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EVALUATING U.S. STATES' CLIMATE CHANGE INITIATIVES

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This paper evaluates sub-federal efforts to mitigate climate change in the United States through a range of climate-relevant initiatives, identifying principal trends and detailing climate-relevant initiatives in several states. These strategies include renewable electricity mandates, State and regional greenhouse gas emissions inventories, mandatory greenhouse gas emissions reporting, State greenhouse gas emissions caps, greenhouse gas emissions reductions from motor vehicles, and greenhouse gas emissions cap-and-trade programs for electric generation in several States.

Many municipalities in the United States are also pursuing a range of climate-relevant initiatives, those actions are beyond the scope of this paper, but it should be noted they also influence state and national consideration of climate-relevant initiatives in the United States.

I. INTRODUCTION

In March 2001, the United States announced it would not ratify the Kyoto Protocol of the United Nations Framework Convention on Climate Change, citing significant adverse economic costs, and the lack of legally binding quantitative targets for developing countries. In February 2002, the United States announced a revised climate change policy focusing on emission intensity, measured by units of greenhouse gas emissions per unit of Gross Domestic Product, with a new greenhouse gas emissions reduction target of 151

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tonnes of emissions per million dollars of GDP by 2012, from a current level of 183 tonnes of emissions per million dollars of GDP, yielding a net reduction of 18 percent.

The February 2002 Climate Initiative was greeted with derision by many critics, who dismissed it as patently inadequate to the threat posed by global warming and challenged the Bush Administration for renegeing on a election campaign commitment by opposing the Kyoto Protocol, while offering no alternative path to protect the planet.

The International Energy Agency estimates that over the next decade (2000-2010) the United States would have a decrease in carbon intensity of energy related carbon dioxide emissions of 15.5 percent, making the revised energy intensity related emission decrease of 18 percent, rather modest.² The General Accounting Office (GAO), an independent legislative investigatory agency of Congress, analyzed the February 2002 Climate Initiative, and reached similar conclusions. Specifically, GAO concluded that the 18 percent reduction target touted in the February 2002 Climate Initiative includes 14 percent reductions already anticipated in pending regulatory actions and noted it “did not find a specific basis or rationale for the administration’s decision to establish a 4 percentage point reduction goal beyond the already expected reductions.”³

Apart from the limitations of the February 2002 Climate Initiative itself, many critics, including several States, have challenged its reliance on the voluntary reporting of greenhouse gas emissions under Section 1605(b) of the Energy Policy Act of 1992, citing shortcomings in the design, reporting and verification of the resulting greenhouse gas inventory. Exacerbating the uncertainty, the Department of Energy, responsible for administering Section 1605(b), withdrew a separate proposal outlining various options for tradable emissions credits under the voluntary reporting of greenhouse gas emissions reductions under Section 1605(b), after critics challenged the Department of Energy’s legal authority for implementing such a trading mechanism.⁴ This further encouraged State efforts to develop rigorous and verifiable greenhouse gas emissions inventories that could

² International Energy Agency, *Beyond Kyoto: Energy Dynamics and Climate Stabilisation* OECD/IEA 2002 at 71. The carbon intensity of the US economy has declined 14.9 percent over the last decade (1990-2000), an average decline of 1.5 percent annually. Assuming economic growth of 3 percent per annum over the next decade, and carbon dioxide emission growth of 1.5 per annum over the next decade, the IEA estimates that the United States would have a decrease in carbon intensity of energy related carbon dioxide emissions of 15.5 percent, making the revised energy intensity related emission decrease of 18 percent, rather modest. Id.

³ “GAO Derides Bush’s Climate Initiative Goals” *The Electricity Journal* (November 2003) p. 12. General Accounting Office, *Climate Change: Trends in Greenhouse Gas Emissions and Emissions Intensity in the United States and Other High-Emitting Nations* GAO-04-146R.

⁴ “DOE Drops Plan for Tradable Credits” *The Electricity Journal* (January/February 2004) p. 6.

be utilized in future regional or national greenhouse gas emission reduction trading systems.

In 2002, U.S. emissions of greenhouse gases totaled 6,862.0 million metric tons carbon dioxide equivalent, an increase of 10.9 percent greater than in 1990, with carbon dioxide emissions accounting for 84.5 percent of total U.S. greenhouse emissions (5,795.6 million metric tons).

II. STATE CLIMATE RELEVANT INITIATIVES

The March 2001 withdrawal of the United States from the Kyoto Protocol and concerns about the inadequacies of the February 2002 Climate Initiative prompted range of responses by State governors, legislatures and executive agencies across the United States.

Several States supported the March 2001 withdrawal from the Kyoto Protocol. Michigan, Wyoming, West Virginia, Pennsylvania, North Dakota, Colorado, and Alabama, passed resolutions, appropriations, or laws specifically urging rejection of the Kyoto Protocol and prohibiting any actions, including developing greenhouse gas emission inventories, facilitating the implementation of mandatory greenhouse gas emission reduction requirements. For example, the State of Michigan specifically prohibited state regulatory agencies from engaging in any activities that could leave to implementation of the Kyoto Protocol.⁵ These States economies are particularly carbon intensive, with large coal production, heavy manufacturing industries, and transportation related manufacturing. In enacting such prohibitions, many elected officials expressed fears regarding the significant structural costs complying with implementation of the Kyoto Protocol.⁶

Other States have vigorously opposed the March 2001 withdrawal from the Kyoto Protocol. Since 2002, 90 bills or resolutions, creating the framework or requiring outright the regulation of carbon dioxide emissions from various economic sectors have been

⁵ See Barry G. Rabe, *Greenhouse & Statehouse, The Evolving State Government Role in Climate Change* 7 (November 2002) at 7. By late 2002, sixteen states have passed resolutions urging the U.S. Senate not to ratify the Kyoto Protocol, and Michigan recently passed a law preventing its state agencies from proposing rules or regulations to reduce greenhouse gas emissions without legislative approval.

⁶ Susan Joy Hassol & Randy Udall, *A Change of Climate, Issues in Science and Technology* (Spring 2003).

introduced in 24 State legislatures.⁷ More than 20 States and 200 cities have adopted symbolic, voluntary or comprehensive measures intended to reduce greenhouse gas emissions.⁸ Other State climate relevant strategies include renewable electricity mandates, State and regional greenhouse gas emissions inventories, mandatory greenhouse gas emissions reporting, State greenhouse gas emissions caps, greenhouse gas emissions reductions from motor vehicles, and greenhouse gas emissions cap-and-trade programs for electric generation in several States.

And some States have challenged the March 2001 withdrawal from the Kyoto Protocol in court, arguing that under existing federal law, specifically the Clean Air Act, the United States Environmental Protection Agency has an existing obligation to regulate and limit emissions of carbon dioxide, methane and other greenhouse gases.⁹

Continued criticism of the Bush Administration's March 2001 from the Kyoto Protocol has found representatives of the Bush Administration in the increasingly awkward of position of relying upon State climate-relevant initiatives, which the Bush Administration largely opposes domestically, as refute allegations that the United States Federal government is "not taking climate change seriously and has been acting "unilaterally" in its approach because of its rejection of the Kyoto Protocol":

The U.S. has in place more than 60 federal (and many more State) programs—some mandatory, some incentive-based, and some voluntary—that will help to slow the growth in U.S. GHG emission over the next decade and beyond.¹⁰

Understandably, to an outside observer it may appear that little if any substantive climate-relevant initiatives are being developed or implemented in the United States or its political subdivisions. That would be misleading. Under the Federal-State distribution of sovereign authority under the United States Federal Constitution, States enjoy considerable discretionary authority, independent of the federal branches of government. States can address sources of greenhouse gas emissions within their boundaries directly in many instances, despite inaction by Congress and the White House, by acting in critical policy

⁷ Jennifer 8. Lee, *The Warming is Global But the Legislating, in the U.S., Is All Local*, *The New York Times* October 29, 2003. According to the American Legislative Exchange Council, sixty-six bills requiring the regulation of carbon dioxide were introduced in 2001 and 2002. Id.

⁸ David Olsen, *State Climate Change Initiatives: Creation of the California Climate Action Registry*, Wirth Chair in Environmental and Community Development Policy Graduate School of Public Affairs University of Colorado (April 2003) at 2-3.

⁹ Joshua Chaffin, *US States File Lawsuit Over Greenhouse Emissions*, *The Financial Times* October 24, 2003 at 3.

