

MONTANA ENERGY FUTURE

The Future of Montana Electricity

*Valuing our traditions and
seizing opportunity to create jobs*





THE FUTURE OF MONTANA ELECTRICITY

Valuing our Traditions and Seizing Opportunity to Create Jobs

"Montana is going to be an energy leader for generations to come and we're poised to create thousands of new jobs while protecting the ones we have. I'm looking for realistic and common sense solutions that work for Montana, expand our economy and protect our clean air and water."

-Governor Steve Bullock, December 1, 2014

Blessed with an abundance of natural resources, Montana's flowing water, coal, oil and gas, and more recently wind resources, have powered our state and the region for decades. As Governor, I take great pride that our state's energy resources provide good-paying jobs for Montanans, strengthen our rural communities and support local schools, while safeguarding our quality of life.

Montanans expect that we will protect our environment, outdoor heritage, communities and agricultural producers. That's why my administration is committed to maintaining sustainable and responsible development of our energy resources to benefit our state. Energy development fosters growth and puts Montanans to work, and we can do it in a way that protects the things we love about living here.

Determining our Energy Future

Montanans should determine our destiny, and that includes our energy future. The energy industry, from workers at a coal mine to those putting up wind turbines, provides good-paying jobs for hardworking Montanans. States like Montana are the best laboratories for finding the path forward and solving problems while creating opportunities.

When Montanans roll up their sleeves, set aside their differences, and work together, we can accomplish great things. Working together we've moved Montana's energy future forward, by:

- Expanding incentives for renewable power, including the opportunities for job creation associated with our legacy of hydroelectric power.
- Hosting the Chinese and U.S. federal governments and industry leaders to Montana to talk about coal use and climate change, and the shared challenges and opportunities for coal development in a changing world.
- Protecting Montana's Renewable Portfolio Standard against legislative efforts to unravel this job-creating law.

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- Lowering tax rates for new pollution control equipment, providing tax incentives for enhanced oil recovery, and carbon capture and sequestration, and supporting legislation that recognized the incidental carbon storage associated with enhanced oil recovery.
 - Launching the SMART Schools program in 2014 as a voluntary competition between Montana K-12 schools that focuses on resource efficiency and environmental health of the school environment – 107 schools have taken part, resulting in \$273,000 in energy cost savings.
 - Lessening the burdens associated with permitting by streamlining the processes involved in obtaining permits while ensuring proper protection of our clean air, water, and land.
 - Supporting and advocating for the development of storage technologies and projects that will add value to Montana’s variable resources.
 - Pursuing opportunities for new technologies to allow our coal plants to generate energy with less pollution.
 - Directing the Montana Department of Environmental Quality to benchmark the energy use of all state buildings, providing a priority for needed energy efficiency upgrades and investments.
 - Fighting to protect our interests in the region, and reinforcing for our neighbors the important role Montana energy has played in building their robust economies.
 - Earning nearly \$700,000 on energy incentive payments for state coffers by operating a highly efficient data center.
 - Pushing back on federal government overreach when necessary.

While some people argue and point fingers about a changing energy economy, the world moves forward. The future of energy development is shifting beneath our feet, and we must all work together to create a Montana-based energy plan to tap our full potential.

We must take the lead in preparing a responsible future for Montana – one that drives economic growth and creates good-paying jobs with new technologies that allow the state’s coal plants to generate energy with less pollution, building more renewable energy, and encouraging innovation and energy efficiency.



I have made it a priority to hear directly from Montanans.

- In Colstrip, I heard from a community concerned about their future and a way of life built upon the use of coal in generating electricity. At the same time, the community sees promise in new technologies to make coal-plants less polluting.
- Wind power was the center of discussion in Great Falls. Montanans talked about new wind developments bringing jobs to the region, as well as revenues for local governments. But we have only scratched the surface on our potential for wind energy development.
- In Missoula, the focus was on the value of energy efficiency as the cheapest form of “new energy,” its increasing role in boosting our economy, and the unmet needs among our lower income households that typically pay a larger share of their income for energy use.
- Solar was the focus in Bozeman, Hamilton, and Helena. Simms Fishing proudly showed off the solar array that powers its facility, Ravalli Electric Co-op cut the ribbon on its first community solar project to meet the demands of its customers, and Lewis and Clark County looked forward to healthy tax revenues from a new solar facility in the county.
- As part of the Main Street Montana Project, Montana’s top business leaders who served on the Energy and Utilities Key Industry Network met extensively. They told me that to improve our energy future we should create an energy infrastructure authority that develops energy opportunities and work with stakeholders to improve infrastructure siting.

While we’ve made progress it’s clear that Montanans expect more when it comes to fostering growth in our energy sector. That means continuing our work to protect existing jobs as well as seizing opportunities presented by the changes going on in the energy sector to create new jobs and economic prosperity.

