A Roadmap for Clean Power Plan Compliance: State Developments and Consideration of Energy Efficiency

Cassandra Kubes, Mary Shoemaker, and Sara Hayes, American Council for an Energy-Efficient Economy

ABSTRACT

The US Environmental Protection Agency (EPA) relied on authority found within Section 111(d) of the Clean Air Act to create the agency's Clean Power Plan (CPP). Section 111(d) has hardly been used, and states have little or no experience navigating the 111(d) process. Specifically the CPP challenges states to consider their power planning in a holistic way. The route to compliance with EPA's state goals can look different in each state and can be based on a broad range of mechanisms to reduce carbon dioxide (CO_2) pollution, including a variety of energy efficiency policies and programs. Given that states are navigating largely uncharted territory it is important to learn from those few that step out in front and lead. This paper examines two states that have committed to planning for CPP compliance on an accelerated timetable: Minnesota and Pennsylvania. We compare and contrast efforts in these states in order to identify best practices and lessons learned that can be applied in other states as they juggle the multiple responsibilities of air, energy, and utility regulators and achieve their pollution-reduction goals. We discuss factors to consider when incorporating energy efficiency programs into compliance planning and identify strategies for incentivizing energy efficiency programs through CPP compliance.

Early Actors: Minnesota and Pennsylvania

In October 2015 the US Environmental Protection Agency (EPA) published its Clean Power Plan (CPP) final rule, regulating carbon dioxide (CO_2) emissions from existing power plants (EPA 2015). The CPP challenges states to consider their energy planning in a holistic way, and states can base compliance on a broad range of strategies, including demand-side energy efficiency. Within the CPP rule EPA explicitly identifies a variety of energy efficiency programs and policies that can count toward compliance, including utility programs, building energy codes, energy savings performance contracting (ESPC), state appliance and equipment standards, behavioral and industrial programs, combined heat and power (CHP), and energy efficiency in water and wastewater facilities, among others (EPA 2015). Given the variety of compliance pathways available to states, coordination is essential among state agencies, utilities and other owners of affected electric generating units (EGUs), and other stakeholders in order to weigh their options and develop a state plan. We have selected two states that have committed to planning early for CPP compliance: Minnesota and Pennsylvania. By examining their compliance planning approaches to date we will identify best practices and strategies for incorporating energy efficiency that can be applied in other states.

Each state has unique emission-reduction obligations under the CPP and existing energy efficiency policies that can be relied on for compliance. Minnesota is a leader in energy efficiency, placing 10th in ACEEE's *2015 State Energy Efficiency Scorecard*—the

highest rank of any Midwestern state (ACEEE 2015). Minnesota has an energy efficiency resource standard (EERS) that requires electric and gas utilities to achieve 1.5% incremental savings and applies to both investor-owned and publicly owned utilities. The state also recently adopted the 2012 International Energy Conservation Code (IECC) for both residential and commercial buildings. To ensure code compliance Minnesota completed a compliance study and gap analysis and convenes a code collaborative. Over the past few years Minnesota has also set specific energy-savings targets for public buildings. The state requires public facilities to benchmark energy use in a state-designated benchmarking tool and encourages agencies to explore ESPC in coordination with the Minnesota Guaranteed Energy Savings Program (GESP). Because of its leadership in energy efficiency, Minnesota is in a strong position to meet its CPP emissions target.[1] This target requires a reduction in the state's emissions rate from 2,033 pounds per megawatt-hour (lbs/MWh) to 1,213 lbs/MWh by 2030.[2] If Minnesota maintains its ratepayer-funded energy efficiency programs, continues to engage in energy performance contracting, and adopts the latest building energy codes, it could meet nearly 85% of its 2030 CPP emissions goal from just these energy efficiency–related policies.[3] In forecasting CPP compliance options the Minnesota Pollution Control Agency (MPCA) also found that with existing renewable and energy efficiency resources the state is already on the path to comply with the 2030 rate-based goals (Ciborowski 2015).

Pennsylvania placed 17th in ACEEE's *2015 State Energy Efficiency Scorecard*, a score that puts the state in a competitive position relative to its Northeastern neighbors (ACEEE 2015). Pennsylvania has an EERS for electric utilities, but utilities are limited in what they are able to achieve due to a cap on their spending under this program. The state requires residential buildings to comply with the 2009 IECC or 2009 International Residential Code (IRC) and commercial buildings to comply with the 2009 IECC and portions of ASHRAE 90.1. Like Minnesota, Pennsylvania has completed a gap analysis and compliance study, and it convenes an energy code collaborative (Pennsylvania 2015). In addition, the state requires new state buildings to meet high performance standards and encourages public facilities to use ESPCs. Under the CPP Pennsylvania must reduce its emissions rate from 1,682 lbs/MWh to 1,095 lbs/MWh in 2030—a moderate goal in comparison with those of other states.[4] If Pennsylvania strengthens its ratepayer-funded energy efficiency programs, continues to engage in energy performance contracting, and

[1] Minnesota also has a strong renewable-energy standard in place that can contribute to CPP compliance. programs.dsireusa.org/system/program/detail/2401.

