

Draft 111d ETIC-EQC Subcommittee

September 10

2015

To plan its work and establish goals, the 111d Subcommittee will need to map out its priorities. The subcommittee's work will likely be driven by federal deadlines and the Montana Department of Environmental Quality's work to develop a compliance plan for meeting the federal requirements and deadlines.

2015-16
Interim



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Introduction

This is an overview of the tasks the 111d Energy and Telecommunications Interim Committee (ETIC) and Environmental Quality Council (EQC) subcommittee may wish to work on for the 2015-2016 interim.

Committee Procedures and Public Participation

The ETIC-EQC 111d Subcommittee will operate under the Rules, Procedures, and Guidelines for Interim Committees adopted by the Legislative Council. As required by law, 10 day advance public notice will be given for all meetings and the public will be given an opportunity to comment on any matter that is within the jurisdiction of the committee. The Presiding Officer may establish time limits for public comments, if necessary. Interested persons may be added to the mailing list by visiting the ETIC or EQC websites. By visiting the websites, interested persons may sign up for electronic meeting notifications. Agendas, memos, links and other information can be found on the subcommittee website: <http://leg.mt.gov/css/Committees/Interim/2015-2016/EQC/111d-Subcom/default.asp>.

Members and Staff

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How the 111d Subcommittee Will Plan its Work

During the legislative interim, the ETIC and EQC focus on the study topics assigned by Legislative Council while maintaining oversight of programs and rulemaking activities of various state agencies. They also may address issues and improve law as deemed to be in the best interest of the state.

For the last year, both the ETIC and EQC have been tracking the Environmental Protection Agency's (EPA) draft rules requiring states to reduce carbon dioxide emissions in the power sector by about 32 percent below 2005 levels by 2030. The federal rules are also known as the EPA's Proposed Clean Power Plan or 111d regulations. The work of the ETIC-EQC subcommittee will be narrow in scope and focus on the rule and how Montana can best position itself to implement the final rule.

At the close of last interim, the ETIC members requested the EQC form a subcommittee with the ETIC for the 2015-2016 interim in an effort to oversee the state's development of rules to comply with the federal requirement. The EQC agreed, the Legislative Council included that in its budget package, and the 2015 Legislature passed a budget with about \$9,770 for a subcommittee. However, that appropriation was line-item vetoed out of HB 2 by the governor. The ETIC and the EQC, however, determined it would proceed with a subcommittee.

In response to the federal Clean Power Plan, Governor Steve Bullock in July began working with the Center for New Energy Economy (CNEE) to determine a path forward for Montana in responding to the final 111d rule. CNEE is a privately-funded initiative to support the expansion of clean energy. It is part of Colorado State University and directed by former Colorado Governor Bill Ritter. In late July CNEE reached out to potential stakeholders in Montana, including Representative Ellis and Senator Ankney, to discuss the process Montana should follow in responding to a final 111d rule. CNEE is privately funded, initially from the San Francisco-based Energy Foundation and the Fort Collins-based Bohemian Foundation. Rockefeller Brothers Fund, Argosy Foundation, and Advanced Energy Economy also have invested in CNEE. Funding is tax-exempt and directed through the Colorado State University Foundation, a 501(c)(3) organization. CNEE has concluded their interviews on the process with the various stakeholders in Montana and is in the process of summarizing the information they gathered to present to the Governor and the Department of Environmental Quality (DEQ).

The final Clean Power Plan rule was issued on August 3. The final emission guidelines for Montana to follow in developing its plan to reduce emissions from fossil fuel-fired electric generating units changed significantly from the draft rule. The DEQ is in the process of reviewing the final, 1,560-page rule, what it means for Montana, and how the state should respond to the rule.

With a final rule now issued, it is the responsibility of the DEQ to develop Montana's plan for implementing the rule. The state has until September 6, 2016 to submit a final plan or submit an initial state plan with a request for an extension. Final complete state plans must be submitted to the EPA no later than September 2018. The final rule, however, provides 15

years for full implementation of all emission reduction measures and establishes incremental steps for demonstrating progress.

The ETIC-EQC subcommittee will need to address its role in working with the DEQ and with the Governor's potential advisory group in development of a Montana plan. The subcommittee also will need to determine how to spend its limited time and resources. Because the subcommittee will operate using funding from existing EQC and ETIC budgets, the subcommittee may tailor its meeting schedule. The subcommittee also, if necessary, may approach the Legislative Council for additional funding to complete its work.

Background Information for 111d

The Environmental Protection Agency in 2014 issued a draft rule to regulate carbon pollution from existing power plants. The draft rule established a target of carbon reduction for each state to reach by 2030. Montana's proposed target was a reduction of 21%. When the final rule was issued in 2015, however, that reduction changed to as much as a 47%. Comparing the two numbers is challenging, as the baseline for how they were established in the draft and final rule also changed dramatically.

In the Clean Power Plan, EPA calculates the emissions reduction targets for individual states using the Best System of Emissions Reduction (BSER). Under Section 111(d) of the federal Clean Air Act, the EPA can designate a BSER for facilities that emit certain pollutants. The rule establishes interim and final carbon dioxide emission performance-rates for fossil fuel-fired electric generating units and natural gas-fired combined cycle generating units.

Montana must develop and implement a plan so that fossil-fuel fired electric facilities (there are nine generating units affected by the rule in Montana) either individually, together, or in combination with other efforts, achieve, in terms of either rate or mass, interim carbon dioxide performance rates between 2022 and 2029 and final rates by 2030. In Montana those rates overall are 1,534 lbs/MWh in the interim and 1,305 lbs/MWh by 2030. Those numbers are compared to Montana's 2012 rate of 2,481 lbs/MWh.

In terms of mass, the final rule limits emissions in Montana to a total of about 11 million short tons by 2030. To put that in perspective, Colstrip Units 3 and 4 alone annually emit about 12 million short tons.

The BSER in the Clean Power Plan includes three building blocks representing methods for reducing CO2 emissions at existing fossil fuel-fired generators. The building blocks include:

- Building block 1: Improving the thermal efficiency of coal-fired facilities;
- Building Block 2: Substituting increased generation from lower-emitting existing natural gas combined cycle units for reduced generation from higher-emitting affected steam-generating units (It should be noted that Montana does not have any natural gas combined cycle plants, so this building block can't be used.); and
- Building Block 3: Expanding the use of new zero-carbon generation like solar and wind to displace fossil fuel-fired generation.

The federal rule provides the state with some flexibility in determining how to meet the standards. The renewable building block, under certain circumstances, for example, can include some energy efficiency efforts. The state will have to choose between two types of plans to meet the new standards. The state can use an "emission standard plan", with source-specific requirements to ensure power plants meet required performance rates or a "state measures plan" that can include a mixture of actions, including renewable energy standards and other programs. The state also has the ability to work with other states, and the plan also includes emissions trading to allow facilities to meet emission standards using emission rate credits or allowances. In Montana-specific information about the rule, it appears Montana is expected to partner with other states. The Montana fact sheet states, "While EPA's projections show Montana and its power plants will need to continue to work to reduce CO2 emissions and take additional action to reach its goal in 2030, these rates – and that state goal – are reasonable and achievable because no plant and no state has to meet them alone or all at once. They are designed to be met as part of the grid and over time."

The plan also provides for a "Clean Energy Incentives Program", which allows states to invest in renewable energy and demand-side energy efficiency programs that reduce emissions by 2020 and 2021. Under the program, the EPA will make additional allowances or emissions credits available to states that encourage renewable energy. The EPA provides examples that wind and solar projects would receive 1 credit for 1 MWh of generation. Demand-side projects in low-income communities would receive 2 credits for 1 MWh of avoided generation. The details of the incentive program are still being analyzed.

A Partnerships for Opportunity and Workforce and Economic Revitalization (POWER+) plan also is noted in the rule. The federal, interagency initiative, which started earlier in 2015, is targeted at providing "economic and workforce development assistance to communities affected by ongoing changes in the coal industry and the utility power sector." The program is based on offering grants, with certain criteria, to "negatively impacted coal mine counties and power plants." It's unclear at this time what Montana counties could be eligible and how the program could be used in response to meeting the requirements of the 111d final rule.

State plans must provide documentation demonstrating that electric system reliability has been considered in development of the state's implementation plan. The interim benchmarks and allowing states to meet interim goals on average over an 8-year period are aimed at addressing reliability concerns. The EPA in the final rules states that the rule allows "for planning, implementation and the integration of actions needed to address reliability while achieving the required emissions reductions."

A state also must demonstrate that it engaged stakeholders in the development of its plan. The final rule states, "States must describe their engagement with their stakeholders, including their most vulnerable communities. The participation of these communities, along with that of ratepayers and the public, can be expected to help states ensure that state plans maintain the affordability of electricity for all and preserve and expand jobs and job opportunities as they move forward to develop and implement their plans."