¹⁰ Harlan L. Watson, Senior Climate Negotiator and Special Representative in the U.S. Department of State, *Climate Policy in the U.S.*, Second Annual Brussels Climate Change Conference May 11, 2004. At <http://www.useu.be/ClimateChange/May11094WatsonSpeech.html>.

areas that States either dominate or enjoy exclusive regulatory authority. These policy areas that States enjoy exclusive or least partial primary regulatory authority range from electricity generation and distribution; transportation planning and land use matters.¹¹ It is within these policy areas that many States are developing and implementing climate relevant initiatives. State climate relevant initiatives can be grouped roughly into the following categories:

- *Carbon Dioxide Emissions Limits on Electric Generation* – Oregon, Washington, Massachusetts and New Hampshire have either enacted legislation or adopted executive regulations limiting carbon dioxide emissions from fossil fuel-fired power plants.
- *Carbon Dioxide Emissions Limits on Vehicles* – California is promulgating executive regulations capping emissions from passenger vehicles and trucks starting with the 2009 model year (the Bush Administration and vehicle manufacturers are pursuing litigation to overturn).
- *Comprehensive Greenhouse Gas Emissions Reduction Goals* – Maine and New Jersey adopted specific targets, with New Jersey seeking to lower total emissions 3.5 percent below 1990 inventories, and Maine pursuing an initial reduction of lowering total emissions to 1990 inventories and an additional 10 percent by 2020.
- *Creation of Greenhouse Gas Emission Registries* – Some 12 States have created mechanisms for monitoring and reporting greenhouse gas emissions in either voluntary or mandatory programs to assist sources in quantifying such emissions in anticipation of future emissions trading schemes.¹²

In addition to exercising their available primary regulatory authority to develop climate relevant initiatives, several States are challenging the Bush Administration's March 2001 withdrawal from the Kyoto Protocol through litigation, asserting, notwithstanding the lack ratification by the United States, existing federal law imposes an obligation on the Bush Administration to develop and implement greenhouse gas emission mitigation measures. The States of Massachusetts, Connecticut, and Maine announced plans to

¹¹ Barry G. Rabe, *Greenhouse & Statehouse, The Evolving State Government Role in Climate Change* 7 (November 2002) at 1.

¹² David Olsen, *State Climate Change Initiatives: Creation of the California Climate Action Registry*, Wirth Chair in Environmental and Community Development Policy Graduate School of Public Affairs University of Colorado (April 2003) at 1. Those States include: California, Connecticut, Iowa, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Texas, Vermont, and Wisconsin.

challenge the U.S. Environmental Protection Agency's decision¹³ that it lacked legal authority to regulate emissions of carbon dioxide and other greenhouse gases from motor vehicles under the Clean Air Act, stating "[i]n the face of continued inaction, we, at the state level, have no choice but to use the remedies available to us to fill the void left at the federal level...[.]"¹⁴

III. REGIONAL INITIATIVES

Several States are pursuing joint climate relevant initiative strategies, building upon existing or previous collaborative efforts to address the transport of air pollution across state boundaries, including ozone and particulate matter. The Northeast and Pacific Coast have organized efforts with slightly differing climate initiative objectives, but with the intention of leveraging their joint efforts. Comprehensive regional climate initiatives avoid the limitations and shortcomings of decentralized, individual State climate relevant initiatives by developing uniform policies tailored to the particular greenhouse gas emission sources while providing sufficient resources and technical expertise to implement such measures.¹⁵ Several regional climate initiatives are outline below.

Conference of New England Governors and Eastern Canadian Premiers

The Conference of New England Governors and Eastern Canadian Premiers adopted a regional climate action plan (NEG/ECP Climate Action Plan) encompassing the States of Connecticut, Maine, Massachusetts, New Hampshire, Vermont and the Canadian Provinces of Quebec, New Brunswick, Nova Scotia, Newfoundland, and Prince Edward Island, committing the region to stabilizing aggregate GHG emissions at 1990 levels by

¹³ U.S. Environmental Protection Agency, *Control of Emissions From New Highway Vehicles and Engines, Notice of Denial of Petition for Rulemaking*, 68 Fed.Reg. 52922 (September 8, 2003).

¹⁴ State of Massachusetts, *Press Release from the Office of Attorney General Tom Reilly, "State Attorneys General: Bush Administration is Legally Obligated to Address Carbon Dioxide, Global Warming,"* January 30, 2003.

¹⁵ Kenneth A. Colburn, Executive Director, Northeast States for Coordinated Air Use Management (NESCAUM), Testimony before the United States Senate Committee on Commerce, Science, and Transportation, Hearing on the Impacts of Climate Change and States' Action (May 6, 2004).

2010, then to be followed by a 10 percent reduction below 1990 levels by 2020 and additional reductions thereafter.¹⁶ The NEG/ECP Climate Action Plan includes:

- Establishing a standardized regional GHG emissions inventory;
- Establishing a plan for reducing GHG emissions and conserving energy;
- Promoting public awareness;
- Leading by example by reducing public sector GHG emissions by 25 percent by 2012;
- Reducing electricity sector GHG emissions by reducing carbon dioxide emissions per megawatt-hour by 20 percent by 2025;
- Reducing total energy demand by 20 percent by 2025 through conservation and increased energy savings;
- Mitigating and adapting to negative social, economic, and environmental impacts of climate change;
- Reducing growth in transportation sector GHG emissions; and
- Establishing a regional GHG emissions registry and exploring future GHG trading.

The Committee on the Environment of the Conference of New England Governors and Eastern Canadian Premiers has coordinated various planning activities to develop a comprehensive regional greenhouse gas emission inventory, a regional registry, and identify greenhouse gas emission reduction strategies, including incentives for adding ‘green’ vehicles to state and provincial motor fleets, replacing street lighting with LED fixtures and other energy efficiency investments.¹⁷

Regional Greenhouse Gas Initiative

Governor Pataki of New York proposed expanding the scope of regional greenhouse gas emissions reductions offered in the New England Governors and Eastern Canadian Premiers Climate Change Resolution, inviting Governors from New England and Mid-Atlantic States to commit to developing a comprehensive greenhouse gas emissions reduction strategy for fossil fuel-fired electric generating facilities and other emissions

¹⁶ Conference of New England Governors and Eastern Canadian Premiers, Resolution 27-7, *Resolution Concerning Climate Change*, August 2001. See www.cap-cpma.ca/reports_08_2002/27-7_climate_change_e.pdf.

¹⁷ The Committee on the Environment and the Northeast International Committee on Energy, *Draft Report to New England Governors and Eastern Canadian Premiers on Climate Change Projects* (August 2003).

sources. Expressions of interest from the Governors of Connecticut, Vermont, New Hampshire, Delaware, Maine, New Jersey, Pennsylvania, Massachusetts and Rhode Island led to the launch of the Regional Greenhouse Gas Initiative.¹⁸ The State Regional Greenhouse Gas Initiative is a cooperative venture to design a regional cap-and-trade program, initially focusing upon carbon dioxide emissions from fossil fuel-fired electric generating facilities within the 10 State region, beginning in April 2005. RGGI may eventually include additional participating states, as representatives from Maryland, Pennsylvania and the Canadian provinces of New Brunswick are observing the process.¹⁹

Pacific Coast Climate Initiative (California, Oregon, Washington)

Meanwhile, along the Pacific Coast, the Governors of California, Oregon, and Washington announced joint executive actions to require regional cooperation on the feasibility of utilizing the states' combined purchasing power to obtain fuel-efficient vehicles (including hybrid vehicles), equip them with lower rolling resistance tires to further improve fuel economy; reduce diesel fuel emissions in transportation hubs for heavy trucks and shipping along the Pacific seaboard; harmonize energy efficiency standards to specifically leverage GHG emissions reductions; and develop regional GHG inventories and reporting protocols.²⁰

During a recent energy summit organized by the Western Governors Association, California Governor Arnold Schwarzenegger and New Mexico Governor Bill Richardson announced a joint proposal to Western Governors' Association membership, challenging them "to develop at least 30,000 MW of clean energy in the West by 2015, and to increase the efficiency of energy use by 20 [percent] by 2020."²¹

¹⁸ New York Governor George E. Pataki, *Governor Calls on Northeast States to Fight Climate Change* (April 25, 2003).

¹⁹ Regional Greenhouse Gas Initiative, *An Initiative of the Northeast & MidAtlantic States of the United States*. See www.rggi.org. "The action plan calls for a learning phase and two program development phases. The learning phase, which is to be completed by the end of March 2004, consists of sharing recent state experiences relating to the control of carbon emissions; scheduling of targeted expert briefings on relevant topics; and determining what legal mechanism will be required to implement the program for each state (legislative or administrative rulemaking)." *Id.* See also Douglas Smith & Kyle Danish, *Climate Change: The Heat is On – From Reporting to Trading, Utilities Try to Meet New Expectations*, *Public Utilities Fortnightly* (January 2004) at 54.

²⁰ Oregon Climate Change Initiative, *Statement of the Governors of California, Oregon, and Washington on Regional Action to Address Global Warming* (September 22, 2003).

²¹ Text of Letter from Governor Schwarzenegger and Governor Richardson to Western Governors' Association (April 12, 2004). See www.governor.ca.gov/state/. (Accessed April 18, 2004).

While these varied State greenhouse gas emissions reduction initiatives are intriguing, they face significant obstacles to making meaningful reductions in greenhouse emissions, not the least of which is an increasingly hostile and obstinate Bush Administration coordinating closely with representative from carbon-intensive economic sectors. There is also a more immediate, if mundane, obstacle to achieving significant greenhouse gas emissions reductions through state climate initiatives. The vast majority of these measures lack dedicated sources of revenues in annual state budgets, leaving them to compete for financing against other social priorities with established constituencies and bipartisan political support during an extended period of fiscal austerity in the majority of States.

California

California is pursuing multiple efforts to curb greenhouse gas emissions, and is one of the few States pursuing significant reductions from the politically sensitive transportation sector with an ambitious carbon dioxide emissions reduction requirement slated to begin in 2009.