[2] In a mass-based compliance scenario Minnesota must reduce its emissions to 22,678,368 short tons CO_2 in 2030 (a 35% decrease compared to the state's 2012 adjusted emissions baseline), or 22,931,173 short tons CO_2 if the state includes new sources of pollution in its target. www3.epa.gov/airquality/cpptoolbox/minnesota.pdf.

[3] We calculated this estimate using ACEEE's State and Utility Pollution Reduction Calculator, Version 2 (SUPR 2). We assume that the state achieves 1.5% savings in 2016 and every year thereafter, has a performance contracting industry that grows 8.3% annually (based on historical market-growth trends), and improves building energy codes (stringency and compliance) every three years through 2030.

[4] In a mass-based compliance scenario Pennsylvania must reduce its emissions to 89,822,308 short tons CO_2 in 2030 (a 25% decrease compared to the state's 2012 adjusted emissions baseline), or to 90,931,637 short tons CO_2 if the state includes new sources of pollution in its target.

adopts the latest building energy codes, it could meet nearly 60% of its CPP emissions goal just from these energy efficiency–related policies.[5]

Minnesota and Pennsylvania can build upon existing policies and programs to maximize energy efficiency potential and cost-effective compliance. Like Minnesota and Pennsylvania, many states that have adopted such policies are already well on their way to reaching their CPP goals (Kubes, Hayes, and Kelly 2016). These energy efficiency strategies can realize benefits for states beyond helping to achieve emissions goals, including saving customers money, creating jobs, improving grid reliability, and driving investment across all sectors of the economy. The following sections take a closer look at how energy efficiency fits into the compliance planning process in Minnesota and Pennsylvania.

Getting a Head Start

EPA finalized the CPP rule and released several additional draft and guidance documents in August 2015. This started the clock for states, which were given until September 2016 to submit their compliance plans, or as late as September 2018 if granted an extension. In February 2016 the Supreme Court issued a stay suspending EPA's timeline for state compliance plan development (SCOTUS 2016). As of the time of this publication EPA has not published a revised timeline, though many states have committed to continuing plan development to get a head start on planning while the rule moves through the courts. Governors in Minnesota and Pennsylvania had originally committed to submitting a compliance plan by the September 2016 deadline. Since the stay was issued both states reaffirmed their commitment to continue work on compliance-plan development (MPCA 2016a; Litvak 2016).

There are advantages and disadvantages of being an early mover on CPP compliance planning. One disadvantage is that these states will be making important decisions before they know what approaches other states might take. For example, if Pennsylvania were to opt for a mass-based approach while all other states opted for a rate-based approach, EGU owners within Pennsylvania would be unable to trade allowances with EGU owners in other states.[6] While that might limit some options, it would not prevent EGU owners within Pennsylvania from trading with each other. It is also highly unlikely that all other states would opt for a rate-based approach. More importantly the positives of acting early far outweigh the negatives, especially when it comes to energy efficiency.

One of the biggest advantages of acting early is the way that savings from energy efficiency accumulate over time. Once a measure is installed it continues to generate savings for many years to come. For example, if you install a 1 kilowatt-hour (kWh) energy efficiency measure each year for five years, you will save 5 kWh in the final year. This means that states that wait to install efficiency measures will face a much higher hurdle when it's time to comply than the states that have been consistently building up their efficiency

[5] We calculated this estimate using ACEEE's SUPR 2 calculator. We assume that the state achieves 1.5% savings in 2016 and every year thereafter, has a performance contracting industry that grows 8.3% annually (based on historical market-growth trends), and improves building energy codes (stringency and compliance) every three years through 2030.

[6] A mass-based goal is a cap on the total emissions from covered EGUs in a state, while a rate-based goal can be seen as an emissions speed limit measured in pounds CO_2/MWh. States that choose a mass-based goal cannot engage in multistate trading with states that choose to comply with a rate-based goal, and vice versa.

reserves. Figure 1 illustrates this concept. In scenario 1 a state begins an energy efficiency program that installs measures resulting in 1,000,000 MWh of new savings each year. In scenario 2 the state waits until 2020 to begin installing the same measures. At the beginning of the CPP compliance period in 2022 the energy efficiency measures in the early-acting state will result in more than triple the emissions reductions of the state that waited. States that act early will benefit from the compounding emissions reductions that energy efficiency achieves over the long term.[7] The state that waits will have a difficult time catching up.

