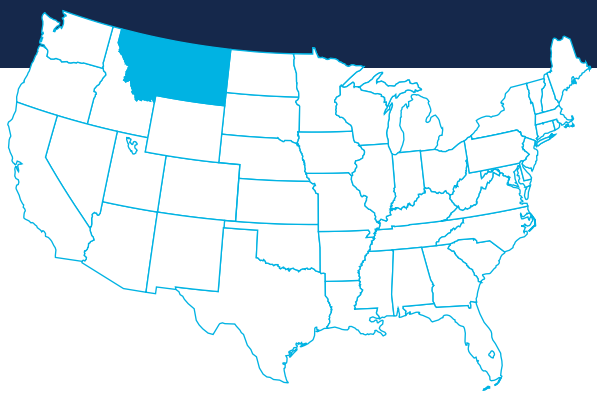
NRDC

ISSUE BRIEF

MONTANA'S CLEAN ENERGY FUTURE



Opportunities to Cut Carbon Pollution Under the Clean Power Plan

Montana has an opportunity to tap a well of economic growth that could provide new jobs, expand the economy, and help protect future generations from the worst impacts of a changing climate. That opportunity is clean energy, and one way for Montana to realize clean energy growth is through the U.S. Environmental Protection Agency's Clean Power Plan. Montana can cut a significant amount of carbon pollution by improving energy efficiency in homes and buildings and by expanding the amount of power it gets from renewable sources like the wind and sun. These investments will create new clean energy jobs, protect people from the harmful health effects of air pollution, and save them money on their electric bills.

Climate change is a clear and present danger to Montanans' health and communities, bringing stronger storms, harsher droughts, and rising temperatures—a point brought home by recent findings that 2014 was, globally, the hottest year on record.[1] The National Climate Assessment, a recent report from 13 federal agencies, warned that human-induced climate change impacts are being felt today, and worsening in every region of the United States.

Montanans have already experienced economic and public health hardships due to changing weather patterns. In 2012 Montana saw 59 heat records broken, 17 precipitation records broken, and 128 wildfires.[2] These fires burned more than 1.1 million acres, the most since 1910, and efforts to control and suppress the fires cost state taxpayers $113 million.[3] Climate change has also been linked to recent pine beetle infestations.[4] Since 2000, mountain pine beetles have infested more than 6 million acres, or 25 percent, of Montana's forestland.[5] Due to severe storms and flooding, portions of the state have been declared disaster areas four times since 2000. In addition, lower snowfall and earlier runoff have already cost Montana's ski industry millions in revenue and will continue to do so, requiring resorts to cut jobs. Nationally, climate-related disasters in 2012 cost American taxpayers, including Montanans, more than $100 billion, or $1,079 per taxpayer.[6]

Montanans understand that climate change is affecting their health, communities, and economy. Governor Steve Bullock recently wrote, "I am very concerned about the impacts of climate change on our state, our economy and our environment. Montanans see the effects on our air and water, agriculture and outdoor heritage."[7]

OVERVIEW OF THE CLEAN POWER PLAN

For the sake of our children and generations to come, we have an obligation to reduce the dangerous carbon pollution that traps heat and is fueling climate change. The nation's fossil-fuel power plants are the single biggest source of carbon pollution in the United States—they account for nearly 40 percent of the total. Coal generation is responsible for about three-quarters of all carbon pollution and about 32 percent of total U.S. greenhouse gas emissions.[8,9] Right now we limit mercury, lead, and soot from these power plants, but not carbon pollution. That is changing. On June 2, 2014, the EPA proposed the Clean Power Plan, which sets the first-ever standards limiting carbon pollution. Nationwide, the plan would prevent about 550 million metric tons of carbon dioxide from being dumped into the atmosphere by 2030, and would cut power sector pollution 30 percent below 2005 levels.[10]

Nationwide, the Clean Power Plan can usher in climate and health benefits worth an estimated $55 billion to $93 billion in the year 2030, according to an EPA analysis; that includes preventing 2,700 to 6,600 premature deaths. These benefits dwarf the estimated national costs of $7.3 billion to $8.8 billion in the year 2030.[11] Additionally, the EPA's proposed carbon pollution standards will stimulate investment that puts Americans to work making our homes

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HOW DOES REDUCING POLLUTION CREATE JOBS AND SHRINK ELECTRIC BILLS?