In 2002, California enacted legislation, Assembly Bill 1493, limiting emissions from passenger vehicles starting with the 2009 model year, “that achieve the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and any other vehicles[.]”²² The initial technical feasibility assessment for AB 1493 indicates carbon dioxide emissions reductions of 20% or greater can be achieved for most classes of standard passenger vehicles with modest cost and break-even points of 3-4 years, while light and medium trucks have higher costs, longer break-even periods, and lower carbon dioxide emissions reductions and alternative-fuel vehicles (with the exception of certain hybrids) are not cost effective.²³

States are usually prohibited from enacting such requirements that could widespread impact through the national economy under the US. Constitutional doctrine known as Federal Preemption, however, in this instance California is exploiting unique discretionary

²² Cal. Stat. § 42823, AB 1493 (2002). AB 1493 requires the California Air Resources Board to develop and adopt the required regulations by January 1, 2005, and applied to motor vehicles starting with the 2009 model year.

²³ California Air Resources Board, *Draft Technology and Cost Assessment for Proposed Regulations to Reduce Vehicle Climate Change Emissions Pursuant to Assembly Bill 1493* (April 1, 2004), See www.arb.ca.gov/ (Accessed April 15, 2004).

authority allotted to California under the federal Clean Air Act, to enact pollution control regulations that would otherwise be preempted under federal law as the exclusive prerogative of the federal government. Both the Bush Administration and vehicle manufacturers allege the State of California exceeded such discretionary latitude under the federal Clean Air Act when enacting Assembly Bill 1493, and vehicle manufacturers and the Bush Administration are closely coordinating legal challenges intended to prevent its implementation.

California also adopted an aggressive renewable portfolio standard, requiring electricity providers to diversify energy sources beyond existing fossil fuel, nuclear and hydroelectric resources and increase utilization of include biomass, solar thermal, photovoltaics, wind, geothermal, fuels cells – with renewable derived generation, small scale hydroelectric, landfill/digester gas, ocean wave, ocean thermal, and tidal current generating resources from 1 percent by 2003 to 20 percent by 2017 and thereafter.²⁴ This is a particularly aggressive diversification requirement, and particularly challenging for California energy producers since existing renewable resources provided 12.9 percent or 23,680,568 MWh in 2002, requiring significant additional investment and siting challenges to achieve the 2017 target.²⁵

The California Energy Commission is also developing regulations to administer the California Climate Action Registry, a comprehensive greenhouse gas emissions inventory, which will include industry sector “best practices”, quantification and reporting protocols – including an electronic reporting mechanism (California Action Registry Reporting Online Tool).²⁶

The California Climate Action Registry will also facilitate best management practices and incorporation of conservation principles of native forest reservoirs to assist in the attainment of carbon emission reduction goals and reporting.²⁷

²⁴ California Legislature SB 1078 (Enacted September 12, 2002). Requires the California Energy Commission and California Public Utilities Commission to coordinate implementation of the standard.

²⁵ Energy Information Administration, *California Energy Profile, Table 5. Electric Power Industry Generation of Electricity by Primary Energy Source, 1993, 1997, and 2002 (Megawatthours)*.

²⁶ David Olsen, *State Climate Change Initiatives: Creation of the California Climate Action Registry*, Wirth Chair in Environmental and Community Development Policy Graduate School of Public Affairs University of Colorado (April 2003).

²⁷ Cal. Stat. § 42801.1 et seq., SB 812 (2002).

Connecticut

In the State of Connecticut a stakeholder dialogue convened by Governor Rowland developed a series of recommended measures to reduce greenhouse gas emissions in agricultural, forestry, energy, waste, transportation, residential, commercial, and industrial sectors, achieving roughly 70 percent of the emission reductions needed between Connecticut baseline emissions through 2020 and the applicable Conference of New England Governors and Eastern Canadian Premiers reduction targets.²⁸

The Governor's Steering Committee (including representatives from various Connecticut executive agencies – Departments of Environmental Protection, Public Utility Control, Transportation, Administrative Services, the Office of Policy and Management, and the Connecticut Clean Energy Fund) and Climate Change Coordinating Committee reviewed the recommended measures, and suggested that Governor Rowland endorse 38 of 55 measures for immediate State and regional adoption, with the remaining options either requiring further study, significant funding, or technological advancement. Using executive authority to implement several measures immediately, Governor Rowland introduced legislation to obtain the necessary legal authority to adopt the balance of the outstanding measures, with the Connecticut Senate approving the measure, which now awaits action in the lower chamber.²⁹

Massachusetts

On May 6, 2004, the State of Massachusetts released a integrated greenhouse gas emissions reduction strategy, the Massachusetts Climate Action Plan, establishing a near-term economy wide greenhouse gas emissions reduction target to 1990 levels by 2010, a 10 percent reduction from 1990 levels by 2020, and a long-term greenhouse gas emissions target “to eliminate any dangerous threat to the climate; current science suggests this will require reductions as much as 75-85 [percent] below current levels.”³⁰

²⁸ Peter Wortsman and Jonathan Raab, Raab Associates, Ltd., *Implementing the New England Governor's/Eastern Canadian Premier's Greenhouse Gas Reduction Targets* (2004). Conference of New England Governors and Eastern Canadian Premiers, Resolution 27-7, *Resolution Concerning Climate Change*, August 2001. See www.cap-cpma.ca/reports_08_2002/27-7_climate_change_e.pdf.

²⁹ Connecticut Governor Rowland issued an executive order requiring increasing percentages of energy purchases for state facilities be derived from renewable energy resources: 20 percent in 2010; 50 percent by 2020; and 100 percent by 2050. Id.

³⁰ Massachusetts Climate Protection Plan (2004) at 8. See www.mass.gov/ocd.

Massachusetts followed electric restructuring reform with a renewable portfolio standard in the 1990s setting the stage for a multi-pollutant emissions reduction control strategy from fossil fuel-fired power plants. The Massachusetts Electric Restructuring Act also required electricity providers to disclose to all consumers total emissions, including carbon dioxide emissions, from their generating sources and compare those emissions to a lower emitting new electric generating facility.³¹

After electric restructuring reforms resulted in increased utilization of higher polluting, in April 2001, Massachusetts enacted a regulatory multi-pollutant cap that requires six existing fossil fuel-fired power plants to reduce their CO₂ emissions by ten percent relative to 1997-1999 levels by 2006 or 2008, depending on the method of compliance chosen.³² Aggregate carbon dioxide emissions from the existing fossil fuel-fired power plants average nearly 2,200 pounds CO₂/MWh, but must be reduced by 1,800 pounds CO₂/MWh for an estimated carbon dioxide emissions reduction of between 2 and 4 million tons, depending on whether they are direct reductions at the existing facilities, through emissions trading, or reduced operations.³³

Maine

The State of Maine adopted the New England Governors and Eastern Canadian Premiers Regional Climate Action Plan reduction targets into state law, requiring the Maine Department of Environmental Protection to prepare a detailed greenhouse emission reduction plan and submit it to the Maine State Legislature by October 15, 2004.

³¹ Massachusetts Department of Telecommunications and Energy. 220 CMR 11.00: *Rules Governing The Restructuring Of The Electric Industry*. Ordered (February 20, 1998). Establishes customer information disclosure requirements for electricity providers. The legislation, passed as part of a broader electricity restructuring package, requires a disclosure label showing electricity customers information on the price, resource mix and emissions in a uniform format. The provisional rule requires the disclosure of carbon dioxide (CO₂), nitrogen oxide (NO_x), and sulfur dioxide (SO₂). Electricity providers must show emissions as a percentage of the New England regional average emission rate and also compare to emissions from a new power unit (as determined in consultation with the Massachusetts Department of Environmental Protection).

³² Massachusetts DEP Regulation 310 CMR 7.29. Rule issued April 23, 2001. Requires the six highest-polluting power plants in Massachusetts to meet overall emission limits for NO_x (1.5 lbs/MWh) and SO₂ (3.0 lbs./MWh) by October 1, 2004 and begin immediate monitoring and reporting of mercury emissions. For the six affected plants, the rule caps total CO₂ emissions and creates an emission standard of 1,800 lbs. of carbon dioxide per megawatt-hour (a reduction of 10% below the current average CO₂ emissions rate). The CO₂ limits must be met by October 1, 2006 or October 1, 2008 for plant retrofit or replacement. Plant operators may meet the standard either by increasing efficiency at the plant, or by purchasing credits from other CO₂ reduction programs approved by the DEP.

³³ Massachusetts Department of Telecommunications and Energy, Massachusetts Department of Environment, <http://www.state.ma.us/dep>. See also Pew Center on Climate Change.

