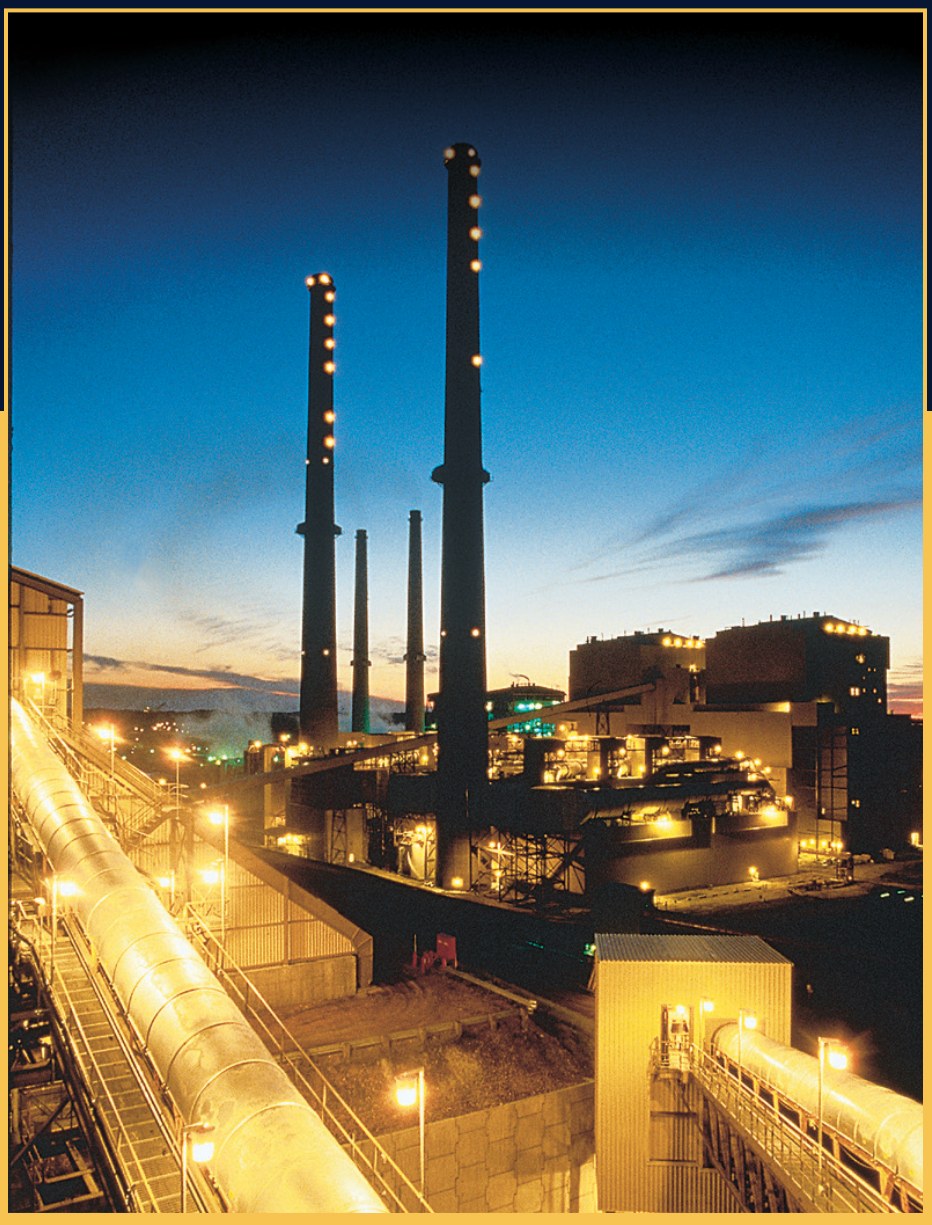
The Economic Implications of Implementing the EPA Clean Power Plan in Montana

Final Report
November 2015



Produced for:
NorthWestern Energy

Produced by:
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Acknowledgements

The authors of this study would like to acknowledge the cooperation of NorthWestern Energy who took the time from their busy jobs to make data available for this study. All errors, omissions, and conclusions in this report are, of course, our own.

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The Economic Implications of Implementing the EPA Clean Power Plan in Montana

Executive Summary

On August 3, 2015, the U.S. Environmental Protection Agency released its final rule for its Clean Power Plan directed at reducing emissions of greenhouse gases. As was the case with the preliminary rules announced in June 2014, those rules require states, including Montana, to submit plans that would result in reductions in state carbon emissions from new and existing electric generation facilities that hit a specified target by year 2030.