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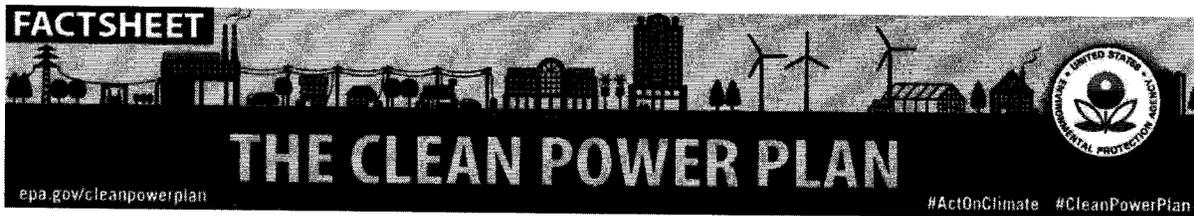
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Proposed Work Timeline

The following timeline provides an outline of how the ETIC-EQC subcommittee will accomplish its work. The timeline may be updated or revised to address scheduling, emerging issues, or to reallocate staff time to other topics.

Date	Activities	Tasks/Policy Decisions
September 10, 2015	<ul style="list-style-type: none"> ➤ Organizational ➤ Agency Monitoring ➤ Compliance Planning 	<ul style="list-style-type: none"> ◇ Elect officers ◇ Review, adopt work plan ◇ Review, adopt calendar ◇ Discuss budget needs ◇ Report from DEQ ◇ Report from PSC ◇ Report from Consumer Counsel ◇ Report from Attorney General's Office ◇ Introduction to 111d ◇ Compare/contrast final rule and draft rule ◇ Identify and engage key agencies and stakeholders; regulators, energy offices, utility commissions, grid planners, consumer advocates, and others ◇ Identify next steps and subcommittee role in formulating potential compliance plans
January 14, 2015	<ul style="list-style-type: none"> ➤ Organizational ➤ Agency Monitoring ➤ Compliance Planning 	<ul style="list-style-type: none"> ◇ Review budget ◇ Report from DEQ ◇ Report PSC ◇ Report from Attorney General's Office ◇ Overview of formulation of range of potential compliance plans ◇ Identify key uncertainties with compliance outcomes ◇ Discuss vetting of compliance options

Date	Activity	Tasks/Policy Decisions
March 10, 2016	> Agency Monitoring > Compliance Planning	◇ ◇ ◇ ◇ ◇ ◇ ◇
May 10 or 11, 2016	> Agency Monitoring > Compliance Planning	◇ ◇ ◇ ◇ ◇ ◇ ◇ ◇
July 21, 2016	> Agency Monitoring > Compliance Planning	◇ ◇ ◇ ◇ ◇
September 8, 2016 (tentative)	> Agency Monitoring > Compliance Planning	◇ ◇ ◇ ◇ ◇ ◇



On August 3, President Obama and EPA announced the Clean Power Plan – a historic and important step in reducing carbon pollution from power plants that takes real action on climate change. Shaped by years of unprecedented outreach and public engagement, the final Clean Power Plan is fair, flexible and designed to strengthen the fast-growing trend toward cleaner and lower-polluting American energy. With strong but achievable standards for power plants, and customized goals for states to cut the carbon pollution that is driving climate change, the Clean Power Plan provides national consistency, accountability and a level playing field while reflecting each state’s energy mix. It also shows the world that the United States is committed to leading global efforts to address climate change.

WHAT IS THE CLEAN POWER PLAN?

- The Clean Power Plan will reduce carbon pollution from power plants, the nation’s largest source, while maintaining energy reliability and affordability. Also on August 3, EPA issued final Carbon Pollution Standards for new, modified, and reconstructed power plants, and proposed a Federal Plan and model rule to assist states in implementing the Clean Power Plan.
- These are the first-ever national standards that address carbon pollution from power plants.
- The Clean Power Plan cuts significant amounts of power plant carbon pollution and the pollutants that cause the soot and smog that harm health, while advancing clean energy innovation, development and deployment, and laying the foundation for the long-term strategy needed to tackle the threat of climate change. By providing states and utilities ample flexibility and the time needed to achieve these pollution cuts, the Clean Power Plan offers the power sector the ability to optimize pollution reductions while maintaining a reliable and affordable supply of electricity for ratepayers and businesses.
- Fossil fuels will continue to be a critical component of America’s energy future. The Clean Power Plan simply makes sure that fossil fuel-fired power plants will operate more cleanly and efficiently, while expanding the capacity for zero- and low-emitting power sources.
- The final rule is the result of unprecedented outreach to states, tribes, utilities, stakeholders and the public, including more than 4.3 million comments EPA received on the proposed rule. The final Clean Power Plan reflects that input, and gives states and utilities time to preserve ample, reliable and affordable power for all Americans.

WHY WE NEED THE CLEAN POWER PLAN

- In 2009, EPA determined that greenhouse gas pollution threatens Americans' health and welfare by leading to long-lasting changes in our climate that can have a range of negative effects on human health and the environment. Carbon dioxide (CO₂) is the most prevalent greenhouse gas pollutant, accounting for nearly three-quarters of global greenhouse gas emissions and 82 percent of U.S. greenhouse gas emissions.
- Climate change is one of the greatest environmental and public health challenges we face. Climate impacts affect all Americans' lives – from stronger storms to longer droughts and increased insurance premiums, food prices and allergy seasons.
- 2014 was the hottest year in recorded history, and 14 of the 15 warmest years on record have all occurred in the first 15 years of this century. Recorded temperatures in the first half of 2015 were also warmer than normal.
- Overwhelmingly, the best scientists in the world, relying on troves of data and millions of measurements collected over the course of decades on land, in air and water, at sea and from space, are telling us that our activities are causing climate change.
- The most vulnerable among us – including children, older adults, people with heart or lung disease and people living in poverty – may be most at risk from the impacts of climate change.
- Fossil fuel-fired power plants are by far the largest source of U.S. CO₂ emissions, making up 32 percent of U.S. total greenhouse gas emissions.
- Taking action now is critical. Reducing CO₂ emissions from power plants, and driving investment in clean energy technologies strategies that do so, is an essential step in lessening the impacts of climate change and providing a more certain future for our health, our environment, and future generations.

BENEFITS OF IMPLEMENTING THE CLEAN POWER PLAN

- The transition to clean energy is happening faster than anticipated. This means carbon and air pollution are already decreasing, improving public health each and every year.
- The Clean Power Plan accelerates this momentum, putting us on pace to cut this dangerous pollution to historically low levels in the future.
- When the Clean Power Plan is fully in place in 2030, carbon pollution from the power sector will be 32 percent below 2005 levels, securing progress and making sure it continues.
- The transition to cleaner sources of energy will better protect Americans from other harmful air pollution, too. By 2030, emissions of sulfur dioxide from power plants will be 90 percent lower compared to 2005 levels, and emissions of nitrogen oxides will be 72 percent lower. Because these pollutants can create dangerous soot and smog, the historically low

levels mean we will avoid thousands of premature deaths and have thousands fewer asthma attacks and hospitalizations in 2030 and every year beyond.

- Within this larger context, the Clean Power Plan itself is projected to contribute significant pollution reductions, resulting in important benefits, including:
 - Climate benefits of \$20 billion
 - Health benefits of \$14-\$34 billion
 - Net benefits of \$26-\$45 billion
- Because carbon pollution comes packaged with other dangerous air pollutants, the Clean Power Plan will also protect public health, avoiding each year:
 - 3,600 premature deaths
 - 1,700 heart attacks
 - 90,000 asthma attacks
 - 300,000 missed work days and school days

HOW THE CLEAN POWER PLAN WORKS

- The Clean Air Act – under section 111(d) – creates a partnership between EPA, states, tribes and U.S. territories – with EPA setting a goal and states and tribes choosing how they will meet it.
 - The final Clean Power Plan follows that approach. EPA is establishing interim and final carbon dioxide (CO₂) emission performance rates for two subcategories of fossil fuel-fired electric generating units (EGUs):
 - Fossil fuel-fired electric steam generating units (generally, coal- and oil-fired power plants)
 - Natural gas-fired combined cycle generating units
- To maximize the range of choices available to states in implementing the standards and to utilities in meeting them, EPA is establishing interim and final statewide goals in three forms:
 - A rate-based state goal measured in pounds per megawatt hour (lb/MWh);
 - A mass-based state goal measured in total short tons of CO₂;
 - A mass-based state goal with a new source complement measured in total short tons of CO₂.
- States then develop and implement plans that ensure that the power plants in their state – either individually, together or in combination with other measures – achieve the interim CO₂ emissions performance rates over the period of 2022 to 2029 and the final CO₂ emission performance rates, rate-based goals or mass-based goals by 2030.

- These final guidelines are consistent with the law and align with the approach that Congress and EPA have always taken to regulate emissions from this and all other industrial sectors – setting source-level, source category-wide standards that sources can meet through a variety of technologies and measures.