This energy blueprint does just that – built upon the input I’ve received from Montanans, it charts a course for the future that not only seeks to protect existing jobs in the coal industry, but also embraces the promise of new jobs in renewable energy, energy efficiency, and developing technologies to more cleanly and efficiently produce energy from fossil fuels. Importantly, it’s a blueprint not a detailed prescription. As the world changes around us, we must be prepared to change with it. When we do it right, we’ll be able to say we found the right balance: we protected our outdoors; and we provided wealth to our citizens in the form of good jobs. We will be proud to pass on a Montana that is still the envy of the nation for our quality of life and economic stability.

My kids, your kids, and all children in every corner of this state deserve no less.



Building Montana's Energy Presence in the Region

Background

Over the coming decades, the energy landscape will dramatically change, as old paradigms are challenged by: new technologies, the cost burdens of maintaining aging infrastructure, regional market forces driven by shifting customer demand, changing and complex regulatory regimes as well as the consolidation and reorganization of markets. Montana needs to be ready for what will undoubtedly be a profound shift in not only how we generate power in the U.S., but how we move that power to market. We need to move into this future with purpose and intelligence.

To meet these challenges, other states in the west have created energy authorities to focus energy policy development and facilitate the development of energy market opportunities in their states.

For example, in Montana the difficulty in siting electric transmission lines has become a major obstacle to achieving timely investment decisions for critical infrastructure. This is made all the more challenging by the lack of a central entity whose role is to coordinate and facilitate the development of energy market opportunities. Montana must be competitive to meet the challenges of the future.

<h3><i>Action Item</i></h3>

- Develop legislation and an appropriate funding mechanism in coordination with DEQ, the legislature, and other stakeholders to establish an energy infrastructure authority based on the recommendation of the Energy and Utilities Key Industry Network. Potential responsibilities include: developing comprehensive energy policy and strategy for workforce needs; promoting energy export opportunities; coordinating state resources; assisting project developers and facilitating regulatory reviews; assessing transmission needs; exploring funding options including bonding and public-private partnerships; and exploring the challenges of emerging energy sectors such as carbon capture and renewables.



Transmission Infrastructure that Moves Our Electricity to Market

Montana’s transmission and distribution system is the economic lifeblood of our state and communities. But Montana’s energy demand alone is not enough to support robust development of our diverse energy resources as outlined in this blueprint, so to be successful we must have adequate means to move our electricity to out-of-state markets.

As the coastal states and some industrial sectors double down on their demands for renewable energy, the need for base-load power and ancillary services will grow. Montana must be able to move power where the opportunities exist, providing good jobs for hard-working Montanans.

Enhance the Planning and Siting of New Transmission

Background

The difficulty in siting electric transmission lines has become a major obstacle to achieving timely investment decisions for critical infrastructure. Our existing regulatory scheme creates certain challenges for planning and siting. In particular, issues relating to “need” and “alternatives analysis” have proven particularly vexing. In addition, the reach of regulatory review for new transmission projects is limited, raising valid concerns regarding potential impacts to wildlife and other natural resource values.


<i>Action Items</i>

- I’ve directed the Montana Department of Environmental Quality to convene a stakeholder process to examine issues regarding modernizing the Major Facility Siting Act, and bring forth recommendations for the 2017 legislative session.
- Direct the Departments of Natural Resources and Conservation, Fish, Wildlife and Parks, and Environmental Quality to establish an interagency working group to determine what steps may be necessary to ensure adequate protections for the integrity and viability of Montana’s wildlife and other natural resources in siting decisions.

Improve Existing Pathways to Hungry Power Markets

Background

Montana has existing transmission pathways to out-of-state markets, but those transmission lines currently have limited capacity or face legal and institutional hurdles. It follows that upgrading existing pathways for more capacity provides the most straightforward opportunity to quickly move more power out of state.



The Bonneville Power Administration Line, which runs from western Montana to Washington State, is the most logical and practical additional access point for western power markets. But several aspects of how the line is managed by BPA continue to create uncertainty for potential new energy development in Montana. A straightforward upgrade of this line alone could unleash as much as 1,000 megawatts of new energy development for export. Last year a wind developer, after several years and a substantial financial commitment, gave up trying to accomplish access on this line to western markets, citing, among others things, legal uncertainties. This is unacceptable.

The Montana-Alberta Tie Line (MATL) is the first direct interconnection between the United States and the Province of Alberta and ultimately represents a new and unique bi-directional energy corridor. A Montana wind farm is currently using MATL to access out of state markets. However, access constraints at the point of interconnection in Alberta have limited future opportunities on the line, and for any future expansion of the line.

Recently, there has also been interest in looking east of Montana to significant markets for the delivery of Montana-produced power. Although the current constraints are significant, the eastern part of the state is where many of the critical energy resources are found. As energy markets continue to evolve, current constraints such as the DC Intertie or limitations on the Western Area Power Administration System are likely to be resolved, particularly as the midcontinent states move to improve integration and market function.

Action Items

- Engage the expertise of the United States Department of Energy (DOE) for a comprehensive review of Montana’s transmission opportunities and constraints in delivering power to out-of-state markets.
- Direct the Montana Department of Commerce, with assistance from the Montana Department of Environmental Quality, to conduct an energy and transmission trade mission to key western states to solicit assistance in loosening the transmission constraints that limit Montana’s potential to market new and existing energy development. Follow that with a Governor’s energy trade mission in 2017.

