

Governors Toolkit for Energy Efficiency



Governors across the country share important priorities: economic progress, job creation, workforce development, improved public health, technological innovation, environmental protection, and saving taxpayers money. Conserving energy in our homes, businesses, and transportation systems has an enormous role to play in furthering these high-priority gubernatorial goals. Importantly, efficiency is a job engine, employing more than 2.25 million Americans. It also is the fastest-growing job market in the energy sector and employs twice as many workers across the nation as all fossil fuel sectors combined.

Here are eight ways that governors can increase energy efficiency across their state economies.

1

Develop and communicate an energy efficiency vision. Governors can take the lead in *state energy planning*, laying the groundwork for a wide array of complementary policies, providing a clear vision and set of strategic goals, and establishing performance metrics and methods to track progress. They can *break silos by valuing efficiency as a public health strategy*. And they can *appoint an energy efficiency lead* tasked with moving efficiency efforts across sectors.

2

Drive energy efficiency in the utility sector. Governors can work with lawmakers to make *energy savings goals for utilities* a legislative priority. They can prioritize legislative and regulatory efforts to *align utility business models* with investments in energy efficiency and promote regulatory reforms like *enabling access to energy data*. In many states, governors have an important role to play in *appointing utility regulators*, who are tasked with making many key energy decisions. Governors can also help *promote efficiency in long-term utility planning efforts* and ensure that state policies *recognize the full value of energy efficiency*, including its health and environmental benefits.

3

Strengthen efficiency in the industrial sector. The industrial sector saves more energy per program dollar than other customer segments, yet many states harness only a fraction of their industrial energy efficiency potential. Governors can play a key role in demonstrating the value of efficiency in industry through *collaborative forums*. They can also work with state energy offices to *connect industrial facilities to technical assistance opportunities*, including resources offered by the US Department of Energy.

4

Encourage energy-efficient transportation. Accounting for almost 30% of national energy consumption, the transportation sector represents a vast opportunity. Governors can direct agencies to develop *tailpipe emissions standards* and to *offer incentives for electric and high-efficiency vehicles*. They can develop *zero-emission vehicle action plans*. They can also facilitate a shift toward more sustainable transit systems and land-use planning strategies by adopting targets to *reduce vehicle miles traveled*, developing *smart growth statutes* and *complete streets* policies, and ensuring *sustainable funding for transit infrastructure*. Governors can also direct that efficiency targets be included in *freight transportation plans*.

5

Scale up energy efficiency in buildings. Buildings account for about 40% of all energy consumed in the United States. Governors and state agencies can help building owners and operators harness efficiency opportunities by establishing building *benchmarking* requirements or incentives and implementing *building labeling* policies. They can reduce energy waste and improve resilience in new construction by ensuring that *building energy codes* are up to date and developing guidelines for localities to adopt *stretch codes*.

6

Lead with efficient state operations. State governments can advance energy-efficient technologies and practices by promoting energy efficiency in their own operations. Governors can use executive orders to set *energy savings goals for state buildings*. They can establish *benchmarking programs* and remove barriers to financing efficiency improvements through *energy savings performance contracts*. Governors can also call for *fleet-wide reduction in fuel consumption*, increases in average miles per gallon, or reductions in overall fleet emissions and direct the development of *efficient procurement policies*.

7

Reach underserved markets through state energy office programs. State energy offices are in a unique position to reach residents and businesses across their states with energy efficiency programs. Governors can *ensure that state energy offices are fully funded* and can work with these agencies to develop programs that address market sectors that may not be fully served by utility efficiency programs. For example, state energy offices can develop *efficiency programs to serve rural communities*, *coordinate funding for programs to serve low-income households*, and offer *financing programs* that leverage private capital alongside public dollars to incentivize efficiency.

8

Move toward more efficient appliances. By setting appliance efficiency standards, states can decrease energy use, save consumers and businesses money, and reduce emissions of greenhouse gases and other pollutants. Governors can work through legislative or regulatory channels to *adopt new appliance standards* while also putting in place *backstops for federal standards*.

Taking the Plunge

Energy efficiency opportunities exist across a state's entire economy. By implementing well-designed efficiency policies and programs, governors can spur economic development, increase employment opportunities, improve public health, and help families save on energy bills.

For more information on the right policies and programs for your state, contact Annie Gilleo, ACEEE's senior manager for state policy, at agilleo@aceee.org or (202) 507-4002.

Accomplishing State Goals through Energy Efficiency

Just as energy supply and delivery play critical roles in state economies, so do investments in energy efficiency. Efficiency is a job engine, employing more than 2.25 million Americans. It also is the fastest-growing job market in the energy sector and employs twice as many workers across the nation as all fossil fuel sectors combined.¹

Although we can't see energy efficiency the way we can see power plants emitting steam or wind turbines spinning, it is a critical energy resource. In fact, due to the success of energy efficiency programs and policies, efficiency has quietly grown into the nation's third-largest electricity resource.² Policymakers recognize that energy efficiency is generally the least expensive energy option compared with coal, natural gas, and renewable energy.³ Efficiency also lowers energy bills, helps drivers save money at the gas pump, cuts pollution, improves public health, and strengthens grid resilience.

While it may seem like an invisible resource, energy efficiency's benefits are anything but. The amount of energy that efficiency has saved since 1990 is equivalent to the output of 313 large power plants—plants that would otherwise have had to be built to meet US energy needs.* This is equal to nearly half of the existing coal plant capacity in the United States as of 2012.⁴

ACEEE estimates that customers are **saving \$90 billion annually** on electricity bills from efficiency, for a total of nearly \$790 billion in cumulative savings since 1990. For residential customers in 2015, this translated into **average annual savings of \$460 per household** on electricity bills alone.⁵

Energy efficiency can be a powerful tool for addressing the outsize burden that energy bills place on rural and low-income households. In cities across the country, the median low-income energy burden exceeds 7% of household income, more than twice the burden faced by non-low-income households.⁶ In rural areas, the energy burden can be even higher, with low-income households facing median energy burdens of 9.5%. Energy efficiency investments have the potential to reduce this burden by 25–30% while also providing residents with safer and healthier homes.⁷

For states with aggressive renewable energy goals, energy efficiency will be indispensable for meeting targets. By reducing overall energy demand, low-cost efficiency can directly support the uptake of clean technologies, such as electric vehicles, wind and solar power, and energy storage. For example, buildings can combine energy efficiency with clean technologies to lower emissions and achieve zero net energy.

Governors across the country are setting innovative energy policies, but there is more room to meet state goals through energy efficiency. In this toolkit, we lay out steps governors can take to increase energy efficiency in homes, businesses, and transportation infrastructure in a number of ways. Governors can:

- Develop and communicate an energy efficiency vision
- Drive utility sector energy efficiency
- Strengthen energy efficiency in the industrial sector
- Encourage energy-efficient transportation
- Scale up energy efficiency in buildings
- Lead with efficient state operations
- Reach underserved markets through state energy office programs
- Move toward more efficient appliances

For each of these areas, we offer foundational policies, examples of implementation, and resources to aid in policy and program development.

* This estimate assumes a 500-MW coal-fired power plant per the "Rosenfeld" analysis (Kooamey et al., "Defining a Standard Metric for Electricity Savings," AIP Conference Proceedings vol. 1401, 2011, pp. 26–43. iopscience.iop.org/article/10.1088/1748-9326/5/1/014017/meta).

