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## Greening State Government: “Lead by Example” Initiatives

### Executive Summary

In response to rising concerns about energy prices, reliance on imported oil, and greenhouse gas (GHG) emissions, many governors are instituting “lead by example” measures that help their states achieve replicable cost and energy savings and that demonstrate their commitment to greener, cleaner state government. Given that state and local governments spend more than \$11 billion a year on building-related energy costs<sup>1</sup> and more than \$2.5 billion a year on operations and maintenance for some 500,000 state-owned vehicles,<sup>2</sup> the opportunities for savings are significant. Lead by example clean energy initiatives can decrease state building and fleet operations costs, educate state employees and the public, and provide other benefits, such as lower GHG emissions, that can inspire and inform citizens and the private sector alike.

Governors are leading by example through the following types of actions:

- Procuring energy efficient appliances and equipment for public facilities, such as advanced lighting and energy efficient computers that use less power;
- Establishing energy efficiency performance standards for new and existing public buildings, setting energy consumption goals, and implementing design standards for building energy performance;
- Purchasing clean energy for public facilities or increasing the use of onsite generation from renewable energy systems;
- Implementing “green fleets” programs by setting alternative fuel standards for state government vehicles and establishing alternative fuel or energy efficient vehicle purchasing requirements; and
- Setting overall GHG emissions reduction targets for state operations.

The executive branch, the state legislature, state energy offices, transportation departments, and energy service companies (ESCOs), as well as school districts, community colleges, and universities, can all play important roles in designing and implementing lead by example programs. Government can also use a variety of financing mechanisms, including energy savings performance contracts, aggregated purchasing contracts, public benefits funds, revolving loan funds, and pension fund investments.

### **The Opportunity**

Currently, state and local governments spend more than \$11 billion annually on building-related energy costs<sup>3</sup> and more than \$2.5 billion annually on operations and maintenance for some 500,000 state-owned vehicles.<sup>4</sup> In many cases, energy consumption can account for up to 10 percent of a state’s operating budget, but inefficiencies and untapped savings persist, much as they do in the larger economy. As a result, state operations present a number of opportunities to reduce operational costs, spur clean energy markets, and demonstrate environmental leadership.

Appliances and equipment can provide an easily accessible starting point for lead by example initiatives. Replacing appliances and equipment with more energy efficient models at the end of their useful life can lead to energy and cost savings across state facilities. For example, standard computers and data servers waste between 30 and 50 percent of their power demand in the form of heat. According to U.S. Environmental Protection Agency (U.S. EPA) estimates, purchasing 100 ENERGY STAR qualified computers and using power management settings can save a state as much as 180,000 kilowatt-hours (kWh) of electricity over approximately three and a half years. This amounts to total cost savings of more than \$15,000 compared to typical units and usage.<sup>5</sup>

Many states own and operate millions of square feet of building space. Setting energy efficient performance standards for state facilities is frequently the next element in instituting a comprehensive lead by example policy. The opportunity for cost savings from reducing energy use in the state building sector, which accounts for approximately 5 percent of total nonresidential floor space in the United States, is significant. One study estimates that, if an average state (with a population between 5 and 6 million) were to reduce its facility energy use by 20 percent, the result could decrease the state’s nonresidential energy use by 1 percent and reduce operating costs by \$16 million.<sup>6</sup>

Lead by example measures can help to spur clean energy markets by leveraging state governments’ vast purchasing power. In many cases, public facilities and vehicle fleets are the largest energy consumers in the state. By establishing clean electricity purchase requirements and procurement standards for alternative fuels and government vehicle fleets, states are providing a guaranteed clean power market and sending a strong signal to producers of renewable energy, alternative fuel vehicles, and alternative fuels. With clean energy goals and “green” purchasing rules for state-owned fleets and facilities, states have the opportunity to encourage future investment and promote environmental stewardship in the public and the private sector alike.

Many states explicitly cite climate change concerns as one rationale for taking lead by example clean energy actions. In working to achieve energy savings and promote the deployment of clean energy resources and technology, states also can reduce GHG emissions. By setting an example for citizens, local governments, and businesses, states can spread the environmental benefits of lead by example policies far beyond its own government agencies.

States have fostered the opportunities discussed above by implementing a variety of policies concerning state government operations. The following sections of this *Issue Brief* further examine cases in which states have led by example through using energy efficient appliances and equipment, implementing energy efficiency performance standards, procuring clean electricity, purchasing alternative fuels and vehicles, and supporting GHG emissions reductions.

### **Energy Efficient Appliances and Equipment**

Energy efficient appliances incorporate advanced technologies that use 10 to 50 percent less energy and water than standard models. Generally, the money saved on electricity bills over the life of the appliance covers the increased cost of a more efficient model. More than 20 states have established energy efficiency appliance and equipment purchase requirements for state facilities. Many states require procurement of ENERGY STAR—or similarly rated—appliances and products. **California**’s 2004 Executive Order S-20-04 and **Virginia**’s 2007 Executive Order 48 are just two examples of directives that require ENERGY STAR purchases. **Hawaii**’s lead by example appliance goal mandates that state agencies increase the availability of “environmentally preferable products” by 12 percent over 2005 numbers by 2015.<sup>7</sup>

Equipment, such as computers and data servers, also provides a valuable opportunity for states to save energy. Between 1984 and 2003, the number of individuals using computers in the workplace increased from 25 percent to 57 percent, including users throughout state governments.<sup>8</sup> While technology-related energy use has grown, a large portion of that increase is in the form of waste heat or other inefficient practices that can be addressed relatively easily and cost-effectively. In an average computer, 30 to 50 percent of the electricity delivered to the system is dispersed as heat.<sup>9</sup> Altering power-management settings to a reduced load when a computer is inactive can save 600 kWh of electricity per year for an average computer, a cost savings of approximately \$60. Additional savings can come from higher efficiency computers and data servers.