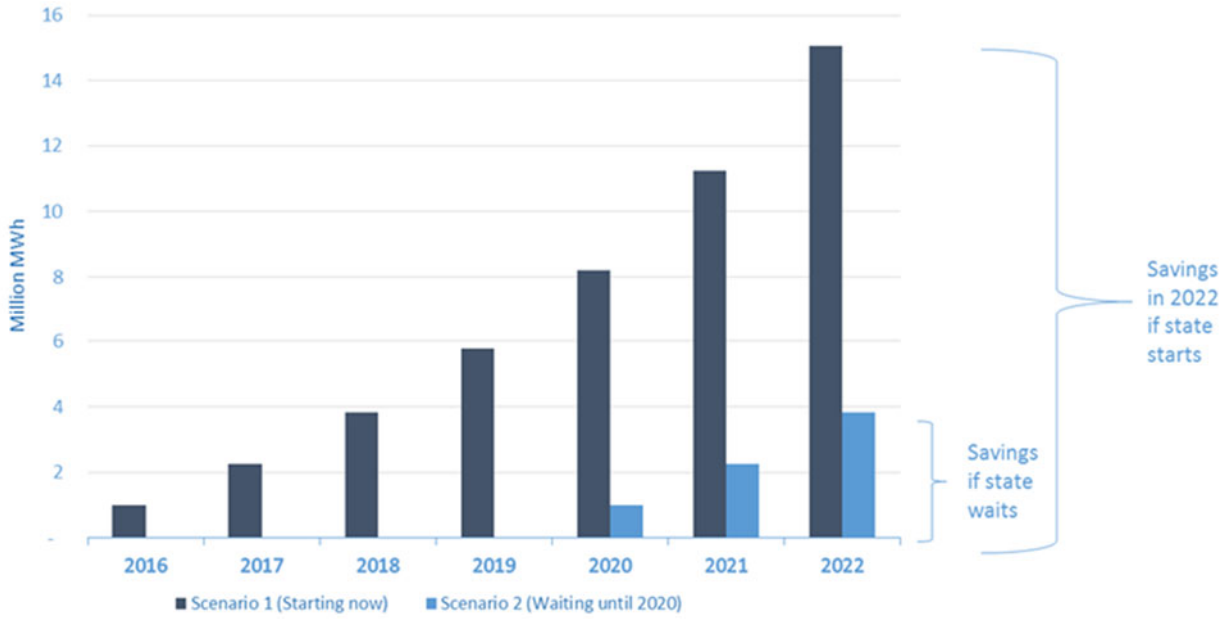

Figure 1. Impact of early action on energy efficiency

States that make key decisions well before the compliance deadline will have time to implement policies that provide clear market signals. They can design a compliance approach that provides investors and businesses with regulatory certainty and incentives. States can also design policies to attract private-sector energy efficiency investments in public buildings. They have time to enact complementary rulemakings or initiate integrated resource-planning processes. In contrast, states that stall or fail to plan for compliance risk forgoing their least-cost compliance options and maintaining business as usual (ACEEE 2016). For example, for many states this means decades of debt sunk into power plants that could become obsolete long before the public pays them off. Minnesota and Pennsylvania's commitments to investing early in cost-effective compliance strategies like energy efficiency not only will result in emissions reductions but will keep money in ratepayers' pockets and drive statewide economic growth.

[7] This assumes that states implement energy efficiency measures with a sufficiently long lifetime of savings.

Engaging Regulators

To kick-start the compliance planning process governors assign compliance plan development responsibilities to the appropriate agency, which is responsible for conducting public outreach, preparing a compliance plan, and submitting the plan to the state's regional EPA office. Minnesota Governor Mark Dayton declared in 2014 that his state would develop a compliance plan, and the MPCA has been convening stakeholders ever since (MPCA undated). Governor Dayton also created the Governor's Committee to Advise the Minnesota Pollution Control Agency, a group committed to ensuring citizen involvement in environmental regulatory decisions. Appointees to the committee include environmental consultants and members of the agricultural and public health sectors (State of Minnesota 2015). After taking office in 2015, Pennsylvania Governor Tom Wolf announced his commitment to work with stakeholders on a compliance plan and directed the Pennsylvania Department of Environmental Protection (DEP) to lead the state's compliance-planning process (State of Pennsylvania 2015).

In both Minnesota and Pennsylvania state air agencies have aimed to coordinate with other agencies that have experience in utility regulation and energy planning. This coordination is beneficial for energy efficiency, as state air agencies have historically had limited experience with energy efficiency programs and policies. Public utility commissions (PUCs) typically oversee the energy efficiency activities of investor-owned utilities in their states, but in Minnesota the Division of Energy Resources (DER) within the Department of Commerce (Minnesota's state energy office) takes a more active role in energy efficiency programs offered by utilities. These three agencies—MPCA, PUC, and DER—coordinated to develop Minnesota's response to the CPP federal plan and model trading rules (MPCA 2016) and continue to engage with each other and with stakeholders to develop a state plan (MPCA undated). The Pennsylvania Public Utility Commission (PAPUC) has participated in compliance planning and submitted comments on the CPP federal plan and model trading rules in response to the DEP's request for comment. PAPUC also endorsed demand-side energy efficiency as a part of the state's CPP compliance plan, specifically highlighting the state's EERS and building codes as opportunities (PAPUC 2015). Bringing multiple state agencies to the table will help both states to take advantage of a fuller range of in-state staff expertise and take credit for activities each state is already undertaking. Coordination can also ensure that the best ideas receive consideration, as the agencies will bring their own views and together will be able to engage a broader set of stakeholders.

Stakeholder Engagement

Under the CPP rule EPA requires states to provide evidence of opportunities for meaningful public engagement with interested stakeholders, including vulnerable communities, during compliance-plan development (EPA 2015). In Minnesota and Pennsylvania this includes engaging interested stakeholders through public meetings and providing opportunities for public comment on the plan components.

