day workshops have been given to selected student/teacher pairs who bring their learning back to home campuses. Audits have also been performed by students outside the campus setting. Contact: Greg Guess, (502) 564-7192.

### **Energy Assistance Task Force, *Michigan***

Since 1989, about \$18.5 million from Michigan power companies has been used to fund energy efficiency improvement for public assistance clients. Homes with annual energy usage in excess of 300 Mcf or 20,000 kWh will receive Fitness Audits, during which low cost measures will be installed and a walk-through analysis conducted. If needed, cost-effective measures such as high-efficiency furnaces, attic and wall insulation, and replacement of old appliances will be offered. Minor repairs will also be considered. Families using above the maximum payment caps—200 Mcf or 13,800 kWh—but less than 300 Mcf/20,000 kWh will be contacted by Michigan's Social Services Energy Intervention Unit (EIU). EIU will provide education on efficient energy use and provide efficient products for householders to install. Program recommendations were made in the Energy Assistance Task Force Report to Michigan's legislature this year. Utilities, consumer groups, legislative professionals, the Public Service Commission, Department of Labor, and Social Services are all represented on the task force. Contact: Tom Gray, (517) 334-6252.

### **Modernizing Industry, *Michigan***

The Electrotechnology Applications project (ETA) assists small and medium-sized industries in using modern, efficient electrotechnologies. Partners in this unique cooperative venture include state public service commissioners, municipal and investor-owned utilities, and the Electric Power Research Institute. The Industrial Technology Institute in Ann Arbor oversees the effort. One significant benefit of the program is helping plant managers understand the technical/economic usefulness of new electrotechnologies. Questionnaires evaluate specific applications of new equipment. In addition, ETA staff evaluates vendor proposals for participating industries. The project receives referrals from participating utilities and the Michigan Modernization Service, a state program that helps small manufacturers to adopt automation technologies. The ETA staff also pilots a Plant Modernization Audit Procedure that evaluates plant operations and energy efficiency. The first of these efforts was completed in April 1990. Contact: Ken Saulter, (313) 769-4234.

### **Energy Education Camps, *Nevada***

The Nevada Energy Office sponsors two summer camp sessions featuring a "kids teach kids" format. In the program, honor students coach other students on suggested topics in National Energy Education Development (NEED). Included are energy efficiency/conservation courses and discussions of alternative energy sources. Contact: Pamela Calhoun, (702) 784-4921.

### **Commercial Energy Assistance, *New Mexico***

Funded by Energy, Minerals and Natural Resources Department (EMNRD), DOE's Western Area Power Administration, and Plains Electric, the program is modeled on the New York

Office's Energy Advisory Service to Industry (EASI) (see pg. 25). Thirteen rural electric cooperatives take part. They target energy-intensive industries such as ski resorts, cattle feedlots, and food processing plants to educate on energy efficiency methods. Contact: Ingrid Kelley, (505) 827-5973.

#### ***Irrigation Efficiency, New Mexico***

Provides on-site irrigation audits, seminars and instructional materials. The plan is guided by EMNRD, DOE's Western Power Administration, and the New Mexico Rural Electrification Cooperative Association. Instructional materials include manuals, videos, and computer software. Contact: Ingrid Kelley, (505) 827-5973.

#### ***Institutional Design Assistance, New Mexico***

A new program for small public school districts. EMNRD, the New Mexico Rural Electrification Cooperative Association and DOE's Western Area Power Administration will participate. The approach is similar to Washington State Energy Office's design assistance program. Seven public school districts currently receive help from architects and engineers with recognized energy management experience. Contact: Ingrid Kelley, (505) 827-5973.

#### ***Publications Distributed, New Mexico***

Numerous state energy publications are sent to local utilities by EMNRD. The program provides much needed information/literature to electric cooperatives. As a result, customers get conservation and renewable energy technology source material. Contact: Ingrid Kelley, (505) 827-5973.

#### ***Summer Energy Camp, New Mexico***

A summer energy camp for 4-H club members is sponsored annually by local electric utilities and EMNRD. Roughly 80 students from around the state attend. Contact: Ingrid Kelley, (505) 827-5973.

#### ***Energy Advisory Service to Industry (EASI), New York (1984)***

Since 1984, New York has offered technical energy audits to industry. Potential energy savings and related costs are assessed. Zero interest loans supported by oil overcharge refunds provide financial support for resulting projects. State officials report annual energy savings totaling \$50 million. The program also evaluates associated carbon dioxide emission reduction savings. A reported 2.75 million tons of CO<sub>2</sub> was conserved through the program as of 1990. Contact: Charles Guinn, New York State Energy Office, (518) 473-4377.

#### ***Energy Auditing and Demand-Side Management Workshops, North Carolina***

The State Energy Division supported workshops for utility employees. Its purpose was to instruct them in performing commercial energy audits for their customers. The 3-day seminar helped to hone skills and knowledge for walk-through energy audits and related data checks on commercial structures. Curriculum included information on climate control/ventilation equipment and instruction in calculating heat loss/gain and plans to reduce energy consumption. Contact: David Smith, (919) 733-2230.

### **Weatherization Services, *Ohio***

The Department of Development, Office of Energy Conservation (ODOD/OEC), and state gas utilities provide weatherization assistance to low-income customers. \$5.2 million in oil overcharge funds are matched with more than \$8 million in utility money to provide assistance to 12,000 homes. Eligible parties fall under the Percentage of Income Payment Plan (PIPP) and Home Energy Assistance Program (HEAP). Since 1987, the utilities have matched ODOD funds with an additional \$14.3 million. The resulting assistance has profited 23,000 units. The PIPP is carried out by community based organizations (CBOs) that install attic and sidewall insulation, air filtration devices, make heating system safety checks, repairs and retrofits, and replace unsafe and inefficient gas fired equipment. Audits determine the most cost effective measures. Referrals between the utility sponsored programs and the Home Weatherization Assistance Program maximize the use of limited resources. They also insure that clients receive proper weatherization assistance. Contact: Paul Haytcher, (614) 466-6797.

### **Energy-Efficient Home Construction Video, *Oregon***

A 20-minute instructional video for high school apprentice builders/contractors that introduces students to conservation methods and highlights associated cost reductions. Oregon State University produced the video with funds from Bonneville Power Administration. Contact: OSU Extension Energy Program, (503) 737-3004.

### **Schools Efficiency Task Force, *Oregon***

The group focused on instruction in building energy efficiency for grades K-12. The Oregon State University, Oregon Dept. of Energy and Oregon Dept. of Education endeavor employs various community professionals to teach energy efficiency and strengthen information/training networks. Contact: David Philbrick, (503) 737-3004.

### **Education and Training, *Washington***

Washington Energy Extension Service (WEES) encourages efficient energy use in a variety of sectors through literature, coursework, newspaper columns, and seminars. This program also acts as a clearinghouse that maintains a database of energy efficiency measures for commercial and industrial applications. A toll-free telephone number provides information access for utilities and consumers in the Pacific Northwest. Contact: Cynthia Putnam, (206) 296-5637.