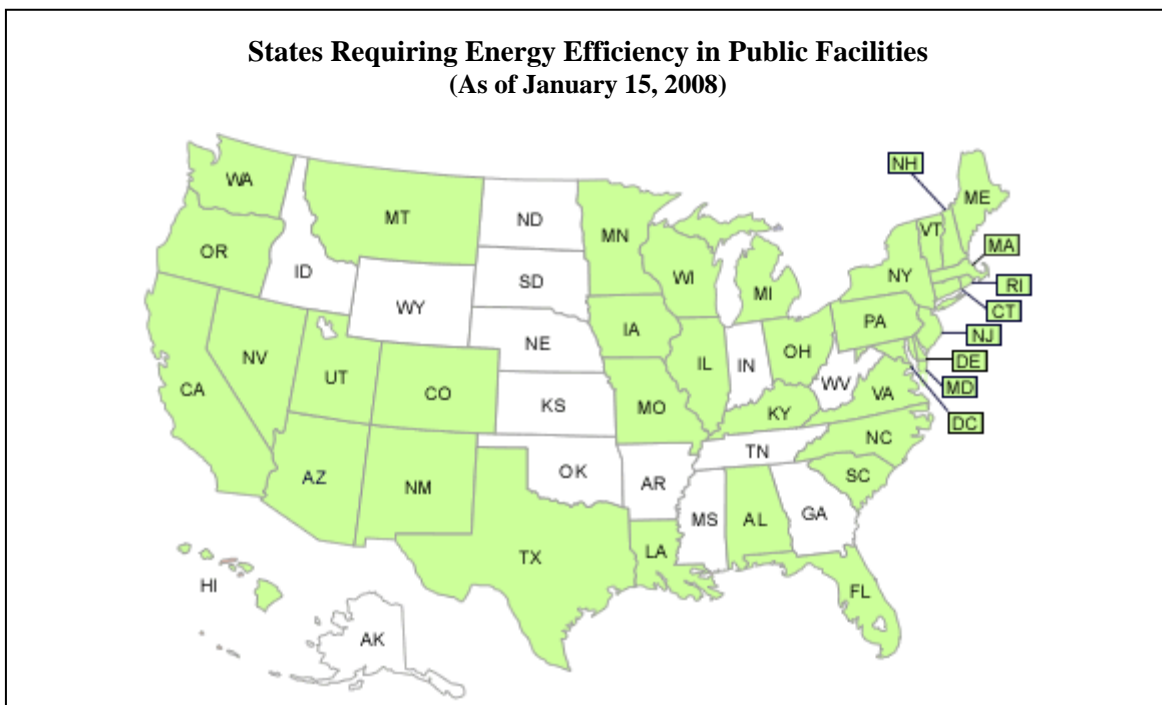
As part of their lead by example efforts and through a partnership between the National Governors Association and the Climate Savers Computing Initiative (CSCI), **Colorado, Kansas, Michigan, Minnesota, and Oregon** have pledged to purchase high-efficiency computer equipment and optimize existing computer systems by educating employees on power-management strategies. If all states were to make a similar commitment, the expected savings could reach \$5.5 billion.<sup>10</sup> CSCI—created in 2007 by Intel Corp. and Google Inc.—seeks to speed adoption of power-management practices and energy efficient computer and server procurement. CSCI aims to decrease global carbon dioxide emissions from computers by 54 million tons per year by 2010.<sup>11</sup>

Further energy savings in public operations can be achieved through a variety of more efficient technologies such as higher performance heating, ventilation, and air conditioning (HVAC) systems and advanced lighting. For example, the **Arkansas** Highway and Transportation Department installed nearly 3,000 light-emitting diode (LED) traffic lights in small communities across the state, which, over a 10-year life-cycle cost assessment, saved the state more than 53 million kWh of electricity, \$500,000 per year, and prevented more than 85 million pounds of carbon dioxide emissions.<sup>12</sup>

### **Energy Efficiency Performance Standards**

In addition to utilizing energy efficient appliances and office products, states can achieve energy savings through building-wide reductions in energy use by implementing energy efficiency requirements for new construction or retrofit projects. The first step in this process often includes setting an energy consumption reduction goal for state government or public buildings. Discrete energy savings targets—which may apply to state agencies and other public facilities, as well as to public housing, schools, and state university systems—have helped state agencies move toward decreasing electricity consumption.

In launching its 20 × 10 initiative, **Montana** is seeking to achieve a 20 percent reduction in each executive branch facility’s energy requirements by 2010. To achieve the goal, state agencies can improve operations and maintenance, implement purchasing practices, and encourage energy-saving actions from state employees. Agencies also are permitted to undertake cost-effective capital improvements to help reduce energy use. In addition, other offices and the university system have been challenged to meet the 20 × 10 requirements under the initiative. The Montana Department of Environmental Quality is charged with establishing the base energy use data (based on 2007 figures) and with providing regular updates to agencies so that the state can accurately measure progress.