Energy efficiency investments reduce energy waste in homes and buildings, leading to smaller monthly electric bills while also cutting pollution. These investments create local, good-paying jobs as demand increases for construction workers to build efficient homes and weatherize existing ones, and skilled technicians to do energy audits and install efficient technologies. In addition, energy bill savings put more money into consumers' pocketbooks, leading to increased spending on other goods and services—and associated job creation—in the local economy. With a stronger standard than the EPA's initial proposal, made possible by ramping up energy efficiency and renewable power, an NRDC analysis found that our country would gain 274,000 jobs and American households and businesses would save $37 billion on their electric bills in 2020.

and businesses more energy efficient. The agency estimates this projected increase in smarter energy use will shrink consumers' electricity bills by roughly 8 percent in 2030 nationwide.[1]

Putting carbon pollution limits on power plants also will give the United States leverage in the international community to elicit strong commitments from other nations to reduce pollution. Already, the Clean Power Plan proposal helped the United States reach a landmark agreement in November 2014 with China to reduce carbon pollution in both countries.

MONTANA'S CARBON POLLUTION TARGET

Every state, Montana included, has the opportunity to craft its own best strategy to reduce pollution and protect our climate. The EPA is expected to finalize the Clean Power Plan in the summer of 2015, and the following year each state must submit initial plans to meet its pollution target. Investing in energy efficiency and renewable wind and solar power should be a fundamental part of Montana's strategy.

The Clean Power Plan proposal sets a state pollution reduction target by assessing four readily available methods (or "building blocks") for cutting pollution in each state. The target is expressed in intensity—pounds of carbon dioxide per megawatt-hour (MWh) of electricity generated—and Montana is being asked to reduce its carbon pollution intensity 21 percent by 2030. The four building blocks EPA used to establish state targets are: 1) making coal-fired power plants more efficient by increasing the amount of electricity they create from each ton of coal burned; 2) using natural gas power plants more effectively by dispatching them before coal plants;[13] 3) increasing renewable energy generation; and 4) and increasing energy efficiency (cutting energy waste) in homes and buildings, reducing the amount of energy that must be generated from fossil fuels to power them.

While the carbon pollution targets are based on these building blocks, states can meet their obligations in any way they choose. The Clean Power Plan puts Montana in the driver's seat, with flexibility to design a plan based on its energy mix and costs and to chart a low-carbon path forward.

GRID RELIABILITY IN MONTANA

For 40 years under the Clean Air Act, our country has been able to dramatically reduce pollution from power plants while keeping the lights on and keeping electricity costs reasonable. Grid operators plan ahead to meet changing electricity needs. Smart grid planning, coupled with supply- and demand-side investments, will position grid operators to be able to fulfill electricity demand while states implement the Clean Power Plan. In recent years, billions of dollars have been invested in new transmission infrastructure to make sure electricity can be distributed wherever and whenever it is needed. For example, in the fall of 2013 the 215-mile Montana-Alberta Tie Line was energized, allowing the shipment of Montana wind energy to Canada.[14] Meanwhile, energy efficiency savings continue to temper demand, which makes it easier for producers and grid operators to ensure adequate electricity supplies.

Moreover, since 2005, changes in the nation's power supply and shifts in state policies have already resulted in a 15 percent reduction in carbon pollution from power plants.[15] Increases in energy efficiency and renewable energy have displaced fossil generation, while lower-cost natural gas generation is increasingly being substituted for coal generation. The grid has easily accommodated these changes through management and planning. This bodes well for our ability to maintain electricity reliability as we cut carbon pollution under the Clean Power Plan.