### **Climate Change Education Programs, *Washington***

In order to educate the public on global climate change, Energy Office officials have contacted the legislature, Northwest Power Planning Council, schools, colleges, and other interested parties. Newspaper articles have also been offered on the subject, and an issue of the agency's *Energy Policy and Planning Research Series* was devoted to explaining the greenhouse effect. The work identifies CO<sub>2</sub> sources by sector. Contact: Dick Byers, (206) 956-2022.

### **Partnership Program for Low-Income, *Washington***

Developed by Tacoma City Light and the Washington Energy Extension Service (WEES), this initiative studied the combined effect of education and home weatherization. The project involved two groups of low-income customers. One received home weatherization along with education materials including energy-saving tips. The other group only received home weather-

ization. As part of its rationale, Tacoma City Light officials cited an Ohio program that produced 14 percent savings with weatherization alone and 21 percent with both weatherization and education. The State Department of Community Development and the Pierce County Community Action Agency also participate in the project. Contact: Wally Croshaw, (206) 593-8363.



### III. TRANSPORTATION

#### *Legislation*

##### **Chapters 105 and 106, *California* (1989)**

The California code has increased the state gasoline tax from 9 cents to 14 cents per gallon in 1990, and to 18 cents per gallon in 1994. \$10 million in revenue raised annually from the tax will go to mitigate environmental damage. Contact: Dan Fong, (916) 654-4638.

##### **Chapter 236, *Colorado* (1989)**

Encourages motor vehicle owners to switch to alternative fuels, reimbursing the conversion costs of up to \$200 per vehicle or \$1,000 per owner. Contact: John Leary, (303) 331-8502.

##### **An Act Concerning Global Warming, *Connecticut* (1990)**

*Transportation:* This Act establishes the following transportation goals: 1) to increase passenger vehicle occupancy levels and use of public transportation; 2) to increase the average car occupancy level to 1.2 people per car by the year 2000 and mandate a report on progress toward this goal by the Department of Transportation; and 3) to increase public transportation and ride sharing so that at least 10 percent of all trips between home and work occur in vehicles occupied by more than one person.

The Act requires the Department of Transportation to include an analysis of public transportation, paratransit, or traffic management options as part of its alternative analysis for new multi-laned expressways on new locations. Public transportation includes rail and bus service. Paratransit includes vanpooling and carpooling. Traffic management programs include employer incentives to promote carpooling, vanpooling, and public transportation.

The Act requires the Connecticut Public Transportation Commission to make recommendations on disincentives to free parking, off-peak transit services, and the establishment of urban-center loop shuttles as part of its existing annual report to the transportation commissioner, governor, and legislature. The Act also requires the Commission to monitor progress toward achieving the goals described above. The Commission must report annually on its findings and recommendations to the Transportation and Environment committees.

*Motor Vehicles and Fuels:* The Act requires the standardization committee, which develops specifications for state government supplies, to consider motor vehicles using alternative fuels when developing specifications for vehicle purchases. It also sets fuel efficiency standards for state-purchased vehicles. By January 1, 1993, state cars must have at least a 29 mpg combined rating and light duty trucks must have at least a 24 mpg combined rating. Four years later, cars must have at least a 38 mpg combined rating and light duty trucks a 30 mpg combined rating. By January 1, 2000, cars must have at least a 45 mpg combined rating and light duty trucks a 35 mpg combined rating. The Act does not apply to law enforcement or other special-use vehicles designated by the Department of Administrative Services. "Car" and "light duty truck" are

defined as the Federal Department of Energy defines them. The Act requires fuel importers or manufacturers to keep records on the specifications of fuels delivered to Connecticut. These records must be available to the Environmental Protection Commissioner on demand. A sworn annual report must also be submitted to the Commissioner indicating that the fuel meets standards established by the American Society for Testing and Materials.

**Parking Garage Tax Assessments:** The law allows municipalities to contract with developers and others for a specified tax assessment on certain property. This Act limits such fixed assessments for multilevel parking to those parking garages necessary in connection with a mass transit system.

**Telecommuting:** The Act requires the Office of Policy and Management to study which state agencies are capable of implementing telecommuting and report to the Environment Committee by January 1, 1991 (see also pgs. 1, 5, 9, and 33). Contact: Nancy Pitblado, (203) 566-2047.

#### **PL#737, Growth Management Law, *Maine***

Encourages clustering new development and maintaining open space as opposed to sprawling, large-lot development. Contact: Maine Law and Legislative Library, (207) 289-1600.

#### **Senate Bills 740 and 769, *Texas***

SB 740 mandates changeover to alternate fuels for fleets of more than 50 school buses. The law also applies to state agencies with 15 or more vehicles. Particulars: after September, 1991, schools/agencies will not purchase/lease vehicles that do not burn alternate fuels; fleets must be 30 and 50 percent converted by September 1, 1994 and September 1, 1996 respectively. Texas hopes to make 90 percent of its vehicles "clean burning" 2 years later. SB 769 does much the same, requiring metro transit authorities in cities with population over 350,000 to similarly convert their fleets. The deadlines and percentages for these city transportation vehicles are the same as those for school buses/state agencies. Contact: Chris Roitsch/Jim McIntyre, (512) 463-1931.

### ***Agency and Other Administrative Measures***

#### **Transportation Initiatives, *Connecticut***

Included are programs for compressed natural gas powered buses, expanding train systems, and demonstrations of alternatively fueled vehicles. Contact: Nancy Pitblado, (203) 566-2047.

#### **Free Vehicle Testing, *Indiana***

The state Fuel Saver Van Program offers free emissions testing, fuel efficiency diagnosis, and a 40-point maintenance checkup to state motorists. The 10-minute service is offered in 30 localities. Tests are controlled by the American Automobile Association (AAA), which also supplies a publication entitled *How to Get the Most Out of Every Gallon of Gasoline*. Contact: Steve Wuertz, (317) 232-8955.

### **Transportation Initiative, *Maine***

Included are adoption of low-volatility gasoline standards during the summer and a state administered rideshare program for state and some private sector employees. Contact: Ron Severance (gasoline), (207) 289-2437 or Russell Spinney (rideshare), (207) 289-2841.

### **Alternative Fuels Demonstration Project, *Massachusetts***

One-year study to evaluate the feasibility of partial fleet conversion to an alternative fuel such as natural gas, propane, or ethanol. Economic, environmental, safety, convenience, and supply considerations will be studied. Contact: Irving Sacks, (617) 727-4732.

### **Regional Gasoline Evaporation Control Agreement, *Northeastern States* (1989)**

A cooperative effort to measure ozone depletion/smog generated by lost gas pump vaporization. The Northeast States for Coordinated Air Use Management (NESCAUM) has mandated upper limits for gas evaporation—by way of the “Reid Vapor Pressure” standard that measures vapor escape levels. Previous release limits of 11.5 lbs. have been lowered to 9.0 lbs. in.<sup>2</sup> Contact: Arthur Marin, (607) 376-8540.