Source: U.S. U.S. EPA<sup>13</sup>

**Pennsylvania’s** Executive Order 2004–12 required that the Department of General Services coordinate conservation measures in state facilities and track the results. As a result of this executive order, Management Directive 720.5 was implemented with the goal of reducing state government energy consumption 10 percent by 2010. The executive order also required life-cycle cost analysis and made the Department of General Services the centralized authority for all energy service company (ESCO) projects undertaken by state executive agencies. Pennsylvania’s ESCO requirements incorporate the federal ENERGY STAR program to help the state meet targeted performance goals and set the standard for benchmarked decision-making and performance contracting. At a minimum, state facilities were charged with reducing energy usage through specific low- and no-cost options such as:

- Turning off lighting systems during non-operating hours;
- Ensuring that HVAC systems operate at reduced levels during non-operating hours;
- Converting to more energy efficient lighting systems and bulbs;
- Utilizing natural lighting whenever possible;

- Removing lighting from vending machines and reducing non-essential lighting; and
- Designating facilities managers whose primary responsibility is to ensure the development of, and compliance with, energy efficiency measures.

### Clean Energy Rating Programs for Buildings

EPA’s ENERGY STAR program provides free Web-based tools, calculators, resources, and training to measure, track, and improve building energy performance. These assessment and guidance tools can help organizations, including state government agencies, improve building operations in ways that can dramatically reduce both energy consumption and costs. Through the program, the energy performance of commercial and industrial facilities is scored on a scale that ranges from one to 100. Facilities that achieve a score of 75 or higher are eligible for the ENERGY STAR rating, which indicates that they are among the top 25 percent of facilities in the country for energy performance. Commercial buildings that have earned the ENERGY STAR rating use, on average, 35 percent less energy than similar buildings and emit one-third less carbon dioxide.

Other programs, such as Leadership in Energy and Environmental Design (LEED) and Green Globes, can also be valuable tools in promoting building energy efficiency. LEED, a program designed by the U.S. Green Buildings Council (USGBC), provides a benchmark for the design, construction, and operations of sustainable buildings that includes an energy component, for instance. However, because these types of broad rating programs include other factors, such as sustainability and land use, they do not necessarily guarantee that a building is maximizing energy efficiency. Therefore, some states have combined broad sustainability ratings with targeted energy efficiency provisions to ensure energy savings across state facilities along with other environmental benefits.

The LEED rating system focuses on the following areas of human and environmental health:

- Sustainable sites;
- Water efficiency;
- Energy and atmosphere;
- Materials and resources;
- Indoor environmental quality; and
- Innovation in design.

States often use LEED for New Construction (LEED–NC) and LEED for Existing Buildings (LEED–EB) to certify public facilities. Registered buildings are given points for items in each of the categories listed above, and, based on the number of points accumulated, receive one of four ratings: Certified, Silver, Gold, or Platinum.

Green Globes is a third-party certification program that uses a Web-based tool to rate commercial buildings according to environmental performance in seven areas. A building qualifies for a Green Globes rating based on the total number of points it receives.

**Massachusetts’** Executive Order 484, issued April 18, 2007, requires state agencies to meet the Massachusetts LEED Plus green building performance standard for all new construction or major renovation projects that exceed 20,000 square feet. Massachusetts has modified the LEED standard to require agencies to take additional steps, including exceeding the Massachusetts Energy Code requirements by a minimum of 20 percent and meeting certain smart growth and water-use reduction requirements. While states have frequently mandated LEED requirements for state facilities, some also have specified other alternatives or designed legislation to be certification-program-neutral. For example, **Arkansas** House Bill 2445, enacted March 28, 2005, encourages state agencies to pursue either the LEED or Green Globes certification.<sup>14</sup>

Other tools and technologies are available to assist states in implementing lead by example goals. **Wisconsin** calls for an adjustment in the building temperatures of all executive branch state agencies, encourages the use of automated temperature set-back systems, and requires increased maintenance checks on system controls. The state hopes to reduce energy use in state agencies and at University of Wisconsin campuses 20 percent by fiscal year 2010. Data from 2007 showed that the state government and the university system had already achieved more than an 8 percent decrease in energy consumption compared with 2005 levels. The state Department of Administration is currently working with business partners and other state agencies to develop a set of guidelines and standards for architects, engineers, and contractors to follow in carrying out design and construction Building Information Model (BIM) deliverables on certain projects. BIM is a digital representation of all aspects of a facility and can assist state agencies in assessing energy use within a particular facility. **New Hampshire**'s lead by example initiative requires state agencies to reduce energy use in its facilities by 10 percent and charges the Department of Administrative Services with implementing an energy information system to measure progress toward the goal. Establishing an energy use baseline and a benchmarking system are important steps in measuring progress towards meeting lead by example goals.

States also can set their own building standards to achieve specific energy efficiency goals. For example, **North Carolina** requires that new buildings larger than 20,000 square feet owned by the state, the University of North Carolina, and the North Carolina Community College system be built 30 percent more efficient than the energy efficiency requirements of the commercial building standard—the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1–2004—and be renovated 20 percent more efficient than ASHRAE 90.1–2004. The state's overall goal is to reduce public facility energy consumption per square foot by 30 percent over the 2003-2004 fiscal year by 2015.<sup>15</sup> Setting a goal in relation to square footage is one way to account for growth in state agency workforce, expanding school systems, and economic development.

Additionally, states have other opportunities to set requirements for buildings that are not state-owned but are financed in part through state funds. Some states require a building to maintain a certain energy efficiency standard or certification contingent upon receipt of a given percentage or dollar amount of financing from the state. For example, legislation introduced in **Pennsylvania** would require that all state-owned buildings meet certain levels of high-performance building standards. Privately owned buildings that receive state funds that are either new construction projects larger than 10,000 square feet or renovation projects receiving in excess of \$500,000 from the state—or 50 percent of the total cost of the work—would be required to meet certain levels of high-performance building standards.

