

Private-Public Partnerships to Advance Low-Carbon State Energy Policies

A NASEO-Ceres Issue Brief

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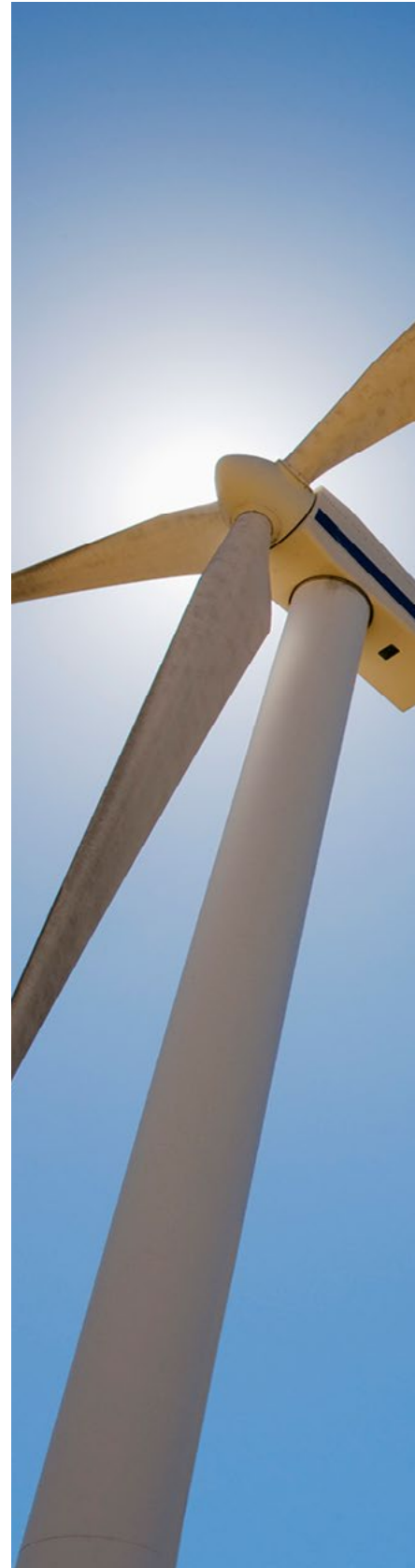
Introduction

An effective strategy for vibrant, sustainable economic growth requires significant and coordinated investments in energy-efficient, low-carbon energy sources, and technologies. The urgency for expanding such clean energy activity is becoming more pronounced as damaging climate change impacts continue to grow. The clean energy economy has already seen profound growth in the United States in recent years, accounting for billions of dollars in investments every year and hundreds of thousands of jobs.¹ Yet, overall activity around energy efficiency, renewable energy, conservation, and pollution mitigation still has significant room to grow and contribute to economic growth, mitigate the environmental impacts of most conventional energy resources, and enhance the nation's security.

Coordinated action and dialogue between the public and private sectors, through regular communications and mechanisms such as public-private partnerships, have proven effective in helping states address and catalyze this significant economic opportunity. To create a forum for such partnerships to grow, the National Association of State Energy Officials (NASEO) and the sustainability nonprofit group Ceres partnered for 18 months to convene large U.S. businesses, investors, and State Energy Offices (SEOs) for discussions on common policy priorities focused on energy efficiency, renewable energy, and economic development. In December 2015, Ceres and NASEO convened the NASEO Board, companies, investors, and non-profit partners for an in-depth dialogue on ways in which SEOs and the private sector can work together to accelerate the transition to a clean energy economy. The December meeting and additional discussions, which have taken place on an ongoing basis since February 2015, have provided unique insights into how state energy policy intersects with corporate sustainability and how improved public-private coordination on energy policies and programs can enable and drive significantly more private clean energy investment and growth.

This white paper highlights high-level issues and recommendations raised during these conversations. Specifically, it identifies key pieces of information that state energy policymakers and U.S. companies and investors should know about one another, and it offers a "deeper dive" on a series of energy policy topics – including clean energy policies, financing mechanisms, and corporate sustainability approaches – on which both state and company/investor representatives can find common ground. The paper's objective is to increase both NASEO and Ceres members' understanding of wide-ranging state energy policy and program options that have helped catalyze and support corporate sustainability efforts in states like New York, Minnesota, Virginia, and Missouri. It also highlights actionable opportunities for enhancing these activities in many more states. The paper also offers specific action items and recommendations that focus not on a specific set of policies (as states and companies have diverse policy priorities and needs), but rather on the processes and activities that both public and private sector partners can use to engage in productive conversations and partnerships.

1. Pew Trusts. (2011). "The Clean Energy Economy in the United States."
Available at: <http://www.pewtrusts.org/~media/assets/2011/03/clean-energy-economy-factsheet.pdf>



About State Energy Offices, Companies, and Investors

Quick Facts

State Energy Offices

60% of State Energy Office directors serve as an energy advisor to their governor.

41 states (including the District of Columbia) have operational, comprehensive energy plans, used by decision makers to set energy planning directions and priorities.

\$1.6 BILLION the amount that State Energy Offices have invested in clean energy financing and investment programs.*

Businesses

60% of Fortune 500 companies have a clean energy, GHG emissions reduction, or energy efficiency goal.

69 major global companies have committed to using 100% renewable energy.

120 major companies have agreed to set independently-verified, science-based GHG emissions reduction targets – equivalent to reducing GHG emissions 80% relative to 2005 levels by 2050.

Investors

28% increase in number of U.S. investment funds incorporating environmental, social, and corporate governance (ESG) criteria between 2012 and 2014.**

80% of academic studies reviewed by the University of Oxford and Arabesque Asset Management in 2015 found that the stocks of companies with "good sustainability practices" perform better than other stocks.

100% of sustainable investing studies reviewed by Deutsche Bank in 2012 that found that high ESG ratings correlate with a lower cost of capital.†

* A significant portion of these funds are used to catalyze and leverage private sector capital and investment, for instance from partner lenders and the secondary market.

** In this time assets also quadrupled to \$4.3 trillion, according to the Forum for Sustainable and Responsible Investment.

† This review also found that high ESG ratings are correlated with market-based outperformance in 89% of studies and with accounting-based outperformance in 85% of the studies.