Request the U.S. Department of Energy to discuss with, and offer assistance to, BPA regarding its management of the Montana-to-Washington line, including tariff policies, permitting for upgrades premised on a business case, and existing legal uncertainties regarding management of the line, at no cost or risk to Montana’s electric cooperatives.

- Engage the government of Alberta to discuss the mutual interests of Montana and the Province to liberalize access across the MATL interconnection into Alberta’s transmission grid, and provide more opportunities for energy development and possible line expansion.

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- Direct the Montana Department of Environmental Quality to investigate the necessary measures to improve transmission capabilities from Montana to markets in the Midwest, and to actively engage in integration and planning activities of the midcontinent states, looking for opportunities to promote Montana energy.

Explore Opportunity in Evolving Western Markets

Background

Several energy providers with business connections to Montana have announced their intentions to join a western Energy Imbalance Market (EIM), which may foster cross-region sharing, optimization, and integration of energy resources. This could enhance reliability and lead to lower energy costs for customers in the region. As the EIM concept expands, further regional coordination among the western states may also be necessary to stay abreast of opportunities.

<h4><i>Action Item</i></h4>

- Direct the Montana DEQ to engage other states in exploring and understanding the opportunities that may exist for Montana-sourced energy exports in any expansion of western regional integration and coordination arising as a result of EIM, or other efforts both within and outside of the region to coordinate energy planning and resource use.



The Potential for Wind Power

Background:

Montana has one of the strongest wind resources in the U.S. and arguably the greatest opportunity for wind development among any state in the West. Montana's wind energy potential regularly ranks in the top 5 of all states, but we are ranked 20th overall in terms of actual wind generation. The U.S. Department of Energy's "Wind Vision" report projects as much as 22,500 MW of wind by 2030. With a current installed wind energy capacity of 665 MW (enough for 180,000 homes) we have a lot of room to grow.


Nationally, and over the past five years, wind was 28% of all new electric generating capacity, and the cost of new wind resources has fallen by 66% in the last 6 years. The overwhelming majority of U.S. wind farms today operate in rural areas, and about 70% of rural wind farms in the U.S. are located in low-income counties. Nationally, wind farms now pay \$222 million dollars a year to farming families and other rural landowners, with more than \$156 million dollars going to landowners in counties with below average incomes.

In Montana, much of our 665 MW of wind energy is exported to other states, and that is where much of our immediate opportunity exists. The economic benefits here at home have been substantial. Wind development in Montana has resulted in approximately \$1.5 billion in new capital investment, at least 100 permanent jobs and 1,500 construction jobs, and last year an estimated \$2 million in land lease payments to rural landowners.

Currently, wind projects totaling more than 2,000 MW are at various stages of development in Montana. If all of those projects were built, some estimates indicate as much as \$3 billion in new capital investment, and more than 11,000 construction job-years and 500 permanent jobs.

The wind farms east of the Rockies in Montana have unique characteristics that make them even more valuable to markets in the Pacific Northwest. Developers have recognized this advantage and built over 400 MW of wind generation for markets outside of Montana. California, Oregon, and Washington not only have large power needs but also some of the nation's strongest demand for renewable energy.

Notably, California and Oregon have both recently adopted new laws calling for more renewables as part of their energy portfolios. Montana wind is well positioned to help these states meet their energy demands and renewable portfolio requirements. Transmission development remains a major hurdle for these wind resources to reach the load centers of the West. In addition, the west coast states have historically maintained protectionist policies that limit Montana's ability to provide renewable energy to them.



Further, one set of end users – medium to large corporations – is beginning to incorporate renewable energy goals into business strategies as a branding strategy and to address long-term cost exposure. For example, the Renewable Energy Buyers Alliance includes 58 major companies that have committed to pursuing these strategies. Some of the members have operations in Montana and others have expressed interest in locating here.

In addition to actual wind development, the proposed 400 MW Gordon Butte Pumped Hydro Storage Facility in Meagher County would use water to integrate up to 3,000 MW of wind development in Montana, providing an opportunity to market Montana wind as a firm resource.

In 2005, Montana adopted a Renewable Portfolio Standard (RPS), requiring many electricity suppliers to provide a percentage of their supply from renewable energy sources. Wind energy contributes the vast majority of developed renewable energy in Montana and has been largely responsible for utilities meeting Montana’s standard of 15% by 2015. A recent legislative report found that the Montana’s RPS:

- contributed to new renewable electric generation;
- has had a positive economic impact on rural communities;
- has not displaced existing power generation; and
- has had a negligible impact on ratepayers.

We must ensure we take steps for this energy sector to realize its remarkable potential.

<i>Action Items</i>

- Continue to support and protect Montana’s Renewable Portfolio Standard and use powers granted to the executive office to continue to defend attacks from the legislature.
- Direct DEQ to create a working group to discuss issues, challenges, and opportunities related to wind and transmission. The group should include developers, state and federal agencies, utilities, and other stakeholders to share information and engage with one another on critical issues.
- Advocate for open markets for Montana renewable energy in those states that are seeking to increase the renewable share of their state energy portfolios.
- Support the development of storage technologies and projects that will add value to Montana’s variable resources.
- Direct the Governor’s Office of Economic Development, and the Departments of Commerce and Environmental Quality to continue to pursue and market opportunities for businesses to take advantage of Montana’s renewable bounty.