High-performance or “green” schools can be another significant component of state lead by example initiatives. State and local governments spend billions of dollars every year on new facilities.<sup>16</sup> Because many high-performance measures involve increased upfront costs that may take one or more years to recover, efficiency efforts are often difficult to pursue without accounting for lifetime operational cost savings. Consequently, life-cycle costing is an important tool for determining the overall costs and benefits of any high-performance measure. Life-cycle costing calculates the long-term expense of operating and maintaining a facility over its useful life. The U.S. EPA estimates that school districts that implement energy efficiency measures can save 20 to 40 percent on annual utility costs for new buildings and between 20 and 30 percent for renovated buildings.<sup>17</sup> However, it must be noted that some benefits associated with high-performance

buildings, such as the positive externalities of improved health and higher test scores for students, cannot be captured in a purely financial cost-benefit model.

Funding for these programs can be generated in a variety of ways. **Utah** created a \$5 million revolving loan fund dedicated to providing low-interest loans for energy efficiency projects in schools that exceed building code standards.<sup>18</sup> In **Massachusetts**, the Massachusetts Technology Collaborative and the Massachusetts School Building Authority (MSBA) administer the distribution of \$15 million in funding for the Green Schools Initiative through the state’s public benefits fund, the Renewable Energy Trust. Twenty schools participated in the initiative’s pilot phase, committing to designs that were, on average, 30 percent more efficient than state requirements. Each school was expected to save between \$50,000 and \$100,000 in annual utility expenses. The success of the initiative led to the adoption of new state regulations requiring that all new schools or major renovation projects approved for an MSBA grant after July 1, 2007, adopt numerous green design measures.<sup>19</sup>

In **Pennsylvania**, the High Performance Green Schools Planning Grant (HPGSPG) program helps public schools seeking LEED for Schools Silver or higher certification offset some of the “soft” costs associated with achieving their performance targets. These upfront soft costs, such as additional design and consultant fees, energy modeling, day-lighting studies, and administrative fees, are often the primary barrier to certification program implementation. The state Department of Education will reimburse schools for up to 10 percent of the costs related to new construction, additions, and renovation projects that achieve LEED for Schools certification at the Silver level or higher.

### **Clean Electricity Requirements**

Many states are helping to create a stronger market for green power by requiring that facilities such as public buildings, schools, and universities purchase a certain percentage of green power. The term “green power” refers to electricity products derived from sources that are renewable and low or no emission—solar, wind, biomass, geothermal, hydroelectric power, etc.<sup>20</sup> There are three primary means for state government green power purchasing: renewable electricity procurement, renewable energy certificates, and onsite renewable generation.

### **Renewable Electricity Procurement**

A state government can contract with a utility or the power marketer to purchase renewable electricity in a fixed quantity block (100 percent renewable energy at a fixed price) or as a fixed percentage (renewable electricity that supplies a certain percentage of monthly use). **Iowa**’s Executive Order 41, issued April 22, 2005, required that state agencies ensure that 10 percent of their electricity comes from alternate energy sources (i.e., green power) by 2010. The order outlined that if the facility’s or agency’s utility already produced a certain percentage of energy from renewable sources, the facility or agency would only have to purchase the remaining percentage to equal the required 10 percent.<sup>21</sup>

The **Pennsylvania** state government purchases nearly 30 percent of its electricity from clean sources by contracting with Community Energy, Inc. to purchase more than 270,000 megawatt hours (MWh) of electricity annually from wind and hydroelectric sources.<sup>22</sup> In June 2008, Governor Edward Rendell announced that the state government would increase its renewable electricity purchase to 40 percent by June 30, 2009, and to 50 percent by June 30, 2010. This lead by example action contributes to Pennsylvania’s statewide alternative energy portfolio standard

(AEPS). Such large clean power purchases by state government not only help to diversify the energy mix, they signal to the market that there is stable demand for alternative energy, which creates an attractive business environment for future clean energy investments.

Aggregated purchasing by state governments also can save money and increase the amount of green power used throughout state agencies and facilities. In 1999, the state of **New Jersey** aggregated the power purchases of 178 public agencies, including the New Jersey Highway Authority, New Jersey Transit, the Palisades Interstate Park Commission, Rutgers University, and many others. The state then entered into a competitive bidding process for the provision of low-cost electricity that would also help meet New Jersey’s goal of acquiring a minimum of 10 percent green power purchases. The resulting contract provided 500 kWh of green power over approximately four years and met 12 percent of the demand for the aggregated facilities. This yielded a state cost savings of \$200,000 from November 2000 through April 2002. The program is estimated to have prevented the release of nearly 170,000 metric tons of carbon dioxide emissions.<sup>23</sup>

In 2007, **Connecticut** auctioned the provision of the state government’s total electric load, which was more than 600 million kWh. The resulting contract included a provision that the supply would be 25 percent above the state’s renewable portfolio standard requirements. Consequently, approximately one-third of the state government’s electricity load is coming from renewable energy.