State and Territory Energy Offices

Formed in response to the energy crisis of the 1970s, the nation's 56 State and Territory Energy Offices collectively oversee more than \$4 billion derived from ratepayers and state and federal appropriations annually. Their efforts cover a wide variety of initiatives, including: the advancement of practical energy policies; energy technology research, demonstration, and deployment; environmental quality; and emergency response and mitigation related to energy infrastructure, liquid fuels, and cyber security. They focus on energy efficiency and renewable energy programs, transportation fuel diversity, and traditional fuel and infrastructure development. Signature programs and initiatives that SEOs advance include: advising governors and legislatures on energy issues; promoting the deployment of energy efficiency and renewable energy technologies in the public and private buildings and industrial energy end-use sectors; reducing U.S. dependence on petroleum as a transportation fuel; and overseeing or assisting in states' efforts to modernize their electric grids and integrate clean and distributed energy resources into the U.S. energy system.

For the most part, the SEOs serve a policy role in their states' energy markets, which is largely distinct from but also complementary to the regulatory role served, for instance, by utility commissioners and their staff. This policy development role and linkage with governors, legislators, and economic development agencies often allow SEOs to serve as conveners of public and private sector actors. This creates a forum – outside of the sometimes strict and confined regulatory process – for states to reach agreement on common priorities and core issues among a wide range of stakeholders. This policy approach of SEOs and the legislative and executive branches of state government can be used to make incremental – rather than disruptive – changes for utilities and private companies that may be concerned about revenue and reliability, while attempting to align economic, energy, and environmental policy priorities. In this way, SEOs in many states have succeeded in increasing public confidence in new market approaches and technologies and can better address underrepresented communities, market segments, and longer-term energy and economic goals.

“Many State Energy Offices help align state energy goals with the regulatory rules and frameworks that determine how energy is delivered across communities and regions,” notes Andrew McAllister, Commissioner of the California Energy Commission and NASEO Board Member. “When done right, such consistency can capture enormous benefits from clean energy technologies, while stimulating economic growth. In California, policy-driven efforts such as ratepayer-funded energy efficiency programs, R&D, and progressive codes and standards leverage billions of dollars of private investment annually, and dovetail perfectly with our innovation economy.”

Especially as the U.S. clean energy economy grows in size, impact, and diversity, the SEOs' policy voice has earned an important seat at the table concerning how state governments maintain and balance energy system reliability with the need for electricity system modernization, clean energy technology innovation, and deployment of low-carbon technologies. New market entrants to the clean energy economy, along with “disruptive” technologies, call for even greater coordination among state governments and the business and investment community.



Companies and Investors

One important note on the companies discussed in this brief: they are energy-consuming companies, not energy-producing companies. They are not oil and gas producers, nor are they clean energy generation providers – demonstrating the fact that the private sector is not monolithic. Energy producers and energy consumers have exceedingly different policy priorities, and even within these two broad categories, companies have many different priorities when it comes to energy production, procurement, and policy designs.

Most companies typically do not decide to engage in energy policymaking in order to create an environment where they can sell more products, but rather to expand opportunities to meet operational goals cost-efficiently, reliably, and in an environmentally-friendly way. A steadily increasing number of companies have aggressive clean energy, efficiency, and greenhouse gas reduction goals – for instance, Apple, Google, and 67 other companies have set goals to source 100 percent of their energy from renewable sources – and many consider state policies an integral way to help them meet those goals.

A growing number of companies are making decisions to site facilities based in part on how friendly states are to clean energy and energy efficiency efforts – especially third-party access to renewable energy and distributed generation. These policies in particular can enable companies to purchase independently-produced renewable power instead of relying on a local utility that may be getting nearly all of its energy from coal and other high-carbon fossil fuel sources.

Investors, to the extent that they invest in energy-consuming companies (most do), are strongly supportive of the policy changes these companies are pursuing – particularly if those policy changes can help lower energy costs, hedge against fossil fuel price spikes, and increase shareholder value. To support those policy efforts, investors often engage directly with CEOs and state governments to advocate on behalf of low-carbon policies. Additionally, investors are also interested in state-level policies that create opportunities for new, innovative investment vehicles and financial products [more on that in the section titled ‘Financing and Investment’] – for instance fixed-income products and other vehicles that can create secondary markets. Such products are increasingly being developed and expanded by states in order to help finance energy efficiency and clean energy investments.

Institutional investors are increasingly applying environmental, social, and governance (ESG) analyses to investments for their clients – not just because their clients seek “green” products, but also because investments with strong ESG profiles perform better than those without. A new empirical analysis from 2015 shows that companies with strong ratings on material sustainability issues significantly outperform companies with poor ratings.²

A growing number of companies are making decisions to site facilities based in part on how friendly states are to clean energy and energy efficiency efforts.

2. Mozzafar, K., Serafeim, G., and Yoon, A., (2015). “Corporate Sustainability: First Evidence on Materiality.” The Accounting Review, Working Paper.
Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2575912



The Intersection of Energy Policy and Corporate Sustainability

State energy policies that support clean energy procurement play a significant role in enabling corporate sustainability efforts to thrive and for innovation and growth in the clean energy economy. In the sections below, we describe policy frameworks and mechanisms that SEOs have established successfully to advance their energy policy priorities, as well as tools that corporations and investors are using to invest in clean energy and improve their bottom lines. These policy topics are meant to highlight the variety of options for advancing clean energy and to offer both state governments and private businesses a springboard for discussions on common priorities, shared goals, and the potential value of engaging in continued public-private dialogues and partnerships.

“As Michigan shifts from the energy sources of the past to those of our future, we are focused on energy policies that will help families and businesses have affordable, reliable, and environmentally-protective energy. This approach offers the greatest opportunity for energy diversity and provides undeniable benefits to our economy and to the well-being of all Michiganders,” says Robert Jackson, Director, Regional/National Response Division, Michigan Agency for Energy (MAE) and NASEO Chair. “For this reason, MAE, like many of our State Energy Office peers, has made community and business engagement a linchpin of our energy planning and policymaking strategy.

State energy planning and policy development processes are often directly or indirectly related to economic development priorities and initiatives.

States’ Energy Policy and Program Frameworks

Across the country, many SEOs are leading or engaged in planning and decision-making processes that can have direct impacts on businesses, investors, and their ability and willingness to invest in clean energy.