Solar Under the Big Sky

Background

Despite its nickname, the Big Sky State is not often thought of as a solar resource fit for development; however, that is changing fast. Falling cost and improvements in solar technology have made Montana a favorable location. For example, because of longer days and cooler temperatures, Helena has solar potential that is better than Jacksonville, FL.

Montana can be divided for insolation roughly the way it is divided geographically - Eastern Montana and Western Montana. Every day on average, annually, Eastern Montana receives 5 hours of full sun while Western Montana receives 4.2 hours. In the right location both can justify solar development. While energy from distributed generation has dominated solar development in the past, interest has recently surfaced in community and utility-scale solar projects.


According to the most recent data, approximately 37 businesses are active in the solar PV installation business statewide. A 2014 survey conducted by the Montana Renewable Energy Association showed 284 additional sub-contractors, including electricians, engineers, roofers and crane operators, are supported by the solar industry.

This survey also showed solar installation businesses employ 92 fulltime employees and 71 part time/seasonal laborers in Montana. On-site solar and wind energy systems installed between 2000 and 2014 have resulted in \$30 million of installation sales revenue, \$2.7 million in utility bill savings and \$10 million in increased property value.

To date, very little data has been compiled in Montana regarding the generation of electricity from solar PV and how that generation interacts with the larger electricity grid and its operation. While there are pockets of data for specific projects, there is a lack of comprehensive data that integrates the climate, weather patterns, geography, demographics, and economics of solar for large, low-population density states like Montana. This has presented a significant barrier to development of larger solar electricity installations in recent years.

Ravalli, Missoula and Flathead Electric Cooperatives have all built community solar projects in the last year ranging from 25 to 100 kW that allow their members to subscribe to the output of one or more panels in a centrally located solar array.

To date, no utility scale solar projects have been developed in Montana. But as solar costs continue to drop and solar becomes most cost-competitive as a result, developers are increasingly expressing interest in constructing solar projects in Montana. Unfortunately, development of smaller utility scale renewable projects has proven difficult if not impossible. Challenges include changing and unpredictable policy at both the state and federal level and depressed electricity markets.



Over time we can expect these barriers to be addressed, and it is a goal of my administration to move Montana to double the current solar development in the state by 2025.

Action Items

- Direct DEQ to collect information regarding new solar developments in Montana, analyze the quality of the solar resource in Montana as well as access to transmission, distribution, and suitable site locations, and assess the market barriers that constrained or limited the projects, and any lessons learned as these projects were developed. Working with the Department of Commerce use this information to engage key stakeholders and work with interested local communities to increase solar development.
- Direct DEQ to consider a rule change to expand the scope of the alternative energy revolving fund loan program to allow individuals to finance shares in a community system.
- Direct DEQ to work with tribes, utilities, co-ops, and the U.S. Department of Energy to facilitate solar development in Indian Country.


State Government Leading by Example: Solar

Background

On the Helena state government campus, the Department of Environmental Quality Metcalf Building is a perfect location for a 50kW net-metered system, the maximum permitted by state law.

In addition, other state buildings around Montana are well suited to solar development, and some of them, for example the State Data Center and Montana State Prison, are candidates for PV installation behind the meter (not subject to the 50kW net metering limit).

The State of Montana owns tracts of undeveloped public lands across the state. State Trust Lands alone account for over 5 million acres of land. The Department of Transportation owns vast land holdings, often in proximity to existing power line rights of way. Some lands, like those held by DEQ, may involve industrial sites or brownfields. There is no comprehensive review of the suitability of these lands for solar development, yet the return can be significant: preliminary estimates project minimum rentals to be \$3,000/MW installed, or higher, because of gross revenues.




Action Items

- Direct DEQ to study an optimal 50kW system for the Metcalf building, and include provisions for installation adaptability to make this package suitable for installation on numerous state buildings.
- Direct DEQ to assess the suitability of other state buildings around Montana (not on the Helena campus) for solar development, and at selected facilities determine the appropriately-sized solar facilities and associated equipment, to provide working packages with specific recommendations as well as general guidance for solar project developers considering maximum limit net metered systems or systems installed behind the meter.
- Direct DEQ and the Department of Administration to develop language suitable for a Request for Proposal to allow a state agency interested in solar for its facilities to specify all system components (e.g., PV panels, rack systems, net metering, utility connection safety equipment, shipping, equipment and system warranties, disconnects and panel enclosures, installation, maintenance, etc.).
- Direct the Department of Administration and DEQ to work with the Governor's Budget Office to explore the opportunities and constraints regarding the development of a financing structure to put private capital to work at a smaller scale with pooled projects, providing resources to add solar to state facilities.
- Direct the Departments of Natural Resources and Conservation and Environmental Quality to develop, based on input from solar developers, screening criteria to identify properties that may have high value for solar development.
- Direct the Departments of Natural Resources and Conservation, Environmental Quality, and Transportation to engage in a comprehensive review of their land ownerships using the criteria to identify specific candidate properties within their ownerships, and to produce a listing of those properties.