1 Develop and Communicate an Energy Efficiency Vision

Governors can develop a vision for energy efficiency through energy planning, messaging, and leadership.

DEVELOP A STATE ENERGY PLAN

Governors have the opportunity to shape a state's energy future by working with their state's energy office and others to develop an energy plan harmonized with other elements of the governor's agenda. A successful energy plan engages stakeholders, lays the groundwork for a wide array of complementary policies, provides a clear vision and set of strategic goals, and establishes performance metrics and methods to track implementation progress over time. As of 2018, 42 states have active energy plans.⁸ These plans help spur legislation, state agency program development, regulatory guidelines, and tax policies friendly to efficiency and clean energy. These plans commonly aim to ensure a reliable supply of energy and promote energy independence and to manage costs so energy is affordable for households and businesses.

The National Association of State Energy Officials (NASEO) identifies 10 steps in developing a state energy plan, beginning with establishing a formal requirement or state directive for a plan, continuing through the collection of data and gathering of public input to formulate a plan and goals, and culminating in implementation and ongoing monitoring of progress.⁹

A state's governor can serve a vital role in the process. Energy planning efforts in about a dozen states (including Arizona, Michigan, Missouri, and Colorado) have been initiated at the direction of the governor or a state agency, either through executive order or an appointed task force.¹⁰ In other states, the process has been driven by state legislatures.

In 2015 Iowa Governor Terry Branstad and then-Lieutenant Governor Kim Reynolds announced the development of a comprehensive state energy plan to assess current and future energy supply and demand, examine energy policies and programs, and identify emerging challenges and opportunities. The plan incorporated significant public engagement and expert input by means of six public forums, the solicitation of comments through a website developed for the plan, and the creation of four working groups aligned with the plan's four strategic pillars: Economic Development and Energy Careers, Iowa's Energy Resources, Transportation and Infrastructure, and Energy Efficiency and Conservation. The completed plan was unveiled in December 2016 and included several specific objectives aimed at reducing energy waste, including facilitating diverse financing options for energy efficiency and renewable energy.¹¹

BREAK DOWN SILOS BY VALUING EFFICIENCY AS A PUBLIC HEALTH STRATEGY

Governors can take the lead in adopting strategies to reach emissions reduction goals to improve public health. While our air is getting cleaner overall, 4 of every 10 people in the United States still live where the air is unhealthy.¹² By saving energy in buildings and making vehicles more fuel efficient, we burn less fossil fuel and reduce the harmful pollutants these fuels emit.¹³ This pollution contributes to the leading causes of death in the United States and is especially harmful to children, the elderly, and people with respiratory illnesses such as asthma.¹⁴

In 2017 New York Governor Andrew Cuomo adopted a "Health Across All Policies" initiative that integrates health considerations into policymaking across all sectors to improve community health and wellness.¹⁵ This approach recognizes energy efficiency as a health improvement strategy that targets the social determinants of health in the home and the environment. Recognizing the threat that climate change

poses to public health, governors can also ensure that energy efficiency plays a central role in climate change resiliency and mitigation plans and in policies to price greenhouse gas emissions.

APPOINT AN ENERGY EFFICIENCY LEAD

Governors can also ensure that energy efficiency is incorporated broadly across state efforts by appointing a full-time employee tasked with driving efficiency efforts. For example, in 2014 Virginia Governor Terry McAuliffe issued Executive Order 31, appointing a chief energy efficiency officer (CEEEO) to oversee planning, implementation, and measurement of energy efficiency throughout the state government.¹⁶ The executive order laid out specific tasks for the CEEEO, including working with the energy office to develop a system to track energy consumption across state facilities, collaborating with the Department of General Services to identify and prioritize state buildings in need of efficiency retrofits, and consulting with subject matter experts to identify efficiency best practices and recognize leaders.

Tools for Developing a State Energy Vision

[NASEO's State Energy Planning Guidelines](#) offer 10 key steps for state energy planning, as well as sources for data and modeling.

The National Governors Association's [Energy Innovation Roadmap](#) details ways governors can take the lead in modernizing state energy systems.

The National Conference of State Legislatures [guide to state energy planning](#) focuses on the role of state legislators.

[ACEEE offers resources](#) on health and energy efficiency.

2 Drive Utility-Sector Energy Efficiency

ACEEE research finds that with additional policy support, especially at the state level, efficiency has the potential to fill one-third of total expected electricity generation needs by 2030. Governors are well positioned to help their states reap the benefits of increased efficiency by establishing energy savings goals and advocating for utility regulatory reforms that incentivize utilities to invest in energy efficiency for their customers, thereby reducing the need for new power generation or transmission and distribution infrastructure.

SET ENERGY SAVINGS GOALS

Energy efficiency targets for utilities are critical to encouraging near- and long-term energy savings. ACEEE has found that states with an energy efficiency resource standard (EERS) in place invest more in energy efficiency and realize savings levels about four times higher than do states without an EERS. In 2015 savings averaged 1.2% of retail sales in EERS states, compared with 0.3% for non-EERS states.¹⁷ Implementation of an EERS can occur either through legislation or through rules and regulations approved by a state's public utility commission (PUC). Governors can work with lawmakers to make energy savings goals a legislative priority, and they can facilitate coordination among regulators, agency staff, utilities, and advocates.

In 2018 New Jersey became the 27th state to adopt an energy efficiency resource standard, thanks in large part to the leadership of Governor Phil Murphy and the clean energy agenda he outlined during his campaign. Murphy formed an Environment and Energy Transition Advisory Committee to advise on key issues as he prepared to take office, publishing a report on January 1 that outlined priorities for his administration, including a recommendation to "set an energy-savings goal and promote investments in energy efficiency (including combined heat and power), with a focus on low-income households and communities of color."¹⁸ Just a few months later, the state legislature introduced, and later passed, legislation establishing new targets for annual reduction of electricity and natural gas usage of 2% and 0.75%, respectively, within five years.

PROMOTE UTILITY REGULATORY REFORMS TO ENCOURAGE EFFICIENCY

Utilities' earnings have traditionally been based on the amount of capital invested in assets, such as transmission infrastructure and power plants, and on the amount of electricity sold. This utility business model discourages saving energy, but many states have turned to policies that realign utility incentives toward efficiency by rewarding utilities for energy saved. In a number of states, governors have supported legislation to align utility business models with investments in energy efficiency. Some governors are also working with regulators and policymakers to explore ways to modernize the electric grid to enable interconnection and deployment of innovative new technologies and third-party services to meet clean energy goals. Key utility regulatory reforms that governors have prioritized include the following.

Performance incentives. Performance incentives are financial incentives that reward utilities (and in some cases nonutility program administrators) for reaching or exceeding specified program goals. These incentives may be based on achievement of energy savings targets or tied to spending goals. As of 2018, 29 states offer a performance incentive for at least one major electric utility, and 17 states have incentives for natural gas energy efficiency programs.¹⁹ In 2016, Michigan Governor Rick Snyder worked with legislators to win approval of major energy legislation that extended and improved the state's EERS, removed an existing cap on energy efficiency spending, and added tiered incentives to encourage utilities to exceed 1.5% annual savings.