Comprehensive Energy Planning: A core responsibility housed within most SEOs is statewide comprehensive energy planning. In addition to serving as a tool for policymakers to evaluate and justify budget appropriation decisions and help prioritize policy directions and funding opportunities, comprehensive energy plans can help create a preview or signal for the private sector that indicates how public funds may be invested and how subsequent policy and regulatory decisions may emerge. According to NASEO’s 2013-14 review of states’ energy plans, the main topics covered by the planning process include: energy efficiency, renewables, transportation, oil and petroleum, emerging technologies, natural gas, coal and clean coal, and nuclear power.³

State energy planning and policy development processes are often directly or indirectly related to economic development priorities and initiatives; as such, they typically take private sector perspectives into serious consideration. Private entities are often engaged by states in their comprehensive energy planning processes. At an early stage, members of the public and business community help provide direction for the overall energy plan and priorities for the state. For instance, Missouri held several public meetings to inform the state’s plan development

3. National Association of State Energy Officials. (2013). “An Overview of Statewide Comprehensive Energy Plans.” Available at: http://naseo.org/Data/Sites/1/naseo_39_state_final_7-19-13.pdf

process and conducted extensive engagement with businesses located in the state.⁴ The final version of the Missouri Comprehensive State Energy Plan (CSEP), released in 2015 includes an entire section devoted to “Businesses and Energy,” which offers strategies for improving energy efficiency and productivity in the manufacturing and industrial sectors.⁵

Energy-Air-Environment Planning: In some states, comprehensive energy planning has evolved and expanded over time to encompass broader environmental issues such as air quality and climate change. The State Energy Office may be a formal or informal partner with other state and local environmental officials to examine future challenges to energy system infrastructure build-out, including the potential for clean energy and energy efficiency deployment.

These types of planning partnerships – and policy directions and goals that may emerge from them – can have significant positive impacts on private business operations, costs, growth potential, and future investments in sustainable energy technologies. Company and investor action and coordination with the SEO can help businesses and investors understand the potential impacts of environmental policy and regulation, as well as the ways that businesses and investors can support compliance and achievement of environmental targets.

For instance, to support SEOs’ environmental planning efforts and partnerships, NASEO has had an ongoing “3N” initiative with the National Association of Clean Air Agencies (NACAA) and the National Association of Regulatory Utility Commissioners (NARUC) on states’ roles in the U.S. Environmental Protection Agency’s (EPA) existing environmental rules impacting power plants, including its pending Clean Power Plan (CPP) rule.⁶ NASEO has not taken a position on the appropriateness of the CPP. However, since the Obama Administration has finalized the rule (pending a judicial stay), NASEO believes it is important to support states in maintaining electricity-system reliability and affordability; ensuring broad compliance flexibility for states; and enabling market-oriented, least-cost compliance options that would significantly reduce the cost of compliance for consumers and businesses. In support of these priorities, NASEO has called for recognition, crediting, and encouragement of energy efficiency, renewable energy, and transmission and distribution system modernization options as emissions reduction strategies that support power system reliability and other state energy and economic development goals.

A significant outcome of these efforts has been an increased focus on the use of private sector-driven clean energy investments as a CPP compliance strategy in states with planning processes underway. NASEO has sought to raise awareness of non-ratepayer energy efficiency activities (including voluntary private investments in energy efficiency, such as through building energy codes and energy savings performance contracts) that, in fact, account for a large portion of U.S. energy efficiency investment and savings. Regular communication and data exchange between private businesses and planning officials – for instance, through stakeholder groups convened by state agencies – will help familiarize planners with the type and scale of clean energy projects that could potentially be captured in their efforts to achieve environmental targets.

4. Missouri Department of Economic Development, Division of Energy. (2015). “Comprehensive State Energy Plan.” Available at: <https://energy.mo.gov/energy/about/comprehensive-state-energy-plan>

5. Ibid.

6. National Association of State Energy Officials. (2016). “Energy-Air Resource Hub.” Available at: <http://111d.naseo.org>. NASEO’s online “Energy-Air Resource Hub” provides information for state agencies – including energy offices, clean air agencies, and utility commissions – to consider options for developing CPP compliance strategies and other pollutant reduction plans.



Corporate and Investor Engagement in Clean Power Plan Implementation*

The Clean Power Plan, which garnered strong public support from 365 companies and investors in August 2015, is a key policy mechanism that will help states transition to a clean energy economy. Companies and investors across the country have a vested interest in seeing Clean Power Plan (CPP) state compliance programs that are cost-effective, business-friendly, and help corporations meet their clean energy goals (renewables, efficiency, and greenhouse gas emissions) and investors meet earnings goals.

As states are considering the various design elements of their compliance programs, they should take into account the views of the non-energy private sector. Commercial and industrial businesses are not in the business of generating and selling electricity or energy solutions. These large energy users are increasingly procuring clean energy, and in some cases may be some of the largest energy customers in the state.

With corporate renewable energy procurement on the rise, there is a need for state compliance plans that allow for the continuation of the voluntary renewable energy market. While many businesses strongly support the CPP, they may also want to meet their renewable energy or greenhouse gas reduction goals by using renewable energy that is not also used for CPP compliance. They should continue to have that option.

Under the CPP, demand in the voluntary market for Renewable Energy Certificates (RECs) may be threatened. States implementing a mass-based approach should ensure that they maintain the voluntary market for renewable energy by setting aside a portion of their emissions allowances and retiring them on behalf of voluntary renewable energy/REC sales supplied by renewable energy in the state. Such a regulatory mechanism has already been implemented in California and Regional Greenhouse Gas Initiative (RGGI) states. Rate-based states can design their compliance plans to preserve the voluntary market as well.

The timeline for implementation of the Clean Power Plan has changed since the final rules were released in August 2015. In January 2016, the D.C. Circuit Court of Appeals denied petitions from states, coal companies, and others to stay implementation of the Clean Power Plan. States began moving forward with stakeholder engagement meetings and planning. Then, in February 2016, the U.S. Supreme Court granted a stay, overruling the Circuit Court decision and halting implementation of CPP pending resolution of legal challenges in court.

At the end of March 2016, a number of businesses and trade associations submitted legal briefs in support of the Clean Power Plan, outlining wide-ranging economic benefits that can be provided by working to reduce greenhouse gas emissions across the country. Major American businesses in the tech industry – Google, Apple, Amazon, and Microsoft – submitted an amici brief explaining that, as large consumers of energy and as companies committed to sourcing renewable energy and investing in energy efficiency, they believe the CPP will help accelerate the transition to a low-carbon economy. Other major businesses, including IKEA, Mars Inc., Adobe, and Blue Cross Blue Shield, joined another legal brief highlighting the public health, agricultural, and economic benefits of tackling climate change and CPP's positive role in that regard. Trade associations representing the clean energy sector, small business associations, state and local chambers of commerce, public health associations, and many others also filed supportive briefs.