In Minnesota MPCA began convening stakeholders to discuss the state's CPP compliance options shortly after the draft CPP rule was released in 2014. Since then public meetings and opportunities for public comment have continued. MPCA files meeting notes and presentations on its CPP homepage, making the information accessible to the public (MPCA undated). Stakeholders involved in the discussions include utility companies, energy

efficiency and renewable energy groups, community organizations, and businesses, along with representatives from the PUC, DER, and the state legislature. To guide these public dialogues MPCA has led topic-specific meetings on emissions tracking, mass and rate allocation/issuance scenarios, interactions with wholesale markets, and other issues. After collecting feedback through the stakeholder process, MPCA and DER submitted comments to EPA on the federal plan and model trading rules (MPCA 2016) as well as the program design elements of the early-action Clean Energy Incentive Program (CEIP) (MPCA 2015).

Throughout Minnesota's stakeholder outreach efforts, energy efficiency advocates and businesses have played an active role. State-based environment nonprofits such as Fresh Energy, the North Star Chapter of the Sierra Club, and the Center for Energy and Environment (CEE) among others are engaged in the development of the compliance plan and are coordinating to encourage public participation in MPCA's listening sessions. CEE, a Minnesota-based nonprofit that researches and delivers energy efficiency programs, convened state officials and national energy efficiency experts in 2015 to discuss how the CPP could best incorporate energy efficiency and provide opportunities in low-income communities, especially in multifamily housing (CEE 2015). Energy efficiency advocates and businesses, including consultants and contractors, have suggested improvements to existing programs and recommend new ideas that state air regulators may not have considered (MPCA 2016).

Pennsylvania stakeholder engagement on the CPP has been ongoing, but it started later due to the state's change in leadership in 2015. Soon after the final CPP rule was released, Governor Wolf directed DEP to hold a series of 14 public listening sessions across the state beginning in September 2015 (State of Pennsylvania 2015a). DEP heard from a variety of energy interests and key stakeholders during the listening sessions and accepted written comments from the public, which it shared publicly through the state's eComment portal.[8] DEP then used these comments to inform the formal comments it submitted to EPA on the proposed federal plan and model trading rules (DEP 2016). DEP continues to hold meetings with interested stakeholders; however in mid-2016 the state is focused on considering the feedback from the public listening sessions and weighing options to draft a compliance plan.

Energy efficiency advocates and businesses in Pennsylvania have also worked to inform regulators and generate consensus on CPP compliance. The Keystone Energy Efficiency Alliance (KEEA), a nonprofit that represents members of the clean-energy industry, has engaged in DEP stakeholder meetings and convened businesses such as Advanced Energy Economy; AJW, Inc.; and Chambers for Innovation and Clean Energy among others to discuss CPP compliance options and communicate with state officials to inform the state's compliance plan. Other Pennsylvania-based organizations, including PennEnvironment, Clean Air Council, PSE Healthy Energy, and NextGen, have worked to draw the connection between existing power plant pollution and opportunities for improving public health and to communicate clean energy solutions to state decision makers. The engagement of these energy efficiency advocates, environmental groups, and businesses has provided an opportunity for regulators to hear and understand the needs and concerns of various parties. Advocates representing the interests of low-income individuals have also worked directly with Pennsylvania state officials to ensure that a plan protects the interests of

[8] www.ahs.dep.pa.gov/eComment/ViewComments.aspx?enc=8YWIeHIdijzUAfiG53EkjflnP%2fXgFr0fA3HnfGi1I5Y%3d.

these vulnerable populations. By engaging regularly with state officials these organizations help to ensure that the state's compliance plan meets the broad needs of the public interest and the business community.

A state legislature can be another stakeholder in the compliance-planning process. Legislatures may shape the CPP planning process by passing laws that expand or limit agency authority to develop a compliance plan. For example, legislatures may require legislative approval of a compliance plan, require state agencies to conduct specific analyses, or improve or alter energy efficiency policies so that they may better work for compliance. The Minnesota State Legislature required MPCA and DER to submit a draft compliance plan to the legislature for review by March 15, 2016 (Legislative Review 2015). However pending legislation would require MPCA to receive the legislature's approval before submitting its plan to EPA (Requirement for Legislative Approval 2015). The Pennsylvania General Assembly requires DEP to submit a state plan to the legislature no later than 100 days prior to submission to EPA (Pennsylvania Greenhouse Gas 2014), but pending legislation would extend this period to 180 days and require DEP to receive the legislature's approval before submitting to EPA (Senate Bill 2016). As state legislatures continue to evaluate their states' compliance priorities, additional legislation may affect state planning processes.

Modeling

Another component of information gathering is modeling the various compliance scenarios available to states. These modeling efforts can help states answer key questions about their plans such as the trade-offs between mass- and rate-based approaches and the costs of different emission reduction strategies. Modeling that includes energy efficiency can help a state assess the impact of the programs it already has in place and the potential emissions reductions from additional policies or programs. There are a wide range of models and tools available to help states, and each includes its own set of assumptions and limitations based on the tools' varying capabilities.[9] Since the release of the final rule many states have gathered results from modeling efforts to better understand the cost effectiveness of their compliance options. While it can be difficult to compare the results from one modeling tool to the next, many results offer unique insights into the emissions reduction potential of compliance strategies and the many complexities involved in compliance planning.