STATE PLANS

- The final Clean Power Plan provides guidelines for the development, submittal and implementation of state plans that establish standards of performance or other measures for affected EGUs in order to implement the interim and final CO₂ emission performance rates.
- States must develop and implement plans that ensure the power plants in their state – either individually, together, or in combination with other measures – achieve the equivalent, in terms of either rate or mass, of the interim CO₂ performance rates between 2022 and 2029, and the final CO₂ emission performance rates for their state by 2030.
- States may choose between two plan types to meet their goals:
 - Emission standards plan– includes source-specific requirements ensuring all affected power plants within the state meet their required emission performance rates or state-specific rate-based or mass-based goal.
 - State measures plan– includes a mixture of measures implemented by the state, such as renewable energy standards and programs to improve residential energy efficiency that are not included as federally enforceable components of the plan. The plan may also include federally enforceable source-specific requirements. The state measures, alone or in conjunction with federally enforceable requirements, must result in affected power plants meeting the state’s mass-based goal. The plan must also include a backstop of federally enforceable standards for affected power plants that fully meet the emission guidelines and that would be triggered if the state measures fail to result in the affected plants achieving the required emissions reductions on schedule. States may use the final model rule, which EPA proposed on August 3, for their backstop.
- In developing its plan, each state will have the flexibility to select the measures it prefers in order to achieve the CO₂ emission performance rates for its affected plants or meet the equivalent statewide rate- or mass-based CO₂ goal. States will also have the ability to shape their own emissions reduction pathways over the 2022-29 period.
- The final rule also gives states the option to work with other states on multi-state approaches, including emissions trading, that allow their power plants to integrate their interconnected operations within their operating systems and their opportunities to address carbon pollution.

- The flexibility of the rule allows states to reduce costs to consumers, minimize stranded assets and spur private investments in renewable energy and energy efficiency technologies and businesses.
- States can tailor their plans to meet their respective energy, environmental and economic needs and goals, and those of their local communities by:
 - relying on a diverse set of energy resources;
 - protecting electric system reliability;
 - providing affordable electricity; and
 - recognizing investments that states and power companies are already making.

EMISSIONS TRADING

- One cost-effective way that states can meet their goals is emissions trading, through which affected power plants may meet their emission standards via emission rate credits (for a rate-based standard) or allowances (for a mass-based standard).
- Trading is a proven approach to address pollution and provides states and affected plants with another mechanism to achieve their emission standards. Emission trading is a market-based policy tool that creates a financial incentive to reduce emissions where the costs of doing so are the lowest and clean energy investment enjoys the highest leverage.
- Market-based approaches are generally recognized as having the following benefits:
 - Reduce the cost of compliance
 - Create incentives for early reduction
 - Create incentives for emission reductions beyond those required
 - Promote innovation, and
 - Increase flexibility and ensure reliability
- In addition to including mass-based state goals to clear the path for mass-based trading plans, the final rule gives states the opportunity to design state rate-based or mass-based plans that will make their units “trading ready,” allowing individual power plants to use out-of-state reductions – in the form of credits or allowances, depending on the plan type – to achieve required CO₂ reductions, without the need for up-front interstate agreements.
- EPA is committed to supporting states in the tracking of emissions, as well as tracking allowances and credits, to help implement multi-state trading or other approaches.

RELIABILITY ASSURANCE

- The final rule has several features that reflect EPA’s commitment to ensuring that compliance with the final rule does not interfere with the industry’s ability to maintain the reliability of the nation’s electricity supply:

- A long compliance period, and phased-in reduction requirements, providing sufficient time and flexibility for the planning and investment needed to maintain system reliability.
 - A basic design that allows states and affected EGUs flexibility to include a large variety of approaches and measures to achieve the environmental goals in a way that is tailored to each state's and utility's energy resources and policies, including trading within and between states, and other multi-state approaches that support electric system reliability.
 - A requirement that each state demonstrate in its final plan that it has considered reliability issues in developing its plan.
 - A mechanism for a state to seek a revision to its plan in case unanticipated or significant reliability challenges arise.
 - A reliability safety valve to address situations where, in the wake of an unanticipated event or other extraordinary circumstances, an affected power plant must provide reliability-critical generation notwithstanding CO₂ emissions constraints that would otherwise apply.
- In addition to the measures outlined in the rule EPA, the Department of Energy (DOE) and the Federal Energy Regulatory Commission (FERC) are coordinating efforts to monitor the implementation of the final rule to help preserve continued reliable electricity generation and transmission.

STATE PLAN TIMING

- States will be required to submit a final plan, or an initial state plan with an extension request, 13 months after the final rule, or September 6, 2016.
- Final complete state plans must be submitted no later than September 6, 2018.
- The final rule provides 15 years for full implementation of all emission reduction measures, with incremental steps for planning and demonstration that will ensure progress is being made in achieving CO₂ emission reductions.
- Each state plan must include provisions that will allow the state to demonstrate that the plan is making progress toward meeting the 2030 goal. The Clean Power Plan offers several options for states to show their progress for meeting interim CO₂ emission performance rates or state CO₂ emission interim step goals.
- In addition to offering three multi-year "step down" goals within the interim period, the final rule also allows states to apply measures in a gradual way that that they determine is the most cost-effective and feasible.

- During the interim period states are required periodically to compare emission levels achieved by their affected power plants with emission levels projected in the state plan and report results to EPA.

HELPING COMMUNITIES BENEFIT FROM CLEAN ENERGY

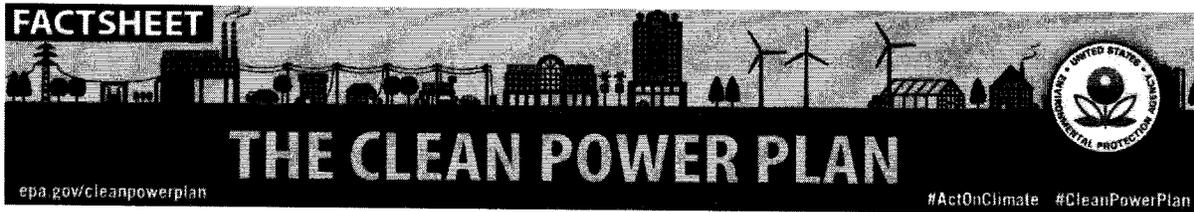
- The Clean Power Plan gives states the opportunity to ensure that communities share in the benefits of a clean energy economy, including energy efficiency and renewable energy.
- EPA is creating a Clean Energy Incentive Program (CEIP) to reward early investments in wind and solar generation, as well as demand-side energy efficiency programs implemented in low-income communities, that deliver results during 2020 and/or 2021. Through this program, EPA intends to make allowances or emission rate credits (ERCs) available to states that incentivize these investments. EPA is providing additional incentives to encourage energy efficiency investments in low-income communities.

COMMUNITY INVOLVEMENT AND ENVIRONMENTAL JUSTICE

- The final rule reflects two years of unprecedented outreach and engagement with stakeholders and the public, and incorporates changes directly responsive to stakeholders' critical concerns and priorities.
- Public engagement was essential throughout the development of the Clean Power Plan, and EPA will continue to engage with communities and the public now that the rule is final.
- To ensure opportunities for communities – particularly low-income communities, minority communities and tribal communities – to continue to participate in decision making, EPA is requiring that states demonstrate how they are actively engaging with communities as part of their public participation process in the formulation of state plans.
- The requirement for meaningful engagement within state plans will provide an avenue for all communities to both hear from the state about strategies that might work best to tackle climate pollution, and to provide input on where possible impacts to low-income communities, minority communities, and tribal communities could occur along with strategies to mitigate those impacts.
- The final rule includes information on communities living near power plants, and EPA will provide additional information to facilitate engagement between communities and states as implementation of the Clean Power Plan moves forward. For example, the agency will provide guidance on strategies states can use to meaningfully engage with communities, along with other resources and information, on a portal web page the agency will develop for communities' use.
- As implementation of the Clean Power Plan goes forward, the agency will conduct air quality evaluations to determine impacts that state plans may have on vulnerable

communities. EPA encourages states to conduct analyses to help states, communities and utilities understand the potential localized and community impacts of state plans.

- To help with these analyses, EPA will ensure emissions data is available and easily accessed through the Clean Power Plan Communities web page. The agency also will provide demographic information and other data, along with examples analyses that states have conducted to assess the impact of other rules.



BY THE NUMBERS

CUTTING CARBON POLLUTION FROM POWER PLANTS

On August 3, President Obama and EPA announced the Clean Power Plan – a historic and important step in reducing carbon pollution from power plants that takes real action on climate change. Shaped by years of unprecedented outreach and public engagement, the final Clean Power Plan is fair, flexible and designed to strengthen the fast-growing trend toward cleaner and lower-polluting American energy. With strong but achievable standards for power plants, and customized goals for states to cut the carbon pollution that is driving climate change, the Clean Power Plan provides national consistency, accountability and a level playing field while reflecting each state’s energy mix. It also shows the world that the United States is committed to leading global efforts to address climate change.