### **Oregon Department of Energy-Assessment of the Effectiveness of Economic Incentives for Promoting Transportation Efficiency, *Oregon***

The Oregon Department of Energy (ODOE) will evaluate the use of a 35 percent business energy tax credit and an accompanying educational campaign to promote van pooling and telecommuting. ODOE will determine the impact of this tax credit on business participation in van pooling and telecommuting programs. Its cost and benefits will also be evaluated. The project is an outgrowth of the Oregon Task Force on Global Warming’s finding that transportation was Oregon’s single largest source of carbon dioxide emissions, accounting for 53 percent in 1988. Contact: Kathy King, (503) 378-5584.

### **Airport Energy Efficiency, *Texas***

Includes engineering analyses of airport facilities to identify available energy saving and alternative energy measures. The program emphasizes solar and wind powered devices and helping to stem fuel burning take-off and landing delays by studying and correcting design/systemic flaws that affect runways/taxiways. Contact: Bob Otto, (512) 463-1876.

### **Transportation Initiatives, *Vermont***

Recent initiatives include a pilot program to provide interest-free loans for van purchases and a requirement that the Department of Forests, Parks, and Recreation down-size their fleet vehicles as a demonstration project. Contact: John Gilligan, (802) 828-2215 or Helene Chapman, (802) 296-2143.

### **Transportation, *Washington***

Transportation is a major source of Washington’s CO<sub>2</sub> emissions. Two programs attempt to mitigate this problem. First, the Washington State Energy Office (WSEO) is working with schools to improve school bus routing, scheduling, and maintenance. WSEO is also exploring the possibility of bus fleet conversion to alternative fuels. Secondly, WSEO is conducting a

telecommuting demonstration project, studying the energy and environmental impacts of substituting the movement of information for that of commuters. Contact: Dee Christianson, (206) 956-2000.

## IV. FORESTRY

### **Legislation**

#### **An Act Concerning Global Warming, *Connecticut* (1990)**

Authorizes the Environmental Protection Commissioner to require air discharge permit applicants to offset CO<sub>2</sub> emissions by planting trees or turf grass. Regulations establish a formula for the tree/turf grass required based on carbon dioxide emissions levels. The plan does not require a complete offset of emissions, but may call for planting only for certain types or sizes of sources. The regulations must require planting in Connecticut where feasible and appropriate. (See also pgs. 1, 5, 9, and 29.) Contact: Nancy Pitblado, (203) 566-2047.

#### **Tree Planting, *Iowa***

State utilities are required to include tree planting as part of the comprehensive energy efficiency plans they submit to the Iowa Utilities Board. Contact: Gordon Dunn, (515) 281-7051.

#### **SF 1473, Chapter 587, *Minnesota* (1990)**

Requires commissioners of Natural Resources and Pollution Control to report on carbon dioxide emissions and incentives to reduce emissions. The reports will consider a fee structure on sources of CO<sub>2</sub> and recommend/plan methods to encourage tree planting in lieu of a fee program. Contact: David Sampsel, (612) 296-7128.

#### **SF 1473, Chapter 254, *Minnesota* (1991)**

Follow-up legislation to the preceding entry. Chapter 254 requires the Department of Natural Resources, Pollution Control Agency (PCA), and the Department of Agriculture to prepare and submit a tree-planting implementation plan to the Legislative Commission on Minnesota resources. The PCA must recommend a fee on industrial CO<sub>2</sub> emissions to raise revenue for the tree-planting program. Contact: David Sampsel, (612) 296-7128.

### **Agency and Other Administrative Measures**

#### **Reforestation Program: "Plant the Future", *Arkansas***

The state Forestry Commission and the Arkansas Cooperative Extension Service will oversee this initiative. Program's goals:

- Plant 10 million trees each year. Planners believe growers and the Arkansas Nurserymen's Association will prove invaluable as teachers and program implementors. Projected residential planting sites include school grounds, parks, and road sides. Officials estimate that planting trees near residences can save \$4 billion a year through reduced energy consumption (e.g. mitigating the heat island effect).
- Pursue a "no net loss policy" on forest land. Planners hope to add 18 million acres of forested land by the year 2000. The Arkansas Reforestation Program encourages continuation of related federal/state cost share programs. The American Tree Farm System,

American Forest Council, and the Arkansas Forestry Association will continue to provide assistance to woodland owners.

- Challenge other states to establish programs that impact on the greenhouse effect and deforestation.
- Establish a bottomland hardwood demonstration forest in east Arkansas to display various techniques of hardwood regeneration and management; show hardwood management as productive and profitable endeavors; emphasize these incentives for managing and regenerating local hardwood forests; and sell growers on new forest development as a cooperative effort involving the Arkansas Forestry Commission and other organizations. So far, six state demonstration forests have been planted.

Additional goals include: reforestation of old farmland and harvested forestlands; restoration of bottomland hardwood and wetland forests and forested corridors along streams and lakes; forested windbreaks and borders along cleared lands; development of urban and community forests and greenways; maintenance and promotion of the state's forest economy; and government and private sector cooperation to educate the public, provide technical assistance, and ensure adequate resources. Contact: Jim Grant, (501) 664-2531.

#### **Forest Improvement Act (CFIP), *California***

Decade-old state tree planting program. Includes both urban and rural reforestation. The 1992 budget will devote \$740,000 to this initiative. Ten to 15 percent of the funding is slated for wildlife and land conservation. Contact: Don Banghart, (916) 653-9453.

#### **MASS Releaf Program, *Massachusetts (1989)***

Initiative to encourage planting and care for shade trees. Objectives include combating global climate change, conserving energy, and improving quality of life. Donations go to communities through a competitive grant program administered by the Department of Environmental Management. Localities with tree wardens and related budget inclusions are eligible. Contact: Jim MacArthur, (617) 727-3180, ext. 671.

#### **Operation T.R.E.E: Trees Renew Energy and Environment, *Missouri***

Reforestation measure sponsored by the Missouri Department of Natural Resources (DNR). Anticipated effects include minimizing global climate change and soil erosion and promoting energy conservation.

- DNR/Division of Energy allocates \$500,000 of oil-overcharge funds for the "Energy Efficient Landscaping Demonstration Project." This funding will go to public and nonprofit organizations to show that strategic landscaping can reduce energy consumption by 10 to 50 percent through shading, windbreaks, and evaporative cooling.
- DNR/Division of Environmental Quality will work with the Soil and Water Commission to pilot a Special Area Land Treatment (SALT) site. Its aims are to use innovative reforestation techniques. Results will guide the development of future woodland SALT sites.