State agencies have led CPP modeling efforts in some states, while in other states, national organizations have led. The National Governors Association (NGA) selected Pennsylvania, along with Michigan, Utah, and Missouri, to be a part of its Policy Academy on Helping States Prepare for Federal Greenhouse Gas Rules in the Electric Power Sector. Since its formation in March 2015 the Policy Academy has offered modeling support to participating states and technical assistance from a variety of experts, with the goal of evaluating cost-effective compliance strategies for each state (NGA 2015). This assistance has given Pennsylvania a head start on compliance-planning efforts. In Minnesota MPCA staff have been actively modeling compliance scenarios for the state. The agency has also reviewed the work of other organizations, such as M.J. Bradley & Associates, along with the

[9] Synapse Energy Economics and Argonne National Laboratory recently created a synopsis of the various planning tools available to states for CO_2 performance projections: www.synapse-energy.com/sites/default/files/Guide-to-Clean-Power-Plan-Modeling-Tools.pdf.

state's utilities to analyze a variety of options through the state's stakeholder process (MPCA 2015a). Current modeling results show that the state will be in compliance with its CPP target without needing to adopt any new policies (MPCA 2016b).

Modeling is an art rather than an exact science, and results are always a best estimate. By beginning the modeling process early and taking advantage of a range of tools and resources, states like Pennsylvania and Minnesota can consider many compliance options. This will help the states keep compliance costs low and take advantage of their best emissions reduction opportunities.

Interstate Coordination

The CPP allows states to participate in multistate compliance pathways including options to submit trading-ready plans. These plan types allow a state to submit an individual plan to EPA and initiate trading with any other state that submitted a similar plan, without the need for a formal upfront agreement. By engaging in multistate conversations states are able to better understand each other's priorities and consider trading strategies that can reduce the cost of compliance.

Regional transmission organizations are uniquely positioned to coordinate multistate compliance. In the Midwest and Mid-Atlantic the states located within the transmission territories of Midcontinent Independent System Operator (MISO) and PJM Interconnection are taking part in CPP planning discussions. The Midcontinent States Environmental and Energy Regulators (MSEER) group brings together state air and public utility regulators from 13 states located in MISO, including Minnesota, to explore nonbinding multistate compliance options (MSEER 2016). In June 2015 regulators of states served by PJM Interconnection, including Pennsylvania, initiated a similar effort to coordinate CPP compliance planning (Tomich 2015). As with MISO the PJM group discussions are commitment-free and give participating states an opportunity to learn about the CPP rule and strategies for multistate compliance. The Great Plains Institute convenes both of these stakeholder discussions.

In order to assist states in their planning efforts MISO and PJM are modeling compliance scenarios that emphasize emissions trading among the states in their footprints (MPCA 2016b; PJM 2016). The Great Plains Institute leads a simultaneous effort called the Midcontinent Power Sector Collaborative (MPSC). Formed in 2012, the Collaborative consists of regulated utilities, generation and transmission cooperatives, merchant power providers, environmental organizations, and observing state agencies including regulatory staff from Minnesota. The goal of the Collaborative is to engage with EPA and states on the regulation of power plants in the Midwest region.[10] While it is too early to say what will result from this coordination, these state discussions are important for considering the effects of electricity flows across state boundaries. By participating in these dialogues Minnesota and Pennsylvania have been given a venue to learn about and discuss how the decisions of their neighbors might impact their own plans.

[10] To date MPSC has submitted consensus comments to EPA on the draft CPP rule and elements of the final rule: www.betterenergy.org/projects/midwestern-power-sector-collaborative and www.betterenergy.org/sites/www.betterenergy.org/files/MPSC%20Comments%20to%20EPA_1-21-16_final.pdf.

Plan Contents and Major Decision Points

Throughout the planning process states must consider several foundational decisions including the timing of their plan submission, whether to choose a rate- or a mass-based goal, and the degree of their coordination with other states. Many of these decisions have significant implications for the inclusion of energy efficiency as a compliance strategy. In table 1 we describe questions that states should consider as they explore their compliance options, along with the associated pros and cons for energy efficiency in each decision (Shoemaker and Hayes 2016). Each compliance pathway involves different considerations for incentivizing energy efficiency. These decision points, among others listed in table 1, are key components of energy efficiency stakeholders' engagement with state officials and are the focus of ongoing discussions in both Minnesota and Pennsylvania's compliance-planning processes.

Table 1. Implications of state decisions for energy efficiency

Decision	Pro	Con
States are required to submit final plans in September 2018. Should the state wait until 2018 to submit a final plan?[11]	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 can use this extra time to evaluate all the options.	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.

[11] The Supreme Court's stay on the CPP has temporarily frozen the rulemaking process, and the timeline may change.