Greenhouse emissions reduction are being sought from buildings, facilities, and manufacturing; forestry and agriculture; electricity generation and solid waste; and, transportation and public land use.³⁴

Maine adopted an initial carbon dioxide emissions reduction target of lowering total emissions to 1990 inventories and an additional 10 percent by 2020. In 1990, energy related carbon dioxide emissions of 4.88 million metric tons carbon equivalent (MMTCE).³⁵

Maine adopted a Renewable Resource Portfolio requirement under a 1997 electric utility restructuring law, obligates electric providers to provide at least 30 percent of their total retail electric sales in Maine from biomass, municipal solid waste, tidal power, photovoltaics, wind geothermal, hydroelectric resources with certain size and capacity requirements.³⁶

Ironically, while the Maine Renewable Resource Portfolio requirement of 30 percent is the most aggressive diversification requirement in the United States, it is actually lower than the amount of existing renewable resources utilized in Maine, which could jeopardize some marginal cost renewable resources, unless a regional renewable credit exchange system, one has been proposed, is adopted.³⁷

Minnesota

In Minnesota, the State Legislature and executive agencies began investigating carbon emission reduction strategies for various economic sectors and carbon sequestration in the 1990s. The State adopted a greenhouse gas emission intensity reduction goal of an 18 percent reduction in total emissions per dollar of State Gross Domestic Product by 2010, which would yield a 12-13 percent greenhouse gas emission reduction compared to business-as-usual.³⁸

³⁴ Maine 38 MRSA c. 3-A, LD 0845. “By 2006, the Department shall develop a long-term climate action plan for the State that provides for a method for reducing greenhouse gas emissions: (1) Reduction by 2010. To 1990 levels by 2010; (2) Reduction by 2020. By at least 10% below 1990 levels by 2020; and (3) Long-term reduction. Ultimately to a level that is 75% to 80% below 2003 levels. The plan must establish a date by which this reduction should be met.” Id.

³⁵ U.S. Environmental Protection Agency, *Energy Carbon Dioxide Inventories 1990-1999* (2003).

³⁶ Maine Public Utilities Commission Docket No. 98-619; 2002-494 (September 28, 1999), ME PUC 65.404, Ch. 311. 35-A M.R.S.A. § 3210 (LD 1804 Public 316).

³⁷ Database of State Incentives for Renewable Energy (March 25, 2004).

³⁸ Pew Center on Global Climate Change, *State Policy Solutions to Climate Change Workshop*, Chicago, Illinois (November 4-5, 2003) at 2-3.

Minnesota has also steadfastly pursued a comprehensive energy strategy to lessen the adverse environmental impacts of energy production, including significant investment and deployment of renewable energy and demand side management investments to diversify generating portfolio, but this strategy does not specifically target greenhouse gas emissions.³⁹

The Minnesota State Legislature enacted a carbon sequestration law, the Minnesota Releaf Program, which promotes and funds the planting of trees as a means to store carbon and save energy.⁴⁰ Funded through an environmental trust fund receiving revenues from oil overcharge penalties, the state lottery, and other sources, Minnesota Releaf financed 361 forestry projects, including tree planting, forest maintenance and inventories, between 1991 and 2001.⁴¹ The Minnesota Releaf Program is touted as a successful means to store carbon and save energy, but the economic recession in the United States has forced Minnesota, and many other States, to reduce funding for such leaving their future uncertain.

Separately, the Minnesota Public Utilities Commission, an independent state regulatory entity charged with overseeing state energy markets, including the generation, transmission and distribution of electricity within Minnesota, conducted an inquiry on the costs associated with carbon emissions from fossil fuel-fired electric utility power plants in Minnesota. The Commission eventually determined that a range of .30 - 3.10 \$/ton (1995 dollars) for carbon dioxide valuation for the global warming impacts/costs of carbon emissions from utility power plants was appropriate, after considerable public input and utilizing a damage-cost assessment prepared by the Minnesota Pollution Control Agency – apparently the first instance in the United States that economic valuation techniques were utilized to monetize the impacts of carbon dioxide emissions in a regulatory proceeding.⁴²

Minnesota's Oxygenated Fuel Standard, requiring most gasoline fuel to contain 2.7 percent oxygen by weight, for which gasoline suppliers elected to use ethanol to satisfy, is often cited as another carbon emission reduction measure (the use of ethanol does decrease carbon emissions from cars and light trucks) but its primary purpose is to reduce

³⁹ Id., at 4.

⁴⁰ Minnesota, Chapter 254, Article 2, Section 20 (1991).

⁴¹ Pew Center on Global Climate Change, Barry G. Rabe, *Greenhouse & Statehouse: The Evolving State Government Role in Climate Change* (November 2002) at 21-22.

⁴² Minnesota Public Utilities Commission. January 3, 1997. The Minnesota Public Utilities Commission voted to accept a .30 - 3.10 \$/ton (1995 dollars) of CO₂ valuation for the global warming impacts/costs of carbon emissions from utility power plants. They did so on the basis of a damage-cost assessment conducted by the Minnesota Pollution Control Agency – the first time in the country that economic valuation techniques have been used to establish damage costs from CO₂ emissions in a contested case. The values shall be updated using the Gross National Product Price Deflator Index as data becomes available from that index (Rule E-999/CI-00-1636, May 3, 2001).

emissions of complex hydrocarbons that contribute to the formation of ozone smog and particulate pollution.

Montana

Montana has pursued relatively modest efforts in carbon reductions, utilizing Universal System Benefits Program funding to subsidize specific renewable energy, energy efficiency, and funding projects.

Carbon sequestration through reforestation projects is being promoted through a quasi-public entity created by the Montana Legislature, the Montana Carbon Offset Coalition.⁴³

Nevada

Restructuring of energy markets, allowing competition amongst providers to benefit consumers with choices and hopefully new services, preoccupied many state legislatures throughout the 1990s with mixed results. The Nevada legislature included a Renewable Energy Portfolio Standard in its 1997 electric restructuring law.⁴⁴ While the California energy crisis prompted Nevada to delay implementation of the comprehensive restructuring legislation in 2000 and again in 2001, it did proceed with the Nevada Renewable Energy Portfolio Standard requires 5 percent of state's energy demand to be generated by renewable resources in 2003, increasing biannually by 2 percent, to 15 percent by 2013. In 2001 the Nevada Legislature increased the minimum renewable energy increments and specified that not less than 5 percent of renewable energy must be generated from solar renewable energy systems.⁴⁵

⁴³ Pew Center on Global Climate Change, Barry G. Rabe, *Greenhouse & Statehouse: The Evolving State Government Role in Climate Change* (November 2002) at 23.

⁴⁴ Nevada A.B. 366, NRS 704.7801, amended by S.B. 372 (2001) (Effective January 1, 2003). See also NAC 704.8831 – NAC 704.8893.

⁴⁵ Nevada S.B. 372 repealed NRs 704.989, enacting more rigorous renewable requirements, codified at NRS 704.7801 – 704.7828. See Nevada Public Utilities Commission of Nevada.

New Hampshire

New Hampshire enacted carbon emission reduction requirements for electric utility power plants in the context of multi-pollutant legislation requiring reductions of mercury, sulfur dioxide, nitrogen oxides, and carbon dioxide emissions, with a target of reducing carbon dioxide emissions 10 percent below 1990 levels by 2010.⁴⁶ The affected electric utility power plants may obtain carbon emission offsets through any federal or regional trading programs. Symbolically, the carbon dioxide emission reduction requirement is particularly significant, but its practical import is somewhat tempered the fact that reduced utilization of existing fossil fuel-fired electric generating units in New Hampshire has resulted in declining emissions below 1990 levels.

The multipollutant legislation builds on earlier efforts, including a New Hampshire voluntary greenhouse gas emission reductions registry as an incentive for voluntary emission reductions enacted in 1999.⁴⁷ Other carbon emission reduction initiatives include the New Hampshire Building Energy Conservation Initiative, offering energy efficiency analysis, improvement, and financing opportunities to manage energy and reduce waste and emissions in commercial and residential building design, construction and operation.

New Jersey

New Jersey developed an integrated greenhouse gas emissions reduction strategy that encompasses all aspects of economic activities across the State, establishing a greenhouse gas emissions reduction goal of 3.5 percent from 1990 levels by 2005.⁴⁸ Initial activities were almost exclusively limited to State activities and limited voluntary agreements with public- and private-sector organizations and regulatory initiatives.⁴⁹

The State of New Jersey also entered into agreements with several corporations and other institutions which pledge to reduce their greenhouse gas emissions. Public Service

⁴⁶ New Hampshire House Bill 284, signed May 2002.

⁴⁷ New Hampshire Senate Bill 159, signed 1999. Established a voluntary greenhouse gas emission reductions registry as an incentive for voluntary emission reductions. State Department of Environmental Services to study the potential for a similar registry for particulate matter.

⁴⁸ *New Jersey Executive Administrative Order* 1998-09 (March 1998).

⁴⁹ New Jersey Department of Environmental Protection New Rules (*N.J.A.C 7:27-30.2 and 30.5*), adopted April 17, 2000. Modifies Open Market Emissions Trading Rule for the generation and banking of greenhouse gas (GHG) credits. Greenhouse gases included in the rule are: carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); certain hydrofluorocarbons (HFC), certain perfluorocarbons (PFC); and sulphur hexafluoride (SF₆).

Enterprise Group (PSEG), the largest investor-owned electric utility serving New Jersey, agreed to such an agreement, with specific greenhouse gas emission reduction target of 15 percent from 1990 levels by 2005 from all its mix of coal, natural gas, and oil-fired electric generating facilities.⁵⁰

As part of New Jersey's comprehensive electric restructuring law enacted in 2001, all retail electric providers must provide 6.5 percent of their energy from wind, solar, fuel cells, ocean energy, landfill methane and biomass, and hydroelectric and limited waste-to-energy resources by 2012.⁵¹

New York

New York has pursued a range of strategies seeking to identify opportunities for greenhouse gas emissions reductions, many of which grew out of regulatory efforts originally responding to reduce the vulnerability of the New York economy to volatile energy costs experienced during the 1973 oil embargo. The New York Energy Plan includes an economy-wide greenhouse gas reduction strategy, establishing a greenhouse gas emissions reduction goal of 10 percent from 1990 levels by 2010.⁵²

Since the 1970s, the State of New York has sought to reduce electricity demand, particularly during the summer peak period, when residential air conditioners and constrained transmission capacity frequently create potential network failures in the densely populated New York City region. Within the region, consumers are offered financial incentives to replace older, inefficient air condition units with more highly efficient models, reducing peak demand and carbon dioxide emissions.⁵³

⁵⁰ Pew Center on Global Climate Change, Barry G. Rabe, *Greenhouse & Statehouse: The Evolving State Government Role in Climate Change* (November 2002) at 38.