- DNR/Division of Parks will target wooded areas in need of intensive management. Of roughly 5,000 acres, 2,200 will be reforested. Remaining land is slated for natural growth.
- DNR/Division of Parks and the Department of Conservation plan a two-phase reforestation initiative involving public volunteers. 50,000 trees will be planted.
- DNR/Division of Environmental Quality will work for reforestation of reclaimed coal and mineral mines.
- DNR/Division of Management Services plans educational programs and materials to encourage agricultural, residential, and commercial reforestation.
- DNR will establish an internal reforestation coordinator to oversee, expand, and enhance the department's efforts for Operation T.R.E.E. Contact: Ken McCarty, (314) 751-8660.

**New England Governor's Conference Forest Health Monitoring Network, *New England/Eastern Canada (1984)***

A regional wilderness oversight measure that promotes woodland protection. The program pursues improvement in air pollution and CO<sub>2</sub> mitigation through a forest health monitoring network by gauging change in these critical areas. Contact: Steve Leahy, (617) 423-6900.

**The Centennial Tree Planting Program, *North Dakota***

A project to encourage increased annual tree planting by making greater use of established local programs. The goal is to plant 100 million trees by the turn of the century, or an average of 10 million per year for the next decade. North Dakota's current annual plantings are roughly 3,500,000 annually. The Centennial Decade Tree Committee, made up of tree planting professionals from government and the private sector, guides the program. The program consists of seven elements:

- Centennial Groves tree project will fund 5 to 10 acre replanting sites. Its non-profit/civic/service organization/local government sponsors hope to receive matching state dollars.
- Centennial Arboretums display as many as 100 species of regional plants. Donations come from local groups—most notably North Dakota's charitable gambling fund.
- Centennial Woods can encompass 10 to 24 wilderness acres with up to 12,500 trees. Sponsors for the planting project span the non-profit, individual, and governmental gamut. Plantings can be scheduled in three ways: seasonal, incremental, or over the next decade. Marginal, remnant or idle agricultural lands, or lands with highly erodible soils are potential Centennial Woods sites.
- Centennial Forests are rural wildlife planting projects consisting of at least 25 acres and 12,500 trees. Sponsors can range among non-profit groups, individuals, or government.
- Centennial Tree Farmer program encourages landowners to concentrate efforts on enlarging, improving or creating new windbreaks. Qualifying guidelines for numbers of trees planted differ among districts.
- Centennial Tree Buyers purchase and plant from 1 to 99 trees and shrubs. Under the program, individual plantings on private property are considered major contributions.

Special sales and reduced prices are available for related endeavors.

- Centennial Tree Planters qualify by installing 100 trees and or shrubs per season. The planting may take place in conjunction with community or organization projects, or it may be on private property. Contact: Dennis Neumann, (701) 224-2935

## **V. CFCs**

### ***Legislation***

#### **Aerospace Rule 1124, Assembly and Component Manufacturing Operations, *California***

Tightens emissions standards for aerospace companies. The initiative was adopted by the South Coast Air Quality Management District. Originally promulgated in 1979, the 1990 amendment to the rule directed a three-pronged approach including: recycling of ozone-depleting chlorofluorocarbons (CFCs) when air conditioners or refrigerators are discarded; phasing out use of CFCs and halons by January 1, 1997; and studying the feasibility of reducing carbon dioxide emissions 20/40 percent by the years 2000 and 2010 respectively. Contact: James M. Lents, (714) 396-2000.

#### **HB 5630 (Public Act 89-227), *California* (1989)**

The law prohibits sale of foam products manufactured with CFCs; requires the motor vehicle commission to consider regulations establishing CFC emissions standards for automobile air conditioning equipment; requires state health services to conduct a pilot program to reduce the use of CFCs in hospital sterilization; requires the Commission of Administrative Services to run a pilot program for state agency purchase of helium-based refrigerators; requires the environmental protection commission to issue regulations for recycling and disposal of CFCs in refrigerators and air conditioners; and requires incineration of insulating foam. Contact: Patrick Norton, (207) 289-1670.

#### **LD 468, Chapter 39, *Florida* (1989)**

Prohibits the sale of any foam products manufactured using CFCs. Contact: Julia Johnson, (904) 488-8466.

#### **HB 951, Chapter 90-290, *Florida***

Requires UL certified recycling equipment for repair of mobile air conditioners. Service stations with two or fewer bays will be given one extra year to comply. Service persons will be required to have training by The Department of Environmental Regulations on the proper use of recycling equipment. Contact: Julia Johnson, (904) 488-8466.

#### **HB 2388 (Act #77), *Hawaii***

Amends the 1989 law (SB 1344) which mandates the use of certified recycling equipment, by changing the definition of CFC to include CFC blends such as CFC-500, CFC-502, CFC-503 and to delete references to CFC-14 and CFC-116. The law currently includes CFC-11, 12, 113, 114, and 115. Contact: Mary Rose Teves, (808) 586-4337.

#### **PL 622 (LD 2032), *Maine***

Effective January 1, 1992, prohibits CFC-12 in cans smaller than 15 lbs. The law also requires: the use of UL certified recycling equipment for air conditioner repairs; service station maintained records for all mobile air conditioner repairs; records to show amounts of CFCs purchased, sold or used; and a prohibition on registration of 1994 automobiles that use CFC-12

in the air conditioner (this does not include blends or HCFC substitutes). Contact: Maine Law and Legislative Library, (207) 289-1600.

**HB 659, Chapter 345, *Maryland* (1990)**

State Income Tax Break: Allows for a modification in state individual and corporate income tax for 100 percent of the expenses incurred to buy and install equipment to recycle CFCs. The law will remain in effect until June 30, 1993. Contact: Maryland Library Service, (410) 841-3810.

**HB 2173, Chapter 560, *Minnesota***

Amends the Minnesota Toxic Pollution Prevention Act. Section 2 is entitled: "Comprehensive CFC Reduction and Recycling Act of 1990." Beginning July 1, 1993, sale of CFC-12 in cans smaller than 15 lbs. is barred to all individuals except those who have proof of purchase of certified recycling equipment. It also requires use of recycling equipment for mobile air conditioner repairs by July, 1991. One year later, recycling equipment for repair of refrigeration and air conditioning systems will be mandated. Additionally, the law calls for recapture of CFCs prior to disposal of air conditioning systems, refrigerators and automobiles. It also prohibits the sale of non-essential CFC related items, including horns and streamers. The state Department of Natural Resources will put into effect recycling regulations. This law preempts other local ordinances. Contact: Office of Policy and Legislative Affairs, (517) 373-9280.

**SB 3475/ AB 1538, *New York*.**

Effective Jan. 1, 1992, sale of CFC-12 in cans smaller than 15 lbs. is banned unless the buyer has proof of purchase for recycling equipment. As of Jan. 1, 1991: mandated use of recycling equipment for all mobile air conditioner repairs is required; shops with less than four bays have been given one additional year to comply. The law calls for recapture by 1992 of CFCs before disposal of autos or refrigerators. Beginning Jan 1, 1992, sale of hand held fire extinguishers containing halons is outlawed. The non-essential use of CFCs, i.e. horns, photo cleaning, and toys, was prohibited beginning 1991. Contact: New York State Legislative information, 1-800-342-9860.