In addition, renewable energy can actually increase reliability of the electric grid. Thanks to more precise weather forecasts and improved technologies, grid operators are increasingly able to predict renewable energy power output while maintaining reliability. Wind power can be used to help stabilize the grid with high-quality power.[16] Unlike fossil-fuel and nuclear sources, which can have large, abrupt, and unpredictable changes in electricity output, changes in wind and solar generation are relatively predictable.[17] This means that wind and solar need less backup generation than fossil-fuel or nuclear sources. Thanks to management, planning, and improving grid technologies, Montana can cut pollution, increase energy efficiency, and add renewable energy capacity while maintaining a strong and reliable electric grid.

THE ELECTRICITY SECTOR IN MONTANA TODAY

Figure 1 shows that over half—53.3 percent—of Montana's electric power came from coal in 2013. Hydropower provided 37.3 percent of the state's total. Non-hydro renewable energy sources accounted for 6 percent, predominantly from wind (4.5 percent of total generation). Natural gas made up only 1.7 percent of the total.[18]

In the nation's electric generation mix, coal generation has decreased considerably in recent years, declining from a 52 percent share of the total to 37 percent between 2000 and 2012.[19,20] In this same period, natural gas's share of nationwide electricity generation grew from 16 percent to 30 percent and renewables grew from 9 percent to 12 percent.[21]

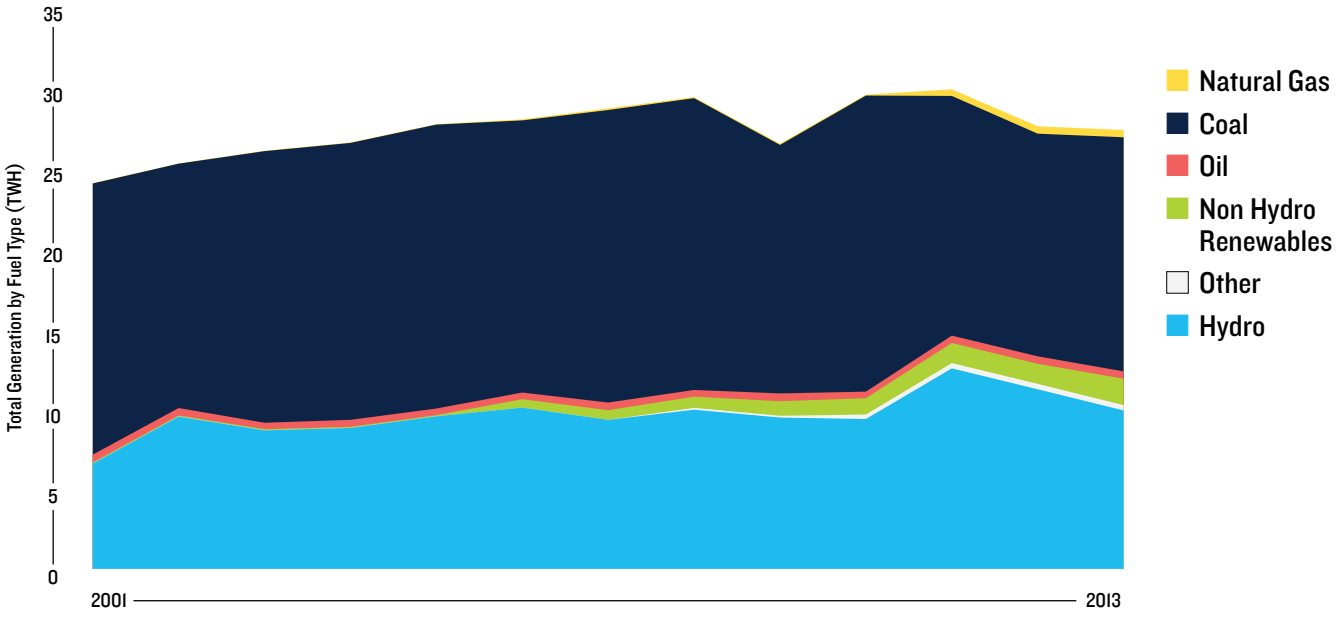
Actual coal plant retirements and estimates of future retirements are higher than industry projections of just a few years ago. Using industry figures, a U.S. Government Accountability Office (GAO) report states that from January 2010 to May 2014, power companies retired 100 coal-generating plants representing 15,000 MW of capacity.[22] This trend is expected to continue. The U.S. Energy Information Administration's "2014 Annual Energy Outlook" projects that between 2012 and 2020 an additional 60,000 MW of coal generation will be retired.[23] Accompanying this wave of coal plant retirements is the electric industry's increased preference for other forms of generation over coal. For example, in the first six months of 2014, natural gas, solar, and wind were the leading resources for power generation capacity additions. Except for one small combined heat and power coal plant in North Dakota, which required more than a decade to come online, no coal plants were added to the nation's coal generation inventory in 2014.[24]