Net Metering

Background

Montana's net metering statute allows utility customers to install a solar PV, wind, or hydro generator no larger than 50 kW on their property, while remaining connected to the utility grid. In the case that the 'customer generator' produces more energy than they use over the course of a month, the net metering statute requires that the utility provide the customer generator with a credit for those excess kilowatt hours. Montana's net metering law was passed in 1999 and has been largely unchanged since that time.



It only applies to NorthWestern Energy but the Montana Public Service Commission has adopted a similar net metering tariff for Montana-Dakota Utilities (the only other investor-owned utility in the state). Rural electric co-ops have the authority to set their own net metering policies. All of the 25 rural electric co-ops in the state (and Mission Valley Power) have net metering policies.

Fifteen utilities statewide have net metering customers. There are approximately 1,500 utility customers with net metering systems designed to serve on-site electricity load. Approximately 88% of those systems are solar PV with wind and a few micro-hydro generators making up the remainder. The total installed generating capacity of all the net metering systems in Montana is estimated at 6.6 MW.

In both the 2013 and 2015 Legislative Sessions, several bills were introduced that would have expanded Montana's net metering opportunities. Those bills were not passed in either session. The Energy & Telecommunications Interim Committee is currently analyzing many aspects of net metering. In addition, key stakeholders are working to negotiate an updated policy framework for net metering.

Action Items

- Monitor discussions among stakeholders and support any negotiated agreement to update and strengthen Montana's net metering laws to ensure continued deployment of this resource on an economic basis.
- Oppose any efforts to weaken the current statutes and work with stakeholders and utilities to address legitimate concerns regarding fixed cost recovery arising from traditional rate regulation.



The Coal Industry and Coal-Fired Sources of Electricity

Montana holds the largest coal reserves in the United States – 120 billion tons constituting about 28% of our nation’s reserves and almost 8% of the world’s reserves. Recently, Montana coal companies mined around 40 million tons annually, generating millions of dollars in revenues, wages, and taxes.

When it comes to Montana and electricity, our total mix of electricity generation is dominated by coal, which in 2015 accounted for over half of all generation (hydroelectric provided one-third of the total). We’re proud of our role in powering the region, and Colstrip has been an important part of that role since the mid-1970s. The Colstrip operations provide \$104 million in state and local tax collections and good-paying jobs for hard-working Montana families, paying an average wage that is significantly higher than the state average.

But there’s little doubt that change is on the horizon, driven by historically low natural gas prices, flat domestic energy demand, regulatory concerns and changing consumer demands. And then there are concerns related to climate change. We Montanans know it is happening because we see it. Moreover, the financial markets are strongly reacting to it.


While coal production in Montana has been higher under my administration than any previous one in the last three decades, the bankruptcies of Alpha Resources, Peabody Coal, and Arch Coal sent tremors through the industry. Similarly, coal-fired generation, like that provided at Colstrip, has been undercut by depressed power markets and added scrutiny because of carbon emissions.

Coal is an important part of the future – the federal Energy Information Administration estimates coal will provide 18-26% of all domestic energy in 2040. As with other fossil fuels, even natural gas, the success of coal in the future will require significant public investment and broad public support.

A Low Carbon Future Requires Public Investment

Background

Climate change is a global issue, and the United States will play an important role in any solution. Our country can lead, but we can’t solve this issue on our own. Coal will continue to be an important part of this nation’s energy portfolio for decades. With global demand for energy forecast to grow, coal is likely to continue to be an important resource for other nations as well. We must invest in innovation to show the world how to lead with low carbon coal that is affordable.



Montana is leading the way in much of the clean energy research being done in this country. These emerging technologies being pioneered on our university and college campuses – including low-carbon coal research – will pave the way to a cleaner energy future and the good-paying jobs that come with it.

But Washington D.C. has not done enough to advance and support clean coal technologies. We'll need both carbon-based and renewable sources of energy in the coming decades. Unfortunately, as a country, we have not prioritized this research enough.

My beliefs were reinforced last summer when I toured SaskPower's Boundary Dam Unit 3 in Saskatchewan, Canada, the world's first coal-based power plant to be fully retrofitted with Carbon Capture and Underground Storage technology. As would be expected, the new technology is not without its challenges and detractors. But the plant can capture in excess of 90% of its CO2 emissions for storage and utilization in enhanced oil recovery. We need to ask, why isn't this happening here?

I'm committed to making it happen here, and building a low carbon future that includes coal, and I will continue to support Montana's coal industry and coal-fired generation.