**Legislation (S. 7589), *New York*, (1990)**

Restricts and aims to eliminate sale of ozone-depleting compounds such as CFCs and halons. Calls for recycling/destruction of such compounds when released in the course of repair, maintenance, or disposal of related products. Authorizes the Commissioner of Environmental Conservation to compile lists of restricted CFCs. Contact: New York State Legislative information, 1-800-342-9860.

**Legislation, *Oregon*, (1977)**

CFC recycling and recovery legislation. Oregon was the first state to ban aerosol CFCs. A 1989 amendment to the original law prohibits their sale in containers smaller than 15 lbs. It also requires CFC recycling programs for automobile air conditioner servicing and disposal and bans sale of Polystyrene for food packaging when made from such CFCs. The Fire Marshal must also ensure/report on lessened halon dumping during industrial fire extinguisher tests. Contact: Jerry Coffey, (503) 731-3049.

**HB 260, Act 59, *Vermont* (1989)**

Requires recovery and recycling of CFC coolants from automobile air conditioners. Bans the sale of such coolants for noncommercial or nonindustrial use or in containers smaller than 15 lbs. The following are prohibited: the sale and registration of 1995 (as amended in 1991 by Vermont HB 71) or later automobiles using CFCs; sale of fire extinguishers for noncommercial or nonindustrial use that contain halons or certain other ozone-depleting substances; and the sale of certain other equipment and products containing CFCs. The bill also requests the governor to develop cooperative agreements with other states that work toward early elimination of ozone-depleting chemicals. Contact: Richard Valentinetti, (802) 244-8731.

**SB 382, Act 284, *Wisconsin***

Effective February 1991, requires the use of certified recycling equipment to repair mobile air conditioners. Beginning December 1991, mandates the use of recycling equipment for refrigeration and air conditioning systems with more than 5 lbs. of CFCs. Beginning December 31, 1992, requires recycling equipment for all refrigeration systems (including those that contain less than 5 lbs. of CFCs). Also, in December 1990, sale of CFC-12 in cans smaller than 15 lbs. was banned. Beginning June 30, 1992, the measure calls for recapture of CFCs prior to disposal of refrigeration and air conditioning systems. Contact: Paul Heinen, (608) 266-2120.

***Agency and Other Administrative Measures***

**The New Jersey Climate Change Initiative, *New Jersey* (1989)**

Program's main focus is on energy conservation and CFC use. It includes lighting and air conditioner efficiency standards, increases in carpooling and mass transit, improved maintenance of existing state-owned vehicles, and expanded purchasing of recycled products. It also mandates the purchase of capture and recycling equipment for automobile and stationary air conditioner repair operations. Additional measures include use of non-CFC air conditioners and investigating the bulk purchase of natural gas to facilitate conversion from oil to natural gas at state facilities.

Other elements of the initiative include: Encouraging energy conservation and reduction in greenhouse gas emissions through regulatory and other means; considering regulatory steps to reduce CFC use including recycling of auto radiators; maximizing New Jersey's forestation (tree for tree replacement strategy); understanding and planning for sea level rise; using greenway policies (providing corridors for migration of plants and animals as sea level rises and climate changes); and improving public education about the causes and effects of climate change. Contact: Scott Weiner, (609) 292-2885.



## **VI. ADAPTATION**

### ***Legislation***

#### **38 M.R.S.A., Section 471-478 — Amended, Chapter 355, Coastal Sand Dune Law/ Rules, *Maine***

Board of Environmental Protection initiative to provide restrictions on the location, size, and density of development activities in order to prevent future flood hazards and interference with sand supply and movement due to sea level rise and shoreline retreat. Contact: David Keeley, (207) 289-3261.

#### **SL3, Wetland Planning Law, *Oregon* (1987)**

Consists of several measures to help develop comprehensive local plans for land use activities next to wetlands. These include: 1) improved wetland inventories; 2) development of local government wetland identification and definition skills; 3) amendment of statewide planning goals to include the Division of State Land's wetland definition; and 4) allowing the Division to review and carry out estuary management plans. Contact: Ken Bierley, (503) 378-3805.

### ***Agency and Other Administrative Measures***

#### **Anticipatory Planning for Relative Sea Level Rise Along the Coast of Maine**

The Maine State Planning Office will analyze strategies, resource management practices and governmental programs, laws, and policies to limit adverse environmental and socio-economic impacts of sea level rise. The project will produce a technical advisory report on response options that will be circulated to other states vulnerable to sea level rise. Contact: David Keeley, (207) 289-3261.

#### **Strengthening Coastal Zone Management Programs, *New Jersey***

A comprehensive study on sea level rise and other coastal changes to better understand their effects on the New Jersey shore. Policies will be developed to respond to anticipated changes in consultation with the public and affected government entities. Contact: Steve Whitney, (609) 984-0058.

#### **The New Jersey Climate Change Initiative, *New Jersey***

Seeks to reduce greenhouse emissions and ozone-depleting gases and to educate and prepare residents for anticipated climate change effects. Strategies include: understanding and planning for sea level rise and continuing expansion of the State Greenway program to provide corridors for plant and animal migration. To help understand and plan for sea level rise, New Jersey will also begin a multi-state research program to study effects of sea level rise and other coastal changes (See Strengthening Coastal Zone Management Programs above and the the New Jersey Climate Change Initiative, page 3). Contact: Scott Weiner, (609) 292-2885.

**Land Conservation and Development, *Oregon***

Coastal erosion study by the state Department of Land Conservation and Development. It will identify and help solve erosion-related problems and review similar work in other states. A study is planned on state and federal shoreline erosion policies/procedures. Government planning does not currently consider these effects. The rise in sea level will be a key factor in the study. Contact: Emily Toby, (503) 373-0096.

The Program will include a strategic 5-year plan to identify and deal with coastal and economic problems. Contact: Don Oswalt, (503) 373-0091.