#### **Renewable Energy Certificates**

Some states include the purchase of renewable energy certificates (RECs) as part of their green power purchase efforts. RECs, also known as green tags or green certificates, are used to assign a value to renewable energy—a tradeable “currency” that accounts for the environmental attributes of power produced from renewable energy projects (e.g., lower emissions, local generation, etc.) and that can be sold independently from electricity service. The funds generated from the sale of RECs make renewable energy less expensive than it would be otherwise, allowing it to compete with other traditional sources for electricity generation. Renewable energy certificates also allow states to pay for green power without being locked into a supply contract. In 2004, **Rhode Island** Governor Donald Carcieri announced that the State Energy Office would purchase enough renewable energy certificates to equal 100 percent of the electricity used at the State House for the next five years. The five-year commitment, awarded through competitive solicitation, had an estimated cost of \$210,000 that was scheduled to be funded through the Rhode Island Renewable Energy Fund, the state’s public benefits fund. The cost supported the equivalent of one large wind turbine.<sup>24</sup>

#### **Onsite Renewable Generation**

States are also achieving green power purchase goals through onsite renewable electricity generation, or electricity generated at the location it serves. To help satisfy the requirements of Executive Order 41, the **Iowa** Department of Human Services is installing a biomass combined heat and power (CHP) system at its Woodward Resource Center.<sup>25</sup> Under **Hawaii**’s lead by example initiative, the state Department of Transportation Airports Division is soliciting proposals from private companies for the development of photovoltaic systems at 12 state sites. The 12 systems are expected to generate 34 megawatts (MW) of electricity, displacing the equivalent of 130,000 barrels of fuel oil or enough conventional electricity generation to power approximately 9,000 homes.<sup>26</sup>



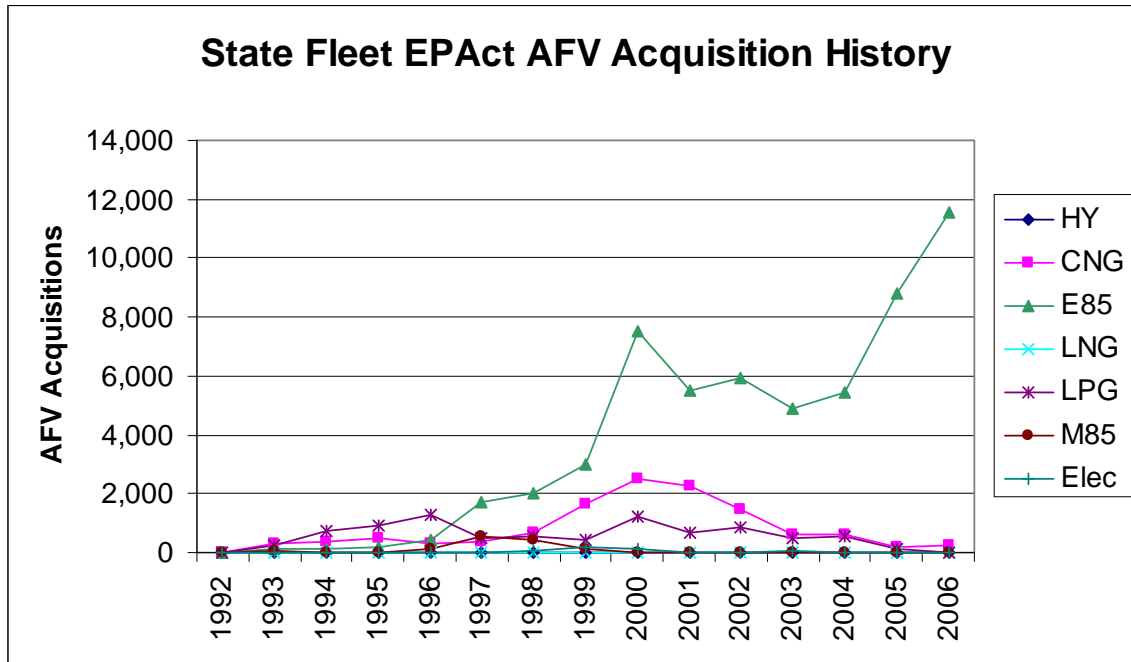
In addition, some states provide financial assistance for the installation of onsite renewable systems at public facilities. For example, **Indiana**'s Alternative Power and Energy (APE) Grant Program provides matching grants to nonprofit, public and commercial entities—including state and local governments—to support the purchase and installation of alternative energy systems that offset fossil fuel usage.<sup>27</sup> Onsite generation can provide significant energy cost savings when the cost of generating electricity is less than purchasing electricity from the utility. While onsite generation can require considerable upfront capital costs, states can size, structure, and finance such systems in a variety of ways to meet their specific needs. Capital budget funding, state-issued revenue bonds, financing leases, lease/purchase arrangements, conditional sales contracts, and third-party financing are just some of the options available to state governments.<sup>28</sup>

### **Alternative Fuels and State Vehicle Fleets**

U.S. gasoline prices have risen steadily since the 1990s, recently averaging more than \$4.00 per gallon.<sup>29</sup> Diesel prices also reached record highs in 2008, increasing up to 130 percent over certain periods in the previous year.<sup>30</sup> As prices continue to rise, the operational costs of state fleets also have increased. In **California**'s North County Transit District, for every 10 cent increase in fuel prices, the district spends an additional \$280,000 per year;<sup>31</sup> and in **Nevada**, the Department of Transportation's fuel costs are expected to reach \$6.3 million in fiscal year 2008—\$1.7 million more than the budgeted amount.<sup>32</sup> These cost increases provide strong motivation for states to explore lead by example policies that promote the purchase of more fuel efficient vehicles and the use of alternative fuels.

Lead by example initiatives in state vehicle fleets can include demand-side measures—vehicle procurement requirements—as well as supply-side measures—setting alternative fuel consumption targets or conventional fuel displacement requirements.

Through leading by example with their own fleets, states are in a favorable position to address the challenges that have prevented the wider use of use of biofuels, such as limited infrastructure development and consumer reluctance. As alternative fuel distributors seek an initial market for their fuels, which might be priced higher than conventional fuels, state fleets can provide a guaranteed buyer. State policymakers may decide that the price premium is worth the potential benefits of creating an initial market for the alternative fuel. More than 63,000 alternative fuel vehicles (AFVs) were operated by state agencies in 2005, a 73 percent increase over AFV use in 2003 (*see graph*).