As a result of the stay, there is significant uncertainty about the timeline for implementation of the EPA rule. Many states are continuing to proceed and are conducting stakeholder engagement sessions, modeling, and planning while the case moves through the courts. It is important that states continue to engage the business community in the planning process and, where possible, use this period of uncertainty to continue to advance energy policy in the states.

* This section was written by Ceres and is not reflective of the positions of NASEO and its state energy office members

Energy System Modernization: Efforts to modernize the U.S. electric grid and the ways that electric utilities do business have brought to the table a wide variety of regulatory, policy, and industry stakeholders. According to a 2015 report on the “21st Century Electric Utility” by Ceres, these efforts seek to advance key imperatives, including enhanced grid reliability and resiliency; increased distributed and clean energy resources; optimized system energy loads and energy system efficiency; and a focus on customer value, including service choices and ease of adoption of new and clean technologies.⁷ Importantly, a truly effective evolution and transformation of the electric grid will require a shift in regulatory oversight “from being administered primarily through period rate cases to a forward-looking focus on planning, accountability, and financial incentives for results achieved”⁸ – a shift that SEOs are well-suited to catalyze and support.

Examples across the country offer a spotlight on how electricity policy and regulation can better align to support energy system modernization. In New York, various agencies are playing a critical role in Governor Cuomo’s “Reforming the Energy Vision” (REV) strategy. A key pillar of REV is groundbreaking regulatory reform, including features that increase customer knowledge and management of energy bills; animate the market and leverage ratepayer contributions with private investment; and increase system-wide efficiency, fuel and resource diversity, and system reliability and resiliency. As part of this effort, the New York State Energy Research and Development Authority (NYSERDA, which serves as the State Energy Office), is charged with advancing the Clean Energy Fund (CEF), a 10-year, \$5 billion program. CEF’s market-oriented approach uses innovation, research, and financing (through the New York Green Bank) to encourage private investment in clean energy.⁹

In Minnesota, the Public Utility Commission, the Department of Commerce (which houses the SEO), and private and utility stakeholders organized by the Great Plains Institute through its e21 Initiative have been significant proponents of grid modernization. These efforts have been characterized by numerous stakeholder meetings, planning discussions, and legislative initiatives. In the 2015 Special Legislative Session, Governor Dayton signed legislation related to grid modernization and planning, enacting amendments requiring investor-owned utilities (IOUs) operating under a multi-year rate plan to identify investments to modernize the transmission and distribution system and to conduct a study for small-scale distributed generation resources.¹⁰

To assist states in addressing the complex set of interrelated energy challenges and economic opportunities associated with grid modernization, NASEO, with support from the U.S. Department of Energy, has established the Energy Market and Planning pilot program, or E-MAP. Its goal is to help states develop holistic approaches to accelerate electricity system and related energy infrastructure modernization, resilience, and affordability. Currently, NASEO is



7. Ceres. (2015). “Pathway to a 21st Century Electric Utility.”

Available at: <http://www.ceres.org/resources/reports/pathway-to-a-21st-century-electric-utility>

8. Ibid.

9. New York State Energy Research and Development Authority. (2016). “Clean Energy Fund.”

Available at: <http://www.nyserda.ny.gov/About/Clean-Energy-Fund>

10. Minnesota Public Utilities Commission. (2016). “Staff Report on Grid Modernization.”

Available at: <https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={E04F7495-01E6-49EA-965E-21E8F0DD2D2A}&documentTitle=20163-119406-01>

working with the states of Nevada, Michigan, and Virginia on a state-led road-mapping process and the eventual adoption of practical actions to advance energy infrastructure modernization, resilience, and productivity.¹¹

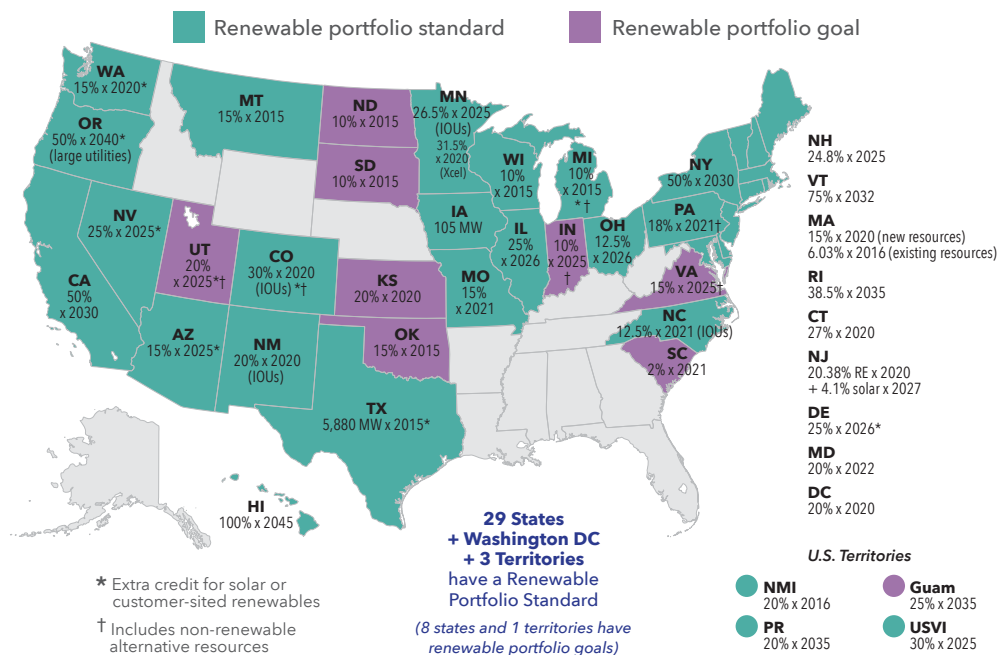
For this discussion, it is important to remember that the vast majority of companies in the U.S. are energy users, not energy producers. As such, companies, like many types of consumers, care about affordability and reliability. But for a variety of additional reasons, including concerns about overreliance on fossil fuel energy sources that are prone to price volatility, companies increasingly care about procuring their energy from renewable and clean resources; for them, electricity has ceased being a commodity. Companies face choices in the types of electricity products they can purchase, and many are interested in promoting efficient electricity systems that maximize the availability of clean energy and allow choice – both in terms of energy type (including renewable energy and energy efficiency) and the way in which they contract for that energy.

Energy Policy Development: In addition to energy planning, policy development is another core activity for many CEOs. State policies in energy can take various forms. At the highest level, portfolio standards are policies that require utilities to meet certain energy targets, including renewable energy and energy efficiency targets.