Revenue decoupling. State regulators can introduce a decoupling mechanism that separates utilities' sales from their revenues and profits, thereby removing the incentive to sell more energy. Although decoupling does not necessarily make a utility more likely to promote efficiency programs, it removes or reduces the financial disincentive to do so. As of 2018, 16 states, including Minnesota, Colorado, and Ohio, have implemented decoupling for electric utilities. Twenty-three states have approved decoupling for natural gas utilities.²⁰

Rate design principles. As smart grid technologies unleash new data, governors can work with regulators to explore new rate design mechanisms that help encourage conservation and reduce peak demand. ACEEE has identified three particularly important principles for rate design: simplicity, utility revenue stability, and price signals that encourage conservation and energy efficiency.²¹

Data access. Engaging utilities, regulators, or legislators to advance access to utility consumption information for customers, building owners, and authorized third parties can help open the market to new efficiency products and services for customers. By providing guidelines or requirements that standardize and streamline data access electronically across a utility territory or state, regulators can help facilitate data transmission from customers to third parties, expanding opportunities for innovation in the energy services marketplace while also addressing privacy concerns that may pose barriers to data sharing.

APPOINT AND ENGAGE WITH UTILITY REGULATORS COMMITTED TO EFFICIENCY

Governors in some states are granted authority to nominate officials to serve in state PUCs, often for four- or five-year terms. This provides the opportunity to shape the priorities of the commission by appointing officials with skills, experience, or values that align with goals of the administration.

The National Governors Association has recommended engagement practices for governors to help maintain efficiency as a government priority. These include submission of oral and written testimony to PUCs in order to ensure that administration policy goals are considered as part of open proceedings, assembly of working groups to provide input into more formal proceedings, and ensuring that PUCs have adequate staff and resources to address the workload and technical challenges that may arise from more complex proceedings, such as those addressing grid modernization issues.²² Engagement via the state energy office offers another mechanism to elevate issues under consideration by the PUC, as well as emphasize the importance of policy decisions that align with the goals of the state energy plan. Energy offices in some states can also formally intervene on behalf of the governor in utility regulatory proceedings.

VALUE ENERGY EFFICIENCY IN LONG-RANGE UTILITY ENERGY PLANNING

Another vital part of successful state energy policy is an integrated resource plan (IRP). Commonly undertaken or updated every two-to-three years, IRPs forecast future energy demand to determine a cost-effective approach to meeting energy needs. While energy efficiency is included in most IRPs, the extent to which it is considered can vary widely. Governors can work with utilities and state regulators to help ensure that energy plans include a comprehensive and accurate assessment of potential energy efficiency benefits in modeling scenarios in order to lower costs for customers. In October 2018, Virginia Governor Ralph Northam released the 2018 Virginia Energy Plan following a stakeholder process conducted by his administration over the summer.²³ One of the recommendations incorporated into the plan is to undertake reforms to the utility IRP process to strengthen consideration of distributed resources, including rooftop solar, smart meters, energy efficiency, electric vehicles, and energy storage.

RECOGNIZE THE MULTIPLE BENEFITS OF ENERGY EFFICIENCY

Successfully leveraging efficiency as a resource requires an accurate valuation of the true costs and benefits of efficiency, which often extend beyond energy savings. Yet when states evaluate cost effectiveness, they often undervalue or fail to include many nonenergy benefits that accrue to utilities, participants, and society. Some of the most significant omissions are the health and environmental benefits generated by energy efficiency. These include the avoided cost of utilities' compliance with environmental regulations, improved air quality, the improved health of program participants, and better public health in general.

A balanced, state-specific cost-effectiveness test can help regulators, utilities, and stakeholders get on the same page in designing and delivering efficiency programs. As a guide, ACEEE recommends use of the National Standard Practice Manual (NSPM), developed by efficiency experts and informed by the premise that each state should develop its primary cost-effectiveness test to reflect its guiding policies. The NSPM provides a step-by-step process for developing a primary test, including extensive information and examples for addressing common technical issues. Governors can also work with lawmakers to integrate energy efficiency into health and environmental policies, and engage utilities and regulators to incorporate the multiple benefits of energy efficiency into cost-effectiveness tests.

Tools for Utility-Sector Energy Efficiency

The National Efficiency Screening Project's [National Standard Practice Manual](#)

ACEEE technical assistance toolkits: [Energy Efficiency Resource Standard and Aligning Utility Business Models with Energy Efficiency](#)

[Energy Data: Unlocking Innovation with Smart Policy](#), a report by Mission:data Coalition and the Advanced Energy Management Alliance, offers a guide and examples from states like California, Illinois, New York, and Texas regarding how policymakers and advocates can empower consumers to access their energy usage information.

Electric Power Research Institute: [State Level Electric Energy Efficiency Potential Estimates](#)

National Governors Association: [Grid Smarts: State Considerations for Adopting Grid Modernization Technologies](#)

US Department of Energy: [Partnering with Utilities and Other Ratepayer-Funded Energy Efficiency Program Administrators](#)

3

Strengthen Energy Efficiency in the Industrial Sector

In many utility systems, industrial customers account for the largest share of energy demand, representing a significant opportunity to achieve substantial savings through energy efficiency. ACEEE has found that some of the most cost-effective efficiency programs are those designed for large energy users.²⁴ Yet many states harness only a fraction of their industrial energy efficiency potential. The governor's office has the means to bring greater attention and resources to bear on the unique needs of industrial customers.

PROMOTE INFORMATION SHARING AND COLLABORATIVE FORUMS

Governors can leverage and create opportunities to facilitate collaboration between utilities and industry to cross-pollinate ideas for reducing energy waste. In recent years governors and utility commissions in several states have convened workshops and working groups to tackle energy issues ranging from improving access to energy data to identifying technical and policy barriers to the uptake of combined heat and power (CHP) technologies.

In 2012 the Utah Office of Energy Development (OED) held the first annual Governor's Energy Development Summit to draw together businesses, nonprofits, the public, and state legislators to learn about energy technologies and policies. The OED also supported a multiyear challenge to encourage industry to reduce energy consumption through friendly competition.

CONNECT INDUSTRIAL FACILITIES TO TECHNICAL ASSISTANCE

Governors can also work through the state energy office to provide technical assistance to manufacturing and industrial facilities, helping them identify and act on energy efficiency opportunities. Ohio's state energy office partnered with Energy Industries of Ohio to establish a cooperative program that provided assessments as part of the US Department of Energy's (DOE) Better Plants Program. The initiative also provided best practices workshops that covered motor-drive systems and natural gas-fueled processes.²⁵ State energy offices can also partner with federally funded Industrial Assessment Centers at regional technical universities to deliver energy assessments using faculty and student teams. These universities can play an important workforce development role, which manufacturers have identified as a top challenge. Governors can also ensure that industrial facilities are connected to additional federal resources, including the DOE's 50001 Ready program, which helps facilities establish an energy management system, and CHP Technical Assistance Partnerships, regional services that help overcome barriers to combined heat and power adoption.

Tools for Industrial Energy Efficiency

ACEEE: aceee.org/topics/industrial-energy-efficiency-programs

SEE Action (State & Local Energy Efficiency Action Network): www4.eere.energy.gov/seeaction/system/files/documents/industrial_energy_efficiency.pdf

DOE's Better Plants Program: betterbuildingsinitiative.energy.gov/better-plants.