Source: U.S. Department of Energy (U.S. DOE)<sup>33</sup>

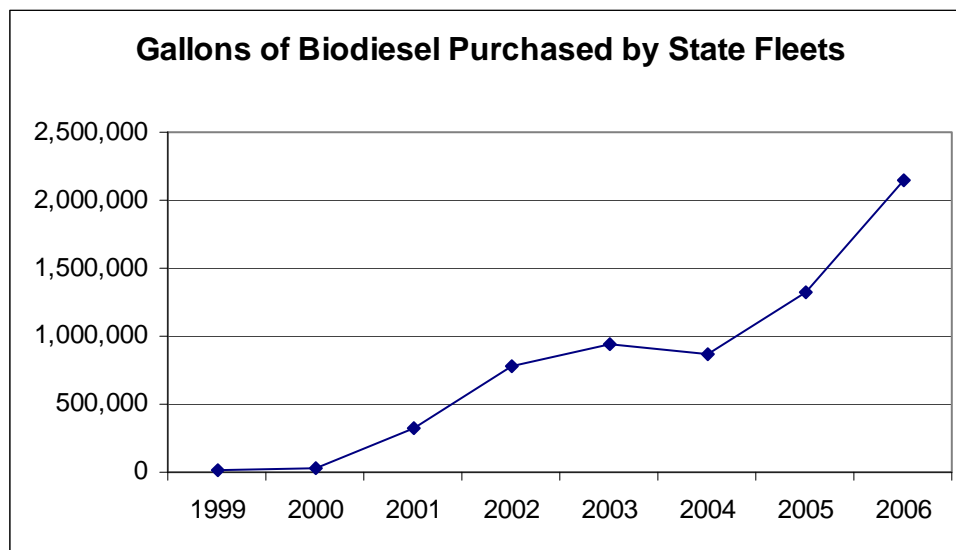
States maintain vehicle fleets that range in size, purpose, and fuel consumption and therefore can choose from a variety of measures to achieve financial and environmental benefits. Procurement guidelines can be used to accomplish broad objectives in the areas of emissions reduction, alternative fuels production, or increased fuel efficiency. For instance, in **Arizona**, 75 percent of new light-duty vehicles purchased by the state fleet must be capable of operating on alternative or clean-burning fuel. Alternatively, states can mandate the purchase of low-emissions vehicles (**California, Massachusetts, and New Hampshire**) or vehicles that meet a certain miles-per-gallon rating (**Connecticut and Maine**) through legislation, executive order, or the rulemaking process. The state procurement officer and/or fleet manager plays an important role in ensuring compliance. Policies can also be extended to vehicles operated by the state. For example, in **Michigan**, 33 percent of the leased fleet is considered “green.”

Alternative fuel vehicles can include cars and trucks that operate using a blend of ethanol or biodiesel, hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), or vehicles that run on fuel cell or hydrogen technology. By requiring the state to purchase AFVs, lead by example initiatives can serve as an important market indicator for automobile manufacturers, helping to spur research and development into advanced technology. The state of **Oregon** recently announced a pilot program in which state agencies will convert state-owned hybrid vehicles into PHEVs to make the state fleet cleaner and safer. Thirty percent of Oregon’s estimated 11,500-vehicle fleet is already made up of alternative fuels or hybrid vehicles.<sup>34</sup>

Similarly, **Minnesota** requires its State Department of Administration to facilitate the purchase and deployment of renewable hydrogen and fuel cell technology in order to help the state move to hydrogen to provide an increasing portion of its electrical power, heating, and transportation needs. Under state law, the Department of Commerce is required to identify opportunities for deploying renewable hydrogen, fuel cells, and related technologies in state-owned facilities, vehicle fleets,

and operations.<sup>35</sup> This effort includes partnering with local governments and other states in the region to construct hydrogen-fueling stations linking major urban centers along key trade corridors.

Accompanying the rise in AFV purchases, state governments are also setting goals regarding the amount or type of alternative fuels and alternative fuel blends consumed by government fleets. In many states, particularly in ethanol-producing regions of the United States, AFV procurement requirements are paired with alternative fuel requirements, creating a comprehensive state fleet operating policy. As this has become increasingly common among states—over half of the states now have a lead by example state fleet policy—the purchase of alternative fuels, such as ethanol and biodiesel, has increased dramatically (*see graph*). Producers and consumers in the broader market are, as a result, taking notice.



Source: U.S. DOE<sup>36</sup>

In **Iowa**, all state agency non-law enforcement, light-duty vehicles must be AVFs or HEVs and must operate on a blend of 85 percent ethanol (E85) whenever possible. The state requires that 60 percent of the fuel purchases for these vehicles be able to use E85 by June 30, 2009. In addition, all bulk diesel purchased by state agencies must contain at least 20 percent renewable content by 2010 (i.e., B20). Under a 2003 executive order, the Director of the Office of Energy Independence was charged with coordinating with the Director of the Office of Administrative Services to submit a “State Government E85 Use Plan” to provide information on how to meet the state’s ethanol goals.<sup>37</sup>

Iowa’s plan, released on December 31, 2007, includes policy recommendations such as:

- Implementing a universal E85 sales code to track product sales;
- Establishing a task force to discuss increasing E85 and biodiesel use in state government and reducing any usage barriers;
- Including an E85 station finder in every state AFV, which is updated every three months by the Department of Administrative Services;
- Developing a Web-based trip planner application that highlights E85 stations along the route; and

- Issuing awards to state employees for best practices in alternative fuels use.<sup>38</sup>

By promoting the use of biofuels in state fleets, Iowa is creating a demand for an alternative fuel infrastructure and helping meet its Renewable Fuel Standard goal, which is to replace 25 percent of gasoline in the state with biofuels (ethanol or biodiesel) by 2020.