Decision	Pro	Con
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 CO_2 per megawatt-hour of electricity generated). The alternative most states are considering is a mass-based approach, in which compliance is achieved by limiting emissions to a tonnage cap. Should the state choose a mass-based approach?	Under a mass-based approach savings are accounted for at the stack and automatically count toward compliance as reduced CO_2 emissions. States are not required to submit an Evaluation, Measurement and Verification (EM&V) report to EPA.[12]	In theory a mass-based trading approach should create a financial incentive for the state to pursue the least-cost path to compliance. However long-standing regulatory and market barriers to energy efficiency investments remain. Without a method for specifically ensuring that regulatory and market barriers are addressed, states may miss out on energy efficiency opportunities.
Should the state choose a rate-based approach?	The rule details what types of energy efficiency can generate emission rate credits (ERCs), which EGU owners must acquire to demonstrate compliance. This provides certainty to efficiency providers that credit will be granted via specific EM&V and a mechanism for a variety of actors to obtain credit for their activities. This also creates an incentive for energy efficiency in the private sector.	States are required to submit EM&V planning and reporting to EPA before ERCs can be issued. Because ERCs are generated through qualifying projects during compliance, their value is uncertain.

[12] 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
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 CO_2 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.[13] Alternatively, they may expand the cap and include new power plants in the CPP state plan.[14] 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). Should energy efficiency be used to address leakage in a state plan?	A set-aside of allowances dedicated to energy efficiency can serve as an incentive to encourage new investments.	A set-aside is typically some smaller portion of the total cap, when in fact energy efficiency could be used to meet 100% of some state targets. If a state employs a set-aside as the only mechanism to incentivize energy efficiency, this might have the effect of artificially limiting the potential of energy efficiency. It is also unclear how this treatment of energy efficiency would adequately address the leakage issue described in the rule.
If a state selects a mass-based approach it can allocate or auction allowances.[15] Should states allocate or auction allowances to incentivize energy efficiency?	Energy efficiency is a least-cost path to compliance, but many states have regulatory or market barriers that inhibit investment in efficiency improvements. States can overcome existing barriers and incentivize energy efficiency by allocating allowances directly to efficiency providers or directing the revenues from auctions of allowances to efficiency providers.	When allocating or directing revenues states can select efficiency winners and losers and risk missing out on the least-cost compliance options. This risk can be overcome by designing approaches that are inclusive and enable a variety of efficiency providers, policies, and programs to earn allocations or auction revenues.

[13] States can also counteract leakage by creating set-asides for qualifying natural gas combined cycle (NGCC) units or for renewable-energy providers.

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

[15] 80 FR 64892.

Decision	Pro	Con
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 readily 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. Should the state consider interstate trading?	States that import electricity may 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. Participation in an interstate market can help keep compliance costs low by providing access to a broader range of opportunities to reduce emissions.	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.
The CEIP is a program included in the CPP that rewards investments in renewable energy and low-income energy efficiency that reduce CO_2 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). Should the state participate in the CEIP?	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. Providing energy efficiency to low-income communities may require additional effort or upfront expenditures. This program can help defray those costs.	Project developers in states participating in the CEIP must meet EPA's EM&V requirements to obtain the ERCs or allowances (80 FR 64831).

Lessons Learned

With so many factors to consider when structuring a compliance plan, it is important for states to focus on the key strategies for incorporating energy efficiency. States that act early will have more time to implement policies and programs and design a compliance strategy that provides certainty to investors and businesses. Early movers adopting energy efficiency solutions will benefit in particular because many types of energy efficiency programs involve the application of measures or technologies many times over in residential, commercial, industrial, or public buildings. Each measure typically generates a relatively trivial amount of CO_2 reductions. However, once a measure is installed it continues to generate savings for many years to come. It is the aggregate of these measures—each a drop in the bucket—that becomes a tidal wave that can change a state's entire energy outlook. Emissions avoided by energy efficiency accumulate like compounding interest: once a measure is installed it saves energy for many years, and those years add up. States that act early will benefit from the compounding emissions reductions that the energy efficiency achieves over the long term, while the states that wait will have a difficult time catching up. Both Minnesota and Pennsylvania are examples of states that acted early to establish energy efficiency policies and programs in order to maximize their energy-savings potential. With stringent energy efficiency and renewable-energy policies in place, Minnesota is well on its way to meeting and exceeding its CPP goal (Kubes, Hayes, and Kelly 2016). Pennsylvania's willingness to consider all its options from the start will also help it ensure a least-cost path to compliance.

Early planning also provides an opportunity for many stakeholders to engage and for the best ideas to surface. In order for energy efficiency to be included in a state's compliance-planning efforts, the right stakeholders need to be included to ensure that the state takes advantage of this least-cost compliance approach. State air agencies can benefit from the energy efficiency program and the regulatory knowledge of state energy offices and public utilities commissions. In turn both agencies can help stakeholders understand which of the state's existing or potential energy efficiency programs can be leveraged for compliance.

In addition to state officials, energy efficiency advocacy organizations and businesses play an important role in educating decision makers on expanding existing policies and incentivizing energy efficiency investments in a state. Advocacy organizations can educate state agencies, lead technical analyses (e.g., modeling), initiate partnerships, or take alternate approaches to engaging and informing the public. Energy efficiency advocates can also coordinate with nontraditional partners such as labor organizations and public health groups to promote the multiple benefits of reducing energy waste, including local job creation and improved air quality. Energy efficiency businesses including program implementers, consultants, and manufacturers can help to inform state agencies of the job creation, energy savings, and economic growth potential associated with strong energy efficiency policies and programs. Businesses can also voice the importance of providing regulatory certainty and incentives for energy efficiency under both rate- and mass-based approaches. Both Minnesota and Pennsylvania have held stakeholder meetings that included the diverse interests of energy efficiency stakeholders across each state. Pennsylvania held 14 listening sessions across the state in 2015. Minnesota started its stakeholder meetings in 2014, and MPCA is still convening stakeholders to discuss technical elements of the state's compliance scenarios. These extended stakeholder processes have been successful in giving all interested stakeholders an opportunity to have their interests heard and discussed.