While there is in principle some flexibility in how states construct plans to comply with the emission targets set forth in the rule, the final rule's state-specific mandates for CO2 reductions for Montana power producers have been set at a level that drastically reduces the choice set for our state. A comparison of CO2 emission rate targets for year 2030 to their baseline levels by state shows Montana's 47 percent reduction to be the highest of any state included in the rule.

The EPA Clean Power Plan final rule – often referred to as 111(d) for the portion of the Clean Air Act that is cited as giving the Agency the authority for its actions – is the most significant economic event to occur in Montana in more than thirty years. Compliance with the rule raises the very real prospect of the premature closure and decommissioning of the Colstrip Steam Electric Station, a coal-fired generator in southeast Montana that is the largest industrial facility in the state. It will also require significant new investment in replacement generation assets, as well as in the transmission system improvement necessary to support them. As the regulation rolls out nationwide, it will significantly impact the price of wholesale and retail electric power.

As a means of helping Montana policymakers, businesses and households understand the implications of 111(d), NorthWestern Energy contracted with the Bureau of Business and Economic Research at the University of Montana to conduct an economic analysis of the impacts on the state economy that could result from actions necessary to comply with the rule. The findings of that analysis are contained in this report.

Summary of Findings

While Montana's final compliance plan for 111(d) is not due to be submitted to the EPA until next year, any compliance scenario will contain three changes from the status quo:

- the closure and decommissioning of existing generation facilities in Montana, with consequences for upstream (e.g., coal mine) and downstream (transmission line) assets, required to reduce CO2 emission rates in compliance with the rule;

- the construction and operation of new, less CO2-intensive generating facilities, with the necessary infrastructure (pipelines, transmission system improvements) to maintain the safe, reliable provision of electric power to Montana businesses and households, and

- changes in wholesale and retail electricity markets that reflect capital investments and the changing mix of generation regionally and nationally.

The size of the required CO2 reductions imposed by the Clean Power Plan, and limited options available raise the prospect that compliance will result in the complete closure of the Colstrip generating station. Indeed, the scenarios that leave portions of that facility in operation hinge on outcomes – such as the availability of low-cost emissions credits in sufficient quantities from markets that do not exist today – depend in part on outcomes and events beyond our control. Thus the compliance scenario presented here is timely and relevant.

We have developed a specific scenario of compliance with 111(d) that contains each of the these components listed above. It is in conformance with the rule, which requires changes in existing facilities by the year 2022, and reductions in CO2 emission rates in conformance with the targets over the subsequent 8 year period. It provides for new generation and other infrastructure that replaces power that is currently supplied at facilities that would be shutdown, decommissioned, and remediated to conform with 111(d). And it reflects third-party projections of price changes that would result as the targets set by 111(d) come into effect regionally and nationally.

The BBER used its economic model, leased from Regional Economic Models, Inc. (REMI), and specifically calibrated to the Montana economy, to project two economic futures for our state. The first is a reference, status quo projection. The second is a projection of a future under a scenario of compliance with 111(d). This future reflects all of the actions required to comply with the final rule, as well as changes in wholesale and retail electricity markets that result. These changes bring the economy to a different, lower, resting point as investment flows, population, and spending by businesses, governments and households respond.

The Economic Implications of Implementing the EPA Clean Power Plan in Montana

Impacts Summary

		Impacts by Year		
Category	**Units**	**2025**	**2035**	**2045**
Total Employment	Jobs	-7,137	-5,381	-3,715
Personal Income	$ Mill./Year	-515.9	-556.3	-482.2
Disposable Pers. Income	$ Mill./Year	-440.6	-481.2	-417.7
Selected State Revenues	$ Mill./Year	-145.6	-165.8	-152.0
Property Tax Revenues	$ Mill./Year	-44.4	-74.5	-78.5
Output	$ Mill./Year	-1,511.7	-1,407.4	-1,268.0
Population	People	-5,211	-10,731	-9,207

The difference between these two economic futures measures the economic impact of changes made to comply with 111(d). As shown in the table above, the impacts represent a significant loss to the state economy of jobs, income, output, tax revenues and population. Within three years of implementation of the compliance plan, the state economy

- suffers a job loss of more than 7,100 jobs, reflecting not only the regular and contractor jobs at all four units of the Colstrip generation facility, but also the neighboring coal