## RESOURCES

- Alternate Fuels Initiatives in Texas.* Governor's Energy Management Center, Austin, TX.
- Biennial Energy Report: Issues and Analyses for Washington's Legislature.* Washington State Energy Office, Olympia, WA.
- Building Energy Management: FY 1989 Annual Report.* Iowa Department of Natural Resources, Des Moines, IA.
- Cost Effective Energy Design Workshop: Final Report.* Commonwealth of Kentucky, Division of Energy, Frankfort, KY.
- Comprehensive Program Package: Iowa Local Government Energy Bank.* Iowa Department of Natural Resources, Des Moines, IA.
- Conservation Update.* Kentucky Division of Energy, Frankfort, KY.
- Dispatch.* Washington State Energy Office, Olympia, WA.
- Finding the Forest.* North Dakota Centennial Commission, Bismarck, ND.
- Focus: Clean Air Washington.* Washington State Department of Ecology, Olympia, WA.
- Energy Conservation in Agriculture.* Energy Resources Division, Atlanta, GA.
- Global Climate Change Mitigation Actions—Operation of Buildings and Fleets Management of Personnel.* Arizona Energy Office, Phoenix, AZ.
- The Global Warming Challenge: What States Can Do.* Southern Growth Policies Board, Research Triangle Park, NC.
- Institutional Manager's Guide to Utility Conservation Programs.* U.S. Department of Energy, Washington, DC.
- Institutional Conservation Program.* Kentucky Energy Cabinet, Division of Conservation, Frankfort, KY.
- Iowa Energy Bulletin.* Iowa Department of Natural Resources, Des Moines, IA.
- NM Energy.* New Mexico Energy, Minerals and Natural Resources Department, Albuquerque, NM.
- News.* South Coast Air Quality Management District, El Monte, CA.
- Preliminary Report: Oak Park Commercial Lighting Rebate Pilot.* Michigan Public Service Commission, Office of Energy Programs, Detroit, MI.
- Ohio Energy Conservation Programs Communication.* Ohio Office of Energy Conservation, Columbus, OH.
- Oregon Residential Energy Efficiency Project.* Oregon Department of Energy, Salem, OR.
- Photovoltaics in Arizona.* Arizona Energy Office, Phoenix, AZ.
- Press Release.* December 30, 1988, State of New York, Albany, NY.
- Program Guide.* Washington State Energy Office, Olympia, WA.
- The Statehouse Effect: State Policies to Cool the Greenhouse.* Natural Resources Defense Council, Washington, DC.
- State and Provincial Responses to Global Climate Change.* Center for Environmental Management, Tufts University, Medford, MA.
- Summaries of State CFC Legislation and Regulations.* Vermont Agency of Natural Resources, Waterbury, VT.
- Telecommuting.* Washington State Energy Office, Olympia, WA.
- Vermont Comprehensive Energy Plan.* Department of Public Service, Montpelier, VT.
- Workplan for the ERC/CSG Global Climate Change Task Force.* Eastern Regional Conference of the Council of State Governments, New York, NY.



# STATE INDEX

A = Administrative Action L = Legislation

<b>Alaska</b>	Broad-based (L): climate change policy options .....	page 1
<b>Arkansas</b>	Forestry (A): reforestation program .....	page 33
<b>Arizona</b>	Renewables (L): solar energy for public buildings/alternate fuel vehicles .....	page 19
	Renewables (A): renewable energy program .....	page 20
	Education (A): energy education services, residential retrofit, seniors retrofit .....	page 22
<b>California</b>	Broad-based (L): climate change study and policy recommendations .....	page 1
	Broad-based (L): review state Environmental Quality Act .....	page 1
	Broad-based (A): global warming study .....	page 2
	Cross-cutting (L): gas tax to mitigate environmental damage .....	page 5
	Energy Efficiency (A): analysis of demand side technology .....	page 10
	Utility (L): conservation plans .....	page 16
	Utility (A): Cal-Poly and Pacific Gas & Electric, energy conservation .....	page 16
	Education (A): school initiatives .....	page 22
	Education (A): 1) technical assistance to local governments, 2) farm technology, 3) illumination degree .....	page 23
	Transportation (L): gas tax .....	page 29
	Forestry (A): tree planting program .....	page 34
	CFC (L): 1) aerospace companies recycle/abolish CFCs, 2) foam/auto/hospital sanctions .....	page 37
	Renewables (A): solar energy troubleshooting .....	page 20
<b>Colorado</b>	Transportation (L): alternative fuel vehicles .....	page 29
<b>Connecticut</b>	Broad-based (L): varied energy efficiency measures .....	page
	Cross-cutting (L): building codes standards, electric power usage, conservation in state facilities, appliances .....	pages 5
	Energy Efficiency (L): conservation and load management .....	page 9
	Utility (A): conservation project .....	page 17
	Transportation (L): vehicle occupancy, public transport, fuel efficiency, garage tax, telecommuting .....	pages 29-30
	Transportation (A): transportation initiatives .....	page 30
	Forestry (L): planting to offset carbon dioxide .....	page 33
<b>District of Columbia</b>	Education (A): residential conservation videotapes .....	page 23
<b>Eastern States</b>	Broad-based (A): climate change task force .....	page 2

<b>Florida</b>	Renewables (A): alternative fuel research .....page 20
	CFC (L): prohibiting foam products, certifying recycled equipment to repair mobile air conditioning .....page 37
<b>Georgia</b>	Energy Efficiency (A): farm irrigation/dairy conservation .....page 11
<b>Hawaii</b>	CFC (L): CFC recycling, CFC definition changes .....page 37
<b>Illinois</b>	Energy Efficiency (A): building loans .....page 11
<b>Indiana</b>	Transportation (A): free vehicle testing .....page 30
<b>Interstate</b>	Utility (A): solar council, renewable energy technology .....page 17
<b>Iowa</b>	Broad-based (L): climate change research center .....page 1
	Cross-cutting (L): broad-based energy measures, utility regulation, alternative energy and fuels, transportation, global warming center, oil overcharge funds, affordable heating program .....pages 6-7
	Cross-cutting (A): 1992 comprehensive energy plan .....page 8
	Energy Efficiency (L): 1) energy bank, 2) energy rating system .....pages 9-10
	Energy Efficiency (A): energy conservation study .....page 11
	Renewables (A): amorphous silicon semiconductor project .....page 20
	Education (L): energy education programs and data .....pages 21-22
	Education (A): energy center .....page 23
	Forestry (L): tree planting .....page 33
<b>Kentucky</b>	Energy Efficiency (A): marketing new lighting technologies .....page 11
	Renewables (A): passive solar workshop .....page 20
	Education (A): energy audit training .....page 24
<b>Maine</b>	Energy Efficiency (L): cogeneration, construction, and renovation .....page 10
	Transportation (L): growth management law .....page 30
	Transportation (A): low volatility gas/ride share .....page 31
	CFC (L): CFC containers, recycling, auto air conditioners .....pages 37-38
	Adaptation (L) and (A): coastal sand dune law, sea level rise planning .....page 41
<b>Maryland</b>	Energy Efficiency (A): residential relamping .....page 11
	CFC (L): tax break for installing equipment .....page 38
<b>Massachusetts</b>	Cross-cutting (A): solar schools .....page 8
	Utility (A): externalities .....page 17
	Renewables (A): solar access, photovoltaics, hydropower permits/sites .....page 20
	Transportation (A): alternative fuels demonstration project .....page 31
	Forestry (A): planting initiative .....page 34
<b>Michigan</b>	Energy Efficiency (A): commercial lighting .....page 11
	Utility (A): conservation program .....page 1
	Education (A): energy assistance task force, modernizing industry .....page 24