States have a variety of decision points to consider when planning for compliance. Modeling compliance scenarios can help states to answer key questions about their plans, and by including energy efficiency in modeling states can assess the emissions reduction impact of existing and future programs or policies. Each compliance pathway involves different considerations for incentivizing energy efficiency. Both Minnesota and Pennsylvania have relied on the help of modeling from a variety of sources to inform their compliance planning. By working closely with energy efficiency providers and modeling a variety of compliance scenarios, state air offices can increase the amount of low-cost emissions reductions they are able to capture for CPP compliance.

It is also important to include state agencies and other stakeholders knowledgeable about energy efficiency in multistate compliance discussions. Energy efficiency can help states achieve their CPP goals cost-effectively and can be incentivized within any approach states choose. In order for states to fully take advantage of its benefits, energy efficiency must be represented accurately in modeling analyses to help a state assess the impact of the programs it already has in place and the potential emissions reductions from additional policies or programs.

Conclusion

Although the CPP is a federal regulation, states have significant ability to take the reins and chart their own energy course. Minnesota's commitment to energy efficiency and Governor Dayton's responsiveness in acting on the CPP puts the state in a strong position to build on existing policies and programs. Pennsylvania's prompt compliance planning will also provide an example to other states as they develop plans of their own. Through Governor Wolf's leadership DEP completed significant stakeholder engagement and is looking to the CPP as an opportunity to plan for the state's energy future. Minnesota and Pennsylvania have both explored multistate compliance strategies, and by acting early to create compliance plans they will give surrounding states a blueprint for moving forward.

As the least-cost, fastest, and cleanest way for states to reduce emissions, energy efficiency is a compliance path that can get states most if not all of the way to their emissions goals. States can benefit from acting early and tapping into their energy efficiency potential. By setting compliance planning in motion states will have more time to design a plan that takes advantage of least-cost energy efficiency compliance strategies. This will provide certainty to businesses and will also allow states more time to implement policies and programs. By acting early on compliance Minnesota, Pennsylvania, and other proactive states will set themselves up for maximizing energy savings and cost-effectively meeting their emissions reduction targets.

References

ACEEE (American Council for an Energy Efficient Economy). 2015. "The State Energy Efficiency Scorecard." October 21. http://aceee.org/state-policy/scorecard.

ACEEE (American Council for an Energy Efficient Economy). 2016. "Energy Efficiency Lowers the Cost of Clean Power Plan Compliance." March 17. http://aceee.org/fact-sheet/ee-lowers-cost-cpp.

CEE (Center for Energy and Environment). 2016. “Energy Efficiency Policy Exchange.” December 17. www.eventbrite.com/e/energy-efficiency-policy-exchange-tickets-19609722207.

Ciborowski, P. 2015. “Update: Forecast Numbers, Projected Clean Power Plan Compliance.” Presentation to the MPCA Clean Power Plan stakeholder group. December. www.pca.state.mn.us/sites/default/files/aq-rule2-22b.pdf.

DEP (Department of Environmental Protection). 2016. *Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations (80 FR 64966; October 23, 2015)*. Docket ID No. EPA-HQ-OAR-2015-0199. www.regulations.gov/#!docketDetail;D=EPA-HQ-OAR-2015-0199.

EPA (US Environmental Protection Agency). 2015. “Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule.” 80 Fed. Reg. 64661 (October 23). https://www.gpo.gov/fdsys/pkg/FR-2015-10-23/pdf/2015-22842.pdf.

Kubes, C., S. Hayes, and M. Kelly. 2016. *State and Utility Pollution Reduction Calculator Version 2 (SUPR 2)*. Washington, DC: American Council for an Energy-Efficient Economy. aceee.org/research-report/e1601.

Legislative Review. 2015. Minnesota Statutes. § 216H.077. https://www.revisor.leg.state.mn.us/statutes/?id=216H.077.

Litvak, A. (2016). “DEP recommits to September deadline for Clean Power Plan.” *Pittsburgh Post-Gazette.* February 11. powersource.post-gazette.com/powersource/policy-powersource/2016/02/11/DEP-commits-to-Sept-deadline-for-Clean-Power-Plan/stories/201602110174.

Minnesota (2015 State Energy Efficiency Scorecard Fact Sheet: Minnesota). 2015. Washington, DC: ACEEE. aceee.org/sites/default/files/pdf/state-sheet/2015/minnesota.pdf.

MPCA (Minnesota Pollution Control Agency). 2015. *Clean Energy Incentive Program (CEIP) Clean Power Plan Comments*. EPA-HQ-OAR-2015-0734. www.regulations.gov/#!docketDetail;D=EPA-HQ-OAR-2015-0734.