Industrial Assessment Centers: iac.university/

DOE's 50001 Ready Program: betterbuildingsolutioncenter.energy.gov/50001Ready

CHP Technical Assistance Partnerships: betterbuildingsinitiative.energy.gov/chp/chp-taps

4

Encourage Energy-Efficient Transportation

Accounting for almost 30% of national energy consumption, the transportation sector represents a vast opportunity for the governor's office to effect positive change to reduce emissions from mobile sources, improve air quality, and enhance the connectivity and livability of communities. By working with legislators and others through the state transportation planning process, governors can steer resources toward strategies to encourage the uptake of more efficient transportation options. In addition, governors today have the advantage of presiding during a dynamic time for the automobile industry, in which manufacturers, utilities, and states are exploring strategies for integrating electric vehicles into the energy grid and existing transportation systems in order to reduce pollution, meet state carbon goals, and transition away from less efficient consumption of fossil fuels.

SET TAILPIPE EMISSIONS STANDARDS

In the wake of the federal government's proposal to freeze national vehicle efficiency standards for 2020–2025, California's authority to set its own tailpipe emissions standards, as well as other states' option to adopt those standards, has gained renewed importance. Thirteen states and the District of Columbia currently use California's standards. In June 2018, Colorado Governor John Hickenlooper issued an executive order directing the state Department of Public Health and the Environment to develop a rule establishing a low-emissions vehicle program modeled after California's.²⁶ Adoption of California's standards not only reduces greenhouse gas emissions but helps save consumers money at the pump. It can also help the state meet other air quality goals like maintaining compliance with federal National Ambient Air Quality Standards.

OFFER HIGH-EFFICIENCY VEHICLE INCENTIVES

While many recognize the environmental benefits and lifetime net savings from purchasing certain fuel-efficient vehicles, up-front costs can be a significant barrier for consumers. To encourage consumers to purchase fuel-efficient vehicles, states may offer financial incentives including tax credits, rebates, and sales tax exemptions.²⁷

In support of his administration's priority to strengthen sustainability in the transportation sector, Delaware Governor Jack Markell launched the Clean Transportation Incentive Program in 2015, designed to provide incentives to purchase alternatively fueled vehicles and EV charging equipment and to install alternative fueling infrastructure. Administered through the Delaware Department of Natural Resources and Environmental Control, the program has provided rebates to more than 750 drivers for the purchase or lease of electric and plug-in hybrid vehicles, as well as 200 rebates for electric vehicle charging stations.²⁸

ACCELERATE TRANSITION TO ZERO-EMISSION VEHICLES

Spurred by ambitious carbon reduction goals, a number of states have undertaken more comprehensive efforts beyond vehicle incentives to accelerate the transition to zero-emission vehicles (ZEVs), including battery-electric, plug-in hybrid electric, and fuel cell electric vehicles. These states are also working with dealerships to increase sales and with public utility commissions to expand charging infrastructure, address ownership model questions, and update electricity rate designs.

In 2012, California Governor Jerry Brown convened a ZEV Summit to explore strategies for implementing his executive order for widespread deployment of ZEVs. The resulting ZEV Action Plan provided a detailed road map with specific actions to build the required infrastructure, expand consumer awareness, and transform the marketplace to meet the governor's goals.²⁹

Many states have also recognized the importance of pursuing a coordinated approach to expanding vehicle electrification along major interstate corridors. In 2017 the governors of Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming signed a memorandum of understanding (MOU) to provide a framework for creating a regional electric vehicle plan for the West, the REV West Plan.³⁰ The MOU established a coordination group charged with determining best practices for enhancing EV adoption, creating voluntary minimum standards for charging stations, identifying opportunities to incorporate charging stations into building codes and metering policies, and working with EV manufacturers to stock and market EVs. The group meets quarterly to report on progress toward meeting MOU goals. A coalition of a dozen Northeast states released a similar plan in 2018, the *Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure*.³¹

ADOPT VEHICLE-MILES-TRAVELED REDUCTION TARGETS

Reducing vehicle miles traveled (VMT) is key to managing transportation energy use, and several states have taken on this challenge both by setting targets for VMT per capita (New York, Vermont, Washington) and by stipulating region-specific per capita GHG reduction goals (Oregon, California).

In 2007 Washington Governor Christine Gregoire partnered with the governors of Arizona, California, New Mexico, and Oregon to establish a registry for managing regional emissions as part of the Western Climate Initiative. That same year, Governor Gregoire issued EO 07-02, setting specific statewide GHG reduction benchmarks, later codified in law.³² Parallel benchmarks for VMT reduction were adopted the following year to address transportation-sector GHG (RCW 47.01.440). A follow-up executive order (EO 09-05) signed in 2009 by Governor Gregoire directed the state transportation department to evaluate these VMT targets in light of new fuel efficiency technologies and to coordinate with regional transportation planning organizations to reduce VMT in the most populated counties.³³

PROMOTE COMPLETE STREETS POLICIES AND INTEGRATION OF LAND USE AND TRANSPORTATION

To address urban sprawl, preserve open spaces, and promote use of public transit, many states have adopted smart growth statutes and strategies integrating transportation and land use planning. Integrated approaches include measures that encourage transit-oriented and/or compact development, redevelopment of areas with existing infrastructure, and policies that require interagency coordination and review of comprehensive plans.

In response to dramatic increases in development in the 1990s, Arizona Governor Jane Hull made conservation and open space management a priority. In 1998 the legislature passed the Growing Smarter Management Act, expanding the community planning process to require greater consideration of open space, growth management, and the environment.³⁴ The act also created a 15-member Growing Smarter Commission, appointed by the governor, to consider additional growth and open space-related issues and strategies with the help of public input. The commission's recommendations informed Growing Smarter Plus (GS+) legislation, signed by the governor in 2000, which went further to require rapidly growing cities to obtain voter approval of general plans at least once every 10 years. GS+ also authorized cities and counties to designate service area limits and create infill incentive districts, and it established a transfer of development rights program.

Complete streets policies offer another strategy for reducing fuel consumption and vehicle miles traveled, promoting street connectivity by creating safe and easy access to roads for all pedestrians, bicyclists, motorists, and public transportation users. More than half of the states have adopted planning statutes incorporating complete streets provisions to provide equitable access in road projects.

In 2010 Michigan passed HB 6151, creating a governor-appointed Complete Streets Advisory Council, situated within the state Department of Transportation and tasked with formulating a complete streets policy.³⁵ In 2012 the State Transportation Commission approved the policy, laying out a timeline for

implementation.³⁶ Municipalities must address this complete streets policy before finalizing capital infrastructure projects.³⁷

ENSURE SUSTAINABLE FUNDING FOR TRANSIT

Governors can also direct support for state transit infrastructure and services by leveraging the annual state budget development process or by backing legislation to establish a more sustainable long-term funding stream.

In 2010 Georgia Governor Sonny Perdue announced comprehensive plans to strengthen the state's transportation network, including a budget recommendation for \$300 million in bond projects for transportation.³⁸ Even more significant to invigorating statewide transportation funding was the governor's support for legislation passed that same year creating special tax districts mirroring regional planning boundaries in order to finance transit development and expansion.³⁹ Since then voters in three regions have approved a 10-year 1% sales tax, expected to generate a total of \$1.5 billion in new revenue, to fund regional and local transportation improvements.

SET FUEL USE AND MODAL TARGETS FOR FREIGHT MOVEMENT

Many states have updated their freight transportation plans in recent years in accordance with the 2015 Fixing America's Surface Transportation (FAST) Act, which requires inclusion of multimodal strategies. These freight plans can be strengthened by adopting concrete targets or performance measures that establish energy efficiency as a priority for goods movement. Such measures involve tracking and reporting the fuel used for freight movement in the state, and they encourage the use of energy efficiency as a criterion for selecting or evaluating freight projects.