ENSURING AND BUILDING ON CLEAN ENERGY MOMENTUM

- Power plants are the **largest source** of carbon dioxide emissions in the United States, making up roughly **one-third** of all domestic greenhouse gas emissions.
- The transition to clean energy is happening faster than anticipated. This means carbon and air pollution is already decreasing, improving public health **each and every year**.
- The Clean Power Plan accelerates this momentum, putting us on pace to cut this dangerous pollution to **historically low levels** in the future.
- When the Clean Power Plan is fully in place in 2030, carbon pollution from the power sector will be **32 percent below** 2005 levels – or **870 million tons less** carbon pollution – securing progress and making sure it continues.
- That’s equal to the annual emissions from more than **166 million cars**, or **70% of the nation’s passenger vehicles**.
- The transition to cleaner sources of energy will better protect Americans from other harmful air pollution, too. By 2030, emissions of SO₂ from power plants will be **90 percent lower** compared to 2005 levels, and emissions of NO_x will be **72 percent lower**.

- Because these pollutants can create dangerous soot and smog, the historically low levels mean we will **avoid thousands of premature deaths** and mean thousands fewer asthma attacks and hospitalizations **in 2030 and every year beyond**.
- Within this larger context, the CPP itself is projected to contribute significant pollution reductions, resulting in important benefits.

THE CLEAN POWER PLAN HAS BIG PUBLIC HEALTH AND CLIMATE BENEFITS

- The Clean Power Plan has public health and climate benefits worth an estimated **\$34 billion to \$54 billion** per year in 2030, far outweighing the costs of **\$8.4 billion**.
- Reducing exposure to particle pollution and ozone in 2030 will avoid a projected
 - **1,500 to 3,600** premature deaths
 - **90,000** asthma attacks in children
 - **Up to 1,700** heart attacks
 - **1,700** hospital admissions
 - **300,000** missed school and work days
- From the soot and smog reductions alone, for every dollar invested through the Clean Power Plan – American families will see **up to \$4** in health benefits.
- The Clean Power Plan will reduce pollutants that contribute to the soot and smog that make people sick by **over 20 percent** in 2030.
 - **318,000 tons** of sulfur dioxide
 - **282,000 tons** of nitrogen dioxide
- In EPA’s nearly **45-year history**, air pollution has decreased dramatically across the county, improving public health protection for all Americans while the economy has grown.

EPA LISTENED TO THE PUBLIC

- The plan takes into account the unprecedented input we received through numerous outreach efforts, including the **4.3 million comments** that were submitted to the agency during the **6-month public comment period**.

LOWER ELECTRICITY BILLS

Due to increased energy efficiency, the Clean Power Plan is projected to reduce electric bills by about **\$7 per month** by 2030.

NUMBER OF POWER PLANTS COVERED BY THE CLEAN POWER PLAN

- In the U.S., there are **1,000 fossil fuel fired power plants** with about **3,100 units** covered by this rule.
- Utility planners are already making plans to address an aging fleet. The average age of coal units is **43 years**. The average age of oil units is **46 years**. The average age of natural gas combined cycle units is **15 years**.

STATE CLIMATE, ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICY STATISTICS

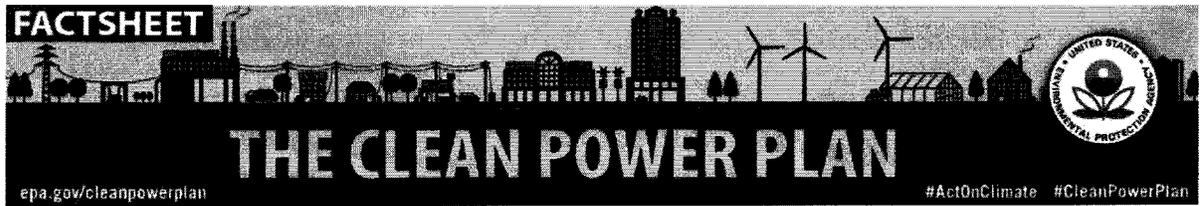
- States, cities and businesses are already leading the way with proven, widely adopted renewable energy and energy efficiency strategies that are substantially and cost-effectively lowering CO₂ emissions from the power sector. States will be able to use these types of programs in their plans to cut carbon pollution under the Clean Power Plan.
 - **50** states with demand-side energy efficiency programs
 - **37** states with renewable portfolio standards or goals
 - **10** states with market-based greenhouse gas emission programs
 - **25** states with energy efficiency standards or goals

STATE PLANS

- **September 6, 2016** – Initial submittal with request for extension or complete plan due.
- **September 6, 2017** – If state got an extension, submit a progress update.
- **September 6, 2018** – If state got an extension, submit final plan.

COMPLIANCE TIMEFRAME

- States and utilities will have **15 years** to meet the final goals by **2030**. Investment can begin **now**, with the period for mandatory reductions beginning in **2022**.



CLEAN ENERGY INCENTIVE PROGRAM

The EPA is providing a Clean Energy Incentive Program (CEIP) to reward early investments in renewable energy (RE) generation and demand-side energy efficiency (EE) measures that generate carbon-free MWh or reduce end-use energy demand during 2020 and/or 2021. State participation in the program is optional.

Through this program, the EPA will make additional allowances or Emission Rate Credits (ERCs) available to states to encourage early reductions from zero-emitting wind or solar power projects and EE projects. The EPA intends for the CEIP to have a reserve for wind and solar projects and a reserve for EE projects in low income communities and is taking comment in the federal plan on several aspects of the CEIP, including the size of these reserves. The EPA is providing additional incentives to encourage EE investments that are implemented in low-income communities.

The CEIP specifically incentivizes wind and solar RE projects because these technologies can be implemented relatively quickly and because stakeholders were concerned that the Clean Power Plan could potentially shift investment away from these zero-emitting technologies.

The CEIP will help ensure that momentum to no-carbon energy continues and give states a jumpstart on their compliance programs.

WHAT IS THE CLEAN ENERGY INCENTIVE PROGRAM?

The Clean Energy Incentive Program is a voluntary “matching fund” program that states can use to incentivize early investment in eligible RE, as well as demand-side energy efficiency projects that are implemented in low-income communities.

The Clean Energy Incentive Program will:

- Encourage the widespread development and deployment of wind and solar, which is essential to longer term clean energy and climate strategies and consistent with the Clean Air Act’s directive to advance newer technologies.
- Jumpstart job gains that are anticipated from construction and installation of RE and EE projects under the CPP.
- Provide incentives to follow through on planned investments in zero-emitting wind and solar power in advance of the Clean Power Plan’s first performance period.
- Provide near term health benefits from reductions in sulfur dioxide, particulates, and nitrogen oxides.

- Level the playing field for implementing energy efficiency in low-income communities, which has been historically limited by economic barriers, bringing jobs and lower energy costs to consumers in those areas.

Requirements for Eligible Projects:

- Located in or benefitting a state that has submitted a final state plan that includes requirements establishing its participation in the CEIP.
- Commence construction (in the case of RE) or commence operations (in the case of EE) following the date on which the state submits its final state plan to the EPA.
- For RE: Generate metered MWh from wind or solar resources.
- For EE: Result in quantified and verified electricity savings (MWh) through demand-side EE measures implemented in a low-income community.
- Generate or save MWh in 2020 and/or 2021.

Incentives for Project Providers

- EPA will provide matching allowances or Emission Rate Credits (ERCs) to states that participate in the CEIP, up to an amount equal to the equivalent of 300 million short tons of CO₂ emissions.
- Wind or solar projects will receive 1 credit for 1 MWh of generation (i.e., half early action credit from the state and half matching credit from the EPA)
- Demand-side EE projects implemented in low-income communities will receive 2 credits for 1 MWh of avoided generation (i.e., a full early action credit from the state and a full matching credit from the EPA)

Aligns with the Flexible Compliance Pathways that States can Choose Under the CPP:

- States that choose mass-based compliance may draw CO₂ emission allowances from their 2022-2029 mass-based goal and award them to eligible projects that achieve reductions in 2020 and/or 2021.
- States that choose rate-based compliance may “borrow” from the pool of ERCs they will issue during the 2022-2029 performance period and award them to eligible projects that achieve reductions in 2020 and/or 2021.
- Allowances and ERCs issued under the CEIP may be used for compliance by affected EGUs with their emission standards during the interim and final performance periods, and may be banked within and between periods.
- The CEIP will be available to projects in states where EPA implements a Federal Plan. Eligibility would be limited to projects that commence construction (RE) or commence operations (EE) after September 6, 2018.

Future Engagement:

- EPA will engage with stakeholders in the coming months to discuss the CEIP and gather feedback on specific elements of the program.

Clean Power Plan: State at a Glance

Montana

In the final Clean Power Plan (CPP), EPA is establishing interim and final carbon dioxide emission performance rates for the two types of electric generating units - steam electric and natural gas fired power plants - under Section 111(d) of the Clean Air Act. The CPP also establishes state-specific interim and final goals for each state, based on these limits and each state's mix of power plants. The goals are expressed in two ways—rate-based and mass-based— either of which can be used by the state in its plan. States that choose a mass-based goal must assure that carbon pollution reductions from existing units achieved under the Clean Power Plan do not lead to increases in emissions from new sources. EPA is offering an option to simplify this requirement for states developing plans to achieve mass-based goals. If a state chooses this route, its state planning requirements are streamlined, avoiding the need to meet additional plan requirements and include additional elements.

EPA has a "goal visualizer" tool on the web at www.epa.gov/cleanpowerplanttoolbox that walks through the exact calculations for Montana.

