

Energy Efficiency and the Clean Power Plan: Steps to Success

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Abstract

This is the first in a series of papers intended to guide states as they embark on the path to Clean Power Plan compliance. Energy efficiency brings significant pollution reduction potential, but states may miss out on the lowest-cost road to compliance because of barriers to investment and uncertainty about how to proceed. While energy resources, regulatory structures, and policy priorities vary widely from state to state, some elements of the planning process are common to many of them.

This guide highlights steps states can take to use energy efficiency as a key compliance strategy. We help states identify critical decisions and their implications for energy efficiency, and we describe opportunities for identifying and engaging important stakeholders. We also describe factors in evaluating energy efficiency compliance options, including strategies and tools for comparing options, measuring and verifying energy and emission savings, and incentivizing energy efficiency. Throughout the guide, we provide examples of states that have shown leadership in the compliance and program development process.

Introduction

In August 2015, the US Environmental Protection Agency (EPA) released the final Clean Power Plan (CPP), a regulation to reduce carbon pollution from existing fossil fuel power plants.¹ Energy efficiency presents significant pollution reduction potential, but barriers to investment and uncertainty about how to proceed may mean that states miss out on the lowest-cost road to compliance.

While energy resources, regulatory structures, and policy priorities vary widely from state to state, some elements of the planning process are common to many of them. This guide highlights steps that states can take to help them use energy efficiency as a key compliance strategy. It is designed to help states

- Identify critical decisions and their implications for energy efficiency
- Identify and engage important stakeholders
- Evaluate energy efficiency compliance options

Identify Critical Decisions

As states embark on the path to compliance, they must make several foundational decisions about the timing of their plan submission, format of their emissions reduction goals, degree of interstate coordination, and interest in EPA's Clean Energy Incentive Program (CEIP).² Each of these choices will affect the timing, reporting requirements, and revenue streams related to emissions reduction measures. Energy efficiency can be used as a core compliance strategy in all scenarios. In table 1, we lay out some of the questions states should consider addressing as they examine their compliance landscape, and some pros and cons for energy efficiency in each decision.

¹ EPA provides resources in its Clean Power Plan Toolbox to help states develop compliance plans: www.epa.gov/cleanpowerplanttoolbox.

² EPA provides a fact sheet, list of next steps, and other CEIP-related resources here: www.epa.gov/cleanpowerplan/clean-energy-incentive-program.

Table 1. Implications of state decisions for energy efficiency

Decision	Pro	Con
<p>States are required to submit final plans in September 2018.</p> <p>Should the state wait until 2018 to submit a final plan?³</p>	<p>Waiting until 2018 to submit gives states more time for convening stakeholders and evaluating compliance options. Many states have only begun to scratch the surface of their energy efficiency potential, and this extra time can be used to evaluate all the options.</p>	<p>Delaying a plan submission puts a state in an extended period of flux. Uncertainty about what investments or activities will count toward compliance and how much those investments are worth may have a chilling effect on investment. Businesses and investors might seek opportunities in other states where the regulatory environment is more certain.</p>
<p>States may select from a variety of plan structures. EPA provides detailed guidance in the CPP on how to incorporate energy efficiency in a rate-based approach, in which states demonstrate compliance through achievement of a lbs/MWh rate (pounds of CO₂ per megawatt-hour of electricity generated). The main alternative most states are considering is a mass-based approach, in which compliance is achieved by limiting emissions to a tonnage cap.</p> <p>Should the state choose a mass-based approach?</p>	<p>Under a mass-based approach, savings are accounted for at the stack and automatically count toward compliance as reduced CO₂ emissions. States are not required to submit an Evaluation, Measurement, and Verification (EM&V) report to EPA.⁴</p>	<p>In theory a mass-based trading approach should create a financial incentive for the state to pursue the lowest-cost path to compliance. However longstanding regulatory and market barriers to energy efficiency investments remain. Without a method for specifically ensuring that regulatory and market barriers are addressed, states will miss out on energy efficiency opportunities.</p>

³ The Supreme Court recently granted a motion to stay the CPP until the DC Circuit Court hears arguments. In spite of this freeze on the rulemaking process, energy efficiency remains a powerful and cost-effective tool for reducing pollution. State air, energy, and utility regulators can use this time to continue working together — and with the public — to understand energy efficiency opportunities.