	CFC (L): CFC reduction and recycling .....	page 38
<b>Minnesota</b>	Energy Efficiency (A): community-based programs .....	page 12
	Forestry (L): carbon dioxide reductions, tree planting .....	page 33
<b>Missouri</b>	Broad-based (A): global warming commission .....	pages 2-3
	Energy Efficiency (L): commercial conservation loans .....	page 10
	Energy Efficiency (A): newspapers for trees exchange .....	page 12
	Utility (L): energy conservation and renewable energy projects .....	page 16
	Forestry (A): landscaping, reforestation .....	pages 34-35
<b>Multi-state</b>	Cross-cutting measures (L): greenhouse gas emissions .....	page 7
	Utility (A): energy efficiency measures .....	page 19
<b>Nevada</b>	Renewables (A): clean power rules .....	page 21
	Education (A): energy education camp .....	page 24
<b>New England</b>	Forestry (A): forest health monitoring .....	page 35
<b>New Jersey</b>	Broad-based (A): lighting, reduced energy and CFC consumption, recycling .....	page 3
	CFC Section: climate change initiative .....	page 39
	Adaptation (A): sea level rise, animal migration .....	page 41
<b>New Mexico</b>	Energy Efficiency (A): 1) dairy management, 2) energy-efficient construction, 3) weatherization .....	page 12
	Renewables (A): solar builder seminar/home design .....	page 21
	Education (A): 1) commercial energy assistance, 2) irrigation efficiency, 3) institutional design assistance, 4) publications distributed, 5) summer energy camp .....	pages 24-25
<b>New York</b>	Cross-cutting (A): energy resource plan, energy research and development .....	pages 8-9
	Energy Efficiency (A): 1) energy star, 2) expanding energy efficiency standards program, 3) energy research .....	page 1
	Utility (A): competitive bidding program, consumer assistance .....	page 18
	Education (A): energy advisory service .....	page 25
	CFC (L): eliminating CFC sales .....	page 38
<b>North Carolina</b>	Education (A): energy audits, demand-side workshops .....	page 25
<b>Northeastern States</b>	Transportation (A): regional gasoline evaporation control agreement .....	page 31
<b>North Dakota</b>	Forestry (A): tree planting .....	page 35
<b>Ohio</b>	Education (A): weatherization .....	page 26
<b>Oregon</b>	Broad-based (L): greenhouse gas reductions .....	page 2
	Broad-based (A): global warming task force .....	page 3
	Cross-cutting (A): energy plan .....	page 9

	Energy Efficiency (A): conservation report, residential energy efficiency project, energy-efficient manufactured housing .....	pages 13-14
	Utility (A): environmental externalities, least-cost planning, ratemaking incentives .....	page 18
	Education (A): energy-efficient home construction video, schools efficiency task force .....	page 26
	Transportation (A): economic incentives for transportation efficiency .....	page 31
	CFC (L): CFC recycling and recovery .....	page 38
	Adaptation (L) and (A): wetland planning (L), land conservation (A) .....	pages 41-42
<b>Pennsylvania</b>	Energy Efficiency (A): expanding state energy efficiency programs .....	page 14
	Utility (L): power demand and power use projections .....	page 16
<b>Southern Growth Policy Board</b>	Broad-based (A): global warming policy planning .....	page 3
<b>South Carolina</b>	Broad-based (A): climate change adaptation .....	page 4
<b>Texas</b>	Broad-based (A): climate change policy .....	page 4
	Transportation (L): Alternatively fueled school buses .....	page 30
	Transportation (A): Airport energy efficiency .....	page 31
<b>Vermont</b>	Cross-cutting (A): energy conservation executive order .....	page 9
	Energy Efficiency (A): building energy efficiency .....	page 14
	Utility (A): regulatory reforms .....	page 18
	Renewables (A): energy initiatives .....	page 21
	Transportation (A): van purchases, downsizing fleets .....	page 31
	CFC (L): CFC recovery and recycling, CFC sales ban .....	page 39
<b>Washington</b>	Energy Efficiency (A): 1) electric motor research, 2) energy codes, 3) energy edge/governor's energy team, 4) energy partnerships .....	page 14
	5) energy savings for non-profits, 6) school energy saving, 7) lighting design lab, 8) energy-efficient appliances, 9) housing demonstration, 10) waste heat use, 11) cogeneration, 12) Washington environment 2010 .....	page 15
	13) telecommuting .....	page 16
	Utility (L): residential construction and energy conservation .....	page 16
	Renewables (A): bioenergy .....	page 21
	Education (A): education and training, climate change education programs, partnership program for low-income .....	pages 26-27
	Transportation (A): school bus routing and fuel conservation .....	pages 31-32
<b>Wisconsin</b>	Utility (A): utility regulation .....	page 19
	Renewables (A): alternative fuel vehicles .....	page 21
	CFC (L): CFC recycling equipment .....	page 39

# SUBJECT INDEX

Adaptation: .....	4, 41-42
Advisory Council on Energy Efficiency Research: .....	23
Aerosols: .....	37-39
Aerospace Industry and CFC Use Rules: .....	37
Agriculture and Energy Conservation: .....	1-2, 4, 9, 23
Air Conditioners and CFCs: .....	3, 37-39
Air Discharge Permits: .....	1, 33
Airport Energy Efficiency: .....	31
Alternative Energy Use/Production: .....	5-7, 23-24, 31
Alternative Fuels	
General: .....	2, 4-6, 10, 13
and School Buses: .....	30
Appliances and Energy Efficiency: .....	1, 5, 14-15, 18, 23
Audits, Energy: .....	9-12, 17-18, 24-26
Bank, Energy: .....	9-10
Bidding, Competitive: .....	8, 18
Bioenergy/Biomass Technology: .....	2, 21
Building Standards; and Energy Conservation .....	2, 5-6, 9-12, 15-16, 19-26
Buses, Natural Gas Powered: .....	30
Business Energy Tax Credit: .....	31
Business/Industrial Sector Responses to Climate Change: .....	3, 8-10, 13, 14, 24, 31
Camps, Energy: .....	24-25
Car Care Clinics: .....	6
Carbon Sequestration: .....	33-35
CFCs	
and Aerosol Sales: .....	37-39
and Aerospace Industry Rules: .....	37
and Air Conditioners: .....	3, 37-39
Container Sizes: .....	37-39
and Coolant Sales: .....	37-39
Emissions Standards: .....	37-39
and Foam/Polystyrene Products: .....	37-39
General: .....	3, 37-39
and Recycling: .....	3, 37-39
and Taxes: .....	38
Clean Power Rules: .....	21
Clearinghouse on Energy Efficiency: .....	26
Climate Change	
Business/Industry Responses to: .....	3, 8-10, 13, 14, 24, 31