⁵¹ N.J.S.A. 48: 3-49 et. Seq. "Electric Discount and Energy Competition Act." Database of State Incentives for Renewable Energy, Renewables Portfolio Standards (Accessed March 25, 2004). The New Jersey Renewables Portfolio Standard originally distinguishes between preferred (Class I – wind, solar, fuel cells, ocean energy, landfill methane and biomass (cultivated and harvested in a sustainable manner) and acceptable (Class II – hydroelectric and waste-to-energy) resources.

⁵² New York Energy Plan.

⁵³ New York Energy Demand - Keep Cool Air Conditioner Bounty Program.

The State of New York also provides financial assistance to cover the incremental cost of a clean-fueled bus (lower emission) over a diesel bus to transit authorities, state agencies, universities, municipalities, and school bus fleets.⁵⁴

Requiring greenhouse gas emissions from the transportation sector is also being considered by the New York Legislature in the current session. New York Assembly Bill 4082 would require New York to adopt the suite of regulations being developed by the State of California, pursuant to AB 1493, to achieve cost-effective reductions in greenhouse gas emissions from motor vehicles starting in the 2009 model year.⁵⁵

The New York Legislature is also considering requiring greenhouse gas emissions reductions from fossil fuel-fired power plant through multi-pollutant reduction requirements targeting emissions of nitrogen oxides, sulfur dioxide, carbon dioxide and mercury to specified levels. Compliance could be facilitated by an intrastate or regional emissions trading program to help achieve carbon dioxide emission reductions.⁵⁶ The New York Public Service Commission already requires developers to factor the environmental pollution costs associated with new facilities, including carbon dioxide emissions, in competitive bidding guidelines for new electricity generating capacity within the State of New York.⁵⁷

Oklahoma

Oklahoma is one of several States exploring the feasibility of carbon sequestration through modification of existing agricultural methods. In February 2004, the Oklahoma Legislature enacted the Carbon Sequestration Act, requiring the State to quantify

⁵⁴ New York Transportation - Clean-Fueled Bus Program. The State of New York also offers financial assistance for energy-efficient heating, ventilation, and cooling systems (HVAC) for trucks at travel centers, which reduces fuel consumption and emissions. New York Advanced Travel Center Electrification Program.

⁵⁵ See New York Assembly Bill 4082, in Assembly Committee (February 24, 2004). Would require the Department of Environmental Conservation to adopt California's regulations to achieve cost-effective reductions in greenhouse gas emissions from motor vehicles. The regulations would apply to 2009 model year vehicles and later. National Conference of State Legislatures 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm>.

⁵⁶ New York Assembly Bill 5933 Passed Assembly; In Senate Committee (February 24, 2004). Would require the Commissioner of Environmental Conservation to adopt regulations to reduce emissions of nitrogen oxides, sulfur dioxide, carbon dioxide (CO₂) and mercury from power plants to specified levels. Would authorize an emissions trading program to help achieve CO₂ reductions. National Conference of State Legislatures 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm>.

⁵⁷ New York Public Service Commission, Opinion and Order Establishing Guidelines for Bidding Programs, Opinion No. 89-7 (April 13, 1989), cited in U.S. Congress, Office of Technology Assessment, *Changing By Degrees: Steps To Reduce Greenhouse Gases* (Washington, DC 1991) Appendix B at 329.

sequestration opportunities on agricultural and nonagricultural land.⁵⁸ The Carbon Sequestration Act seeks to prepare the regulatory oversight and administrative requirements enable the State's landowners to participate in carbon dioxide emissions marketing or trading systems through carbon sequestration agreements.⁵⁹

This legislation builds upon the activities and recommendations of the Oklahoma Carbon Sequestration Advisory Committee, created in 2001, which investigated the efficacy of carbon sequestration through existing and modified agricultural practices.⁶⁰

Oregon

Oregon was among the first States to enact limits on carbon dioxide emissions from new or expanded electric utility power plants in the United States. Such facilities must lower carbon dioxide emissions at least 17 percent below the most efficient natural gas-fired electric utility power plant in the nation by either directly reducing such emissions through greater efficiency, control devices or obtaining carbon emission offsets from the Oregon Climate Trust, an entity created to invest in carbon dioxide mitigation projects.⁶¹

Oregon offers tax incentives that mirror or enhance federal clean vehicle tax incentives, including state income tax credits of up to \$1,500 for the purchase of an alternative fuel vehicle by an individual and a business tax credit of up to 35 percent of the difference between the purchase cost of a hybrid or alternative fuel vehicle and an equivalent conventional fuel vehicle.⁶²

⁵⁸ Oklahoma House Bill 1051, enacted February 24, 2004. Establishes the "Oklahoma Carbon Sequestration Act" to document and quantify such efforts on agricultural and nonagricultural land within the state to enhance the ability of the state's landowners to participate in carbon dioxide emissions marketing or trading systems. National Conference of State Legislatures 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm> Oklahoma House Bill 1192, signed April, 2001. Creates the Carbon Sequestration Advisory Committee to document and quantify reductions related to agricultural practices; to provide duties; and to create the Carbon Sequestration Assessment Cash Fund. National Conference of State Legislatures 2002 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/airleg02.htm>

⁵⁹ National Conference of State Legislatures 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm>.

⁶⁰ Oklahoma House Bill 1192, enacted April 2001.

⁶¹ Barry G. Rabe, Power to the States: The Promise and Pitfalls of Decentralization, in Norman J. Vig and Michael E. Kraft, Environmental Policy: New Directions for the Twenty-First Century Congressional Quarterly (Washington, DC 2003) at 41-42.

⁶² David G. Duff, *Tax Policy and Global Warming*, Public Law and Legal Theory Research Paper No. 03-03, University of Toronto School of Law, 42 footnote 172. See also Oregon Office of Energy, "Hybrid Vehicle and Dual Fuel Vehicles" <http://www.energy.state.or.us/trans/hybridcr.htm>.

Other Oregon carbon emission reduction initiatives include: the Dairy Waste to Energy program, a state-utility relationship encourages "green power" generation from dairy waste on Oregon's farms, reducing methane emissions and producing electricity for participating farms; Oregon's Forest Resource Trust program, encourages landowners establish and manage healthy forests through private agreements with the state to leverage carbon sequestration.⁶³

Texas

In December 1999, the Texas Public Utility Commission enacted a Renewable Energy Mandate Rule, requiring electricity providers to obtain increasing amounts of renewable energy capacity up to 2,000 MW of new renewable capacity by 2009, finance construction of renewable energy facilities, and develop new renewable energy resources.⁶⁴ The Texas Renewable Energy Mandate was required as part of the electric restructuring legislation, the Restructuring of Electric Utility Acts, enacted in September 1, 1999.⁶⁵

Eligible renewable energy sources include solar, wind, geothermal, hydroelectric, wave or tidal energy, biomass, or biomass-based waste products, including landfill gas. The Texas Renewable Energy Mandate is credited with increasing renewable generating capacity from 242 MW in 1997 to 1,200 MW by 2002, well ahead of the regulatory milestones.⁶⁶

Electricity providers may comply with the Texas Renewable Energy Mandate by either developing or contracting for new renewable energy generating capacity or obtaining sufficient renewable energy credits (each credit equals a megawatt hour (Mwh) of qualified renewable energy generated and metered in Texas) to meet the energy retailer's pro rata obligations. Texas also administers energy demand reduction programs offering providers

⁶³ Oregon House Bill 2200, enacted July 6, 2001: Allows State Forester to establish program for creating forestry carbon offsets. Allows trading of forestry carbon offsets for carbon dioxide emissions. Defines forestry carbon offset and authorizes the State Forester to market, register, transfer or sell offsets on behalf of state forestlands, nonfederal landowners and Forest Resource Trust.

⁶⁴ Texas Public Utilities Commission, Texas Utilities Code Section 39.904; PUCT Substantive Rule 25.173 (Effective January 10, 2000).

⁶⁵ Texas Legislature 76th Session Ch. 39, The Restructuring of Electric Utility Industry Acts, S.B. 7 (Enacted September 1, 1999).