Tools for Energy-Efficient Transportation

ACEEE's [State Energy Efficiency Policy Database](#) offers a variety of examples of states establishing sustainable funding streams for alternative transportation options, often from a dedicated annual portion of sales tax revenues.

American Transportation Research Institute: [Identifying State Freight Plan Best Practices](#)

Institute of Transportation Engineers: [Designing Urban Walkable Thoroughfares](#)

Multi-State ZEV Task Force: [Multi-State ZEV Action Plan 2018–2021: Accelerating the Adoption of Zero Emission Vehicles](#)

National Association of State Energy Officials: [PEV Policy Evaluation Rubric: A Methodology for Evaluating the Impact of State and Local Policies on Plug-in Electric Vehicle Adoption](#)

National Association of City Transportation Officials: [Urban Bikeway Design Guide](#)

National Governors Association: [Governors Staying Ahead of the Transportation Innovation Curve: A Policy Roadmap for States](#)

Smart Growth America provides a [nationwide inventory](#) of Complete Streets policies

Department of Transportation: [National Freight Strategic Plan](#)

Buildings account for about 40% of all energy consumed in the United States.⁴⁰ Governors can influence building efficiency not only in state-owned buildings but also in the private sector.

MOVE MARKETS WITH DATA

Governors and state agencies can help building owners and operators harness efficiency opportunities by establishing building benchmarking requirements or incentives. These policies require property owners, builders, or sellers to compile information about their buildings' energy use or energy efficiency characteristics and report these data to a central database and/or to prospective buyers at the time of sale. Studies have shown that benchmarking and transparency policies are associated with energy reductions of 1.6 to 14% (most results fall between 3 and 8%) because building owners, property managers, and private-sector efficiency service providers can use this information to identify and implement efficiency opportunities.^{41,42} Cities have historically led the way in establishing benchmarking programs, but several states, including California and Washington, have also implemented requirements that large commercial buildings benchmark and disclose energy usage.

Similarly, states can leverage data to uncover energy efficiency opportunities in homes. While miles-per-gallon stickers and Energy Guide labels have become dependable fixtures of the vehicle and home appliance markets, a lack of transparent energy use information has historically plagued the housing sector. Home energy labeling can help close the information gap, enabling homebuyers to make smart purchasing decisions and undertake targeted efficiency upgrades soon after the time of purchase. In 2018 Governor Charlie Baker of Massachusetts spearheaded legislation to require that a home energy scorecard and energy rating be provided to homeowners as part of free residential energy efficiency assessments, and that home energy performance ratings be made available to potential homebuyers beginning in 2021.⁴³

ENSURE NEW CONSTRUCTION IS EFFICIENT BY UPDATING BUILDING ENERGY CODES

Mandatory building energy codes require a minimum level of energy efficiency for new residential and commercial buildings as well as specify aspects of health and safety. Building energy codes can help bring new technologies and design strategies to market and ensure more efficient and resilient construction practices. New model codes are developed by ASHRAE and the International Code Council, with review and technical analysis from DOE. National model codes are updated every three years. States can then adopt these codes outright or use them to build state-specific codes.

Processes for updating building energy codes vary by state. In some states, legislatures initiate the process. In these states, governors can introduce or support legislation that includes code updates. In other states, code authorities are tasked with reviewing and updating codes. These authorities may be directly overseen by the governor's office, or they may be housed within a state agency like the energy office or planning office. In Florida, for example, the chairman of the Florida Building Code Commission is appointed by the governor and tasked with appointing additional members and adopting code changes. Legislation authorized the commission to update codes on a regular basis.⁴⁴ Ten states are home rule, meaning local jurisdictions rather than the state are tasked with code adoption. In these cases, the governor can elevate the issue of code adoption and provide support to localities through programs at the state energy office. In all states, governors can make sure that a state agency is well funded to provide training to code officials.

ENCOURAGE LOCALITIES TO ADOPT STRETCH CODES

Governors can also establish policies that enable willing localities to go beyond statewide code to achieve greater levels of energy savings. Stretch codes are voluntary additions to the statewide minimum code that allow municipalities to put in place a more stringent uniform code option. Stretch codes pull the construction market upward, providing an opportunity for the building community to advance technologies and construction practices before statewide code is updated.⁴⁵ Massachusetts was the first state to adopt a stretch code in 2008 as part of the Green Communities Act. As of 2018, 250 municipalities have adopted the stretch code. A recent analysis found that homeowners see a positive cash flow when purchasing a home built to 2015 stretch code requirements as opposed to 2015 base code requirements.⁴⁶

Tools for Energy Efficiency in Buildings

Information on code update processes broken down by state: [Status of State Energy Code Adoption](#)

US Department of Energy: [Building Energy Codes Resource Guide for Policymakers](#)

The New Buildings Institute's [Model Stretch Code](#) targets a 20% performance improvement for commercial buildings over the ASHRAE 90.1-2013 code baseline.

6 Lead with Efficient State Operations

State governments can advance energy-efficient technologies and practices in the marketplace by promoting energy efficiency in their own operations. Taking actions to improve efficiency across government buildings and fleets not only leads by example but can also lower everyday energy costs, which can account for as much as 10% of a typical government's annual operating budget.⁴⁷ Governors are typically drivers of lead-by-example programs, using executive orders to call for energy savings in three areas: buildings, fleets, and procurement.

PROMOTE EFFICIENCY IN STATE BUILDINGS

Set Goals and Standards

Through executive order, governors may promote energy efficiency in buildings in several ways. Policies may target existing buildings by requiring all state agencies to reduce their energy use by a set percentage over a certain amount of time. These policies should set explicit, measurable expectations for energy savings, specify a baseline and an end date, and establish a system for monitoring progress and holding state agencies accountable. Colorado has used this approach on an iterative basis, first establishing an energy savings target in 2005 through Executive Order D005-05, which charged all state agencies and offices with reducing energy consumption 20% by fiscal year 2012 relative to 2006 levels. The state reached this goal, and in 2015 it enacted Executive Order D 2015-013, setting another energy savings target of 12% by fiscal year 2020 from a 2015 baseline.⁴⁸

Several states have also established more stringent building energy codes for state-owned or operated buildings or require that new construction meet specific energy or green building guidelines such as those set forth by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED). For example, in Missouri a 2009 executive order requires that newly constructed state-owned or operated buildings comply with the most recent International Energy Conservation Code.⁴⁹ In Washington, Governor Jay Inslee issued Executive Order 18-01 requiring that newly constructed state-owned buildings be designed to be zero energy or zero energy-capable and take into account the energy and emissions implications of materials and construction.⁵⁰

Focus on Implementation

Governors can also use executive orders to create a pathway for achieving goals. For example, benchmarking programs may be paired with energy savings targets. In Minnesota, Executive Order 11-12 (2011) calls for a 20% reduction in energy use in state facilities and requires the use of the B3 Energy Benchmarking website to track efforts to comply. More than 8,000 public buildings—including state agencies, city and county facilities, higher-education campuses, and school districts—use the tool to track energy consumption, potential energy savings, total dollar savings, and other metrics.⁵¹