Many factors are driving this transformation in the nation's electric generation mix and the move away from coal generation. The age of the nation's existing coal facilities has naturally led to an increase in coal plant retirements. Natural gas costs have dropped significantly. Wind and solar power have become price competitive with fossil-fuel-based electricity sources, thanks to advances in solar and wind power technology and significant increases in renewable power generation. Last, coal mining is associated with considerable environmental, land use, and social impacts, and the burning of coal for electricity creates dangerous air pollutants—including carbon, mercury, and soot—that threaten people's health and the climate.

Montana is not immune to these trends. The J.E. Corette coal-fired power plant (153 MW) in Billings is scheduled to be retired in 2015.[25] Montana-Dakota Utilities has indicated that in the next few years its Lewis and Clark Station (53 MW) either will be retired or will be fired entirely or partially with natural gas.[26] The owner of the Hardin Generator Project (116 MW) has filed for bankruptcy.

The Colstrip generating station (2,200 MW), which consists of four separate coal-fired units, is also under significant economic pressure. Because Colstrip is owned in significant part by out-of-state utilities, most of its production serves customers in Washington and Oregon.[27]

FIGURE 1. MONTANA'S ELECTRICITY GENERATION SOURCES (2001–2013)



Source: Energy Information Administration

This means that utilities and regulatory authorities in those states have significant control and authority over Colstrip's fate. For example, Puget Sound Energy, which has the largest single ownership interest in Colstrip, has been put on notice by Washington's utility commission that its investment in Colstrip may not be beneficial for customers.[28] An executive order from Washington Governor Jay Inslee makes it clear that Washington utilities are to reduce or eliminate their use of coal-derived electricity, directly targeting Colstrip generation.[29]