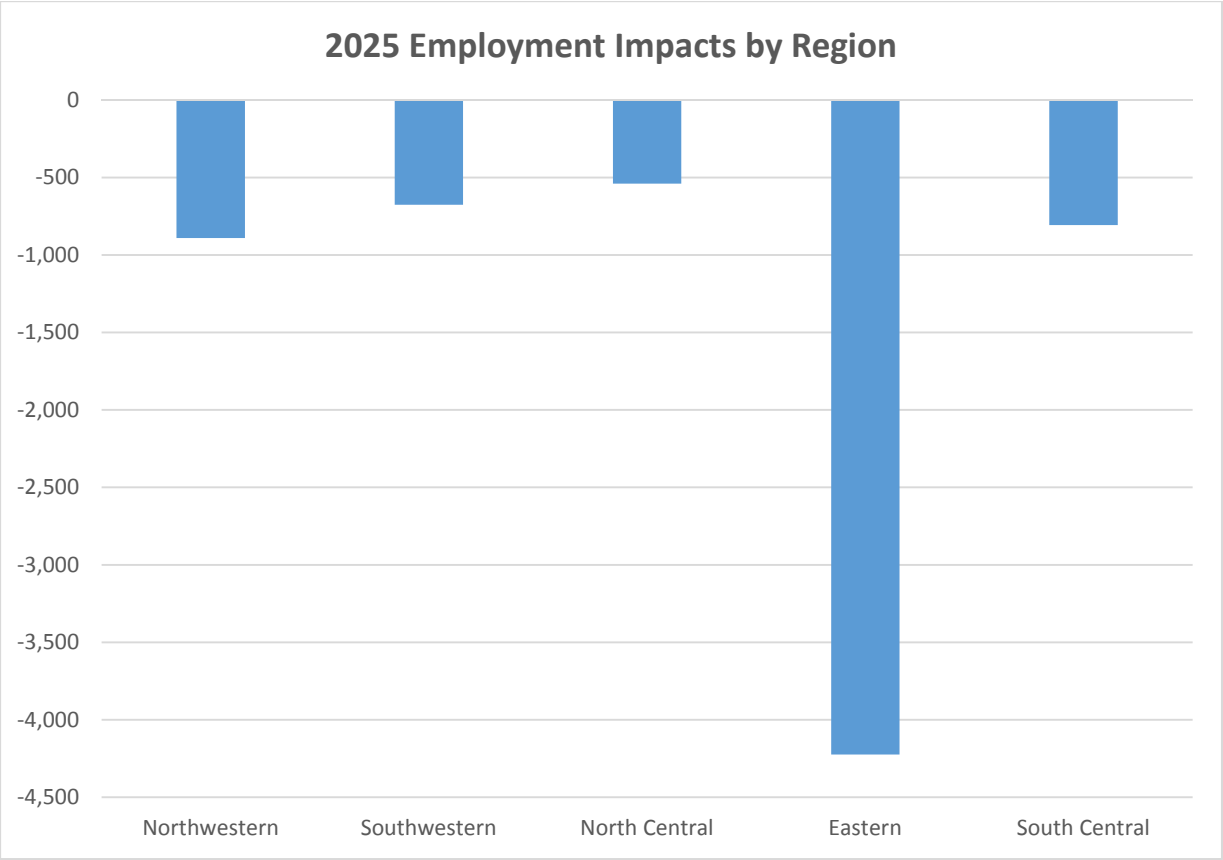
mine, as well as the local government jobs supported by the significant property tax bills those facilities pay, and all of the changes elsewhere in the economy that result from those losses;

- incurs a loss of over $500 million in annual income received by Montana households which is made larger by the fact that the jobs lost due to 111(d) pay well in excess of the Montana average;

- realizes a loss of more than $1.5 billion in gross output (sales) by Montana businesses and other organizations, as Montana swings from being a state with significant energy exports to a state that must rely on imported power from other states and regions in periods of heavy load or during generation curtailments;