Encouraging the use of energy savings performance contracts (ESPC), including removal of any barriers to such use, is also a key role for a governor. ESPCs allow the state to enter into a performance-based agreement with an energy service company, paying the company for its services with money saved through energy efficiency measures. Most states have ESPC-enabling legislation, but the strongest policies explicitly promote the use of ESPCs to improve the energy efficiency of public buildings through statutory requirements, recommendations, or express preference for using ESPCs. In Kentucky, the Division of Facility Efficiency oversees the state's Guaranteed Energy Savings Performance Contracting

program, authorized through state code.⁵² The division developed a dashboard to help the state assess and manage energy needs; it allows bill payment, usage analysis and benchmarking, work order management, and building automation system integration.⁵³ Since the passage of enabling legislation in 1996, Kentucky government facilities have leveraged more than \$1 billion in ESPCs to enable efficiency upgrades to buildings.⁵⁴

PROMOTE EFFICIENCY IN FLEETS

Governors can encourage fuel savings by putting in place policies that call for a fleet-wide reduction in fuel consumption, an increase in average miles per gallon, or a reduction in overall fleet emissions. State agencies can also require a certain percentage of new vehicle purchases to be hybrid or electric. In California, Executive Order B-16-12, signed in 2012, required the state's vehicle fleet to increase its number of zero-emission vehicles through the normal course of fleet replacement so that at least 10% of light-duty fleet purchases were zero-emission by 2015. The goal is now at least 25% by 2020.⁵⁵ In North Carolina, Executive Order No. 80 (2018) sets a specific requirement for zero-emission vehicles, calling for the state fleet to include at least 80,000 by 2025.⁵⁶

FOCUS ON PROCUREMENT, PLUG LOADS, AND BEHAVIOR

Governors can also use executive orders to guide product procurement policies. These policies often require Departments of Administrative Services (DAS) or General Services to procure ENERGY STAR®-labeled products or those certified by the Federal Energy Management Program. Energy-efficient product procurement can also help develop an in-state market for clean energy products. Working with building occupants and managers can also improve efficiency. Several states have focused on plug loads and behavior programs to save energy in operations. In November 2017, Governor Kate Brown of Oregon issued Executive Order 17-20, directing DAS and the Oregon Department of Energy (ODOE) to develop a statewide plug load management strategy. The order also calls on DAS and ODOE to develop strategies for occupant behavior change.⁵⁷

Tools for Energy-Efficient State Operations

ACEEE's lead-by-example toolkit: aceee.org/sector/state-policy/toolkit/lbe

Department of Energy lead-by-example resources: www.energy.gov/eere/slsc/energy-efficiency-lead-example-resources

7 Reach Underserved Markets through State Energy Office Programs

State energy offices are in a unique position to reach residents and businesses across the state with energy efficiency programs. Governors can ensure that energy offices are fully funded and can work with state agencies to develop programs addressing market sectors that may not be fully served by utility efficiency programs.

DEVELOP PROGRAMS FOR RURAL COMMUNITIES

Rural areas often have unique needs and can be hard for utility programs to reach. Some state energy offices have developed programs to serve these customers. In Iowa, Lieutenant Governor Reynolds oversaw the development of a state energy plan, released in late 2016, that targeted support for rural and underserved communities. Based on the plan, the Iowa Economic Development Authority (IEDA) developed a two-year pilot program to be delivered jointly with the Iowa Association of Municipal Utilities and funded a Regional Energy Services Specialist to coordinate efficiency and distributed renewable programming.⁵⁸

COORDINATE ASSISTANCE FOR LOW-INCOME HOUSEHOLDS

Energy efficiency can be a powerful tool for reducing the high energy burdens faced by low-income households. Governors can lead coordination of efficiency services to these residents, ensuring that resources are maximized by administering programs through a single state agency. For example, the Ohio Development Services Agency, Community Services Division, Office of Community Assistance (OCA) is responsible for administering several key energy programs, including the Community Services Block Grant, the State Energy Plan, the Low Income Home Energy Assistance Program (LIHEAP), and several other programs targeting customers struggling to pay their energy bills. OCA participates in a stakeholder network that facilitates the integration of federal weatherization funds with utility resources through a single coordinated funding model, managing programs for all seven major utilities.⁵⁹

SCALE EFFICIENCY THROUGH FINANCING

Leveraging private capital can further stretch public dollars to incentivize energy efficiency. Several states have pursued green banks, which may combine public and ratepayer funds to attract private capital and to stimulate investment in clean energy projects. Green banks often provide technical assistance to clean energy projects across sectors to help consumers understand available funding streams and to simplify the process of purchasing efficiency technologies. Green banks can also address other barriers to matching capital with customers, by establishing loan loss reserves or credit enhancements.

State agencies can facilitate the use of specific financing tools. Property assessed clean energy (PACE), for example, offers a mechanism for financing energy efficiency and renewable energy improvements on private property by which up-front costs are financed and then paid back over time through a voluntary assessment. PACE requires enabling legislation, which 36 states and the District of Columbia have passed for programs for commercial properties.⁶⁰ Strong PACE programs require facilitation, and states may consider establishing programs administered or supported at the state level, as opposed to locally administered programs, to achieve economies of scale and market consistency. Models and approaches for statewide PACE programs exist in Texas, Colorado, Connecticut, and Utah, where the Governor's

Office of Energy Development administers commercial PACE by providing standardized program forms, maintaining a list of approved vendors, reviewing technical proposals, and hosting online tools.⁶¹

Other states have had great success in financing efficiency investments with tools including bond financing (New Mexico), direct lending through low- or no-interest revolving loans (Texas), loan participation programs (Nebraska and Alabama), and on-bill financing programs run through the state energy office (New York, Arkansas).⁶²

Tools for State Energy Office Programs

ACEEE's financing toolkit: aceee.org/sector/state-policy/toolkit/financing-energy-efficiency

PACE legislative toolkit: pacenation.us/pace-legislation/

NASEO information on state energy office financing programs: naseo.org/state-energy-financing-programs

DOE State and Local Solutions Center overview of financing mechanisms: www.energy.gov/eere/slsc/pay-energy-initiatives

ACEEE resources on efficiency for rural and small-town America: aceee.org/topics/rural-and-small-town-communities

ACEEE resources covering efficiency for low-income households: aceee.org/topics/low-income-programs

8 Move Toward More Efficient Appliances

Appliance and equipment standards specify the minimum energy efficiency levels of specific products. National standards apply to appliances and equipment manufactured in the United States or imported for sale, while state standards apply to products sold or installed in a given state. Historically, states have taken the lead in the development of new standards. Usually new state standards cover products for which there are no existing national standards because, with limited exceptions, national standards preempt state standards. By setting appliance efficiency standards, states can decrease energy use, save consumers and businesses money, and reduce emissions of greenhouse gases and other pollutants.

SET NEW STANDARDS

The Appliance Standards Awareness Project outlined a package of 21 standards that states could adopt that would lead to cumulative energy savings of about 590 million kilowatt-hours through 2035, enough to power 50 million US households for a year.⁶³ These standards would also generate significant economic savings, ranging from \$198 million in North Dakota to \$16 billion in California. In 2017, Vermont Governor Phil Scott signed a bill adopting 16 of these standards.⁶⁴

PROTECT NATIONAL STANDARDS

Historically, federal energy efficiency standards have enjoyed broad, bipartisan support. However in recent years there have been concerns that the federal government could weaken or even remove them. In response, some states have adopted backstop legislation. For example, in 2017 Vermont adopted H. 411, which adopted all current federal standards as state standards that would remain in effect should federal standards be repealed or voided.⁶⁵ Governors can work with state legislatures to adopt measures with similar language, ensuring that appliance standards will remain in place regardless of federal actions in the future.