⁴ Exceptions to this exemption include states that are participating in the CEIP (80 FR 64831) and states that are using efficiency to address leakage (80 FR 64951).

Decision	Pro	Con
	<p>The CPP regulates existing power plants, but not new ones. If a state selected a mass-based approach, and if electricity demand were shifted away from existing power plants and onto new plants, statewide CO₂ emissions could increase. In the rule this is called leakage (80 FR 64887). States can address leakage by setting aside some allowances from the overall cap for energy efficiency, or by expanding the cap and including new power plants in the CPP state plan.⁵ States may also demonstrate to EPA through additional analyses that emission leakage is unlikely to occur due to existing state policies or unique characteristics (80 FR 64890).</p> <p>Should energy efficiency be used to address leakage in a state plan?</p>	<p>A set-aside is typically some smaller portion of the total cap, when in fact energy efficiency can be used to meet 100% of state targets. Employing a set-aside as the only mechanism to incentivize energy efficiency might have the effect of artificially limiting its potential.</p> <p>It is also unclear how this treatment of energy efficiency would adequately address the leakage issue described in the rule.</p>

⁵ EPA refers to this as a "new source complement" (80 FR 64888).

Decision	Pro	Con
<p>If a state adopts one of the model approaches laid out in the CPP, the state's plan will be "trading ready" (80 FR 64833). This means that entities in one state can transact with entities in other states to buy and sell allowances or credits if both states have the same type of plan. States can also partner with other states to enact multistate plans.</p>	<p>States that import electricity will reduce emissions in other states when they employ energy efficiency. States that partner can ensure that the full emissions benefits of energy efficiency can be tracked, documented, and counted toward compliance.</p>	<p>States may seek to achieve multiple goals in the CPP planning process, such as increased services to low-income communities. An influx of credits from a neighboring state could make those goals more difficult to achieve by eliminating the need for additional in-state reductions.</p>
<p>Should the state consider interstate trading?</p>	<p>Participation in an interstate market can help keep compliance costs low by providing access to a broader range of opportunities to reduce emissions.</p>	<p>Project developers in states participating in the CEIP must meet EPA's EM&V requirements to obtain the ERCs or allowances. (80 FR 64831)</p>
<p>The CEIP is a program included in the CPP that rewards investments in renewable energy and low-income energy efficiency that reduce CO₂ emissions in advance of the compliance period. States that opt to participate in the CEIP can obtain extra allowances or Emission Rate Credits (ERCs) from a pool that is maintained by EPA. (80 FR 64829)</p>	<p>Participation in the CEIP could mean additional allowances or credits that states could use for compliance in later years. Since investments in energy efficiency typically generate savings for many years, it would also mean a jump-start on reductions needed during the compliance period.</p>	<p>Providing energy efficiency to low-income communities may require additional effort or up-front expenditures. This program can help defray those costs.</p>
<p>Should the state participate in the CEIP?</p>		

Engage the Players

As states define their stance on the critical issues above, they will need to identify parties to involve in the compliance process. Government structures and policy priorities vary from state to state. As a result, stakeholders do not have the same responsibilities or areas of expertise.

GOVERNORS

In many states governors kick-start the compliance planning process. Whether they issue an executive order or announce intent to comply through less formal venues, a governor's stance can set the tone in that state. Governors often assign compliance plan development responsibility to the appropriate agency, such as the air quality regulatory agency, which then coordinates with other agencies such as utility regulators and state energy planners. In several states governors have also appointed CPP advisory committees.