_____. 2015a. Compliance Projections – MJ Bradley Tool. Presentation at the CPP Stakeholder Group Meeting CPP. December. https://www.pca.state.mn.us/sites/default/files/aq-rule2-22c.pdf.

———. 2016. *Minnesota’s Comments on the Proposed Federal Plan and Model Trading Rules*. Docket ID No. EPA-HQ-OAR-2015-0199. www.regulations.gov/#!docketDetail;D=EPA-HQ-OAR-2015-0199.

———. n.d. “Clean Power Plan: Rulemaking in Minnesota” Accessed March 11, 2016. www.pca.state.mn.us/air/clean-power-plan-rulemaking-minnesota.

_____. 2016a. Letter to Honorable Kurt Daudt, Minnesota House of Representatives. http://e67ti2w9ws71al8xmnhsozd3.wpengine.netdna-cdn.com/files/2016/03/Clean-Power-Plan-Commissioner-Response-aq-4-41-pdf.pdf.

_____. 2016b. MPCA Clean Power Plan Stakeholder Technical Meeting and Webinar- Union of Concerned Scientists Presentation. March 31. https://www.pca.state.mn.us/sites/default/files/aq-rule2-22f.pdf.

_____. 2016c. MPCA Clean Power Plan Stakeholder Technical Meeting and Webinar- MISO Presentation. March 31. https://www.pca.state.mn.us/sites/default/files/aq-rule2-22f.pdf.

MSEER (Midcontinent States Environmental and Energy Regulators). 2016. Midcontinent States’ Environmental and Energy Regulators’ Comments on the Clean Power Plan Model Rules and Federal Plan (January 20, 2016). Docket ID No. EPA-HQ-OAR-2015-0199. https://www.adeq.state.ar.us/air/planning/cpp/pdfs/final_mseer_comment_letter_20160120.pdf.

National Governors Association (NGA). 2015.”Staets Prepare for Future Greenhouse Gas Rule.” March 19. http://www.nga.org/cms/home/news-room/news-releases/2015--news-releases/col2-content/states-prepare-for-future-federa.html.

PAPUC (Pennsylvania Public Utility Commission). 2015. *Comments of the Pennsylvania Public Utility Commission*. Solicitation of Comments to Develop the Commonwealth's Compliance Plan for the United States Environmental Protection Agency's Final Rule for Carbon Pollution Emissions Guidelines for Existing Stationary Sources; Electric Generating Units (Clean Power Plan). www.eenews.net/assets/2016/01/19/document_cw_03.pdf.

Pennsylvania (2015 State Energy Efficiency Scorecard Fact Sheet: Pennsylvania). 2015. Washington, DC: ACEEE. aceee.org/sites/default/files/pdf/state-sheet/2015/pennsylvania.pdf.

Pennsylvania Greenhouse Gas (Pennsylvania Greenhouse Gas Regulation Implementation Act) 2014. Statutes of Pennsylvania. www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2014&sessInd=0&act=175.

PJM (PJM Interconnection). 2016. “Cl*ean Power Plan Analysis PJM Modeling Plan*.” February 8. http://www.pjm.com/~/media/committees-groups/committees/teac/20160211/20160211-pjms-modeling-approach-to-the-final-cpp-emissions-guidelines.ashx.

Requirement for Legislative Approval. 2015. Minnesota State Legislature. House File 333. www.revisor.mn.gov/bills/text.php?session=ls89&number=HF333&session_number=0&session_year=2015&version=list.

SCOTUS (Supreme Court of the United States). 2016. *Order in Pending Case Chamber of Commerce, et al. v. EPA, et al.* ID No. 15A787. http://www.supremecourt.gov/orders/courtorders/020916zr3_hf5m.pdf.

Senate Bill No. 1195. 2016. General Assembly of Pennsylvania. Section 1 (a). http://www.legis.state.pa.us/cfdocs/billInfo/billInfo.cfm?sYear=2015&sInd=0&body=S&type=B&bn=1195.

Shoemaker, M., S. Hayes. 2016. *Energy Efficiency and the Clean Power Plan: Steps to Success*. Washington, DC: American Council for an Energy-Efficient Economy. http://aceee.org/energy-efficiency-and-clean-power-plan-steps.

State of Minnesota, Office of Governor Mark Dayton and Lt. Governor Tina Smith. 2015. "Governor Dayton Announces Appointments to the Governor's Committee to Advise the Minnesota Pollution Control Agency." February 23. mn.gov/governor/newsroom/#/detail/appId/1/id/154776.

State of Pennsylvania, Governor Wolf. 2015. "Clean Power Plan Presents New Opportunities for Pennsylvania Energy." August 3. www.governor.pa.gov/clean-power-plan-presents-new-opportunities-for-pennsylvania-energy/.

———. 2015a. "DEP to Hold 14 Listening Sessions on the Clean Power Plan." September 3. www.ahs.dep.pa.gov/NewsRoomPublic/SearchResults.aspx?id=20831&typeid=1.

Tomich, J. (2015). "PJM state officials discuss possible carbon rule coordination." EnergyWire. October 13. http://www.eenews.net/stories/1060026205.