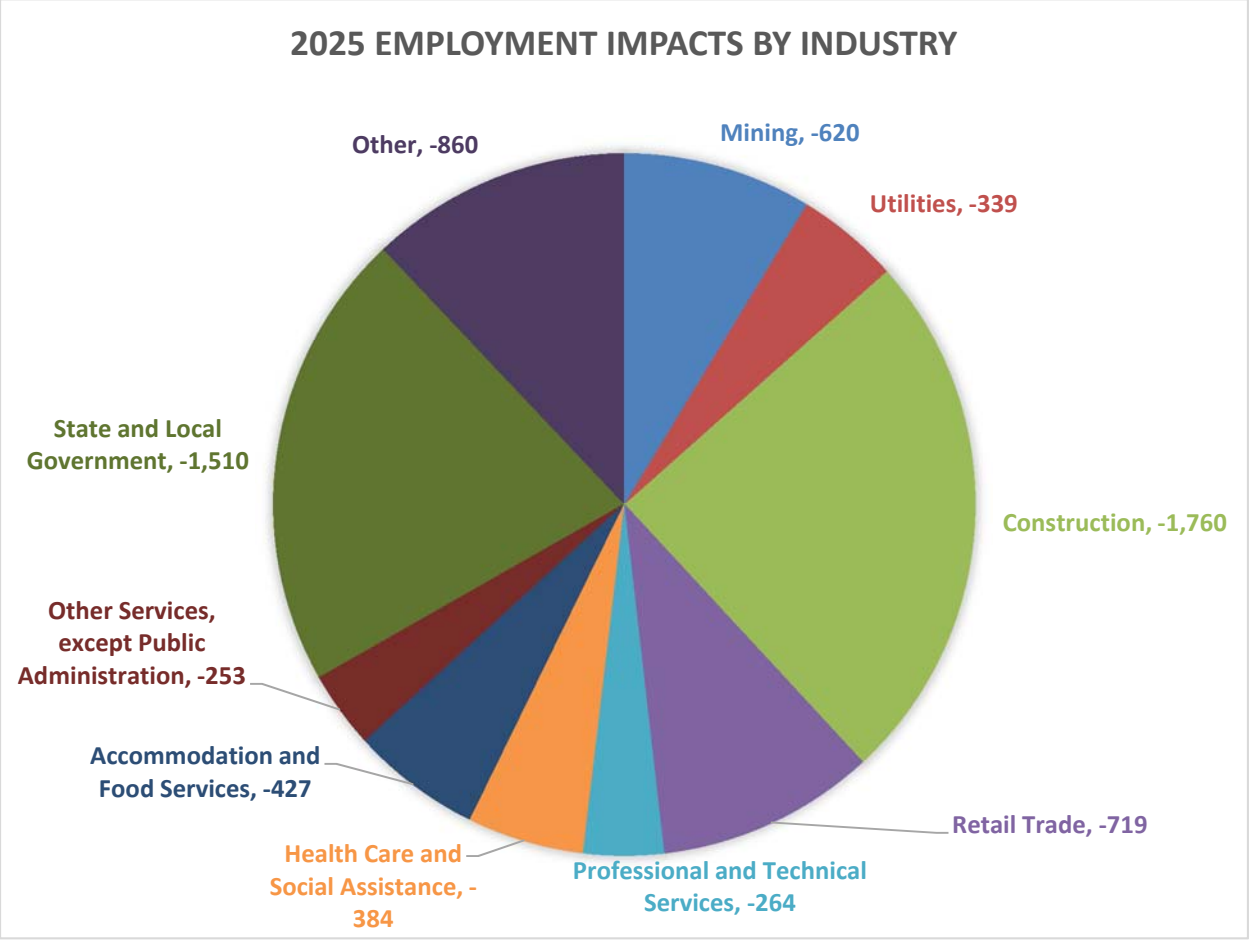
- ultimately realizes a decline in population, particularly in working-aged families and their children, as economic opportunities in our state worsen relative to other states.

The economic impacts of 111(d) in Montana have a wide footprint, both geographically and across industries. But their effect is especially pronounced in eastern Montana, where both the Colstrip generation facilities and the Western Energy Company coal mine that supplies them are located. The more than 4,000 jobs lost in eastern Montana counties as a result of 111(d) comprise almost 7 percent of all jobs in the region, and two thirds of the decline in output that occurs statewide is incurred by businesses and other organizations in the eastern 14-county region of the state. Yet as the figure below makes clear, other regions of the state are significantly impacted by 111(d), through the impact of higher electricity prices as well as declines in state and local property tax revenues.



The impacts of 111(d) in Montana are large in some industries you would expect, namely, utilities and mining. The shutdown of the Colstrip SES and the closure of the Western Energy Company mine contribute to those declines directly. But these are not the two industries that are hit the hardest in terms of job losses in year 2025, as shown in the pie chart below. The job decline of 1,760 jobs suffered by construction industries and the 1,510 jobs lost in state and local government are significantly larger than those two sectors which would seem to have a closer connection to the power plant itself.