Decreasing dependence on expensive petroleum products is an increasingly common priority for states, which are turning to alternative fuels and other advanced technology vehicles. In **California**, the Secretary of State and Consumer Services is required to develop and implement a plan to reduce or displace the state fleet’s consumption of petroleum products on or before July 1, 2009. The state has set a target of in-state production of renewable fuels at a minimum of 20 percent by 2010, 40 percent by 2020, and 75 percent by 2050.<sup>39</sup>

### **Greenhouse Gas Emissions Reduction Targets**

All of the lead by example clean energy strategies mentioned to this point—energy efficiency, clean electricity purchasing, and alternative fuels in state vehicle fleets—can reduce GHG emissions. Many states explicitly cite climate change concerns as one rationale for taking lead by example clean energy actions. Some states are going even further by seeking specific GHG emissions reductions from state government operations.

In 2005, **Vermont** updated its 1993 Energy Plan for State Government, which set forth a goal of cutting energy use by 15 percent across all sectors of government operations. The objectives outlined in the updated plan were threefold: to save energy, conserve resources, and reduce pollution. The 2005 plan, noting the correlation between energy consumption and the environment, as well as the “significant” financial savings that conservation efforts had achieved since the 1993 plan was released, urged state government to move forward with more energy efficiency measures.<sup>40</sup>

Vermont’s updated Energy Plan for State Government also grew out of Governor Jim Douglas’s 2003 Executive Order 14-03 directing the reduction of GHG emissions from state government buildings and operations 25 percent from 1990 levels by 2012, 50 percent by 2018, and 75 percent by 2050.<sup>41</sup> The plan required the development of Agency Implementation Plans, which included the following activities:

- A commitment by the Vermont Agency of Transportation to upgrade its garages with more efficient lighting systems, which would save an estimated 110,000 kWh of electricity and 55 tons of carbon dioxide emissions per year;
- A pledge to prevent unnecessary idling in state vehicles;
- A promise to install meters to track energy use; and
- A requirement to enter into conservation or energy performance contracts.

Similarly, **Florida** Executive Order 07-126 set out GHG emissions reduction targets for state government of 10 percent (below 2007 levels) by 2012, 25 percent by 2017, and 40 percent by 2025. The order mandated the following actions to mitigate GHG emissions:

- Each state agency and department must conduct an assessment of facility- and transportation-related energy used and GHG emissions from its own facilities;

- LEED-NC (preferably Platinum) standards must be in place for all new buildings and LEED-EB standards must be in place for all buildings owned and operated by the Department of Management Services;
- State agencies and departments are precluded from entering into new leasing agreements for office spaces that do not meet federal ENERGY STAR building standards;
- Conservation measures must be developed for new and existing office spaces where state agencies occupy more than 20,000 square feet;
- All vehicles must meet minimum maintenance schedules (tire pressure and tread, fuel filters, and emissions filters, etc.), which conserve fuel; and
- The Department of Management Services must procure only those vehicles with the greatest fuel efficiency rating in a given class.

As the Florida executive order illustrates, setting a state government GHG emissions reduction target effectively encompasses other lead by example actions previously discussed and that are already underway in many states—from more energy efficient state buildings to fuel efficient state vehicles with lower emissions ratings. Such broader emissions reduction targets can be useful umbrella policies that promote a coherent approach to achieving clean and efficient energy operations in state government.

Under **California’s** Executive Order S-20-04, state agencies and departments are required to reduce grid-based energy purchases for state-owned buildings 20 percent by 2015 and to increase efficiency 20 percent by 2015.<sup>42</sup> By reducing grid-based energy purchases in state buildings, the state’s Green Building Initiative also aims to reduce GHG emissions associated with grid-based electricity use. It is estimated that the state’s lead by example Green Buildings program reduce carbon emissions by 500,000 metric tons by 2010 and by 1.8 million metric tons by 2020.<sup>43</sup> In California’s case, setting a lead by example energy efficiency target is also helping the state to achieve substantial reductions in carbon dioxide emissions.

### **How States Can Finance Lead By Example Initiatives**

While many lead by example initiatives are cost effective in the long run, these measures may require upfront capital or maintenance expenses. States may jumpstart these activities in a variety of ways, including—but not limited to—the following mechanisms, which are explained in greater detail below:

- **Energy savings performance contracts**—An ESCO finances an energy savings project to increase the energy efficiency of a state building, and the state agrees to pay the ESCO a share of the energy efficiency savings;<sup>44</sup>
- **Aggregated purchasing contracts**—Lower rate contracts for energy efficient products and/or renewable electricity that combine the purchasing power of several agencies or facilities (such as **New Jersey’s** aggregated clean electricity purchasing contract, discussed previously);
- **Public benefits funds (PBFs)**—Funds typically created by small per-kWh charges on customers’ utility bills;
- **Revolving loan funds**—Low-interest long-term loans that can come from a variety of sources, such as PBFs;
- **Pension fund investments**—State pension fund investments in clean energy, which can generate a strong return; and

- **Financing agreements**—Tax-exempt lease–purchase agreements between the state and a financial institution.