Action Items

- Continue to advocate for more support and funding from Washington D.C. for carbon capture, sequestration, enhanced oil recovery (EOR), and other low carbon technologies, including tax credits and loan guarantees.
- Continue to challenge the EPA on the way it regulates EOR and its refusal to recognize the value of this technology in combatting climate change.
- Propose to the 2017 legislature that Montana provide additional support to our Big Sky Carbon Sequestration Partnership.
- Continue to work with the U.S. Department of Energy to review the feasibility of carbon capture and EOR as a means of addressing the carbon emissions from coal-fired generation in Montana, specifically the Colstrip facilities.
- Take over from the EPA the Regional Haze Program for the upcoming planning cycle.
- Continue to work closely with Wyoming Governor Matt Mead on several efforts to raise the profile of EOR and its role in carbon capture. With the Great Plains Institute, we're leading a coalition of energy producing states to support beneficial state and federal policies. With the Western Governors' Association, we crafted a resolution expressing the support of western governors.



- Work with legislators on both sides of the aisle to provide financial support for clean coal demonstration technology in Montana.
- Continue to argue for fair treatment for Montana and Montana’s coal industry in any effort by the federal government to address climate change.
- Continue to work with Colstrip owners, workers, customers, the community, and others to explore creative options for ensuring the continued viability of those plants.
- Work with Wyoming Governor Matt Mead, and key Montana legislators, to determine the appropriate investment by Montana in Wyoming’s Integrated Test Center.
- Continue to support the development of Montana commodities markets overseas.
- Continue to support the rights of the sovereign Indian Nations to develop their resources as they see fit to serve their people, whether it’s coal or hydropower on the Crow Reservation, hydropower on the Flathead Reservation, or harnessing wind and solar power that is abundant in Indian Country.



Energy Efficiency

Montanans understand the value in doing more with less. Energy efficiency is typically the cheapest way to meet future electricity demand. For example, in the Pacific Northwest, the priority for new resource acquisition to meet expected new demand would be energy efficiency. As a resource, energy efficiency is low risk and low cost. It has a short lead-time and is available in small increments with large cumulative impacts.

Energy efficiency is now the second largest electricity resource in the Northwest region behind hydro, due in large part to its cost-effectiveness. Cost-effective energy efficiency lowers the average utility bills for ratepayers, and it is estimated that ratepayers across the region saved \$3.78 billion in 2014 as a result of the regional focus on energy efficiency over the last two decades. For citizens, that means more money in their pockets for other necessities. It also creates jobs and economic growth from increased employment of local workers and increased spending.

It's not possible to identify the full scope of employment in Montana from energy efficiency activities, but it's safe to assume that there are hundreds of small businesses throughout the state that provide energy efficiency services, from heating, ventilation and cooling (HVAC) to insulation contractors, window manufacturers and installers, to full service energy service companies, the demand for energy saving products and services continues to grow.

Studies show that increased spending on energy efficiency can be expected to have a net positive economic impact, and that nationally every million dollars spent on energy efficiency translates into the creation of approximately 20 job years.

A new opportunity exists for Montana as financing mechanisms are being created to put private capital to work at a smaller scale, providing a greater reach for financing smaller energy efficiency projects. Small projects can be pooled, which lowers transactional costs and maximizes scarce resources.

Despite all the benefits for consumers and the economy, Montana's overall performance is below the national average, at 0.5% of retail sales in 2012, placing us 21st among all states.

As the Montana economy continues to grow, abundant, affordable, and efficiently used electricity will be an important lever. We need to do more to pursue cost-effective energy efficiency, and it's a goal of my administration to put Montana on a track to reduce overall electric energy use by 10% by 2025 – a total savings of 177 average megawatts.

The following are some important steps to head down that path.



Reduce Electric Energy Use by 10% by 2025

Background

There are many more things we can do to achieve our goal, including doing things that set the stage for significant new efficiency gains.

My office launched the SMART Schools program with the Department of Environmental Quality in 2014 as a voluntary competition between Montana K-12 schools that focused on resource efficiency and environmental health of the school environment. It has been a great success – 107 schools have taken part, resulting in \$273,000 in energy cost savings. Billings School District 2 cut its annual gas and electric costs by almost 44% , saving over \$170,000 each year. Similar potential exists not only in other schools but in local government buildings across the state.

Property Assessed Clean Energy (PACE) is an innovative financing program that enables property owners to obtain low-cost, long-term financing for water conservation, energy-efficiency improvements, and renewable energy retrofits at their home or business. A local government uses general funds, private lenders, or bonding to create a funding pool to finance qualified investments in the property.

The term of the PACE loan can extend up to 20 years, and can yield immediate cash flow benefits to the property owner, with no out-of-pocket investment. If the property is sold before the full amount of the PACE loan is repaid, the repayment obligation automatically transfers to the new property owner because the lien securing the PACE assessment follows title to the property, and the improvements remain with the property. Thirty-two states and the District of Columbia have adopted already PACE enabling legislation.

Cost-effective energy efficiency programs conducted by utility providers, commonly working with vendors, are a critical component to improving Montana’s energy efficiency performance. These established programs typically involve contracts with local vendors who in turn hire local technicians to perform the work. Montana needs clear policies that properly support utility programs to obtain cost-effective energy efficiency, and remove financial disincentives that would hinder these efforts.