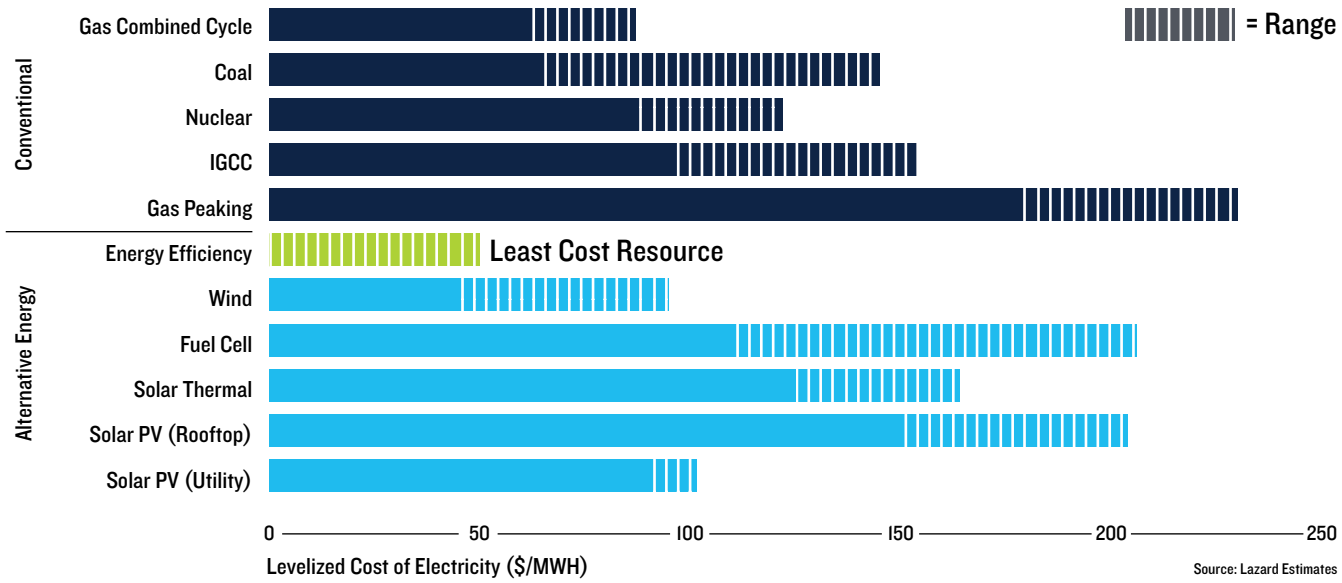
Furthermore, declining coal-fueled electricity generation around the country lowers the demand for coal, which has implications for coal production. For example, in recent years most of the coal from the Bull Mountains Mine near Roundup, Montana, has been shipped to First Energy power plants in Ohio and We Energies' Valley plant in Milwaukee.[30] Those plants are slated to convert to natural gas.[31] Reduced domestic demand for coal explains the coal industry's interest, as Montanans are aware, in developing a market overseas. However, Asia—most notably China—is also beginning to turn away from coal generation.[32] The contribution coal makes to Montana's economy, while significant in a few coal-dependent communities, is not a major driver statewide. While jobs in the coal industry tend to be well paid, there are not enough of these jobs to constitute a strong economic foundation. In 2011, coal mining jobs accounted for less than 0.5 percent of both the total payroll and total jobs in Montana.[33]

As shown in Figure 2, energy efficiency and renewable energy technologies are zero-carbon, low-cost options that can help meet the goals of the Clean Power Plan. Energy efficiency is the lowest-cost "resource," compared with the costs of building new power plants, and is also often cheaper than operating existing fossil-fuel plants. Investments in energy efficiency result in lower retail electricity bills for homes and businesses. Further, with technological advances and taller wind turbines that improve performance, wind power has become competitive with new natural gas plants in many parts of the country.[34,35] This can be seen in Montana, where wind power grew by almost 32 percent and supplied 6 percent of the state's net electricity generation in 2013. Solar power also is becoming increasingly competitive, as a result of rapidly declining costs for solar panels, and most analysts expect that these costs will continue to decline over the next decade.[36] For example, a recent Deutsche Bank report predicted that solar power will be cheaper than average retail electricity prices in Montana by 2016, even without a federal tax credit.[37]

Montana has outstanding renewable energy potential. It is ranked third in the nation for wind potential, second for geothermal potential, and 15th for solar potential.[38] Montana has taken steps to tap into this large potential,

FIGURE 2: COSTS OF ELECTRICITY GENERATION BY SOURCE ($/MWH)

Energy efficiency is the cheapest of all energy resources. Wind and utility solar PV are competitive with new natural gas combined cycle plants.



establishing and already meeting a Renewable Portfolio Standard of 15 percent (including new hydro and pumped storage) by 2015.[39] So far, 650 MW of wind has been installed in Montana—enough to power about 200,000 homes—bringing with it $1.6 billion in new investment, 1,500 high-paying construction jobs, and several dozen permanent jobs in rural communities.[40] In addition, these wind farms contribute a total of $8 million in tax revenue annually and draw millions of dollars each year in payments to landowners.[41] While there is no energy efficiency resource standard in place, some of the state's utilities, most notably NorthWestern Energy, do offer energy efficiency programs. These programs have resulted in significant customer and utility savings. Between 2007 and 2011, NorthWestern Energy's program resulted in a net benefit of $78 million, or $3.70 in benefit for every dollar spent on energy efficiency.[42] In 2012, energy efficiency programs in the state produced a total annual savings of 0.65 percent, putting the state just below the national average savings rate (0.67 percent).[43] However, as shown in Figure 3, many states have been able to achieve higher energy savings through energy efficiency. Among western states, Washington, Oregon, Idaho, and Arizona all get substantially more energy savings from efficiency than Montana does.