Tools for More Efficient Appliances

Status of current state standards: appliance-standards.org/states#states-table

State savings from adopting standards: appliance-standards.org/document/report-overview-states-go-first

The Appliance Standards Awareness Project also works with states to develop customized legislative language for appliance standards.

For more information on the right policies and programs for your state, contact Annie Gilleo, ACEEE's senior manager for state policy, at agilleo@aceee.org or (202) 507-4002.

Endnotes

- 1 E2 and E4TheFuture, Energy Efficiency Jobs in America (Framingham, MA: E4TheFuture, 2018). e4thefuture.org/wp-content/uploads/2018/09/EE-Jobs-in-America-2018.pdf.
- 2 Maggie Molina, Patrick Kiker, and Seth Nowak, The Greatest Energy Story You Haven't Heard: How Investing in Energy Efficiency Changed the US Power Sector and Gave Us a Tool to Tackle Climate Change (Washington, DC: ACEEE, 2016). aceee.org/research-report/ui604.
- 3 Molina et al.
- 4 Molina et al.
- 5 Molina et al.
- 6 Ariel Dreihobl and Lauren Ross, Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities (Washington, DC: ACEEE, 2016). aceee.org/research-report/ui602.
- 7 Lauren Ross, Ariel Dreihobl, and Brian Stickles, The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency (Washington, DC: ACEEE, 2018). aceee.org/research-report/ui806.
- 8 NASEO (National Association of State Energy Officials), "Statewide Comprehensive Energy Plans," 2018. naseo.org/stateenergyplans.
- 9 Sam Cramer and Cassie Powers, NASEO's State Energy Planning Guidelines: Guidance for States in Developing Comprehensive Energy Plans and Policy Recommendations (Arlington, VA: NASEO, 2018).
- 10 DOE (US Department of Energy), A Guide for Incorporating Energy Efficiency in State Energy Plans (Washington, DC: DOE, 2018): table 1, p. 2. www.energy.gov/sites/prod/files/2018/07/f53/State-EE-Planning-Guide_final0618.pdf.
- 11 Iowa Economic Development Authority and Iowa Department of Transportation, "Iowa Energy Plan," 2016. iowaenergyplan.org.
- 12 American Lung Association, State of the Air 2017 (Chicago: American Lung Association, 2017). www.lung.org/assets/documents/healthy-air/state-of-the-air/state-of-the-air-2017.pdf.
- 13 Sara Hayes and Cassandra Kubes, Saving Energy, Saving Lives: The Health Impacts of Avoiding Power Plant Pollution with Energy Efficiency (Washington, DC: ACEEE, 2018). aceee.org/research-report/h1801.
- 14 ACEEE and PSR (Physicians for Social Responsibility), Energy Efficiency and Health (Washington, DC: ACEEE and PSR, 2016). aceee.org/sites/default/files/ee-health-1008.pdf.
- 15 New York State Department of Public Health, "Health Across All Policies Initiative Launched to Support the Prevention Agenda Goal of Becoming the Healthiest State," 2018.
- 16 Office of the Governor of the Commonwealth of Virginia, Executive Order 31: Conserving Energy and Reducing Consumption in the Commonwealth of Virginia, October 16 (Richmond: Office of the Governor, 2014). sgr.virginia.edu/sites/sgr.virginia.edu/files/E031_2014.pdf.
- 17 ACEEE, "Energy Efficiency Resource Standards (EERS)," 2018. aceee.org/topics/energy-efficiency-resource-standard-eers.
- 18 Environment and Energy Transition Advisory Committee, Report of the Environment and Energy Transition Advisory Committee (Trenton, NJ: Environment and Energy Transition Advisory Committee, 2018).
- 19 Weston Berg, Seth Nowak, Grace Relf, Shruti Vaidyanathan, Eric Junga, Marianne DiMascio, and Emma Cooper, The 2018 State Energy Efficiency Scorecard (Washington DC: ACEEE 2018). aceee.org/research-report/ui808.
- 20 Berg et al.
- 21 Brendon Baatz, Rate Design Matters: The Intersection of Residential Rate Design and Energy Efficiency (Washington, DC: ACEEE, 2017). aceee.org/research-report/ui703.
- 22 NGA (National Governors Association), Governors Staying Ahead of the Energy Innovation Curve: A Policy Roadmap for States (Washington, DC: NGA, 2018). www.nga.org/wp-content/uploads/2018/07/Energy-Innovation-Roadmap-Final-Hi-Res-for-Posting-Online.pdf.
- 23 Virginia, The Commonwealth of Virginia's 2018 Energy Plan (Richmond: Office of the Secretary of Commerce and Trade, 2018). www.governor.virginia.gov/media/governorvirginiagov/secretary-of-commerce-and-trade/2018-Virginia-Energy-Plan.pdf.
- 24 ACEEE, Industrial Efficiency Programs Can Achieve Large Energy Savings at Low Cost (Washington, DC: ACEEE, 2016). aceee.org/sites/default/files/low-cost-ieep.pdf.
- 25 DOE (Department of Energy), "Ohio Center for Industrial Energy Efficiency," accessed December 2018. energy.gov/eere/amo/ohio-center-industrial-energy-efficiency.
- 26 Office of the Governor of the State of Colorado, Executive Order Maintaining Progress on Clean Vehicles, B 2018 006, June 18 (Denver: Office of the Governor, 2018). www.colorado.gov/governor/sites/default/files/b_2018-006_maintaining_progress_on_clean_vehicles.pdf.
- 27 ACEEE, "Incentives for High-Efficiency Vehicles," 2018. database.aceee.org/state/incentives-high-efficiency-vehicles.
- 28 Delaware DNREC (Department of Natural Resources and Environmental Control), Governor Markell, DNREC Secretary Small Announce Delaware Clean Transportation Incentive Program, July 16 (Dover: Delaware DNREC, 2015). www.dnrec.delaware.gov/News/Pages/Gov-Markell,-DNREC-Sec-Small-announce-Delaware-Clean-Transportation-Incentives-Program.aspx.
- 29 Office of the Governor of the State of California, 2013 ZEV Action Plan: A Roadmap Toward 1.5 Million Zero-Emission Vehicles on California Roadways by 2025 (Sacramento: Office of the Governor, 2013). [opr.ca.gov/docs/Governors_Office_ZEV_Action_Plan_\(02-13\).pdf](http://opr.ca.gov/docs/Governors_Office_ZEV_Action_Plan_(02-13).pdf).
- 30 "Memorandum of Understanding between Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming," October 12, 2017. colorado.gov/governor/sites/default/files/rev_west_plan_mou_10_12_17_all_states_final_1.pdf.
- 31 NESCAUM (Northeast States for Coordinated Air Use Management), Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure 2018–2021 (Boston: NESCAUM, 2018). nescaum.org/documents/northeast-regional-charging-strategy-2018.pdf.
- 32 Washington State Legislature, "RCW 70.235.020: Greenhouse Gas Emissions Reductions—Reporting Requirements," 2008. apps.leg.wa.gov/RCW/default.aspx?cite=70.235.020.
- 33 Daniel Carlson and Zachary Howard, Impacts of VMT Reduction Strategies on Selected Areas and Groups, (Olympia: Washington State Department of Transportation, 2010). wsdot.wa.gov/Research/Reports/700/751.htm.
- 34 Arizona Legislature, House Bill 2361: Growing Smarter Act – Land Use Planning and Zoning-State Land Open Space Preservation-Study Commission (Phoenix: Arizona Legislature, 1998). azmemory.azlibrary.gov/digital/collection/azsession/id/95/rec/4.
- 35 Michigan Legislature, Michigan Public Act 135 of 2010 (HB 6151) (Lansing: Michigan Legislature, 2010). www.completestreets.org/webdocs/policy/cs-mi-legislation.pdf.
- 36 Michigan Department of Transportation, State Transportation Commission Adopted Policies (Lansing: Michigan Department of Transportation, 2018). www.michigan.gov/documents/mdot/mdot_STC_Policies_633143_7.pdf.
- 37 Michigan Complete Streets Coalition, "Michigan Complete Streets Coalition," accessed December 2018. michigancompletestreets.wordpress.com/resource/policy-center/.
- 38 Office of the Governor of the State of Georgia, "Governor Perdue Announces Transportation Resource Plan," January 14 (Atlanta: Office of the Governor, 2010).
- 39 Georgia Department of Transportation, "Transportation Investment Act," accessed November 2018. www.ga-tia.com/.
- 40 Office of the Governor of the Commonwealth of Virginia, Executive Order 31: Conserving Energy and Reducing Consumption in the Commonwealth of Virginia, October 16 (Richmond: Office of the Governor, 2014). sgr.virginia.edu/sites/sgr.virginia.edu/files/E031_2014.pdf.