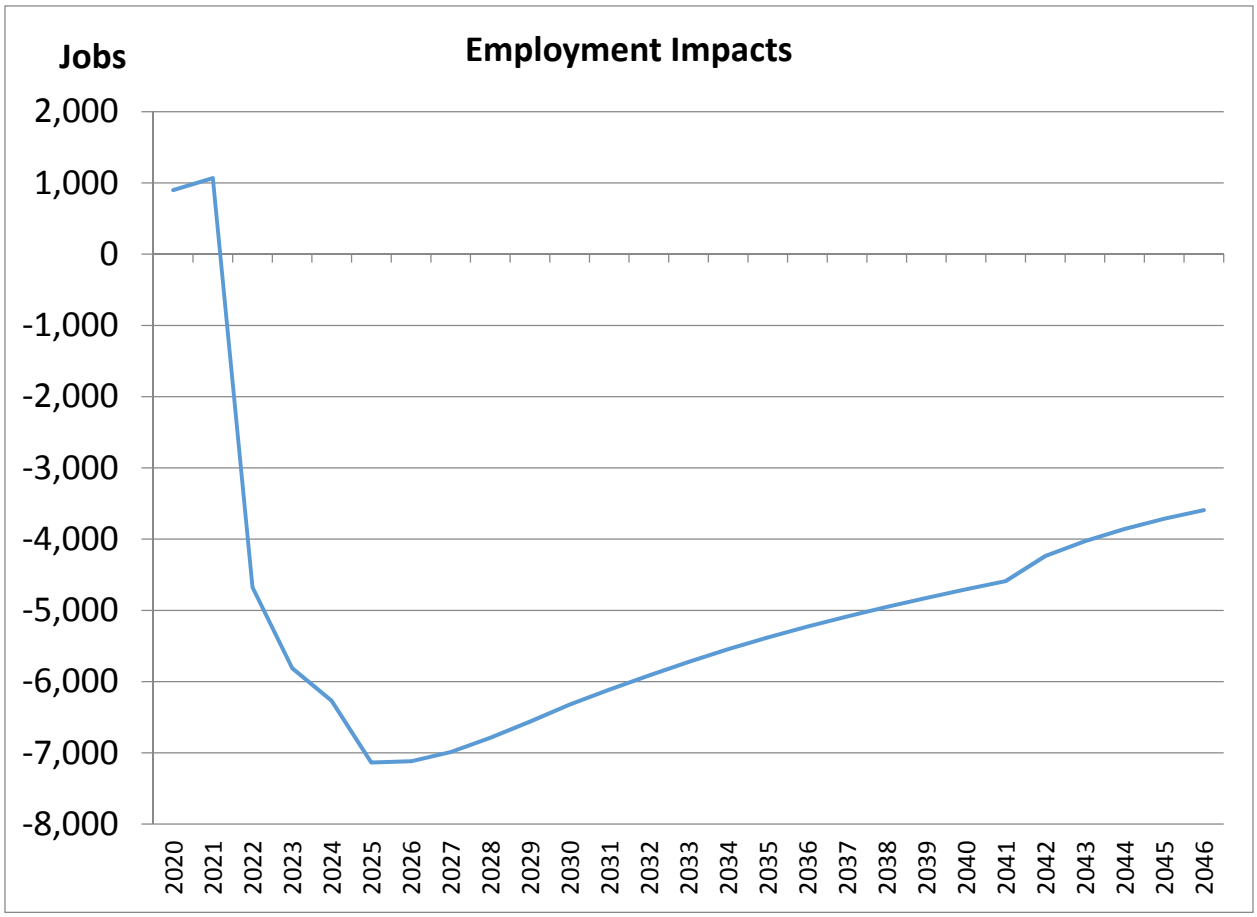
The relative size of these negative job impacts among industries comes about for several reasons. First, both utilities and mining are capital-intensive industries, and so the jobs lost understate the economic scale of the changes. The construction industry is just the opposite, with labor representing a large portion of total industry expenses. Declines in that industry come about – especially in the beginning of the compliance period – as the sudden decline in demand creates a situation where both residential and commercial stocks of capital are much higher than needed. Government job declines occur due to the significant declines in both population, which reduces demand for government services, and property tax and other tax revenues, which fund those services.



There is considerable variability in the impacts of the 111(d) compliance scenario over time, although for the entire period studied by BBER those impacts remain large. Before 2022 there are some positive impacts on the economy as construction projects for a new gas turbine, gas

pipeline and new transmission infrastructure that is necessary to serve Montana customers is underway. From 2022 forward, however, impacts are dominated by (i) the upstream and downstream impacts of the closure of Colstrip, as well as the facility's contribution itself, whose sizable economic contributions were noted in earlier research (Barkey and Polzin, 2010), (ii) the rate increases borne by Montana businesses and residents to pay for the significant new investment needed to provide replacement baseload generation, and (iii) the changes in electricity prices borne by all wholesale and retail purchasers of electrical power as market prices for merchant power move upwards.

Not all of the changes which are due to 111(d) produce negative impacts. The construction and operations of a 250 MW combined cycle combustion turbine, including building a new pipeline to serve its natural gas needs, the remediation activities at the Colstrip site, and even the reduction NorthWestern Energy's property tax bill from shedding generation assets that is partially passed to rate payers all result in some increases in economic activity. But the net result of all the changes, as is demonstrated above, is profoundly negative for every year studied after year 2022.