Impacts of: .....	1-4
and Policy Options: .....	1-4
Reduction Strategies: .....	1-4
<b>CO<sub>2</sub></b>	
Emissions/Reduction: .....	2, 11, 14-15, 17-19, 25, 31, 33, 35
Fees: .....	33
Coal/Mineral Mines, Reclamation: .....	35
Coastal Erosion: .....	41-42
Codes, Energy: .....	14
Costs, Energy: .....	9, 15
Cogeneration: .....	10, 15-16
Competitive Bidding: .....	8, 18
Computer Software: .....	12, 15, 25
Consumer Assistance: .....	18, 26
Coolants and CFCs: .....	37-39
Cooperatives, Electric: .....	25
Database, Energy Efficiency: .....	14, 26
Demand/Supply Side Technology Management: .....	10-11, 16
District Heating: .....	15
Economic Impacts of Energy Conservation: .....	8, 31
Education/Technical Assistance: .....	3, 7, 12, 21-27
Electric Motors: .....	14
Electrotechnology: .....	24
Emissions	
CFC: .....	37-39
CO <sub>2</sub> : .....	2, 11, 14-15, 17-19, 25, 31, 33, 35
Tailpipe: .....	6-7
and Vehicle Testing: .....	30
<b>Energy</b>	
Audits: .....	9-12, 17-18, 24-26
Bank: .....	9-10
and Building Standards: .....	2, 5-6, 9-12, 15-16, 19-26
Camps: .....	24-25
Codes: .....	14
Costs: .....	9, 15
Management: .....	5, 12, 23
Partnerships: .....	14, 23
Plans: .....	5, 8-9, 12, 15
Projects and Legal Aspects: .....	23
Rating System: .....	10
Recapture: .....	13

Solar: .....	8, 19-21, 31
Taxes: .....	8
Use/Saving and State Facilities: .....	9, 13-14
Workshops on Auditing: .....	25
<b>Energy Conservation</b>	
and Economic Impacts: .....	8, 31
Videotapes: .....	23, 25-26
<b>Energy Efficiency</b>	
Advisory Research Council: .....	23
and Airports: .....	31
and Appliances: .....	1, 5, 14-15, 18, 23
Clearinghouse: .....	26
Database: .....	26
and Farm Technology: .....	11, 23
General: .....	1-3, 5-16, 21-26
Landscaping: .....	34
Measures: .....	19
Erosion, Coastal: .....	41-42
Estuary Management: .....	41
 Farm Technology and Energy Efficiency: .....	 11, 23
Farmland Reforestation: .....	34
Fleet Conversions: .....	29-32
Foam/Polystyrene Products: .....	37-39
Forest Health Monitoring: .....	35
Forested Windbreaks: .....	34
Forestry: .....	2-4, 12, 33-35
Fuel Efficiency and Monetary Costs: .....	9, 15, 29
Fuel Type Interaction: .....	8
 Gas Producing Turbine: .....	 16
Gasoline Conversion Costs: .....	29
Gasoline Evaporation Control: .....	31
Gasoline Tax: .....	3, 5, 29
Generator, Wood Gassification: .....	21
Grants, Reforestation: .....	34
Growth Management: .....	3, 30
 Halon, Restrictions on: .....	 38
Hardwood Forest Regeneration: .....	34
Heating Program: .....	7
Hydropower: .....	20

Integrated Resource Planning: .....	8
Insulation and Energy/Monetary Savings: .....	17
Irrigation Projects and Energy Conservation: .....	11, 23, 25
Land/Resource Management: .....	2, 34, 41
Least Cost Planning: .....	2, 18
Legal Aspects of Energy Projects: .....	23
Load Management: .....	9, 16
Low Income Weatherization Assistance Programs: .....	7, 26
Low Volatility Gas: .....	31
Management, Energy: .....	5, 12, 23
Manure Digester as Renewable Energy Source: .....	21
Migration Routes, Plant/Animal: .....	3, 41-42
Natural Gas	
Powered Buses: .....	30
Supplies: .....	8
Off Peak Transit: .....	29
Paratransit: .....	29
Partnerships, Energy: .....	14, 23
Photovoltaics: .....	8, 20, 22
Parking Garage Assessment: .....	29
Plant/Animal Migration Routes: .....	3, 41-42
Policy Options for Climate Change: .....	1-4
Plans, Energy: .....	5, 8-9, 12, 15
Planting, Trees: .....	1-2, 12, 33
Publications: .....	25-26
Public Transportation: .....	29
Radioactive Waste Management: .....	8
Rating System, Energy: .....	10
Recapture of Energy: .....	13
Reclamation, Coal/Mineral Mines: .....	35
Recycling and CFCs: .....	3, 37-39
Reforestation	
and Volunteer Programs: .....	35
of Farmland: .....	34
Grants: .....	34
with Hardwoods: .....	34
Renewables	

and Biomass Technology: .....	2, 21
General: .....	2, 16-17, 19-21, 25
and Manure Digesters: .....	21
Research Centers, University: .....	1, 3, 6, 13, 15, 23
Retrofits: .....	22
Return on Investment: .....	16
Rideshare Program: .....	31
Routing of School Buses: .....	7, 31
Rural Electric Cooperatives: .....	6, 25
School Buses	
and Alternative Fuels: .....	30
and Routing: .....	7, 31
Sea Level Rise	
and Economics: .....	3, 41-42
General: .....	2-3, 41-42
Shuttles, Urban Center Loop: .....	29
Software, Computer: .....	12, 15, 25
Solar Energy: .....	8, 19-21, 31
Soil Protection: .....	2, 34, 41
Shoreline Erosion: .....	41
State Facilities and Energy Use: .....	9, 14-15
Tailpipe Emissions Standards: .....	6-7
Taxes	
Business Energy Credit: .....	31
and CFCs: .....	38
Energy/Environmental: .....	8
Gasoline: .....	3, 5, 29
Technology Management, Demand/Supply Side: .....	10-11, 16, 25
Telecommuting: .....	7, 16, 30-32
Traffic Management/Signals: .....	7, 29
Transportation	
General: .....	2-3, 6, 8, 29-32
Off Peak: .....	29
Paratransit: .....	29
Public: .....	29
Tree Planting: .....	1-2, 12, 33
Turbine, Gas Producing: .....	16
University Research Centers: .....	1, 3, 6, 13, 15, 23-24
Urban Center Loop Shuttles: .....	29
Urban Community Forests: .....	34

## Utilities

General: .....	11-13, 16-19
and Ratemaking Incentives: .....	18
and Sales/Profits: .....	9

Van Pooling: .....	31
--------------------	----

## Vehicles

and Emissions Testing: .....	30
and Occupancy Levels: .....	29

Videotapes, Energy Conservation: .....	23, 25-26
--	-----------

Waste Heat: .....	15
-------------------	----

Waste Management, Radioactive: .....	8
--------------------------------------	---

Water Resources, Protection of: .....	3-4
---------------------------------------	-----

## Weatherization

General: .....	7, 11-12, 14, 22-23, 25-26
----------------	----------------------------

Low Income Programs: .....	7, 26
----------------------------	-------

Wetland Planning: .....	41-42
-------------------------	-------

Wind Power: .....	31
-------------------	----

Wood Gassification Generator: .....	21
-------------------------------------	----

Workshops, Energy Auditing: .....	25
-----------------------------------	----