Spotlight on Colorado

In his 2015 Colorado Climate Plan, Governor John Hickenlooper tasked the Colorado Department of Public Health and Environment (CDPHE) with the primary responsibility for engaging the public and developing the state's CPP compliance plan in coordination with the Public Utilities Commission and Colorado Energy Office. The CDPHE has convened ongoing stakeholder meetings since September 2015 and will continue to meet monthly through June 2016. Some of these meetings are for general public comment. Others focus on energy efficiency; urban and rural low-income communities; the CEIP; demand growth, cost, and reliability; and emission credit trading mechanisms. The CDPHE Air Pollution Control Division will submit an initial compliance plan to the Air Quality Control Commission.

STATE AIR OFFICES

Compliance with federal air regulations falls to these state agencies, which are tasked with conducting public outreach, developing compliance plans, and submitting the plans to their regional EPA offices.

Spotlight on South Carolina

South Carolina's Department of Health and Environmental Control (DHEC) has regularly convened state energy stakeholders since 2013, when they gathered to address early questions from EPA on regulating carbon pollution from existing power plants. Participants in this group—called the South Carolina Energy Coalition—include representatives from the utility sector, conservation and forestry groups, clean energy alliances, a community church, and several large companies with operations in the state.⁶ In addition to four DHEC-hosted stakeholder meetings in late 2015, the coalition meets monthly and has launched compliance modeling and environmental justice work groups. By also engaging local clean air coalitions, DHEC has made a substantial effort to ensure that South Carolina's compliance plan reflects collective viewpoints.

⁶ Michelin North America, Inc., KapStone Paper and Packaging Corporation, and Resolute Forest Products.

ELECTRIC GENERATING UNIT OWNERS

The CPP affects existing fossil fuel-fired electric generating units (EGUs) with capacities greater than 25 megawatts (MW) (80 FR 64715).⁷ All types of owners or operators of affected EGUs have the ability to contribute to a state's emission reduction activities. This includes vertically integrated utilities and merchant generators, investor-owned utilities (IOUs), municipal utilities, customer-owned (cooperative) utilities, and owners or operators of single-unit fleets of generating units (80 FR 64752). The compliance pathway states select guides the responsibilities of EGU owners, who must either reduce the emissions of their affected units or secure the necessary number of ERCs or allowances to be in compliance.⁸ EGU owners will have to evaluate the cost of shifting supply-side resources compared with investing in energy efficiency. An expensive compliance process will raise electricity rates, so participation of these key stakeholders in CPP planning could protect utilities and consumers alike.

UTILITIES

As energy providers, utilities are key partners in the resource planning process. Depending on the regulatory structure of the state, utilities will engage in the planning and implementation process differently. Utilities in vertically integrated states generate, transmit, and distribute power to retail customers. Through the integrated resource planning process, vertically integrated utilities evaluate the cost and reliability of their portfolios (RAP 2011). By evaluating energy efficiency as a resource equivalent to other supply-side options, utilities can assess opportunities for meeting customer needs while complying with the CPP at lowest cost (Hibbard, Okie, and Tierney 2014).

In states with deregulated electricity markets, distribution-only utilities do not own generators and therefore purchase power from upstream wholesale providers. States with restructured electricity markets can use market-based mechanisms to benefit residents and businesses. As one example, in a mass-based approach states might auction allowances to EGUs and then use the proceeds to fund efficiency activities.⁹

STATE ENERGY OFFICES

Responsibility for coordinating non-ratepayer-funded energy efficiency programs often resides within state energy offices (SEOs). Engaging these offices is essential to understanding which existing programs could count toward compliance and whether these

⁷ Many industrial combined heat and power (CHP) facilities are exempt from regulation (80 FR 64717), but some CHP units meet the definition of affected sources. Affected CHP units with a lower emissions rate than the standard requires may contribute reductions in emissions, and their owners are an important stakeholder group to engage.

⁸ In a mass-based scenario, EGU owners emitting above their designated caps will have to acquire allowances that permit them to emit CO₂. In a rate-based scenario, generators with emissions above their designated rates will need to secure ERCs to be in compliance.

⁹ For more information on ways to incentivize energy efficiency, see joint comments by ACEEE and partner organizations: www.seealliance.org/wp-content/uploads/Final-Model-Trading-Rule-Federal-Plan-Comments-1-21-16.pdf.

programs must be adjusted or improved to meet EPA's expectations. SEOs can also help identify new program opportunities.