Montana's Interim (2022-2029) and Final Goals (2030)

MONTANA			
	CO ₂ Rate (lbs/Net MWh)	CO ₂ Emissions (short tons)	
2012 Historic ¹	2,481	17,924,535	
2020 Projections (without CPP)	2,314	20,612,466	
		2020 Goal (annual CO ₂ emissions in short tons)	
Interim Period 2022-2029		13,977,772	
Interim Step 1 Period 2022-2024 ²	1,671	13,776,601	13,977,772
Interim Step 2 Period 2025-2027 ³	1,500	12,500,563	13,003,045
Interim Step 3 Period 2028-2029 ⁴	1,380	11,749,574	12,380,787
Final Goal 2030 and Beyond		11,305,107	

1. EPA made some targeted baseline adjustments at the state level to address commenter concerns about the representativeness of baseline-year data. These are highlighted in the CO₂ Emission Performance Rate and Goal Computation TSD.

2, 3, 4. Note that states may elect to set their own milestones for Interim Step Periods 1, 2, and 3 as long as they meet the interim and final goals articulated in the emission guidelines. In its state plan, the state must define its interim step milestones and demonstrate how it will achieve these milestones, as well as the interim goal and final goal. See section VIII.B of the final rule preamble for more information.

The final Clean Power Plan goals for Montana look different from the proposed goals – the 2030 goal looks more stringent, and the interim goal looks more stringent.

States' goals fall in a narrower band, reflecting a more consistent approach among sources and states.

At final, all state goals fall in a range between 771 pounds per megawatt-hour (states that have only natural gas plants) to 1,305 pounds per megawatt-hour (states that only have coal/oil plants). A state's goal is based on how many of each of the two types of plants are in the state.

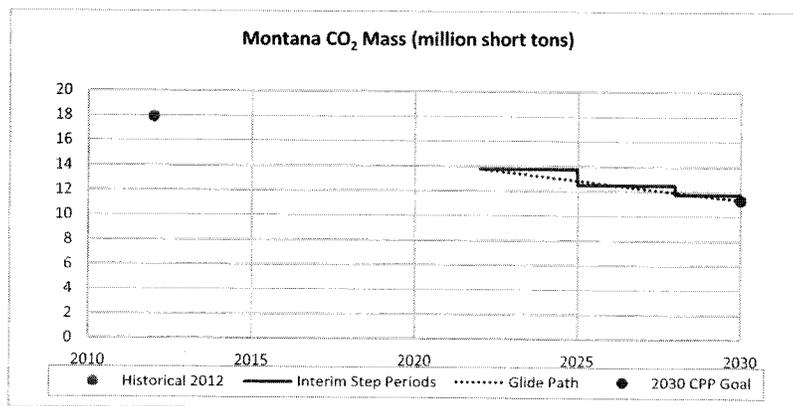
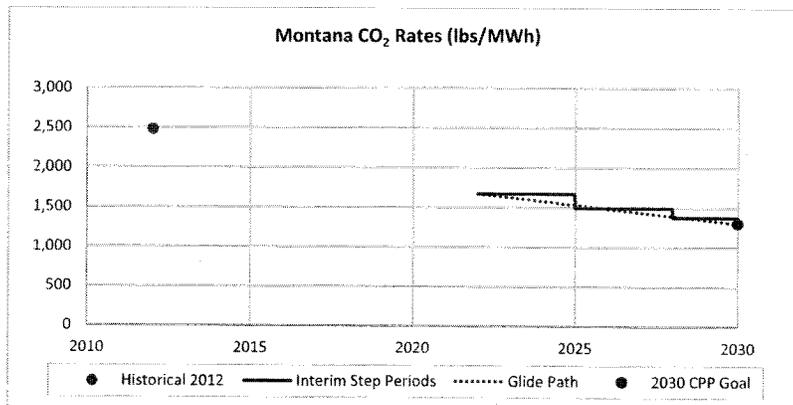
The goals are much closer together than at proposal. Compared to proposal, the highest (least stringent) goals got tighter, and the lowest (most stringent) goals got looser.

- o Montana's 2030 goal is 1,305 pounds per megawatt-hour. That's on the high end of this range, meaning Montana has one of the least stringent state goals, compared to other state goals in the final Clean Power Plan.
- o Montana's step 1 interim goal of 1,671 pounds per megawatt-hour reflects changes EPA made to provide a smoother glide path and less of a "cliff" at the beginning of the program.

The 2012 baseline for Montana was adjusted to be more representative, based on information that came in during the comment period.

Pathway to 2030: While EPA’s projections show Montana and its power plants will need to continue to work to reduce CO₂ emissions and take additional action to reach its goal in 2030, these rates – and that state goal – are reasonable and achievable because no plant and no state has to meet them alone or all at once. They are designed to be met as part of the grid and over time. In fact, the rates themselves, and Montana’s goal, reflect the inherent flexibility in the way the power system operates and the variety of ways in which the electricity system can deliver a broad range of opportunities for compliance for power plants and states. EPA made improvements in the final rule specifically for the purpose of ensuring that states and power plants could rely on the electricity system’s inherent flexibility and the changes already under way in the power sector to find affordable pathways to compliance.

- o **Flexibility in state plans and easier access to trading programs.** States can use EPA’s model trading rules or write their own plan that includes trading with other “trading-ready” states, whether they are using a mass- or rate-based plan.
- o **Clean Energy Incentive Program available for early investments.** This program supports renewable energy projects – and energy efficiency in low-income communities – in 2020 and 2021.
- o **The period for mandatory reductions begins in 2022, and there is a smoother glide path to 2030.** The glide path gradually “steps” down the amount of carbon pollution. Note that states may elect to set their own milestones for interim step periods 1, 2 and 3 as long as they meet the interim goal overall or “on average” over the course of the interim period, and meet the final goals, established in the emission guidelines. To accomplish this, in its state plan, the state must define its interim step milestones and demonstrate how it will achieve these milestones, as well as the overall interim, and final, goals.
- o **Energy efficiency available for compliance.** Demand-side EE is an important, proven strategy that states and utilities are already widely using, and that can substantially and cost-effectively lower CO₂ emissions from the power sector. EPA anticipates that, thanks to their low costs and large potential in every state and region, demand-side EE programs will be a significant component of state compliance plans under the Clean Power Plan. The CPP’s flexible compliance options allow states to fully deploy EE to help meet their state goals.



Regional Point of Contact for Questions:

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EPA 111(D) STAFF ANALYSIS #1: FINAL RULE

TO: Commissioners
FROM: Margo Schurman and Bob Decker
SUBJECT: EPA § 111(d) Final Rule
DATE: August 12, 2015
CC: PSC Electric

Montana's Goal:

- **Rate-based**
 - o Interim (2022-2029) = 1,534 lb CO₂/MWh
 - o Final (2030) = 1,305 lb CO₂/MWh (a 47% reduction from 2012 baseline)
- or
- **Mass-based**
 - o Interim (2022-2029) = 12,791,330 tons CO₂
 - o Final (2030) = 11,303,107 tons CO₂ (a 39% reduction from 2012 baseline)

Recommendations from Comments Submitted to EPA:

Adequately Demonstrated, Baseline Data

PSC 1. EPA should derive baseline data—generation, emissions, capacity factors, et al.—from a statistically representative period instead of from one year (2012 in the proposed rule). For states dependent on fluctuating hydrologic cycles, the baseline period should be 10 years.

EPA is still using 2012 as the baseline year, with an adjustment to MT data for annual variation in the hydrologic cycle as it relates to fossil generation (p. 793).

Adequately Demonstrated, Transmission/Reliability]

PSC 2. Before enacting a final rule, EPA should subject its proposed rule—and the application of the four building blocks—to transmission modeling. Only after such modeling is performed can stakeholders properly evaluate the proposal and its ramifications for the grid.

No transmission modeling is mentioned in the final rule. EPA, DOE and FERC have agreed to coordinate efforts at the federal level to help ensure continued reliable electricity generation and transmission during the implementation of the final rule (p. 51).

PSC 3. EPA should include in the rule a reliability safety valve to prevent the adoption of state plans that result in unreliable grid operations.

The final rule includes a reliability safety valve as an additional reliability assurance, for use where the built-in flexibilities are not sufficient to address an immediate, unexpected reliability situation (p. 854). This is to include an initial period of up to 90 days during which an affected EGU(s) will not be required to meet the emission standard, but will meet an alternative standard (p. 1122).

Adequately Demonstrated, Building Block 1 – Heat-Rate Improvements

The section detailing Building Block 1 starts on page 647 (of 1560).

PSC 4. EPA should modify a state's goal if sufficient evidence exists to demonstrate that a fossil facility cannot obtain a six percent heat-rate improvement because of efficiency measures already undertaken, i.e., operational before the beginning of the rule's baseline data period.

EPA has calculated HRI on a regional level, reducing the Western Interconnection to 2.1 percent and the Eastern Interconnection to 4.3 percent (p. 333). 98.24% of electricity generation in Montana comes from the Western portion of the state's interconnectivity.