- virginia.edu/files/E031_2014.pdf.
- 41 EPA (Environmental Protection Agency), ENERGY STAR® Portfolio Manager™ Data Trends: Benchmarking and Energy Savings (Washington, DC: EPA, 2012).
- 42 Natalie Mims, Steven Schiller, Elizabeth Stuart, Lisa Schwartz, Chris Kramer, and Richard Faesy, Evaluation of U.S. Building Energy Benchmarking and Transparency Programs: Attributes, Impacts, and Best Practices (Washington, DC: DOE, 2017). emp.lbl.gov/sites/default/files/lbnl_benchmarking_final_050417_0.pdf.
- 43 Office of the Governor of the Commonwealth of Massachusetts, "Baker-Polito Administration Files Legislation to Improve Residents' Access to Home Energy Information," April 3, 2018. mass.gov/news/baker-polito-administration-files-legislation-to-improve-residents-access-to-home-energy.
- 44 DOE, "Status of State Energy Code Adoption: Florida," 2018. www.energycodes.gov/adoption/states/florida.
- 45 NBI (New Buildings Institute), "Stretch Codes," accessed December 2018.
- 46 Commonwealth of Massachusetts, "Building Energy Codes," 2018. www.mass.gov/service-details/building-energy-codes.
- 47 EPA, Clean Energy Lead by Example Guide: Strategies, Examples, and Action Steps for State Programs (Washington, DC: EPA, 2009). epa.gov/sites/production/files/2015-08/documents/state_lead_by_example_guide_full_report.pdf.
- 48 ACEEE, "State and Local Policy Database: Colorado," 2018. database.aceee.org/state/colorado.
- 49 Office of the Governor of the State of Missouri, Executive Order 09-18, April 23 (Jefferson City: Office of the Governor, 2009). www.sos.mo.gov/library/reference/orders/2009/eo09_018.
- 50 Office of the Governor of the State of Washington, Executive Order 18-01: State Efficiency and Environmental Performance, January 16 (Olympia: Office of the Governor, 2018). www.governor.wa.gov/sites/default/files/execute_order/18-01_SEEP_Executive_Order_%28tmp%29.pdf.
- 51 ACEEE, "State Government Lead by Example," accessed December 2018, aceee.org/sector/state-policy/toolkit/lbe.
- 52 Kentucky Legislature, Kentucky Revised Statutes: Chapter 56.784: Guaranteed Energy Savings Performance Contracts (Frankfort: Kentucky Legislature, 2018). lrc.ky.gov/Statutes/statute.aspx?id=22694.
- 53 Kentucky Department for Facilities and Support Services, "Commonwealth Energy Management and Control System," accessed December 2018. kyenergydashboard.ky.gov.
- 54 ACEEE, "State and Local Policy Database: Kentucky," 2018. database.aceee.org/state/Kentucky.
- 55 Office of the Governor of the State of California, Executive Order B-16-2012, March 23 (Sacramento: Office of the Governor, 2012). www.gov.ca.gov/2012/03/23/news17472/.
- 56 Office of the Governor of the State of North Carolina, Executive Order No. 80: North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy, October 29 (Raleigh: Office of the Governor, 2018). [files.nc.gov/governor/documents/files/E080-NC%27s Commitment to Address Climate Change %26 Transition to a Clean Energy Economy.pdf](http://files.nc.gov/governor/documents/files/E080-NC%27s%20Commitment%20to%20Address%20Climate%20Change%26%20Transition%20to%20a%20Clean%20Energy%20Economy.pdf).
- 57 Office of the Governor of the State of Oregon, Executive Order No. 17-20: Accelerating Efficiency in Oregon's Built Environment to Reduce Greenhouse Gas Emissions and Address Climate Change, November 6 (Salem: Office of the Governor, 2017). www.oregon.gov/gov/documents/executive_orders/eo_17-20.pdf.
- 58 Mary Shoemaker, Annie Gilleo, and Jill Ferguson, Reaching Rural Communities with Energy Efficiency Programs (Washington DC: ACEEE, 2018). aceee.org/research-report/ui807.
- 59 ACEEE, "State and Local Policy Database: Guidelines for Low-Income Programs," 2018. database.aceee.org/state/guidelines-low-income-programs.
- 60 PACENation, "PACE Programs Near You," 2017. pacenation.us/pace-programs.
- 61 NASEO, Accelerating the Commercial PACE Market: Statewide Programs and State Energy Office Participation in Property Assessed Clean Energy (PACE) Financing (Arlington, VA: NASEO, 2018). naseo.org/data/sites/1/documents/publications/CLEAN_Master%20NASEO%20PACE%20Memo%202016-5-18%20FINAL.pdf.
- 62 NASEO, "State Energy Financing Programs," 2018. naseo.org/state-energy-financing-programs.
- 63 Joanna Mauer, Andrew deLaski, and Marianne DiMascio, States Go First: How States Can Save Consumers Money, Reduce Energy and Water Waste, and Protect the Environment with New Appliance Standards (Washington, DC: ACEEE and Appliance Standards Awareness Project, 2017). [appliance-standards.org/sites/default/files/States Go First.pdf](http://appliance-standards.org/sites/default/files/States%20Go%20First.pdf).
- 64 Joanna Mauer, Andrew deLaski, and Marianne DiMascio, States Go First: How States Can Save Consumers Money, Reduce Energy and Water Waste, and Protect the Environment with New Appliance Standards (Washington, DC: ACEEE and Appliance Standards Awareness Project, 2017). [appliance-standards.org/sites/default/files/States Go First.pdf](http://appliance-standards.org/sites/default/files/States%20Go%20First.pdf).
- 65 General Assembly of the State of Vermont, H. 411: An Act Relating to Miscellaneous Energy Issues (Montpelier: General Assembly, 2018). [legislature.vermont.gov/assets/Documents/2018/Docs/ACTS/ACT042/ACT042 As Enacted.pdf](http://legislature.vermont.gov/assets/Documents/2018/Docs/ACTS/ACT042/ACT042%20As%20Enacted.pdf).