⁶⁶ Energy Information Administration, State Energy Profiles 2002, *Texas Table 4 Electric Power Industry Generating Capacity by Primary Energy Source, 1993, 1997, and 2002*. Renewables represented 1.3 percent of generating capacity while coal-fired, natural gas-fired, and dual-fired capacity represented 21.4, 38.5 and 38.5 percent, respectively.

energy efficiency project financing for state agencies, institutions of higher education, school districts, and local governments.⁶⁷

Washington

The State of Washington is pursuing a range of carbon dioxide mitigation strategies. These strategies include a carbon dioxide emissions reduction obligation for new fossil fuel-fired electric generating facilities built in Washington State. Originally targeting facilities of 350 MW or greater, the Washington Legislature extended the carbon dioxide reduction obligation to facilities greater than 20 MW.⁶⁸ Governor Locke issued executive orders to the Washington Energy Facility Site Evaluation Council (EFSEC) to require carbon dioxide mitigation standards on all new fossil fuel-fired electric power plants capable of generating more than 350 MW.⁶⁹ Final regulations are expected to be issued in late May 2004. [Review EFSEC website before 4/30/04]

The carbon emissions reduction potential of renewable energy resources are also emphasized in Washington's comprehensive state energy plan and encouraged or required in various state administrative and regulatory actions.⁷⁰ For example, the Washington State Building Council revised the energy standards for new commercial and residential construction, yielded an estimated 50 percent reduction of natural gas consumption in residential structures over the next 15 years, avoiding approximately 300,000 metric tons in global warming emissions.⁷¹

⁶⁷ Texas Loan STAR Program.

⁶⁸ Governor Locke signed HB 3141 into law March 10, 2004, relating to the mitigation of carbon dioxide emissions resulting from fossil-fueled electric generation.

⁶⁹ *Taking Action to Address Global Warming: An Overview of the Accomplishments of California, Oregon and Washington – Washington Accomplishments* (Accessed April 8, 2004). See www.sustainableoregon.net/climate/state_accomplishments.cfm

⁷⁰ Governor Locke signed S.B. 6146 into law March 26, 2004, relating to encouraging renewable energy and energy efficiency in businesses in Washington.

⁷¹ *Taking Action to Address Global Warming: An Overview of the Accomplishments of California, Oregon and Washington – Washington Accomplishments* (Accessed April 8, 2004). See www.sustainableoregon.net/climate/state_accomplishments.cfm

West Virginia

In 2001, West Virginia created tax incentives to encourage utilities to invest in wind resources by adjusting the business and operation tax for electric generating facilities from 40 percent of the generating capacity of the unit to 5 percent, along with lowered property tax on utility-owned wind turbines from 100 percent of assessed value to 5 percent.⁷² In conjunction with the federal production tax credit for renewable energy, these state tax incentives were credited for the siting and construction of 66 MW of wind generating capacity in West Virginia, which generated 9,586 Mwh, out of total of 94,761,752 Mwh (98.1 percent coal-fired electric generation).⁷³

Wisconsin

The Wisconsin Public Service Commission, an independent executive agency responsible for overseeing energy markets throughout the State, was amongst the first regulatory entities to require regulated electric utilities to examine the feasibility of reducing carbon dioxide emissions by 20 percent below 1985 baseline levels.⁷⁴ In addition to pursuing an integrated energy planning strategy similar to Minnesota, Wisconsin authorized the Wisconsin Department of Natural Resources to develop a comprehensive greenhouse emissions inventory, including all facilities emitting more than 100,000 tons of carbon dioxide.⁷⁵ The Wisconsin Voluntary Emission Reduction Registry, is designed to give entities in Wisconsin experience with quantifying and reporting to emissions registries and offer potential credit for early greenhouse gas emission reductions.⁷⁶

⁷² West Virginia Corporate Exemption, W.Va. Code Sections 11-13-2o, 11-6A-5a (Effective July 2001). See also DSIRE (Database of State Incentives for Renewable Energy, <http://www.dsireusa.org/index.cfm>).

⁷³ Energy Information Administration, State Electricity Profiles 2002, *West Virginia Table 5 Electric Power Industry Generation by Primary Energy Source, 1993, 1997, and 2002*.

⁷⁴ Wisconsin Public Service Commission Order 05-EP-5 (April 7, 1989), cited in U.S. Congress, Office of Technology Assessment, *Changing By Degrees: Steps To Reduce Greenhouse Gases* (Washington, DC 1991) Appendix B at 329.

⁷⁵ Wisconsin Senate Bill 287. Signed February 8, 2000. Requires Department of Natural Resources to establish and operate a system for registering reductions in greenhouse gas emissions if they are made before required by law. Senate Joint Resolution 32, introduced April 25, 2001. A resolution stating opposition to actions by President George W. Bush against the environment. The focus is on issues relating to the Kyoto Protocol. <http://www.legis.state.wi.us/2001/data/SJR32hst.html>.

⁷⁶ Pew Center on Global Climate Change, Barry G. Rabe, *Greenhouse & Statehouse: The Evolving State Government Role in Climate Change* (November 2002) at 33. Wisconsin enacted mandatory carbon dioxide reporting requirements for large generators and is developing a voluntary registry allowing entities to report carbon dioxide reductions, with the intent of allowing them to obtain credit for reduction in any future federal or state GHG program.

Wisconsin also partnered with the Federal Energy Star® program to implement energy efficiency measures in both existing and new state buildings. The goal is whole-building savings of energy, water, and emissions. Another project involves assessing the feasibility of commercial scale manure digester at a large commercial dairy facility.⁷⁷

IV. CONCLUSION

The March 2001 withdrawal of the United States from the Kyoto Protocol and concerns about the inadequacies of the February 2002 Climate Initiative encouraged many States to begin or expand climate relevant initiative strategies, building upon existing or previous collaborative efforts to address the transport of air pollution across state boundaries, including ozone and particulate matter. These strategies include renewable electricity mandates, State and regional greenhouse gas emissions inventories, mandatory greenhouse gas emissions reporting, State greenhouse gas emissions caps, greenhouse gas emissions reductions from motor vehicles, and greenhouse gas emissions cap-and-trade programs for electric generation in several States. Over 28 States have partial or comprehensive climate change action plans that include multi-sector policies and programs to reach greenhouse gas emission stabilization or reduction goals.⁷⁸

The Northeast and Pacific Coast have organized efforts with slightly differing climate initiative objectives, but with the intention of leveraging their joint efforts. Comprehensive regional climate initiatives avoid the limitations and shortcomings of decentralized, individual State climate relevant initiatives by developing uniform policies tailored to the particular greenhouse gas emission sources while providing sufficient resources and technical expertise to implement such measures.

⁷⁷ U.S. Environmental Protection Agency, *Global Warming State Actions*. Wisconsin--Tinedale Farm Anaerobic Digestion Energy System: pilot manure-to-energy recovery project provides an alternative energy source and reduces manure waste disposal. <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsState.html>.

⁷⁸ U.S. Environmental Protection Agency, *Global Warming State Actions*. <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsState.html>. (May 21, 2004).

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Annex -- State Green House Gas Reduction Initiatives

States	Agriculture	Buildings	Comprehensive	Energy Demand	Energy Supply	Forestry	Industry	Sequestration & Offsets	Transportation
California				Energy Supply - California Energy Commission's Renewable Energy Program supports renewable electricity generation technologies and helps develop a renewable energy market to avoid greenhouse gas emissions.				Transportation - AB 1493 Greenhouse Gas Standards for Vehicles: State to set greenhouse gas emission standards for new passenger cars and light-duty trucks. Zero Emission Vehicle Incentive Program: grants up to \$9,000 per vehicle for new zero-emission vehicles. ⁷⁹	
Colorado				Energy Demand - The Energy Saving Partner program provides cost-effective energy conservation services to low-income households.					
Connecticut ⁸⁰									
Georgia	Agriculture - No Tillage Assistance Program: leases "no-till" equipment to farmers, reducing fuel use and greenhouse gas emissions, and sequestering carbon dioxide as soil carbon.							Transportation - Clean Air Campaign Nonprofit organization works with employers to implement alternative commuting programs for employees. Advanced Travel Center Electrification Program provides energy-efficient heating, ventilation, and cooling systems (HVAC) for trucks at travel centers reduces fuel consumption and emissions.	
Hawaii				Energy Demand - Energy Performance Contracting Program: agreements between a building owner or facilities manager and a private energy services company (ESCO) that uses future energy savings to cover the cost of a building's energy efficiency retrofits.					
Illinois ⁸¹									
Iowa	Agriculture - Chariton Valley Biomass Project: 4,000 acres of Conservation Reserve Program (CRP) land used for			Energy Demand - Building Energy Management Program: enables schools, local governments, and hospitals to identify and implement cost-effective energy management programs without incurring up-front costs. Chariton Valley Biomass Project: 4,000 acres					

⁷⁹ **California:** AB 1493 California Greenhouse Gas Standards for Vehicles: requires California Air Resources Board to set greenhouse gas emission standards for new passenger cars and light-duty trucks, starting with 2009 and later model years. Zero-Emission Vehicles Program: provides grants up to \$9,000 per vehicle for purchase or lease of new zero-emission vehicles.

⁸⁰ **Connecticut:** (*Summary of 1990 Public Acts*, Connecticut General Assembly, Office of Legislative Research.) **Public Act 90-219, HB 5696** (1990): Connecticut passed the first state global warming law to require specific actions for reducing CO₂. The Act establishes a broad range of energy conservation measures, including revisions to the building code to maximize energy efficiency and requirements that the state purchase energy efficient appliances and vehicles. The Act also establishes goals for improving public transportation and requires the Connecticut Public Transportation Commission (CPTC) to monitor progress in achieving them. The Act allows the Environmental Protection Commissioner, in connection with air discharge permits, to require trees or grass to be planted to offset carbon dioxide emitted into the atmosphere. The Act also reduces the ability of municipalities to provide tax abatement for multilevel parking garages.