Companies face choices in the types of electricity products they can purchase, and many are interested in promoting efficient electricity systems that maximize the availability of clean energy and allow choice.

Renewable Portfolio Standard Policies

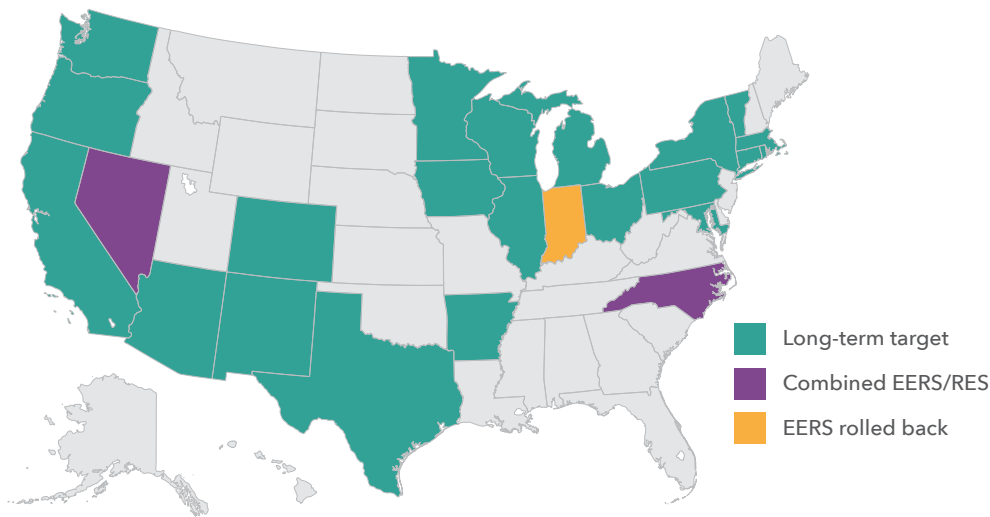
www.dsireusa.org • August 2016



11. Energy Market and Planning Pilot. (2015). "Assisting States in Developing Comprehensive Roadmaps and Actions to Address Energy Infrastructure Modernization Challenges." Available at: <https://www.naseo.org/Data/Sites/1/emap-one-pager.pdf>

State Energy Efficiency Resource Standards (EERS)

American Council for an Energy-Efficient Economy • May 2016



National statistics show that states with energy efficiency resource standards (EERSs) eliminate about four times more energy waste than states without them.

Both large corporate buyers and investors have weighed into debates in dozens of states to support renewable energy and energy efficiency standards. These policies have been instrumental to putting additional clean energy on the grid and providing incentives and services for energy efficiency investments. Fortune 500 companies are developing renewable energy opportunities in locations where market conditions are most favorable and renewable portfolio standards (RPSs) can reduce the overall costs of energy for all ratepayers.

National statistics show that states with energy efficiency resource standards (EERSs) eliminate about four-times more energy waste than states without them.¹² In addition, the only states to achieve more than 1% annual energy savings as a percent of retail sales have EERSs in place.¹³ Robust, multi-year EERSs provide market and regulatory certainty for businesses, and demonstrate that a state is committed to energy efficiency investment and affordable, stable energy costs.

12. Kushler, M., (2014). "IRP vs. EERS: There's one clear winner among state energy efficiency policies." American Council for an Energy-Efficient Economy. Available at: <http://aceee.org/blog/2014/12/irp-vs-eers-there%E2%80%99s-one-clear-winner>. On average states with EERSs report energy savings equivalent to 1.11% of utility retail sales; while states without these policies report savings equivalent to 0.3% of utility retail sales. This means that states with EERSs save about 4-times more than states without these policies (1.11%/0.3% = 3.7)

13. Gilleo, A., Chittum, A., Farley, K., Neubauer, M., Nowak, S., Ribeiro, D., Vaidyanathan, S., (2014). "The 2014 State Energy Efficiency Scorecard." American Council for an Energy-Efficient Economy. Available at: <http://aceee.org/research-report/u1408>. The American Council for an Energy-Efficient Economy (ACEEE) defines an EERS as: 1) Setting clear long-term targets for electricity savings; 2) Making clear that targets are mandatory; and 3) Including a funding mechanism sufficient for full implementation of programs necessary to meet targets. Note: ACEEE considers states with all cost-effective requirements to have EERS policies in place once these policies lead to multi-year savings targets. Some states (CA, OH, ID, MT, IN, FL, WY, MS, ND, AL, VA, AK, LA, KS) did not report 2013 savings for the 2014 Scorecard, so ACEEE used 2012 savings values.

Even in states without strong energy efficiency or renewable energy portfolio standards, there are a wide range of clean energy policy options that support greater investment and deployment. For instance, the Utah Governor's Office of Energy Development administers the state's Renewable Energy Systems Tax Credit and Alternative Energy Development Incentive programs, as well as the statewide Commercial Property Assessed Clean Energy (C-PACE) program and the U-SAVE Energy Efficiency Fund for school districts, counties, and cities.¹⁴

Other supportive policies include SEOs' "lead by example" initiatives, which have helped grow and support the use of energy savings performance contracting (ESPC) across the MUSH (municipalities, universities, schools, hospitals) market and the deployment of high-performance and zero-energy buildings.¹⁵ These initiatives have also helped advance growth and enforcement of building energy codes and appliance standards; energy benchmarking and disclosure rules, which enable transparent building energy-performance information to drive energy efficiency improvements in buildings; and transportation fuel economy and alternative fuel standards. When implemented properly, these policies can realize several benefits, including lower energy bills, improved air quality, greenhouse gas emissions reductions, energy reliability and security, and the potential avoidance of investing in costly new energy production infrastructure.

Technology Innovation and Commercialization: Accelerating the transition and commercialization of energy technologies in every sector – renewables, efficiency, fossil, nuclear and crosscutting technologies – is important not only in meeting state and national energy and environmental goals, but also in creating new economic opportunities. For this reason, several SEOs across the country are involved in a wide range of energy technology transition activities, ranging from early-stage research to commercialization and deployment. Some SEOs are pioneering innovation-driven state policies and programs by leveraging their networks, policy expertise, resources, and clout to help inventors, entrepreneurs, and start-up businesses deliver energy technologies to the marketplace.

A state's "Energy Innovation Ecosystem" is often a vast network encompassing entrepreneurs, start-up businesses, incubators, academia, public and private investors, and deployment partners supporting the development and expansion of advanced energy markets. This ecosystem also captures a wide array of activities, including early-stage research, technology development and demonstration, commercialization, and mainstream market deployment.