Low-income members of our communities benefit the most from energy efficiency investments. Because low-income households spend a larger percentage of their monthly income on energy bills than other households, energy efficiency investments at low-income households provide immediate budget relief as well as providing a more comfortable and healthy home. Montana receives funding from several sources for low income energy efficiency investments, including federal weatherization dollars from U.S. Department of Energy and funds from Montana electric and gas utilities via the universal system benefits charge (USB).




The USB Program brings in roughly \$9-10 million annually, to be used among three overarching objectives (energy efficiency, renewable energy, low income). In 2015, I signed legislation to reallocate the USB funds to increase to 50% the USB revenues for low-income weatherization and energy assistance efforts, increasing this funding by approximately \$1 million.

But there is not enough funding for this important work of helping our less fortunate neighbors keep their houses warm. For example, the District XI Human Resource Council serves roughly 10,000 low-income individuals annually in Missoula, Mineral, and Ravalli counties. Services include housing and related energy issues, such as weatherization services for eligible households. With current funding, HRC XI conducts approximately 250 weatherization projects per year, but has roughly 2,000 eligible households waiting – a backlog greater than 8 years. That’s just one of the 10 HRCs in Montana, and we know that the need is also significant in Indian Country.

Montana has a number of residential and commercial energy tax incentives. The energy efficiency and alternative energy tax credits cost the State of Montana between \$5 and \$6 million in lost tax revenue in a typical year. The majority of the energy tax credits go to taxpayers in the upper deciles of Montana’s tax brackets. The reporting requirements for the energy efficiency tax credit are broad and vague, and it’s unclear how much energy savings is being achieved by the tax credit or to what extent the tax credit is changing people’s energy efficiency investment behavior.

Action Items

- Propose a \$5 million revolving fund in the 2017 legislative session and make it accessible to schools and local governments for energy conservation projects. This will include legislation to facilitate the use of state money as a seed for a match with private capital to create the fund.
- Propose enabling legislation in the 2017 legislative session for Montana local governments to operate PACE programs, if they choose (self-chartered local governments in Montana already have the authority).
- Direct DEQ to work with stakeholders to review the current policies of the state in regard to providing utilities and other energy interests such as efficiency vendors with predictable and fair returns on investments in cost-effective energy efficiency programs, allowing those entities to not only be made whole for their efforts, but to view energy efficiency investments as a viable business model. As one possible area for inquiry, other states have decoupled utility investments in energy efficiency from rate regulation.

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- Put Montana on solid footing to eliminate, by 2025, the backlog of low-income weatherization needs for those households that have an energy burden higher than the Montana average. Direct DEQ and DPHHS to initiate a comprehensive stakeholder process to achieve this goal, by assessing the opportunities and challenges associated with boosting energy efficiency investments for low-income households, including those in Indian Country. The group should assess the challenges of energy efficiency work in a low-population density state like Montana, focus on a holistic assessment of housing stock in low-income and rural communities (including reservations), tackle obstacles and efficiencies in implementation of weatherization programs, and evaluate future opportunities for additional funding, including market-based mechanisms arising from carbon and similar markets.
 - Direct DEQ and the Montana Department of Revenue to bring forward a proposal for the 2017 legislative session that would eliminate the current energy efficiency and alternative tax credits and create a program to boost funding for low-income weatherization, and incentivize activities similar to those addressed by the energy tax credits with the remainder of the funds.

State Government Leading by Example: Lighting and Desktops

Background

Today's next generation Light Emitting Diode (LED) products represent the latest market transformation in lighting technology. LED products now have numerous advantages over conventional lighting systems.

The state recently completed Phase 1 of a campus-wide LED retrofit for lighting at the Montana State Prison (MSP). To date this has been the largest LED project for state government. Project lifecycle savings exceeding \$1 million are anticipated, with a payback of 5 years. Phase 2 at MSP is anticipated to save even more money, with a shorter time for payback.

Estimates suggest that a capital complex campus-wide upgrade to LEDs at appropriate locations (primarily consisting of retrofitting existing florescent linear bulbs) could have a simple payback of 1 year.

Virtual Desktop Machine (VDM) systems save energy and money. A user of a VDM does not have software and a processor at their desk; instead, the VDM connects to a server at a data center that does the processing and software work that an old CPU tower did. Most people don't need the heavy horsepower of a desktop computer's processor sitting next to them. With appropriate infrastructure, performance of VDM systems are comparable to existing desktops, for most user applications.



Comparing VDMs and standard desktop computers shows that VDM units use 99% less energy at the desk (front-end) location, and are less expensive to procure. VDM units have a longer service life and require less service/maintenance than conventional PCs. Costs specific to a VDM system include back-end storage, memory and software. The key advantage to the back-end VDM equipment is that it would be centralized at Helena’s state-of-the-art data center that is backed up by the Miles City data center. The Helena data center is more energy efficient than nearly all other data centers nationwide and the Miles City data center is currently undergoing energy upgrades.

Preliminary estimates suggest that state government could save over \$60 million over the first 10 years by converting to VDMs as desktop computers are retired.