PSC 5. A state's heat-rate efficiency target should take into consideration the nature of the fossil fuel stocks used and available in the state and the extent to which those fuels allow for the safe application of alternative methods of consumption for purposes of heat-rate improvement.

See #4. The methodology used to calculate the HRI was modified, and included possible effects of design and fuel characteristics (p. 674).

PSC 6. Any emission of a facility that results from other air pollution rules should not be included in the calculation of that facility's emission rate for purposes of complying with the § 111(d) rule.

This adjustment is not explicitly made in the final rule. Increased emissions due to other air pollution measures is still counted for in the final emission rates, however the methodology uses gross heat rates, not net heat rates (p. 682). An additional 'other rules' section begins on p. 1347, which explains expected results from various rules.

PSC 7. EPA should exempt any heat-rate improvements made to comply with the § 111(d) rule from a requirement to undergo EPA's New Source Review permitting process.

This is partially taken into account, not through exemption, but through modified New Source Review program rules (p. 1341). EPA will consider reviewing the permitting process if/when there is a need that arises from a specific situation.

Outside-the-Fence Measures, Building Block 3 – Renewable Energy

Building Block 3 has been modified extensively, with a new name of "New Zero-emitting Renewable Generating Capacity" and begins on p. 731. The methodology in the final rule is a modified version of the alternative RE approach in the proposed rule with additional adjustments.

PSC 8. In calculating renewable energy goals for states, EPA should utilize state-specific RPS analysis and other renewable energy development data to accurately determine the current level of renewable energy in the state and to arrive at a reasonable expectation for potential future development.

The regional approach to the calculation remained in the final rule, with individual state-specific measures eliminated. The goal was calculated entirely on a regional level. Existing RE capacity constructed prior to 2012 is removed from this building block for compliance – only new generation will be allowed. Additionally, incremental RE generation, rather than total generation, is used in the final rule goal calculation methodology (p. 752).

PSC 9. As part of the recommended analysis above, EPA should tabulate the renewable energy already developed in a state for purposes of carbon reduction and allow the emission-reduction effects of those facilities to be utilized in compliance with the rule.

See #8, specifically regarding removal of existing RE capacity for compliance. Historical capacity additions were added to the RE methodology for goal calculations in high-hydro

states in order to adjust for fluctuation in hydrologic cycles (p. 750). Montana had an adjustment of 107% to 2012 baseline generation.

PSC 10. EPA should perform state-specific analysis of transmission and grid capability to ensure that renewable goals set for states are not established at levels that pose threats to transmission capacity and grid reliability.

The final rule implies that additional/new RE generators can provide more grid support and reliability (p. 761) and new transmission construction is within historical investment magnitudes (p. 766). Incremental grid infrastructure needs can be minimized by repurposing existing transmission resources (p. 767).

PSC 11. The final EPA rule should assign compliance credit for all renewable energy produced in a state to the state where emissions responsibility falls. If a state is responsible for 100% of emissions, no matter where the energy is utilized, the state should also be credited for 100% of renewable energy produced within the state.

The final rule introduces an extensive trading program, dependent upon the type of state plan submitted (i.e. individual vs. multi-state and rate-based vs. mass-based), that allows for trading of Emission Rate Credits. The rule also requires the state plan to prove non-duplication in accounting for RE or EE measures for compliance (p. 1223).

Outside-the-Fence Measures, Building Block 4 – Energy Efficiency

This building block has been eliminated from the final rule. EE can be used as a method for compliance, but was not used in setting the state goals. Compliance measures must be outlined according to the final rule’s two-step process, and will only include new EE programs in low-income and vulnerable communities.

PSC 12. EPA should establish energy efficiency savings rates based on state-specific analyses that take into consideration past and existing efficiency programs. EPA should recognize the savings achieved by those past and existing programs for compliance purposes.

Outside-the-Fence Measures, Conversion from Rate-Based Emissions to Mass-Based Compliance Goals

PSC 13. EPA should provide and rationalize a single acceptable method for translating a rate-based goal into a mass-based goal.

The final rule provides both rate-based and mass-based goals for each state, as well as a conversion formula (p. 823). The formulas and spreadsheets are provided in the Technical Support Document “CO2 Emission Performance Rate and Goal Computation” and is still under revision on EPA’s website (will be finalized for publication in the Federal Register).

Cost-Benefit Analysis

PSC 14. EPA should revise its cost-benefit analysis to incorporate the direct costs required for rule compliance and to re-calculate its benefits analysis by revising the current global scope of estimated benefits to a state or regional scope that more closely matches the geographical scope of the estimation of direct costs.

Each section has a new/modified cost-benefit analysis methodology lined out. EPA attempted to outline regional approaches throughout, versus national calculations, but did not go into state-by-state detail.

State Role Under § 111(d)

PSC 15. EPA should clarify several questions regarding the authority of states to administer, execute, and enforce a final § 111(d) rule, including how litigation delay will affect timing of state plan submittal.

The legal section begins on p. 920. The deadline for state plans has been extended. There is no mention on litigation delay specifically. State plan legal authority section starts on p. 967, and general legal components are outlined beginning on p. 990. There are also numerous TSDs that outline additional legal issues.

EPA 111(D) STAFF ANALYSIS #2: MONTANA BIG PICTURE

TO: Commissioners
FROM: Public Policy Bureau (Bob Decker, Margo Schurman, Robin Arnold)
SUBJECT: EPA 111(d)—Staff Analysis #2: Montana Big Picture
DATE: August 14, 2015
CC: PSC Electric

Our first staff report on EPA's 111(d) Final Rule summarized how the Commission's 15 recommendations on the Draft Rule (submitted to EPA in November 2014) were addressed in the Final Rule, which was released August 3. In this second installment, we present an overview of the generation facilities in Montana affected by the Final Rule and the scope of the compliance challenge facing the state.¹

MT Electric Generation Units Affected by EPA 111(d)

Generator	Capacity (net MW)	2012 Energy (MWh)	2012 Energy (% of total)	CO2 emissions (tons)	CO2 emissions (% of total)	CO2 rate (lb/MWh)	CO2 w/HRI (tons)
Corrette	153	718,795	5%	864,369	5%	2,405	846,217
Colstrip 1	307	1,297,572	9%	1,626,704	9%	2,507	1,592,543
Colstrip 2	307	1,339,921	9%	1,720,254	10%	2,568	1,684,129
Colstrip 3	740	4,680,658	32%	5,564,141	31%	2,378	5,447,294
Colstrip 4	740	4,932,852	34%	5,855,084	33%	2,374	5,732,127
L & C	53	254,009	2%	334,414	2%	2,633	327,391
CELP	35	301,608	2%	436,051	2%	2,892	426,894
YELP	52	454,794	3%	881,745	5%	3,878	863,228
Hardin	107	467,194	3%	641,774	4%	2,747	628,297
Total	2,494	14,447,403	100%	17,924,536	100%	N/A	17,548,121

Table 8/13/15

Capacity, energy production, and emission data (columns 1, 3, and 5) from EPA

The table lists the energy production and CO2 emission data from 2012, the baseline year of 111(d), for the nine generation units affected by the rule. Note that all generation units in Montana affected by the rule are coal-fired.²

One of the fundamental changes from the Draft Rule now reflected in the Final Rule is EPA's method of calculating state emission targets. In the Draft, EPA applied four "building blocks" to arrive at state-specific allowable emission rates. In the Final Rule, however, EPA utilizes regional interconnection data to arrive at two source-specific CO2 emission rates for power plants—one emission rate for coal plants and one for natural gas combined cycle plants. As a result, affected power plants are subject to the same standards (in either the coal or natural gas category) no matter what state they are located in.

In the Final Rule, Montana's target emission rate dropped from 1,771 lb/MWh to 1,305 lb/MWh, an increase in required CO2 reduction of 26% from the Draft Rule's target rate. Because electric generation in Montana draws significantly from coal, and because Montana has no natural gas

combined cycle plants, the state now faces one of the largest rate-based reduction requirements among all states, i.e., a reduction from 2,481 lb/MWh (baseline level, 2012) to 1,305 lb/MWh. That is, Montana's CO2 emission rate must decrease by 47%.

The Final Rule allows states to comply with the rule through either a rate-based (pounds of CO2 per MWh produced) or a mass-based (total CO2 tonnage per year) approach. Because the mass-based approach makes it easier to comprehend the scope of a state's challenge in complying with the rule, we'll use it to highlight some general points.

(Important: Several aspects of the rule, including data selection, calculation methodology, emission credits and incentives, interstate trading, interim and phase-in periods, and non-emission strategies, such as energy efficiency and renewable resource development, are absent from this analysis; we will address some of them in future reports. The intent here is to broadly define the dimensions of the playing field, not to envision how the compliance game will be played.)

Using a mass-based approach, Montana must reduce its annual CO2 emissions from 17,924,535 tons to 11,303,107 tons, i.e. 6.6 million tons, or 37%.³ To get a general idea of the size of that obligation, ignore the target date of 2030 and the various policy routes that might be executed to reach that target over several years, and imagine that the target must be reached immediately. By using the above table, you can construct certain scenarios ...