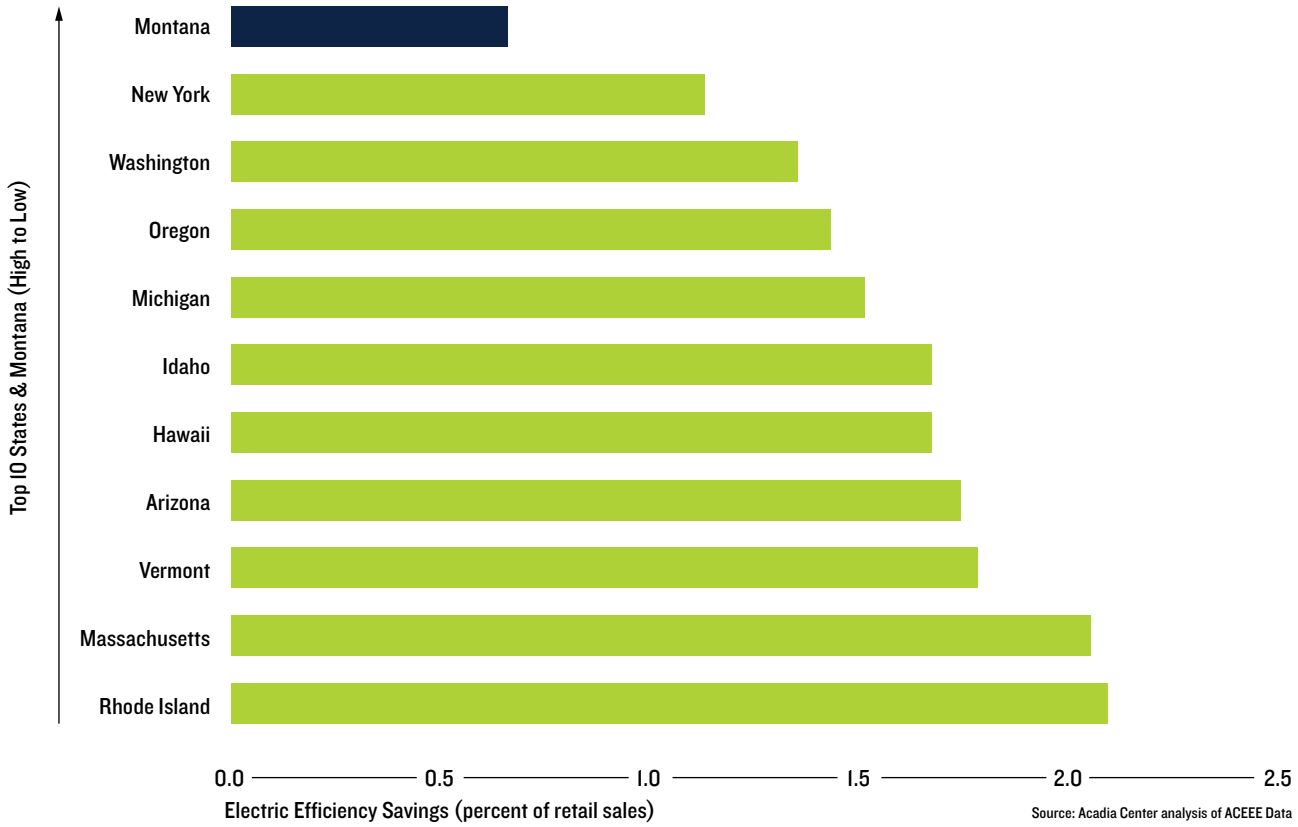
Energy efficiency and renewable energy investments can bring more jobs to Montana. A recent analysis found that Montana could create a significant number of new jobs through clean energy and energy efficiency investments. Over a 20-year period, construction and installation of small solar projects produce 136 job-years per average megawatt of energy generated; large solar projects produce 69 job-years; wind, 14 job-years ; and energy efficiency, 19 job-years.[44] Operation and maintenance means even more jobs in each of these areas.