For example, in Virginia, the Department of Mines, Minerals and Energy (DMME) and the Center for Innovative Technology (CIT) launched the Commonwealth Energy Fund (CEF) in 2011 to make loans to high-growth-potential, early-stage Virginia energy companies. A debt-to-equity investment program, CEF initiates as debt and, at CIT's option, can convert downstream to equity. CIT and DMME use the expertise and guidance of the CEF Investment Advisory Board to advise and support their client companies, which advance technologies that are strategic to Virginia's energy goals.¹⁶

14. Governor's Office of Energy Development. (2016). "Governor's Office of Energy Development home page." Available at: <http://energy.utah.gov/>

15. Kentucky Department for Energy Development & Independence. (2013). "2013 Annual Summary." Available at: <http://energy.ky.gov/resources/Documents/2013%20Annual%20Summary.pdf>. The Kentucky Department of Energy Development and Independence has provided support and technical assistance for the construction of the country's first zero-net-energy-ready schools

16. Center for Innovative Technology. (2016). "The Commonwealth Energy Fund." Available at: <http://www.cit.org/service-lines/commonwealth-energy-fund-cef/>



In California, the Electric Program Investment Charge (EPIC) is designed to assist the development of non-commercialized new and emerging clean energy technologies in the state through applied research and development (\$55 million/year), technology demonstration and deployment (\$75 million/year), and market facilitation and workforce development (\$15 million/year). The California Public Utilities Commission (CPUC) oversees EPIC's implementation, 80% of which is administered by the California Energy Commission (the State Energy Office) and the remaining 20% by three investor-owned utilities.¹⁷

Financing and Investment: For many SEOs, effective clean energy financing programs are founded in innovative partnerships and through a commitment to showcasing the benefits of investing in energy efficiency, renewable energy, and alternative fuels. According to NASEO's State Energy Loan Fund database, which tracks states' investment in clean energy financing, over \$1.6 billion in funds have been invested in at least 35 states for dedicated clean energy financing programs.¹⁸

SEO-run or -supported programs do not seek to displace or replace conventional bank programs. Rather, in many circumstances they fill a gap in the marketplace by introducing incentives or favorable financing that encourages clean energy adoption and deployment. Programs that embrace the goal of market transformation often involve some degree of risk-sharing and stakeholder coordination and engagement. Public funds are brought to the table to help consumers, businesses, and financiers become familiar with energy investments – and to this end, the SEOs are putting the concept of leverage to work. Typically measured as a ratio comparing private to public capital committed to clean energy projects, leverage offers states an important strategy to maximize the impact of limited public funds while familiarizing private investors in the clean energy marketplace. For instance, Nebraska's Dollar and Energy Savings Loan Fund works with lenders to deliver energy savings to Nebraska homes and businesses. The Nebraska Energy Office purchases a percentage of each loan at a 0% interest rate, lowering the borrower's costs while still providing the lender an attractive yield on its share. The fund has leveraged a total of \$325.5 million in improvements since 1990 with the Energy Office's revolving pool accounting for \$153.3 million and the balance of \$172.2 million coming from lenders and the borrowers themselves.¹⁹

To continue innovative programs, there is a growing need for states to look to the secondary, institutional investor market for additional financing and program expansion. Some states, including Pennsylvania, Connecticut, New York, and Hawaii, have successfully completed sales of clean energy loans and Property Assessed Clean Energy (PACE) liens to the secondary market in order to grow funding for their programs. These transactions have informed the creation of structures such as the Warehouse for Energy Efficiency Loans, or WHEEL, which aggregates unsecured energy efficiency loans across various state, local, and utility programs for this purpose.²⁰ In a breakthrough transaction in 2015, Calvert Investment Management purchased

To continue innovative programs, there is a growing need for states to look to the secondary, institutional investor market for additional financing and program expansion.

17. California Energy Commission. (2016). "Electric Program Investment Charge." Available at: <http://www.energy.ca.gov/research/epic/index.html>

18. National Association of State Energy Officials. (2016). "State Energy Financing Programs." Available at: <http://naseo.org/state-energy-financing-programs>

19. Nebraska Government Website. (2016). "Dollar and Energy Saving Loans." Available at: <http://www.neo.ne.gov/loan/>

20. National Association of State Energy Officials. (2016). "State Energy Financing Programs." Available at: <http://naseo.org/state-energy-financing-programs>

over \$12 million in WHEEL loans, the first ever securitization of unsecured consumer energy efficiency loans. The assets were originated in multiple jurisdictions partnering with WHEEL, including Pennsylvania, Kentucky, and Cincinnati, Ohio. Calvert is a member of the Ceres Investor Network on Climate Risk and also participated in the roundtable that informed this report.

Business and Investment Tools for Corporate Sustainability

The clean energy policy and program frameworks established by states have helped businesses and investors use clean energy to advance their corporate sustainability efforts, become competitive in the market, and improve their bottom line.

Nearly half of the Fortune 500 and 60% of the Fortune 100 have committed to strong climate and clean energy goals²¹ – driving the creation of billions of kilowatt-hours of renewable energy generation in the voluntary market. In 2015 alone, large corporates made deals to purchase over 3 GWs of renewable energy through green tariffs, power purchase agreements (PPAs), and outright project ownerships.

However, that growth relies, in part, on policies at both the state and federal level that eliminate market barriers and ensure companies have access to clean energy choices. Below are several policy structures that were discussed throughout the event and are important to corporate procurers of renewable energy and investors who hold their stock.

Power Purchase Agreements: Power purchase agreements (PPAs) and lease arrangements have proven to be mutually beneficial for both the corporation purchasing the power and the energy provider. Because of the scale at which large corporations are able to purchase renewable energy through PPA projects, capacity can be installed with low-cost financing. For developers, corporate PPAs deliver predictable income due to the long-term nature of the agreements, which is key to securing low cost of capital and preferred financing arrangements.

A significant part of the value of renewable energy to corporates is the ability to lock in energy prices and avoid fuel price volatility. During our discussions, Google, Unilever, and Walmart all discussed the role of PPAs in helping them scale-up their clean energy goals. Google kicked off the PPA trend in 2009, and since then PPAs have become the primary tool for corporations looking to purchase renewable energy. PPAs are also a tool that allows companies to hire a third party to manage the logistics and maintenance of renewable energy projects--without having to hire that expertise internally.

“PPAs are important because they allow us to buy energy without making major capital expenditures up front or taking on the risk associated with operating and maintaining a power generation system,” says Kathryn Wiseman, Director of Global Public Policy at Walmart. “We can avoid power price fluctuations by locking in rates over a long period of time and often save money that we can put back into our businesses.”