UTILITY COMMISSIONS

Public utility commissions' priorities generally include maintaining grid reliability and electricity affordability. They also typically oversee the energy efficiency activities of investor-owned utilities in their states, which includes approving or rejecting energy efficiency programs and setting EM&V standards for energy savings—both potentially important components of a state's CPP compliance strategy.

STATE LEGISLATURES

Legislatures may shape the CPP planning process by passing laws that limit or expand agency authority to develop a compliance plan. Laws may also require submission of compliance plans to the legislature for approval prior to finalization or require state agencies to conduct specific analyses. In the 2015 session, 27 states introduced CPP-related bills, but only 9 of these bills were enacted (Durkay 2015).¹⁰ Some states have formed CPP-specific subcommittees to handle all CPP-related legislation. Legislation may also be necessary in order to improve or alter energy efficiency or renewable-energy policies so that they may work better for compliance—for example, by revising an energy efficiency resource standard or updating building energy codes.

LOCAL GOVERNMENTS

The majority of energy consumption and greenhouse gas emissions occur in cities (Ribeiro et al. 2015). Energy efficiency programs and projects managed by local governments could play a significant role in meeting state CPP targets. Cities, localities, and municipalities are familiar with the residential, commercial, and industrial customers in their jurisdictions, and many have experience offering energy efficiency programs to these populations. While states are still defining the role of local governments in CPP planning, they can leverage and expand existing local efforts to reduce CO₂ emissions. A robust stakeholder engagement process that ensures a seat at the table for representatives of these communities can help ensure that all opportunities available to a state are appropriately considered.

THE PUBLIC

EPA requires a public outreach process to inform states' comments to EPA and guide the compliance plan development process. Some states are conducting topic-specific public listening sessions, while others are conducting more-general sessions. By leading public meetings focused on energy efficiency, states can begin an early, proactive dialogue on this compliance resource. State agencies are streaming sessions as webinars, sharing meeting minutes online, or creating state-specific email lists, so participation is not limited to in-person attendance.

¹⁰ Arizona, Arkansas, Illinois, Kansas, Minnesota, Nebraska, North Dakota, Tennessee, and West Virginia have enacted CPP-related bills. The National Conference of State Legislatures (NCSL) tracks states' reactions and legislative developments related to the CPP.

LOW-INCOME, ENVIRONMENTAL JUSTICE, AND VULNERABLE COMMUNITIES

EPA requires states to engage these communities and consider their needs in the compliance plan development process. However it is currently left to states to identify these constituencies. States must demonstrate how they have meaningfully engaged stakeholders including vulnerable communities (80 FR 64856). EPA has provided several resources to help states identify vulnerable populations.¹¹

LARGE COMMERCIAL AND INDUSTRIAL CONSTITUENTS

Substantial energy-saving opportunities exist in large businesses including commercial and industrial facilities. Developing a plan that includes programs that respond to the needs of large customers—including the owners and employees of these facilities—will help maximize potential emissions reductions and ensure a lower-cost path to compliance.

NEIGHBORING STATES

Initiating multistate conversations enables states to understand each other's compliance priorities. States are already having some of these conversations through several regional venues. The Midcontinent States Environmental and Energy Regulators (MSEER), a group of utility and environmental regulators from 13 states, has been meeting since EPA released the draft CPP to discuss nonbinding options for multistate compliance.¹² Another such effort is the Western States Clean Power Plan Initiative, led by former Colorado Governor Bill Ritter Jr. at the Center for the New Energy Economy at Colorado State University. Through this collaborative, environmental, utility, and energy regulators from 14 states have discussed uniquely western issues and opportunities for compliance.¹³ In the Northeast, states participating in the Regional Greenhouse Gas Initiative (RGGI) are discussing CPP compliance through the regional 2016 Program Review process.¹⁴ Topics include state plan approaches to the CPP, strategies for promoting renewable energy and energy efficiency, and advantages of allowing additional states to participate in the RGGI market.