⁸¹ **Illinois Senate Bill 372.** <http://www.legis.state.il.us/legislation/legisnet92/status/920SB0372.html> Signed (August 7, 2001). Requires the Illinois Environmental Protection Agency to establish an interstate NO_x trading program and issue findings that address the need to control or reduce emissions from fossil fuel-fired electric generating plants. The findings are to address the establishment of a banking system, consistent with the U.S. Department of Energy's voluntary reporting system, for certifying credits for voluntary offsets of emissions of greenhouse gases, or reductions of greenhouse gases. Reduction efforts may include, but are not limited to, carbon sequestration, technology-based control measures, energy efficiency measures, and the use of renewable energy sources. **House Bill 842.** <http://www.legis.state.il.us/legislation/legisnet92/status/920HB0842.html> Signed (August 7, 2001). Carbon Sequestration Act. Creates the Carbon Sequestration Advisory Committee and establishes its membership and duties. By February 1, 2002, the Committee is to prepare a report with findings and recommendations for studying carbon sequestration, including various trading options and alternatives, and considering air quality and the preservation of agricultural resources.

Annex -- State Green House Gas Reduction Initiatives

States	Agriculture	Buildings	Comprehensive	Energy Demand	Energy Supply	Forestry	Industry	Sequestration & Offsets	Transportation
	switch-grass production for co-firing at coal-fired power plant. ⁸²			of Conservation Reserve Program (CRP) land used for switch-grass production for co-firing at coal-fired power plant.					
Indiana				Energy Demand - Industrial Energy Efficiency Fund works with Indiana manufacturers to increase the energy efficiency of their manufacturing processes. Public Facilities Energy Efficiency Program provides loans that help public entities in the state identify and implement energy efficiency projects. ⁸³					
Maine ⁸⁴				Energy Demand - customer information disclosure requirements for electricity providers requires disclosure of carbon dioxide (CO ₂), nitrogen oxide (NO _x), and sulfur dioxide (SO ₂). ⁸⁵					
Maryland ⁸⁶	Comprehensive - Smart Growth Program: combines initiatives to limit urban sprawl, preserve natural resources, and support existing communities by targeting state resources to areas already developed or thoroughly planned.			Energy Demand - Clean Energy Incentive Act (CEIA) offers tax incentives on energy-efficient and renewable energy products and services to Maryland residents and businesses.					
Massachusetts ⁸⁷				Energy Supply - Reductions of CO ₂ emissions from Power Plants: State established a multi-pollutant cap that requires six older power plants to reduce their CO ₂ emissions by ten percent relative to 1997-1999 levels by 2006 or 2008, depending on the method of compliance chosen. ⁸⁸					

⁸² **Iowa:** A permanent system capable of processing and burning switch-grass at 12.5 tons per hour is planned, along with a 2,000-ton continuous co-firing test.

⁸³ **Indiana:** Industrial Energy Efficiency Fund (IEEF) works directly with Indiana manufacturers to increase the energy efficiency of their manufacturing processes. The fund provides zero-interest loans for replacement or conversion of existing equipment, for purchase of new equipment as part of a process or plant expansion. The National Industrial Competitiveness Through Energy, Environment, and Economics Program (NICE3) is an industrial efficiency program initiated by the federal government in 1991. Indiana has adopted this program through a partnership with the U.S. Department of Energy (DOE) and works closely with the federal government on implementation. The Indiana Public Facilities Energy Efficiency Program provides loans that help public entities in the state identify and implement energy efficiency projects.

⁸⁴ **Maine Legislative Document 87. House Bill 78. Signed By Governor** (April 6, 2001): Requires the Department of Environmental Protection to create a voluntary registry of greenhouse gas emissions. The registry must provide for the collection of data on the origin of the carbon emissions as either fossil fuel or renewable resources and the collection of data on production activity to allow the tracking of future emission trends. **Legislative Document 1429. Signed** (May 18, 2001): Establishes a State Climatologist who must develop a statewide environmental monitoring network to detect changes in key environmental conditions related to climate. This person must also work to increase public awareness and to investigate the statewide impacts of climate change. <http://janus.state.me.us/legis/bills/LD.asp?LD=1429>

⁸⁵ **Maine Public Law 1997, Ch. 316. Signed** (February 23, 1999): Establishes customer information disclosure requirements for electricity providers. The legislation, passed as part of a broader electricity restructuring package, requires a disclosure label showing electricity customers information on the price, resource mix and emissions in a uniform format. The provisional rule requires the disclosure of carbon dioxide (CO₂), nitrogen oxide (NO_x), and sulfur dioxide (SO₂). The provision specifies that for each of the three emission categories, the emission rate of the resource portfolio will be compared to New England regional average emission.

⁸⁶ **Maryland Executive Order 01.01.2001.02. Sustaining Maryland's Future with Clean Power. Signed** (March 13, 2001): Directs the Maryland Green Building Council to develop a comprehensive set of initiatives known as the "Maryland Greenhouse Gas Reduction Action Plan". The order also sets goals for energy generated from renewable sources, energy efficiency in state buildings and purchased products, waste diversion or recycling and alternative fuel vehicles. <http://www.mde.state.md.us/assets/document/EO-0101200102.pdf>

⁸⁷ **Massachusetts Department of Telecommunications and Energy. 220 CMR 11.00: Rules Governing The Restructuring Of The Electric Industry. Ordered** (February 20, 1998). Establishes customer information disclosure requirements for electricity providers. The legislation, passed as part of a broader electricity restructuring package, requires a disclosure label showing electricity customers information on the price, resource mix and emissions in a uniform format. The provisional rule requires the disclosure of carbon dioxide (CO₂), nitrogen oxide (NO_x), and sulfur dioxide (SO₂). Electricity providers must show emissions as a percentage of the New England regional average emission rate and also compare to emissions from a new power unit (as determined in consultation with the Massachusetts Department of Environmental Protection).

⁸⁸ **Massachusetts DEP Regulation 310 CMR 7.29. Rule Issued** (APRIL 23, 2001). Requires the six highest-polluting power plants in Massachusetts to meet overall emission limits for NO_x (1.5 lbs/MWh) and SO₂ (3.0 lbs./MWh) by October 1, 2004 and begin immediate monitoring and reporting of mercury emissions. For the six affected plants, the rule caps total CO₂ emissions and creates an emission standard of 1,800 lbs. of carbon dioxide per megawatt-hour (a reduction of 10% below the current average CO₂ emissions rate). The CO₂ limits must be met by October 1, 2006 or October 1, 2008 for plant retrofit or replacement. Plant operators may meet the standard either by increasing efficiency at the plant, or by purchasing credits from other CO₂ reduction programs approved by the DEP.

Annex -- State Green House Gas Reduction Initiatives

States	Agriculture	Buildings	Comprehensive	Energy Demand	Energy Supply	Forestry	Industry	Sequestration & Offsets	Transportation
Minnesota ⁸⁹				Energy Demand & Forestry - Minnesota's Releaf Program promotes and funds the planting of trees as a means to store carbon and save energy.			Sequestration - Releaf Program promotes and funds the planting of trees as a means to store carbon and save energy. Transportation - Oxygenated Fuel Standard requires most fuel contain 2.7 percent oxygen by weight, gasoline makers have chosen to use ethanol to meet this requirement.		
Missouri				Energy Demand - Energy Revolving Loan Fund provides public schools and local governments with technology and financial assistance to implement energy efficiency upgrades. Pattonville High School Landfill Gas Recovery Project recovers methane gas from a neighboring sanitary landfill and uses the gas to fuel the school's boilers.					
Montana				Energy Demand & Energy Supply Universal Systems Benefit Program offers market-transforming renewable energy, energy efficiency, and funding programs. Universal Systems Benefit Program offers market-transforming renewable energy, energy efficiency, and funding programs.					
Nebraska	Agriculture Carbon Sequestration in Agriculture Advisory Committee investigating sequestering carbon through modified agricultural methods.							Sequestration - Carbon Sequestration in Agriculture Advisory Committee investigating sequestering carbon through modified agricultural methods.	
Nevada				Energy Supply - Renewable Portfolio Standard: requires 5 percent of state's energy be generated by renewable resources by 2003 and increases biannually by 2 percent, arriving at a standard of 15 percent renewables by 2013.					
New Hampshire ⁹⁰				Energy Demand - Building Energy Conservation Initiative: offers energy efficiency analysis, improvement, and financing opportunities to manage energy and reduce waste and emissions.					
New Jersey			Greenhouse Gas Reduction Target established goal to reduce greenhouse gas emissions by 3.5 percent from 1990 levels by 2005. Draws upon voluntary agreements with public- and private-sector organizations and regulatory initiatives. ⁹¹						
New Mexico						Forest Re-Leaf program: provides grants to public entities (schools, cities, counties, and rural communities) for		Sequestration - Forest Re-Leaf program: provides grants to public entities (schools, cities, counties, and rural communities) for	

⁸⁹ **Minnesota Public Utilities Commission.** January 3, 1997. The Minnesota Public Utilities Commission voted to accept a .30 - 3.10 \$/ton (1995 dollars) of CO2 valuation for the global warming impacts/costs of carbon emissions from utility power plants. They did so on the basis of a damage-cost assessment conducted by the Minnesota Pollution Control Agency – the first time in the country that economic valuation techniques have been used to establish damage costs from CO2 emissions in a contested case. The values shall be updated using the Gross National Product Price Deflator Index as data becomes available from that index (Rule E-999/CI-00-1636, May 3, 2001).