Other important findings of the economic impacts of 111 (d) include:

- With income of Montana households down by more than half a billion dollars per year due to the effect of 111(d), the spending power of Montanans as a group is significantly lower. The annual after-tax income of Montana households is lower in total by $440.6

million in year 2025 statewide.

- Compliance with the 111(d) final rule has a disproportionate impact on higher income jobs. The average earnings of the jobs lost in year 2025 is almost $66,000 per job, growing to nearly $80,000 per job (all dollar figures expressed in terms of 2015 spending power) by year 2045. This takes our state in the opposite direction we need to go to close the earnings gap with other states.

- The tax implications of 111 (d) compliance are significant, for at least two reasons. First, electric power generation and coal mining are capital intensive businesses, with a large footprint in the mix of taxable value as part of local property taxes. Also, the coal business contributes significantly to state tax receipts through severance taxes and lease payments. We estimate the decline in state and local tax and non-tax revenues due to 111(d) to be in excess of $145 million per year in 2025.

- The loss of jobs and job opportunities from implementation of 111(d) in Montana results in working age people leaving the state, taking their children and future children with them. The decline in school-aged population, particularly in smaller communities, could challenge the viability of schools. The population declines due to 111(d) peak at over 10,700 people overall, with school-aged populations declining by about 3,000.

The scale of these negative economic impacts can be seen by comparison with other economic events. The half billion dollar decline in personal income sustained in year 2025 due to the implementation of the Clean Power Plan in Montana is roughly half as large as the decline in personal income that occurred in 2009 in Montana as a result of the Great Recession. The loss in personal income due to 111(d) is greater than the total personal income of all but 12 Montana counties.

The question for many is, why are the impacts described here so sharply negative? We believe that there are several reasons that could be offered.

The first and perhaps the most obvious is that the operations of the Colstrip SES ultimately support a lot of economic activity across the state. That was the clear conclusion of the 2010 study, and those impacts are quite apparent in this analysis as well. In terms of economic activity, this facility – including the adjacent mine – is a powerful generator of wealth as well as electricity. Its purchases are dominated by a made-in-Montana product – coal – it is capital intensive and thus pays high wages, and it exports a high value product outside the state, thus bringing income from the spending of those outside Montana back to the state.

Closing that facility before the end of its productive life terminates those benefits. Bringing on new capacity – and paying for it – before the end of the old capacity's productive life entails higher costs than would otherwise be the case.

Another factor that is prominent in these results is what might be call the "terms of trade" between coal-fired generators and other sources of power generation. What replaces Colstrip has a much smaller economic footprint. Not only is the natural gas-fired 250 MW generator considered in this study much smaller from a capacity point of view, the number of jobs it supports is a tiny fraction of those supported by Colstrip. Part of this is due to the fuel and the technology – for example, there are no material-handling processes at work in a natural gas plant as there are for a coal-fired generator.

Finally there is the important role that the Colstrip generator plays in our state's power grid. Because of Colstrip, we have a high capacity 500 KV line that greatly facilitates the import and

export of power. Because of Colstrip, purchasers of power in the state see lower prices. Because of Colstrip, Montana has been a net exporter of electrical energy for more than 30 years. All of these advantages could be seriously challenged, if not reversed, in a future that complies with 111(d), and that is why the ultimate economic outcomes have turned out as described in this report.

The Direct Effects of the Clean Power Plan

Economic changes of the magnitude reported here come about because of the nature of the changes required as a result of the Clean Power Plan. It is useful to categorize these changes into three groups:

- Direct effects, which represent changes in income flows, tax payments, employment, and other spending resulting from closures or new investments conducted by power producers themselves to bring CO2 emissions rates into compliance;

- Indirect effects, or changes in non-utility businesses that are closely linked to generation activity (e.g., the Western Energy Company mine);

- Induced effects, which refer to the ultimate reaction of trade flows, investment, migration, and spending in the economy at large by consumers, businesses and governments as they respond to changes in sales, job opportunity and demand.

At the beginning of this causal chain are these direct effects -- the sequence of decisions and changes deemed necessary to comply with the final rule. While the state's plan has not been specified, the dominance of coal-fired generation in Montana's overall portfolio of generating assets, and 111(d)'s target of a 44 reduction by year 2030 in CO2 emission rates by year 2030 appears unachievable without closure of coal fired generation. The scenario we have analyzed in this study has three components:

- the premature retirement of generation and transmission assets;

  This includes the closure of units 1-4 of the Colstrip SES, which go offline in 2022, closure of the adjoining Western Energy Company coal mine, and the deactivation of the 500 KV transmission line west of Colstrip.