<u>Scenario A</u>	
- CO2 reduction required	=6.6 M tons
o – heat rate improvement	<u>- .4 M tons</u> (EPA value of 2.1%; column 8 in table)
	= 6.2 M tons
o – Corette retirement	<u>- .8 M tons</u> (already in effect)
	= 5.4 M tons
o – Colstrip 1 retirement	<u>-1.6 M tons</u> (for illustrative purposes; not planned)
	= 3.8 M tons
o – Colstrip 2 retirement	<u>-1.7 M tons</u> (for illustrative purposes; not planned)
- Balance	= 2.1 M tons (target not reached)
<u>Scenario B</u>	
- CO2 reduction required	=6.6 M tons
o – heat rate improvement	<u>- .4 M tons</u> (EPA value of 2.1%; column 8 in table)
	= 6.2 M tons
o – Corette retirement	<u>- .8 M tons</u> (already in effect)
	= 5.4 M tons
o – Colstrip 3 retirement	<u>-5.4 M tons</u> (for illustrative purposes; not planned)
- Balance	= 0 M tons (target reached)

These scenarios add perspective to the relative contribution of certain emission-reduction actions. A collective heat-rate improvement of 2.1%, for example, would achieve about 6% of Montana's required mass-based reduction of 6.6 M tons by 2030. The Corette retirement achieves 12%. A Colstrip 1 retirement would achieve 24%, and a Colstrip 3 retirement would achieve 82%.

Presumably, any operational changes or retirement of fossil generators would be compensated for by efficiency, changing energy markets, and the development of renewable resources and/or low-emission resources. The retirement of, say, Colstrip 1 and Colstrip 2 represents a capacity

loss of 614 MW of baseload power. Replacing all, or a significant portion, of that with non-CO2 or less intensive CO2 resources would require resolved pursuit of a multi-pronged strategy.

Again, these scenarios are illustrative, intended to characterize the magnitude of Montana's compliance challenge, not to suggest a compliance strategy. Montana, as most states, will probably strive to produce a plan that blends numerous policies and resource decisions over a span of 15 years to comply with the rule, and it's impossible to say at this time how such a plan will affect any particular existing generator.

¹ This analysis is based on the presumption that the 111(d) Final Rule takes effect as it was released on August 3, and it looks at the "scope of the compliance challenge facing the state" from a regulatory perspective. It does not examine the legal challenges to the rule or the myriad economic or environmental implications of the rule.

² YELP burns petroleum coke, but EPA treats that fuel as coal in 111(d).

³ The choice of a rate-based, as opposed to mass-based, compliance approach could change the long-term quantity and interim-period timing of required emission reductions. We'll examine and compare the two compliance approaches in a future report.

EPA 111(D) FINAL RULE—STAFF ANALYSIS #3: ENERGY EFFICIENCY

TO: Commissioners
FROM: Public Policy Bureau (Robin Arnold, Bob Decker, Margo Schurman)
SUBJECT: EPA 111(d)—Staff Analysis #3: Energy Efficiency
DATE: August 18, 2015
CC: PSC Electric

Montana's Goal:

- **Rate-based**
 - o **Interim (2022-2029) = 1,534 lb CO₂/MWh**
 - o **Final (2030) = 1,305 lb CO₂/MWh (a 47% reduction from 2012 baseline)**

or

- **Mass-based**
 - o **Interim (2022-2029) = 12,791,330 tons CO₂**
 - o **Final (2030) = 11,303,107 tons CO₂ (a 39% reduction from 2012 baseline)**

Demand-Side Energy Efficiency:

In the Final Rule, *Demand-side energy efficiency* is defined as “an installed piece of equipment or system, a modification of existing equipment or system, or a strategy intended to affect consumer electricity-use behavior, that results in a reduction in electricity use (in MWh) at an end-use facility, premises, or equipment connected to the electricity grid.”

For PSC-regulated utilities in Montana, traditional demand-side energy efficiency (EE) programs are ratepayer funded and administered through the utility.¹ EE measures include energy audits, weatherization, rebates for high-efficiency residential furnaces, rebates for high-efficiency commercial refrigeration, etc. In the Final Rule, other eligible EE programs include state building efficiency codes, state appliance standards, energy service performance contracting (financing projects through a third-party, to be repaid by the building owner/operator in their energy costs), and volt/VAR optimization (smart-grid technologies that reduce line-loss).

Eligible EE measures must be quantifiable and verifiable, be implemented in 2013 or later, and still producing savings in the year 2022 or later. The use of EE measures in a state plan is not federally enforceable and is not included in the federal plan. EE measures can only be utilized in a state measures plan and must be state enforceable (in Montana, this might require legislation to implement a program, such as an energy efficiency resource standard).

The EPA estimates that all states can reach an EE rate of 1% of previous year's electricity sales.² For Montana, which currently has EE savings of .54% (including EE savings from co-ops), if the plan starts with .54% in 2020 and ramps up .2% each year until 1% is reached and maintained each year through 2030, the net cumulative savings would be 1,274,000 MWh by 2030. The savings can be credited to electric generating units (EGUs) in the form of emission reduction credits (ERCs) under a rate-based plan, or allowances under a mass-based plan.³

For the rate-based plan, ERCs are added to the denominator of the lb/MWh equation to determine the CO₂ rate. ERCs equal to 1,274,000 MWh would decrease CO₂ emissions from 2,481 lb/MWh to 2,280 lb/MWh, or 8.1%.⁴

Under a mass-based plan, EE measures reduce reported CO₂ emissions from affected EGUs by avoiding the need for generation from those EGUs. The reduction of 1,274,000 MWh in sales from the 2012 baseline (14,447,403 MWh) would be equivalent to a reduction in CO₂ emissions of 16,341,606 tons, a decrease of 8.8% from the 2012 baseline of 17,924,353 tons. The savings from EE measures would be slightly less than the savings from retiring Colstrip 1.

Generator	2012 Energy (MWh)	CO ₂ Emissions (tons)	CO ₂ emissions (% of total)
Corette	718,795	864,369	5%
Colstrip 1	1,297,572	1,626,704	9%
Colstrip 2	1,339,921	1,720,254	10%
EE savings	1,274,000	1,582,747	8.8%

Important: Our purpose in presenting the emission reduction values of potential EE savings in the context of emission quantities from specific coal plants is not to suggest a compliance strategy for Montana, but to illustrate the contributions toward CO₂ emission reduction from EPA-suggested methods and to provide an analytical process that commissioners may use to make general calculations and comparisons. Note that one of EPA's building blocks—renewable energy—is not included in the above table or the scenario analysis below. The role of renewable energy in Montana's 111(d) compliance will be examined in an upcoming staff analysis.

In our second staff analysis, "111(d) Staff Analysis #2: Montana Big Picture," we presented two scenarios for emission reduction in Montana. Scenario A was still 2.1M tons short of its goal when combining heat rate improvements, retiring Corette, and retiring Colstrip Units 1&2. Adding EE savings to that scenario would leave Montana .5M tons short of its CO₂ reduction mass goal.

<u>Scenario A</u>	
- CO2 reduction required	=6.6 M tons
o - heat rate improvement	- .4 M tons (EPA value of 2.1%)
=	6.2 M tons
o - Corette retirement	- .8 M tons (already in effect)
=	5.4 M tons
o - Colstrip 1 retirement	-1.6 M tons (for illustrative purposes; not planned)
=	3.8 M tons
o - Colstrip 2 retirement	-1.7 M tons (for illustrative purposes; not planned)
=	2.1 M tons
o - EE savings	-1.6 M tons
=	.5 M tons (target not reached)

The EPA estimates that EE programs would cost a total of \$70 million in the first year (the EPA also assumes a 50/50 split between the program cost and the participant cost, which would be \$35 million for the program cost, \$35 million for the participant cost). Annual total costs increase

to \$122 million in 2022, and remain steady at \$97 million from 2023-2030. The average program cost for Montana in the years 2020-2030 using the EPA's assumptions is \$41.84/MWh.

Savings that occur from EE measures may be banked and applied in future years between the interim date (2022) and the final date (2030).

The EPA has created an optional Clean Energy Incentive Program (CEIP) that will match credits for certain EE measures or renewable energy projects that generate or reduce MWh in 2020 and 2021, the "early action period." States must establish a CO₂ emissions budget and may set aside allowances for the interim plan period (mass-based) or generate early action ERCs (rate-based) to allocate to eligible projects. The EPA will match ERCs or allowances during the early action period from a pool of 300 M tons of CO₂ emissions, with some reserved for eligible wind and solar projects and a portion reserved for low-income EE projects. Any amount unallocated from the 300 M tons would be redistributed among states participating in the program.

In order for EE projects to qualify for matching allowances or ERCs, the measures must be located in or benefit Montana after a final state plan is submitted (or a federal plan is implemented), and result in quantified and verified electricity savings in low-income communities. There is no definition for what qualifies as a "low-income community"; as of August the EPA is looking for input. (Note that the low-income requirement is only for the CEIP programs receiving matching credits; other non-low-income EE can still be used to meet a state's overall emissions goal.) The CEIP design and implementation details will be determined by the EPA in a future action. While the details of the CEIP are not clear at this time, in order for a state to participate in the CEIP, it must include in its initial plan submittal a non-binding statement of intent to participate in the program. The CEIP part of the plan may be revised by a state with supporting documentation after the initial plan is submitted.