⁹⁰ **New Hampshire Senate Bill 159.** Signed (1999): Establishes a registry for voluntary greenhouse gas emission reductions to create an incentive for voluntary emission reductions. Requires the Department of Environmental Services to study the potential for a similar registry for particulate matter.

⁹¹ **New Jersey Department of Environmental Protection.** Adopted (April 17, 2000) New Rules (*N.J.A.C 7:27-30.2 and 30.5*). Adds new provisions to the Open Market Emissions Trading Rule for the generation and banking of greenhouse gas (GHG) credits. Greenhouse gases included in the rule are: carbon dioxide (CO2); methane (CH4); nitrous oxide (N2O); certain hydrofluorocarbons (HFC), certain perfluorocarbons (PFC); and sulphur hexafluoride (SF6). **Administrative Order 1998-09** (March, 1998). New Jersey Department of Environmental Protection. Sets a voluntary goal to reduce New Jersey's greenhouse gas emissions by 3.5% below 1990 prior to 2005.

Annex -- State Green House Gas Reduction Initiatives

States	Agriculture	Buildings	Comprehensive	Energy Demand	Energy Supply	Forestry	Industry	Sequestration & Offsets	Transportation
						planting trees.		planting trees.	
New York ⁹²			Energy Demand - Keep Cool Air Conditioner Bounty Program: reduces peak demand for electricity by encouraging customers to replace air conditioners with highly efficient models.			Transportation - Clean-Fueled Bus Program: provides funding for the incremental cost of a clean-fueled bus over a diesel bus to transit authorities, state agencies, universities, municipalities, and school bus fleets. Advanced Travel Center Electrification Program: provides energy-efficient heating, ventilation, and cooling systems (HVAC) for trucks at travel centers reduces fuel consumption and emissions.			
North Carolina	Agriculture & Energy Supply - North Carolina Animal and Poultry Waste Management Program seeks to identify technologies that reduce and redirect methane emissions from North Carolina farms. A second objective of the program is to reduce animal waste discharges into surface waters.								
Oklahoma ⁹³	Agriculture - Oklahoma Carbon Sequestration Act requires state to quantify sequestration opportunities on agricultural and nonagricultural land.								
Oregon	Agriculture - Dairy Waste to Energy: state-utility relationship encourages "green power" generation from dairy waste on Oregon's farms, reducing methane emissions and producing electricity for participating farms.			Dairy Waste to Energy: state-utility relationship encourages "green power" generation from dairy waste on Oregon's farms, reducing methane emissions and producing electricity for participating farms.		Forestry - Oregon's Forest Resource Trust program helps landowners establish and manage healthy forests through private agreements with the state. ⁹⁴		Sequestration - Forest Resource Trust program helps landowners establish and manage healthy forests. Power Plant CO ₂ Offset Program: Climate Trust nonprofit organization funds projects that counter 17 percent of new power plant CO ₂ emissions.	
Pennsylvania					Energy Supply - Green Pricing: Electric Consumer Choice: residents and businesses may elect to buy power generated from a mixture of sources that include a high percentage of renewable energy.				
Texas ⁹⁵				Energy Demand & Energy Supply - Loan STAR Program: provides energy efficiency project financing for state agencies, institutions of higher education, school districts, and local governments. Renewable Portfolio Standard: Electricity providers required to obtain renewable energy capacity, finance construction of renewable energy facilities, and develop new renewable energy resources.					

⁹² **New York Assembly Bill 4082** *In Assembly Committee (February 24, 2004)*. Would require the Department of Environmental Conservation to adopt California's regulations to achieve cost-effective reductions in greenhouse gas emissions from motor vehicles. The regulations would apply to 2009 model year vehicles and later. NCSL 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm> **Assembly Bill 5933** *Passed Assembly; In Senate Committee (February 24, 2004)*. Would require the Commissioner of Environmental Conservation to adopt regulations to reduce emissions of nitrogen oxides, sulfur dioxide, carbon dioxide (CO₂) and mercury from power plants to specified levels. Would authorize an emissions trading program to help achieve CO₂ reductions. NCSL 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm>

⁹³ **Oklahoma House Bill 1051** *Enacted (February 24, 2004)*. Establishes the "Oklahoma Carbon Sequestration Act" to document and quantify such efforts on agricultural and nonagricultural land within the state to enhance the ability of the state's landowners to participate in carbon dioxide emissions marketing or trading systems. NCSL 2003 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/2003airleg.htm> **House Bill 1192**: *Signed (April, 2001)*: A bill to create the Carbon Sequestration Advisory Committee to document and quantify reductions related to agricultural practices; to provide duties; and to create the Carbon Sequestration Assessment Cash Fund. NCSL 2002 State Air Quality Legislation Summaries: <http://www.ncsl.org/programs/esnr/airleg02.htm>

⁹⁴ **Oregon House Bill 2200**. *Signed (July 6, 2001)*: Allows State Forester to establish program for creating forestry carbon offsets. Allows trading of forestry carbon offsets for carbon dioxide emissions. Defines forestry carbon offset. Authorizes State Forester to market, register, transfer or sell offsets on behalf of state forestlands, nonfederal landowners and Forest Resource Trust.

⁹⁵ **Texas Decision by the Texas Natural Resource Conservation Commission (TNRCC) regarding Greenhouse Gas Inventory and Monitoring**. Texas Natural Resource Conservation Commission. Docket No. 2000-0845-RUL <http://www.tnrcc.state.tx.us/comm/agendas/comm/2000/000823.html> (August 23, 2000). The Commissioners of the TNRCC instruct the Executive Director to conduct an inventory of greenhouse gas emissions in Texas and establish a registry for greenhouse gas emissions reductions. By December 1, 2001, the TNRCC will prepare a report assessing the potential effects of global warming and surveys other states and the federal government

Annex -- State Green House Gas Reduction Initiatives

States	Agriculture	Buildings	Comprehensive	Energy Demand	Energy Supply	Forestry	Industry	Sequestration & Offsets	Transportation
Utah				Energy Program for National Parks: State partnership with National Park Service (NPS) to finance and install renewable energy (solar) and energy-efficient technologies in parks and monuments in Utah.					
Washington							Transportation - Washington Commute Trip Reduction program increases the capacity of the transportation system while reducing transportation-related energy use and pollution production.		
West Virginia					Energy Supply - Wind Energy Production Tax Credit: West Virginia made two adjustments to its tax code for utility-owned wind power: a lowered property tax on utility-owned wind turbines and a lowered Business and Operation (B&O) tax for utilities using wind power generation.				
Wisconsin ⁹⁶	Agriculture - Tinedale Farm Anaerobic Digestion Energy System: pilot manure-to-energy recovery project provides an alternative energy source and reduces manure waste disposal. Buildings - Energy Star Building: Wisconsin partnered with federal Energy Star® program to implement energy efficiency measures in both existing and new state buildings. The goal is whole-building savings of energy, water, and emissions.			Energy Star Building: Wisconsin partnered with federal Energy Star® program to implement energy efficiency measures in both existing and new state buildings. The goal is whole-building savings of energy, water, and emissions. Tinedale Farm Anaerobic Digestion Energy System: pilot manure-to-energy recovery project provides an alternative energy source and reduces manure waste disposal.			Industry - Reporting and Crediting for Greenhouse Gases: mandatory reporting requirements for large generators of CO ₂ and is developing a registry that will allow firms to report reductions of CO ₂ , with the intent of allowing them to obtain credit for reduction in any future federal or state GHG program.		
<p>Sources: California Protection Agency, <i>AB 1493 (Pavley) Briefing Package: Global Warming and Greenhouse Gas Emissions from Motor Vehicles</i> (2003); Center for Clean Air Policy, <i>State and Local Climate Change Policy Actions (October 11, 2002) & Climate Change Mitigation: Process and Policy Options for State Greenhouse Gas Plans (November 26, 2003)</i>; Intergovernmental Panel on Climate Change, <i>Climate Change 2001: The Scientific Basis</i> (2001), http://www.grida.no/climate/ipcc_tar/wg1/figts-22.htm; National Conference of State Legislatures; Pew Center on Global Climate Change, <i>Greenhouse & Statehouse: The Evolving State Government Role in Climate Change (November 2002)</i>; United States Environmental Protection Agency, <i>Global Warming Actions Legislative Initiatives</i> (Accessed February 24, 2004) http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsStateLegislativeInitiatives.html.</p>									

to determine what specific actions are being taken to address global warming. The report will also estimate how much greenhouse gas emissions in Texas have been reduced by environmental regulations already in place and recommend strategies for reducing greenhouse gas emissions in Texas.

⁹⁶ **Wisconsin Senate Bill 287.** *Signed* (February 8, 2000): Requires Department of Natural Resources to establish and operate a system for registering reductions in greenhouse gas emissions if they are made before required by law. **Senate Joint Resolution 32.** *Introduced* (April 25, 2001): A resolution stating opposition to actions by President George W. Bush against the environment. The focus is on issues relating to the Kyoto Protocol. <http://www.legis.state.wi.us/2001/data/SJR32hst.html>.