¹¹ EPA's EJSCREEN Tool helps states generate custom environmental justice maps: www.epa.gov/ejscreen. In addition, EPA's *Guidance on Considering Environmental Justice during the Development of Regulatory Actions* provides steps for states to meaningfully engage vulnerable communities: www3.epa.gov/environmentaljustice/resources/policy/considering-ej-in-rulemaking-guide-final.pdf.

¹² Arkansas, Illinois, Indiana, Iowa, Kentucky (observer only), Louisiana, Michigan, Minnesota, Mississippi, Missouri, Montana, South Dakota, and Wisconsin (observer only): www.adeq.state.ar.us/air/planning/cpp/pdfs/final_mseer_comment_letter_20160120.pdf.

¹³ Alaska, Arizona, California, Colorado, Idaho, Montana, North Dakota, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming. www.azdeq.gov/environ/air/download/cnee_comments_121515.pdf.

¹⁴ Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont participate in RGGI. Topics for 2016 Program Review Stakeholder Discussions can be found here: www.rggi.org/docs/ProgramReview/2016/11-17-15/Key_Discussion_Items_11_17_15.pdf.

Develop a Plan in Which Energy Efficiency Works

LEVERAGE EXISTING PROGRAMS

The first step in assessing energy efficiency opportunities will be to evaluate which programs a state currently has in place and what level of savings they are currently achieving. EPA has indicated that many types of energy efficiency actions can count toward state emissions reduction targets. States will then need to identify the strengths of these existing programs, including whether or not the emissions reductions can be tracked and quantified and how long the measure will be sustained throughout the compliance period.

CONSIDER NEW PROGRAMS AND TECHNOLOGIES

In the final CPP, EPA identifies numerous energy efficiency programs as reliable sources of electricity and carbon pollution savings. These include

- utility and non-utility energy efficiency programs
- energy savings performance contracts (ESPCs)
- building energy codes
- CHP
- residential, commercial, and industrial measures
- appliance replacement and recycling programs
- behavioral programs
- energy benchmarking
- state appliance and equipment standards
- water and wastewater programs (80 FR 64901)

New technologies and appliances in the industrial, commercial, and residential sectors use decreasing amounts of energy. Because energy-saving opportunities continue to expand, states looking to achieve greater savings need not start from scratch. States can build on prior success by taking current initiatives to the next level. For example, a state considering building energy codes as one of its compliance strategies could explore opportunities to adopt a more recent version of that code, or it could examine ways to improve compliance with the existing building energy code. Both of these actions would enable the state to reap greater energy and emissions savings. Opportunities abound for states to promote or require energy-efficient technologies, operations, and behavior.¹⁵

COMPARE COMPLIANCE OPTIONS

Several tools have been developed to help states understand the potential of various compliance options:

¹⁵ ACEEE's *State Energy Efficiency Scorecard* scores states on performance and policy metrics in six major areas: utilities, transportation, building energy codes, CHP, state government initiatives, and appliance and equipment standards. Filled with instances of exemplary state programs, the *Scorecard* helps states compare progress and identify strategies for ramping up activities: aceee.org/state-policy/scorecard.

- *State and Utility Pollution Reduction Calculator Version 2 (SUPR 2)*. ACEEE's tool allows users to select from 19 policies and technologies, including energy efficiency, renewable energy, nuclear power, emissions control, and natural gas, then calculates energy, pollution, and monetary savings.
- *Clean Power Plan Planning Tool (CP3T)*. Synapse and Argonne National Laboratory's tool allows users to adjust state-specific fossil fuel unit capacity factors, renewable-energy and energy efficiency projections, unit retirements, and 111(b) unit additions, then compare generation, capacity, emissions, and cost differences associated with various scenarios.
- *Clean Power Plan Compliance Tool*. MJ Bradley's tool allows users to analyze state progress toward compliance with the final CPP rule under a range of electricity demand and generation scenarios and a variety of emissions reduction targets. The tool incorporates policy options outlined in the final rule, and provides the ability to alter all major drivers of state electric-sector emissions and ascertain their impacts on the state's CPP compliance status.¹⁶

Synapse Energy Economics has recently completed a synopsis of the variety of planning tools available to states.¹⁷