¹ Electric cooperatives in Montana are not regulated by the PSC. Some of them administer EE programs, although details and data for those programs are not available in PSC documents. Estimates of EE potential made by the EPA include regulated, cooperative, and municipal distributors of retail electricity.

² Ranges for achievable EE potential vary by study and region. The Northwest Power & Conservation Council estimates EE potential for the Pacific Northwest to be 1.1%, and the Lawrence Berkeley National Laboratory estimates the EE potential for WECC to be in a range from .8%-1.6%.

³ ERCs are not the same as Renewable Energy Certificates (RECs). 1 ERC=1 MWh, and 1 allowance=1 ton of CO₂.

⁴ Calculations for the rate-based and mass-based plans are simplified, and assume there is no growth in CO₂ emissions between 2012 and 2030, and that all EE savings are applied to fossil-fuel EGUs.

EPA 111(D) STAFF ANALYSIS #4: RENEWABLE ENERGY

TO: Commissioners

FROM: Public Policy Bureau (Robin Arnold, Bob Decker, Margo Schurman)

SUBJECT: EPA 111(d)—Staff Analysis #4: Renewable Energy

DATE: August 31, 2015

CC: PSC Electric

This is the fourth in a series of staff reports to the Commission on EPA's 111(d) Final Rule, which seeks to reduce carbon dioxide emissions from electric power plants. Each staff report addresses a particular and significant element of the Final Rule.

The purpose of this series is not to provide details of EPA's methodologies or to suggest a specific compliance strategy for the rule; rather, our objective is to introduce the Commission to the framework of the rule and assist the Commission in understanding the scope of Montana's challenge in complying with it.

This report addresses renewable energy generation, which is one of the three "building blocks" used by EPA to arrive at states' emission goals. Renewable energy was a building block in the Proposed Rule, but EPA considers it differently in the Final Rule and presumes that its role in a state's compliance plan will be greater than it was in the Proposed Rule.

Here are the central elements of EPA's treatment of renewable energy in the Final Rule:

- Renewable energy is defined to include onshore wind, utility-scale solar, concentrated solar, geothermal, and hydropower;
- Existing renewable energy (built before and during 2012) cannot be used for compliance;
- Projected renewable quantities are based on historical development levels and economic modeling (in the Proposed Rule, renewable portfolio standards were used to project achievable renewable energy potential);
- Achievable renewable energy estimates are higher than in the Proposed Rule, based on data from the National Renewable Energy Laboratory depicting lower costs and higher operational efficiencies;
- Renewable energy potential is calculated at the interconnection level (Eastern, Western, and ERCOT);
- Compliance-eligible renewable energy is calculated incrementally; in 2021-22, the projection is based on average annual renewable capacity added in 2010-14, and in 2023-2030, the projection is based on the maximum annual renewable capacity addition in the 2010-14 period;
- Achievable renewable projections are adjusted downward through consideration of various constraints, including terrain variability, transmission limits, turndown limits on fossil fuel units, and a 30% limit of net energy for load of renewables.

The table below illustrates the relative power of specific resource decisions to effect emission reduction in Montana. The table reflects EPA datasets, rounded figures, the presumption of a mass-based (as opposed to rate-based) compliance approach, and the exclusion of numerous potential factors, including energy incentive credits, market trading possibilities, and the impacts of other potential compliance resources. The table is not intended to include all possibilities of rule compliance or to suggest a compliance strategy; it is intended to foster generalized comparisons between the listed resources and to contemplate how difference mixes of resource actions would collectively reduce emissions.

CO2 Reduction Contributions From Various Sources

Source	CO2 Reduction (M tons)
Heat Rate Improvements	0.4
Retire: Corette	0.8
Retire: Colstrip 1	1.6
Retire: Colstrip 3	5.4
Energy Efficiency (1%)	1.6
New Wind: 100 MW	0.4
New Wind: 500 MW	2.0
New Wind: 1000 MW	4.0
Montana Reduction Target (2030, Mass-Based)	6.6

We would be happy to discuss the presumptions and calculations behind the figures in the table. In forthcoming reports to the Commission, we will address other important aspects of the Final Rule, including rate-based and mass-based compliance methods, the Clean Energy Incentive Program, and the potential of market-based utilization of credits and allowances.

EPA 111(D) FINAL RULE—STAFF ANALYSIS #5: STATE PLANS

TO: Commissioners
FROM: Public Policy Bureau (Robin Arnold, Bob Decker, Margo Schurman)
SUBJECT: EPA 111(d)—Staff Analysis #5: State Plans
DATE: September 4, 2015
CC: PSC Electric

Table 1: Montana's Goal

Rate-based
<ul style="list-style-type: none">○ Baseline (2012) = 2,481 lb CO₂/MWh○ Interim (2022-2029) = 1,534 lb CO₂/MWh○ Final (2030) = 1,305 lb CO₂/MWh (a 47% reduction)
Mass-based
<ul style="list-style-type: none">○ Baseline (2012) = 17,924,535 tons CO₂○ Interim (2022-2029) = 12,791,330 tons CO₂○ Final (2030) = 11,303,107 tons CO₂ (a 39% reduction)

The EPA's 111(d) Clean Power Plan rule is designed to reduce carbon emissions from affected fossil fuel electricity generating units (EGUs) by the year 2030. Using a regional approach based on the transmission interconnections (Eastern, Western, and ERCOT), different performance emission rate values were calculated for EGUs falling under two categories: coal plants and natural gas plants.

The EPA determined emissions rates for the regions, based on the total generation and emissions from coal and natural gas units in the 2012 baseline year. Potential reductions that could be achieved by 2030 were calculated for each region through the EPA's "Best System of Emission Reduction" (BSER), which includes increasing efficiency of existing coal plants, displacing coal-fired generation with natural gas, and increasing renewable resource production. The reductions were applied to the 2012 baseline to determine each state's interim and final goals.

The most direct way for a state to comply with the rule would be to require all affected EGUs to reduce their emissions rates to the state's final goal by 2030. As that may not be the most cost-effective or efficient way to comply, the EPA designed the rule to allow states to utilize different compliance plans to achieve their CO₂ reduction goal. These plans result in a package of measures that, when combined, achieve the state's final goal.

The rule allows states to measure and report their compliance in one of two ways. The first option is a rate-based goal, which measures CO₂ emissions per megawatt hour (CO₂ lb/MWh) for all of a state's affected EGUs. The second option is a mass-based goal, which measures the amount of CO₂ emissions from affected EGUs in short tons of CO₂ per year.

Montana has nine affected EGUs under this rule, all of which are coal plants.¹ Table 1 at the top of the page outlines Montana's baseline emissions from 2012, the interim goals, and the final 2030 goals for a mass-based and a rate-based approach. Montana has the option to create its own package to comply with the goals, based on either a rate-based or mass-based metric.

Why are the reduction percentages lower for mass-based than for rate-based compliance in Montana?

Adding zero-emitting renewable sources under a rate-based approach could allow affected EGUs to increase carbon emissions while reducing the state's average emissions rate. In order to allow the same flexibility under a mass-based approach, the calculation for the mass-based goal was adjusted based on each state's estimated share of the additional regional potential renewable resources not accounted for in the rate-based methodology. A state's share of additional renewable resources is calculated based on the amount of generation from affected EGUs in the state divided by the total amount of generation from affected EGUs in the region.

Why would a state choose a rate-based or a mass-based approach?

A rate-based approach does not limit the total amount of carbon emissions in a state and allows for greater load growth beyond the EPA 2030 projections. This would be beneficial for states with fast growing populations or large industrial growth, as they could potentially keep all of their affected EGUs with the addition of large amounts of renewable resources in the state to meet large load growth and simultaneously reduce emission rates from existing fossil generating plants.

A mass-based approach may be preferable to states planning on the retirement of large CO₂ emitters (such as coal plants) without needing to replace the generation from the retired plants. For instance, if Colstrip Units 1 & 2 were retired, the amount of generation capacity that was serving other states would not need to be replaced in Montana.² The mass-based approach also provides states with the flexibility to incorporate measures such as a Renewable Portfolio Standard or Energy Efficiency Resource Standard to reach the state goal (these measures could place some of the burden to meet state goals on public utilities rather than affected EGUs).

Another consideration for states to keep in mind will be participation in a regional trading program. States that adopt a rate-based plan may trade only with other states utilizing a rate-based plan, and states adopting a mass-based plan may trade only with other mass-based states (information on implementing trading programs for 111(d) compliance will be provided in a future staff memo).

¹ Corrette, Colstrip 1, Colstrip 2, Colstrip 3, Colstrip 4, Lewis & Clark, CELP, YELP, and Hardin.

² This scenario would reduce the mass-based emissions, but would have less effect on rate-based emissions since both emissions and energy output would be reduced (the rate-based emissions are a result of emissions per MWh of energy produced by affected EGUs).