Business groups like Ceres and Advanced Energy Economy have mobilized their members to be strong advocates of removing the barriers for third party PPAs for solar PV. Currently nine states disallow PPAs or restrict them through other legal barriers for residential customers. Given the growing use of PPAs as a corporate procurement tool, there are significant opportunities

A significant part of the value to corporates from renewable energy is the ability to lock in energy prices and avoid fuel price volatility.

21. Calvert, Ceres, David Gardiner & Associates, and World Wildlife Fund. (2014). “Power Forward 2.0: How American Companies Are Setting Clean Energy Targets and Capturing Greater Business Value.” Available at: <https://www.ceres.org/resources/reports/power-forward-2.0-how-american-companies-are-setting-clean-energy-targets-and-capturing-greater-business-value/view>

for SEOs, Economic Development Agencies, legislatures, and utility commissions to work with businesses to eliminate barriers and ease the process for companies looking to procure renewable energy in the states.

Green Tariffs: Green tariffs cater to large energy customers seeking to access renewable energy in regulated electricity markets where third party PPAs or fixed-price renewable energy options are not available. Green tariffs provide an alternative to the purchase of unbundled renewable energy credits (RECs), and instead allow customers to buy both RECs and electricity from [often local] renewable energy projects, ideally at fixed prices over a contract term. These programs are offered by local utilities and approved by public utility commissions. When they are designed to meet commercial and industrial needs, they offer the potential for more economic value and cost savings than unbundled RECs.

“Utility programs like green tariffs are important tools that allow companies like Google the opportunity to purchase renewable energy to power their operations,” says Joe Dooley, Manager of State Policy at Google. “Giving companies a method to purchase renewables for their facilities empowers them with the ability to access cost-effective, emissions- and often fuel-free energy, which makes good business sense for them and drives strong economic investment for the region.”

World Resources Institute (WRI) and World Wildlife Fund (WWF) created the Corporate Renewable Energy Buyers’ Principles to help large energy users work with utilities to scale up renewable energy investment. The group has also been instrumental in helping utilities put together green tariff programs that meet the needs of companies who are looking for cost-competitive, long- and variable-term contracts that add to new energy resources to the grid. They have also produced some research on some of the early green tariff proposals and offerings for commercial and industrial customers in regulated markets.

“Green tariffs allow utilities in regulated electricity markets to bring large renewable energy products to their customers,” says Marty Spitzer Senior Director, Climate and Renewable Energy at the World Wildlife Fund (WWF). “Meeting these commercial customer needs is good for customers, good for local economic development, and avoids the need for customers to find creative ways of bypassing their utilities.”

Green tariff programs are on the rise, and experts believe these projects will soon outpace third party power purchase agreements. Utilities are also responding to the growing number of corporate renewable energy commitments. For example, Xcel Energy and Consumers Energy both recently announced the creation of proposals for large corporate buyers.

Net Energy Metering and Fixed Charges: Net Metering policies allow ratepayers with onsite electricity generation to sell the energy they do not consume back to the utility (usually at the retail rate). This has been an effective tool in reducing energy bills for business and residential customers who have invested in distributed generation systems.

The overwhelming majority of states have mandatory net metering policies in place, but most policies have capacity limits, meaning that only systems up to a certain size can qualify. Other states have overall capacity limitations (the total amount of distributed generation that can qualify), sometimes divided by sector. With the explosive growth of rooftop solar power, these limits are a growing challenge as states meet their caps and as corporate buyers invest in larger



clean energy projects. This not only threatens revenue streams of utilities, but high penetration rates of intermittent distributed generation can pose significant operational challenges to local and regional grids.

Many electric utilities have proposed significant increases to customers' monthly fixed charges to address revenue and cross-subsidy concerns. Adopting meaningful monthly fixed or demand charges does reduce financial risk for utility revenue collections for the immediate future, but this approach has several flaws that have led to widespread opposition in state regulatory proceedings. The principal arguments against fixed charges are that they do not promote efficient use of energy; they reduce customer control over energy costs; and they have a negative impact on low- or fixed-income customers. Companies and investors have varying positions on utility rate design, including net metering policies and increased monthly fixed fees. It is essential that companies, utilities, and regulators work together to develop innovative solutions that work for all parties. In particular, in some states, feed-in tariffs, performance contracting, and comprehensive utility reform can begin to address these challenges, while ensuring energy choice and profitability for all parties.

Virtual PPA/Shared Renewables: In a Virtual PPA scenario, customers purchase power from a third-party owned system that is not located on their property. For a shared renewables system, multiple customers are able to participate in the same metering system and share the output from a single facility that is not physically connected to their property. This works especially well for customers that lack a suitable site for a wind or solar installation, but are interested in investing in clean energy. This can be used for residential, commercial, and industrial users. At least 12 states have passed legislation allowing shared renewables with varying caps on net metering.

This can prove especially useful for large companies who may not be able to produce all their required power with on-site installations. Many companies are using these types of projects to meet large portions of their clean energy goals. For example, last year, Unilever worked with NRG to purchase 80 percent of the energy from the Langford Wind farm in Texas. Through a three-year virtual power purchase agreement, Unilever was able to purchase enough energy to meet the needs of all of their U.S. manufacturing facilities and not have to worry about maintenance of the system.

“Our expertise is in food manufacturing, not managing renewable energy systems,” says Stefani Millie Grant, Senior Manager, External Affairs and Sustainability at Unilever North America. “This type of agreement allows us to meet our clean energy goals, lock-in fixed prices, and gain all of the benefits of ownership without the maintenance requirements.”

State Energy Officials, Public Utility Commissioners, and legislators can work together to develop a welcome policy environment that allows companies and investors to invest in these types of projects and contribute to economic development opportunities.

It is essential that companies, utilities and regulators work together to develop innovative solutions that work for all parties.