### **Energy Service Companies**

ESCOs are private companies that provide energy efficiency or load-reduction services to individuals, companies, and organizations that own or operate commercial buildings. ESCOs help states develop and execute energy efficiency strategies through energy audits, project management, and engineering design. These companies often offer guarantees that the project’s energy cost savings will recoup the initial capital cost of the project, thereby paying for itself in a certain amount of time.<sup>45</sup>

ESCO projects can be performance based or comprehensive. In performance-based projects, compensation is tied to the amount of energy saved. Conversely, the goal of a comprehensive project is to achieve energy savings from the largest possible variety of cost-effective measures in a given building or facility. Most states employ the performance-contracting model through which ESCOs identify, design, and finance the project. In **Kansas**, for example, the Facility Conservation Improvement Program (FCIP) helps state agencies, municipalities, counties, and schools expedite conservation projects through 10 preapproved ESCOs.<sup>46</sup>

### **Aggregated Purchasing**

States also can use aggregated purchasing to secure energy efficient products or clean electricity across state agencies and facilities. By combining its purchasing power, the state can often obtain more favorable costs and terms. In **Massachusetts**, the Environmentally Preferable Purchasing initiative allows the state Operational Services Division to identify and offer environmentally preferable products that can be obtained from more than three-dozen statewide contracts. Municipal departments, state colleges and universities, public schools/districts, and other eligible participants take advantage of the program by contacting the vendor and placing orders under approved contracts. Prices are generally defined in the contract, and environmentally preferable products can include products made with recycled content, products that increase energy conservation, or products with reduced toxins.<sup>47</sup>

### **Public Benefits Funds**

PBFs—also called system benefits charges (SBCs)—are used in many states to provide financing through grants, loans, and rebates for energy efficiency, renewable energy, and low-income energy assistance programs. The funds are supported either by a negligible per-kWh charge on each customer’s utility bill or through dedicated contributions from participating utilities. The U.S. EPA estimates that by 2015, PBFs will generate more than \$4 billion for clean energy.<sup>48</sup> States can leverage these funds towards clean energy programs, including lead by example initiatives, where permitted and when other sources of funding are unavailable.

PBFs can be administered in a variety of ways, including through the state energy office, quasi-public agencies, public regulatory agencies, nonprofit organizations, or utilities. In **Wisconsin**, the state’s public benefits fund is administered by the Wisconsin Public Service Commission. The fund supports the Focus on Energy and the Home Energy Assistance programs and is financed by electric and natural gas utility ratepayers. The Focus on Energy program is a public-private partnership whose mission is to develop and operate a range of sustainable energy efficiency and renewable energy programs. For example, the Wisconsin Schools and Local Government program provides financial assistance to help public and private schools make informed purchasing choices. In the first three years of the program, more than 500 schools implemented projects that included

lighting retrofits, increasing use of sensors and multilevel switching in gymnasiums, and implementing the Energy Watchdog program to track energy use. In addition, the Focus on Energy Renewable Energy program provides funding to increase renewable energy adoption in all sectors of the economy. The funds allotted in 2003–2004 helped support 27 wind projects, 55 photovoltaic projects, 7 bioenergy electric projects, and 6 bioenergy thermal projects.<sup>49</sup>

#### **Revolving Loan Funds**

Revolving loan funds have an established pool of money and issue new loans as existing loans are repaid.<sup>50</sup> Utah’s Energy Efficiency Fund was allocated \$5 million for 2007–2008 to retrofit or improve energy efficiency in existing schools or to improve energy efficiency beyond code in new schools. Loans are limited to a term of 2 to 12 years, and the administering board may approve a loan request, contingent on assurances that the proceeds of the loan will be used to pay the cost of the project and that the project will be completed.<sup>51</sup>

#### **Pension Fund Investments**

State pension fund investments can also be directed toward clean energy projects. The California Public Employees’ Retirement System (CalPERS)<sup>52</sup> and the California State Teachers’ Retirement System (CalSTRS) have collective assets worth more than \$250 billion.<sup>53</sup> In 2004, the State Treasurer launched the *Green Wave* initiative, which leveraged \$1.5 billion in CalPERS and CalSTRS assets toward cutting-edge technologies and environmentally responsible companies to achieve positive returns on investments in emerging clean technology.

#### **Financing Agreements**

Minnesota’s Energy Improvement Financing program allows the Commissioner of the Department of Administration to solicit proposals from private financial institutions for competitive terms on tax-exempt lease-purchasing financing assigned to the state agency operating or managing a state building or facility that is in need of energy improvements. Proceeds from the financing agreement are appropriated to the commissioner, who credits them for the following types of energy improvement projects:

- Energy efficiency improvements, including the design, acquisition, installation, construction, and commissioning of equipment or improvements; and
- Projects to design, acquire, install, construct, and commission equipment or products that use alternative energy sources (solar, wind, geothermal, biomass, etc.) in heating, cooling, or for providing electricity used by a state-owned or -operated building or facility.

### **Conclusion**

Energy costs are rapidly increasing, and state operating budgets—of which energy expenses may be up to 10 percent—are growing accordingly. Through setting state lead by example policies for state buildings and fleets, governors and state legislatures can reduce the operations budget for government buildings and vehicle fleets. Lead by example programs also serve as an important market driver in many states. Through leading by example, state governments play a role in contributing both to consumer demand and to the policy support necessary to drive burgeoning markets for energy efficiency measures, clean electricity generation, and the production of alternative fuels.

While there is no “silver bullet” to meeting the nation’s energy needs, lead by example actions are frequently used as an effective first step in designing a comprehensive statewide clean energy policy. Lead by example initiatives range in complexity and cost, but can be tailored to fit a state’s goals and resources and can ultimately pave the way to achieve cost savings, increased clean energy investment in the state, and broader statewide clean energy and environmental goals.



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