- construction and operation of new, gas-fired generation and transmission to serve Montana load;

  This includes the construction and operation of a 250 MW CCCT in Billings, with construction of a gas supply line to serve its gas needs and other connecting infrastructure, and the construction and operation of a new 230 KV transmission line between Three Forks and Great Falls.

- changes in regional/national electricity markets due to 111(d) implementation;

  Based on a NERA state-by-state analysis of the old, preliminary rule, we project that average electricity prices will go up by an average of 12 percent nationwide and by 16 percent for Montana.

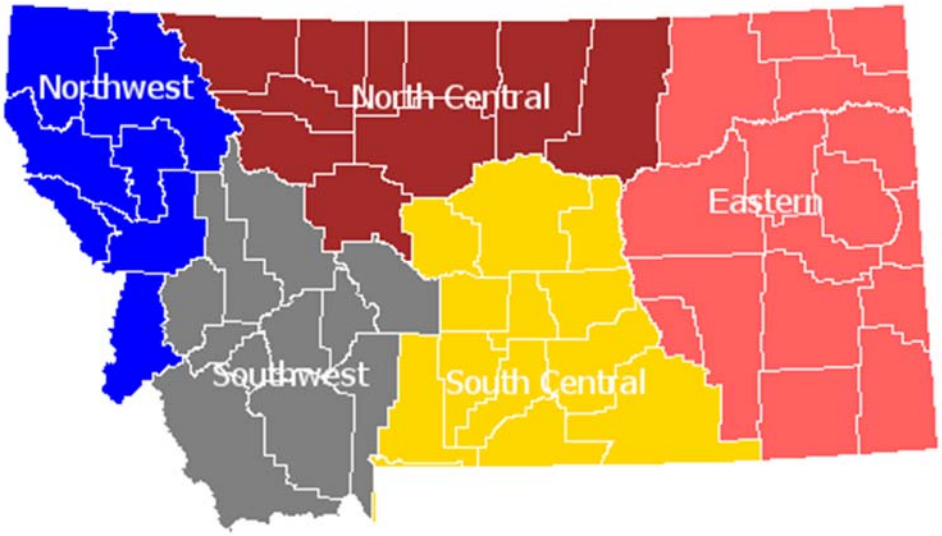
Compliance with 111(d) combines actions that have a disproportionate impact on eastern Montana (closure of Colstrip) with other changes that propagate statewide (loss of

property/severance tax revenues, increases in electricity prices). The results of this analysis reflect the nature of these direct impacts.

Estimates of Economic Impacts

The basic tool used in this study to assess the economic implications of 111(d) is an economic model, calibrated to represent the interactions in the Montana economy, leased from Regional Economic Models, Inc. The REMI model is one of the best known and most respected analytical tools in the policy analysis arena, and has been used in more than a hundred previous studies as well as dozens of peer-reviewed articles in scholarly journals. It is a state-of-the-art econometric forecasting model that incorporates dynamic feedbacks between economic and demographic variables. The REMI model forecasts employment, income, expenditures and populations for counties and regions based on a model containing over 100 stochastic and dynamic relationships as well as a number of identities. A full explanation of the design and operation of the model can be found in Treyz (1993).

The model used in this study disaggregated the state economy into five regions: Northwest, Southwest, North Central, South Central, and Eastern. It explicitly recognizes trade flows that exist between these regions, as well as between the regions and the rest of the world.



The model utilizes historical data on production, prices, trade flows, migration and technological change to calibrate the relationship between five basic blocks of the regional economy: output, labor and capital demand, population and labor force, wages and prices and market shares. The changes in production, labor demand and intermediate demand caused by the changes that occur due to 111(d) cause these blocks of the economy to react and adjust to a new equilibrium. As described above, the difference between the baseline and the alternate scenario is the ultimate impact of compliance with the Clean Power Plan.

The essential philosophy of the model is that regions throughout the country compete for investment, jobs, and people. When events occur in a region, they set off a chain reaction of changes where dollars flow towards better investment and production opportunities, followed over time by a flow of workers and households towards employment opportunities and higher wages. The model embodies an 82-sector input-output matrix that describes the technological

interdependence of production sectors of the economy, as well as extensive trade and capital flow data to determine the share of each sector's demand that can be met by local production.

Conclusion

This study reports on what could potentially be the largest economic event to occur in Montana in more than three decades. The sequence of events that would have to occur to bring the emission rates of Montana's electric generating facilities into compliance with the target rates called for in the EPA's Clean Power Plan – percentage reductions which are higher in Montana than any other state in the country – could exact a toll on economic activity in terms of jobs, income, sales, tax revenues and population. While these economic impacts would fall most heavily on eastern Montana, the nature of the changes required by the regulation as well as the changes in electricity prices overall would impose sizable negative impacts on all regions of the state.