Action Item:

- Direct the Department of Administration and the Governor’s Budget Office to review the expected energy savings on the Helena campus from upgrading existing lighting to LEDs and converting existing PCs to VDMs, and issuing a report no later than September 1, 2017.



Water Resources

Background

Montana's rivers have powered the state and region for over a century, and some of the hydroelectric infrastructure in use today was built well over a half a century ago. Montana is one of the top hydroelectric producers in the country and six of the state's ten largest electrical generating plants run on hydropower. NorthWestern Energy's acquisition of the legacy dams means that Montanans get to enjoy the benefits of home grown, carbon-free, and stably priced energy. Proudly, and rightly so, NorthWestern points out that 60% of the electricity they deliver to Montanans is renewable (70% of nameplate capacity hydro and wind). The acquisition of the Kerr Dam (now Séliš Ksanka Ql'ispé Dam) by the Confederated Salish and Kootenai Tribes is a big step forward for tribal self-determination, making the Tribe an energy exporter.

While this renewable resource provides immense power potential and carbon-free electricity, proposals for new large-scale dam development have historically created significant public debate over the impacts of development – in particular the impacts to fisheries.

However, opportunities exist to add additional capacity through further upgrades to existing facilities (or powering unpowered dams), and there are countless prospects for community development of small-scale hydro along irrigation canals. These types of development have few environmental impacts and take advantage of existing infrastructure.

For example, the Helena Valley Irrigation District has requested approval from the Bureau of Reclamation to develop the 9.4 megawatt project at the existing Helena Valley Pumping Plant site at the Canyon Ferry Dam. Both the Gibson Dam (Sun River) and the dam on the Clark Canyon Reservoir are currently unpowered, and there are recent proposals to power both. Among the state-owned dams, after a preliminary economic analysis the Tongue River Dam has been determined to warrant further study. On the Crow Reservation, the Crow Nation is moving forward with plans to install turbines on the Yellowtail Dam.

In 2013, I signed legislation that incentivized capacity upgrades to existing dams, by qualifying those upgrades for Montana's Renewable Portfolio Standard. I recognized that these activities created new good-paying jobs, while boosting energy production with minimal environmental impacts.



Action Items

- Direct the Montana Department of Revenue and DEQ to review the current tax structure and recommend changes to provide tax treatment for hydro upgrades that is comparable to that for other activities that qualify for Montana’s Renewable Portfolio Standard.
- Direct the Departments of Environmental Quality, Natural Resources and Conservation, and Fish, Wildlife and Parks to prioritize requests for review from developers of new hydropower at unpowered dams and small hydropower projects.
- Seek funding assistance for a full feasibility study of adding hydropower to the Tongue River Dam.
- Actively support the efforts of the Crow Nation to develop hydropower at the Yellowtail dam afterbay project.
- Actively support renegotiation of the Columbia River Treaty with Canada, advocating for Montana’s specific needs in regards to the operation of Hungry Horse and Libby Dams, and supporting efforts to seek compensation for Montana for flood storage behind the Libby Dam.



Biomass: Restoring Our Forests and Generating Electricity

Background

Our forested lands are in need of greater active management work to restore fisheries and wildlife habitat, reduce fire danger, and put Montanans to work in the woods. A stronger functioning market for wood waste could help provide another profit center for this important work and support Montana's wood products infrastructure.

The most recent assessment of biomass energy potential in Montana was completed in 2010. That study examined feedstock, cost, markets, and environmental benefits of an onsite biomass energy facility at 7 sawmills in western Montana.

The study found that there would be enough local feedstock at and near the sawmills to supply an onsite 15-20 MW Combined Heat and Power (CHP) biomass plant at each one. The total megawatt potential would be between 105-140 megawatts. Fuel from state and national forests was not necessary, but would add flexibility to the fuel supply picture and could increase the nameplate capacity potential.

According to the study, the greatest limitation was the estimated cost of power and the potential limitations to securing a power purchase agreement as well as transmission access to markets. With support from the state and others, F.H. Stoltze Land and Lumber Co was able to move forward with a 2.5 MW biomass cogeneration facility and they have a Power Purchase Agreement with Flathead Electric Cooperative.

<h3><i>Action Item</i></h3>

- Advocate for stronger recognition of the role that forest management plays in removing CO₂ from the atmosphere and the economic value on that activity, and the importance of biomass as an economic and carbon neutral byproduct of forest management.



Geothermal Resources

Montana is home to a significant geothermal resource that remains largely untapped. Current uses of geothermal in the state are centered on direct-use facilities like recreational hot springs, green houses, and fish farms. The state does contain several high temperature sites that could provide clean, renewable base-load power.

A recent project that is being examined involves building an Engineered Geothermal System at Colstrip, taking advantage of existing infrastructure to provide up to 200 MW of base load power. The Colstrip location was found to be among the most feasible among several sites considered nationwide, but this project needs more study and the technology is not yet cost-competitive. The number of good paying jobs associated with this type of project is significant.

<i>Action Item</i>

- Direct DEQ and the Department of Commerce to stay abreast of the potential for geothermal developments in Montana and provide assistance to developers as requested.