MONTANA CAN CHOOSE FROM A RANGE OF POLICY APPROACHES

A smart, effective, and forward-looking Montana plan can reduce market barriers that may hinder the development of clean energy. Table 1 shows the policy options available to states under the flexibility provided by the EPA's Clean Power Plan and offers recommendations for how states can achieve economic and environmental benefits as they cut carbon pollution. For states such as Montana that are major net exporters of electricity, mass-based, regional approaches present a significant opportunity for cost-effective compliance.

FIGURE 3. MONTANA'S ENERGY EFFICIENCY RATE

Comparison to the 10 states with the highest energy efficiency rates. Montana ranked 24th as of 2013.



Source: Acadia Center analysis of ACEEE Data

CONCLUSION

Montana is blessed with an abundance of natural resources on which its economy has long been built. Now, in order to develop the clean energy that this nation needs and that is essential for Montana's economic growth, Montana must tap into new energy resources—its wind and sun—and resources it has had from its beginnings: its human resources, the citizenry's ingenuity and self-sufficiency that are waiting to be put to use.

Montana's energy future rests in its hands. The Clean Power Plan presents the state with the opportunity to improve public health, foster new economic development, and help stabilize our climate. Under the proposed Clean Power Plan, states have incredible flexibility to design their own best, most cost-effective plan to cut carbon pollution.

The Clean Power Plan provides states the option to pursue partnerships with other states to reduce carbon pollution. Regional approaches present a number of potential advantages over a single-state plan, such as consumer savings, reduced compliance costs, increased flexibility, and avoided electricity market distortions. Montana has an opportunity now to chart a clean energy future.

TABLE I. STATE POLICY OPTIONS FOR CLEAN POWER PLAN COMPLIANCE.
States have ample flexibility under the Clean Power Plan to choose the best method to reduce pollution.

	Flexible Intensity-based	Mass-based with Trading	Carbon Fee	Portfolio/Resource Standards
Environmental Goal, Units, & Outcome	State has emissions intensity goal in pollution per unit of electricity generated (lbs/MWh)	State has emissions limit in total, fixed amount (tons), regardless of amount of electricity generation	State establishes a carbon fee ($/ton) at price estimated to deliver the emissions goal; price is fixed but emissions outcome is uncertain	State sets minimum requirements for efficiency and renewable resources at levels estimated to deliver the emissions goal
Market Structure & Trading	Fossil power plants that pollute above the intensity standard must buy credits from others that operate below the standard	State agency issues allowances (tons) equal to the emissions limit; allowances can be auctioned or allocated; fossil power plants have to hold an allowance for every ton of emissions	State agency estimates the carbon fee ($/ton) needed to achieve the emissions goal; revenue could be returned to utility customers through rebates, energy efficiency investments, or other state goals	Eligible resources are identified (i.e., efficiency and renewables) and energy (MWh) is tracked using generator certificate tracking systems; the distribution utilities need enough certificates to show they are meeting the required standard
Electric System Reliability	All of these market-based approaches provide significant flexibility for plant operators, grid operators, and regulators to ensure that reliability requirements are met. If a plant is needed in the short term it can keep operating by buying allowances or credits or by paying a fee. A unit could be designated as "must-run" for reliability reasons until the reliability constraint is addressed, and other facilities would adjust their performance to accommodate the output from that plant.			
Regional Approaches:	There are significant benefits associated with states pursuing consistent regional approaches to compliance. The primary benefits are: 1) LOWER COST—A larger market should be more efficient and reduce costs 2) EQUAL TREATMENT—Generators, market participants, and consumers should face consistent market signals, costs and benefits 3) IMPROVED ENVIRONMENTAL OUTCOME—Regional approaches avoid different price signals across a market region and on either side of state boundaries. This would help avoid emissions leakage and higher national emissions than anticipated 4) REMOVE OR REDUCE RELIABILITY CONCERNS—A larger market and additional flexibility further reduces reliability concerns			

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