Action Items and Recommendations

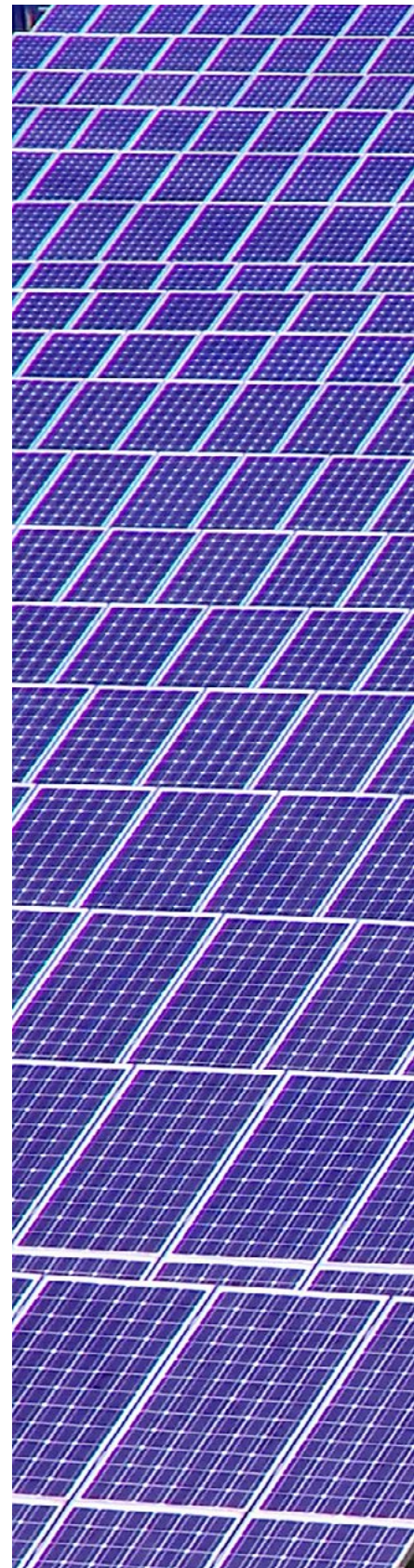
To continue promoting sustainable economic growth, greater coordination between state energy policymakers and businesses and investors is not only beneficial, but crucial. The following high-level recommendations offer further consideration on how public-private coordination and partnerships can occur.

Establish lines of communication and coordination: Especially for policymakers committed to promoting energy-related economic growth and development, the experiences, challenges, and successes of businesses in their state are important data points that can form the basis for new policies or programmatic initiatives. For this reason, public-private partnerships and regular communication and coordination with CEOs can help cultivate optimal policy environments over time. Both NASEO (www.naseo.org) and Ceres (www.ceres.org) are available to help facilitate such dialogues and partnerships.

Leverage states' comprehensive energy planning processes: States' energy planning and policy development processes offer a forum for public-private dialogues and exchanges to occur, typically in the form of stakeholder engagement "listening" sessions or written opportunities for public input. Once an energy plan is released, its content offers a roadmap for the types of policies and programs the state is likely to pursue; therefore, early and continued input into the plans may help set a positive, stakeholder-driven policy direction and may increase the likelihood of creating an energy policy environment that is friendly to businesses, investors, and their customers.

Include utilities and large energy users in legislative and regulatory discussions: In the Eversource service territory in Connecticut, the largest commercial and industrial (C&I) customers account for about 2% of utility C&I customers and 80% of C&I customer energy use. Thus meaningful participation of the largest C&I customers in energy-savings efforts is critical for realizing the benefits of energy efficiency and renewable energy investments. These customers often have unique needs and energy efficiency and renewable energy programs must be tailored to meet them. Programs must accommodate capital planning processes; financial hurdle rates; and complex, specialized manufacturing processes; and they must offer nontraditional engineering and technical services to meet unique needs. Utilities, policymakers, and C&I customers should work together to develop solutions that work for all parties.

Utilize partnerships to implement incentives and financing: Grants and incentives represent key tools to promote the expansion of clean energy markets, tap into the benefits of energy technology-based economic development and job growth, and create platforms for effective public-private partnerships. Innovative financing mechanisms have the potential to serve as an alternative tool to promote energy markets without placing a major burden on government coffers.



Appendix A

Participants in the December 2015 NASEO-Ceres Meeting

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Kathryn Wiseman, Walmart

Edward Yim, DC Department of Energy & Environment

Ellen Zuckerman, Schlegel Associates

Participation in this meeting does not signify agreement with all of the concepts presented in this white paper.

Appendix B

Excerpts from Pathway to a 21st Century Electric Utility

The principal challenges facing the utility model can be summarized as follows:

- Slowing demographic (U.S. population) and economic growth opportunities have reduced electric consumption growth and customers' disposable income levels;
- Customer interest in reducing energy usage and environmental impact has gained attention and interest;
- Public-policy goals seek to increase energy-efficiency adoption and clean-energy production and to reduce environmental emissions;
- Price inflation and costs to deploy new grid technologies are increasing utility capital budgets and requiring increased electric rates (although rate increases have not in general outpaced inflation);
- Customers now have enhanced options to save on their energy bills through programs that reward adoption of clean technologies (e.g., solar distributed energy resources combined with net energy metering programs); and
- U.S. regulatory models that are energy-usage based, regardless of load or time of day, constrain prospects for utility revenues and financial health.

Utility sector investments, however, continue to trade close to all-time high valuations based on low interest rates. Threats to the utility sector are still in the early stages because customer adoption of new energy technologies remains low, but are growing. Furthermore, customers, rather than investors, are bearing the near-term cost of disruption through increased utility rates.

Once investors begin to experience these challenges as a direct impact on the economic return potential of their investments, however, the cost and availability of capital to fund the utility sector will suffer. Given that the industry relies on 30-plus-year investment recovery cycles, it is essential that capital deployed today be planned and rationalized to avoid future stranded costs.

To create the clean, efficient and sustainable energy future that all stakeholders seek, we must revisit the industry model to ensure alignment with customer and policy goals, while also ensuring that utilities and third-party providers are properly motivated to support their customer, societal and fiduciary obligations.

Solutions exist to address the utility revenue challenge as an alternative to increased fixed charges, such as inclining block rates, reforming net energy metering, use of bidirectional meters, time-of-use rates, accountability incentives and identifying new revenue opportunities for utilities.

The vision proposed for the 21st Century Utility model is relatively straightforward, and includes:

- Enhanced reliability and resilience of the electric grid while retaining affordability;
- An increase in cleaner energy to protect our environment and global strategic interests;
- Optimized system energy loads and electric-system efficiency to enhance cost efficiency and sustainability; and
- A focus on customer value, including service choices and ease of adoption.

The foundational principles or ground rules to support the achievement of this vision are as follows:

- Financially viable utilities are essential to fund and support an enhanced electric grid;
- Policymakers must promote clear policy goals as part of a comprehensive, integrated jurisdictional energy policy or 21st Century Utility model;
- Commitment to engaging and empowering customers can help them make intelligent energy choices, including third-party engagement and access to necessary data; and
- Equitable tariff structures promote fairness and policy goals.