EXAMINE STRATEGIES FOR MEASURING AND VERIFYING SAVINGS

Depending on a state's chosen compliance approach, EM&V can play an important role in quantifying energy savings and assessing progress on monetary, energy, or emissions goals. In a mass-based state plan, EM&V is generally not required unless a state has chosen to participate in the CEIP or needs to address leakage in its allowance allocation process (80 FR 64951). In a rate-based plan, EM&V is required to support ERC tracking, trading, and issuance, as well as for participation in the CEIP. In both the mass- and rate-based compliance scenarios, states with utility-run energy efficiency programs will likely already have EM&V requirements, led by the state's public utility commission, to ensure that programs are cost effectively delivering energy savings. While EM&V requirements for the CPP are not yet final, EM&V protocols for ratepayer-funded energy efficiency programs are well established and can be used to begin the planning process.¹⁸ Before evaluation begins program administrators should determine the metrics important to them: energy savings, cost savings, pollution reduction, or other state policy priorities. For CPP planning purposes administrators should include carbon pollution reduction as a metric for success. As states examine EM&V protocols, they should consider whether or not there is proper oversight of

¹⁶ ACEEE State and Utility Pollution Reduction Calculator Version 2: aceee.org/research-report/e1601; Synapse Clean Power Plan Planning Tool: www.synapse-energy.com/tools/clean-power-plan-planning-tool-cp3t; MJ Bradley Clean Power Plan Compliance Tool: www.mjbradley.com/about-us/case-studies/clean-power-plan-evaluation-tools.

¹⁷ www.synapse-energy.com/sites/default/files/Guide-to-Clean-Power-Plan-Modeling-Tools.pdf.

¹⁸ The US Department of Energy (DOE)'s Energy Efficiency Program Impact Evaluation Guide offers many tools to help states determine an evaluation process, quantify energy and emission impacts, and understand related energy efficiency evaluation terms, issues, and resources. www4.eere.energy.gov/seeaction/sites/default/files/pdfs/emv_ee_program_impact_guide_1.pdf.

such processes—by the utility, the utility regulatory commission, a third party, or another government agency. To lend credibility, consensus, and transparency to the EM&V oversight process, some states have a multiparty energy efficiency advisory group including utilities, environmental groups, businesses, and other stakeholders.¹⁹

INCENTIVIZE ENERGY EFFICIENCY

Each compliance method involves different considerations for incentivizing energy efficiency. In a mass-based compliance scenario, in which a state auctions allowances to EGUs, the state can invest proceeds in end-use energy efficiency measures.²⁰ If a mass-based state is directly allocating allowances, it can prioritize energy efficiency in that allocation process or set aside a portion of allowances for energy efficiency providers. In a rate-based compliance scenario, states can streamline EM&V so that efficiency projects and programs can easily apply for and receive ERCs. The providers of these projects can then sell ERCs to affected EGUs.

Next Steps

Energy efficiency measures are a low-cost, reliable approach to reducing CO₂ emissions that every state should consider including in its compliance plan. In subsequent publications ACEEE will provide guidance on specific energy efficiency policy and program approaches that can fit within a state compliance plan, making recommendations for best practices and models states can follow. States have a wide variety of opportunities to better maintain electric grid reliability, keep costs down, and protect the environment with energy efficiency.

¹⁹ Arkansas's Parties Working Collaboratively (PWC), initiated by the Arkansas Public Service Commission, includes investor-owned gas and electric utilities, EM&V contractors, program implementers, and others. The group recently reviewed industry EM&V best practices and developed a technical reference manual for the state (Johnson and Klucher 2014). Michigan's Energy Optimization Collaborative, established by the Michigan Public Service Commission, convenes electric and gas providers, energy efficiency experts, equipment installers, and other stakeholders to improve, develop, and support energy efficiency plans and programs: www.michigan.gov/mpsc/0,1607,7-159-52495_53750-217178--,00.html.

²⁰ Several states participating in the RGGI program use proceeds from periodic allowance auctions to fund investments in energy efficiency.

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