Specifically, we find that the implementation of 111(d) in Montana as described in this report would

- result in the loss of more than 7,000 jobs in year 2025, which have average earnings per job of almost $66,000,
- impose a reduction of more than half a billion dollars in income received by Montana households, equal to half of the reduction suffered by the state in the Great Recession,
- result in a decline in sales by Montana businesses and other organizations of more than $1.5 billion, and
- cause a population loss of over 10,000 people due to changes in demand and job opportunity.

About the BBER

The Bureau of Business and Economic Research (BBER) was founded as the research arm of The University of Montana's School of Business Administration in 1948. As set forth in its mission statement,

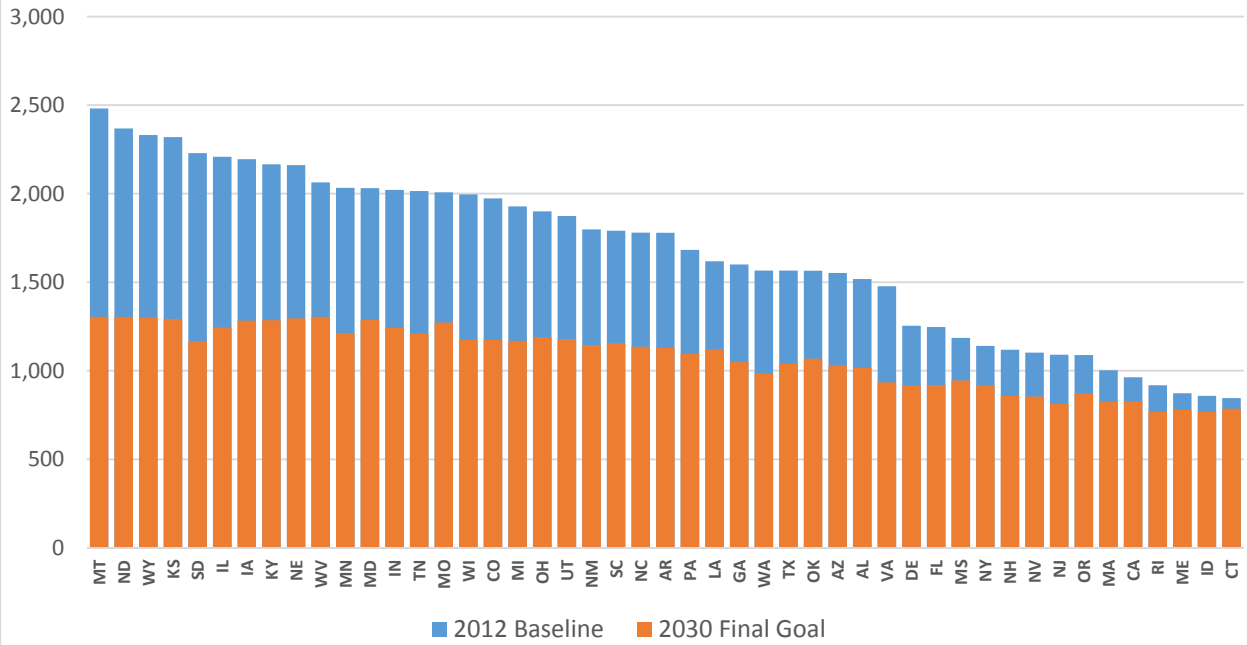
"The purpose of the Bureau is to serve the general public, as well as people in business, labor, and government, by providing an understanding of the economic environment in which Montanans live and work."

BBER has developed over the years to become one of the most sought-after sources of information and analysis on the Montana economy. It has published the Montana Business Quarterly, its award-winning business periodical, since 1962, and has conducted the Montana Poll, a quarterly sentiment survey of the Montana adult population, since 1980.

1. Introduction and Overview

On August 3, 2015, the U.S. Environmental Protection Agency announced its Final Rule for its Clean Power Plan aimed at reducing CO2 emission rates for electric generating units around the country. As was the case for its preliminary rule published in 2014, the Final Rule requires states to file plans with the EPA spelling out the actions they will take to achieve CO2 emission rates set forth in state-specific targets by the year 2030. However, in the Final Rule the emission rates goals for the states have undergone significant revision. That has greatly complicated the task of complying with the Rule – referred to as "111(d)" for the section of the Clean Air Act cited as the authority for EPA's actions -- for Montana.

Figure 1.1 Emission Targets Relative to Baseline (lbs/MWh)



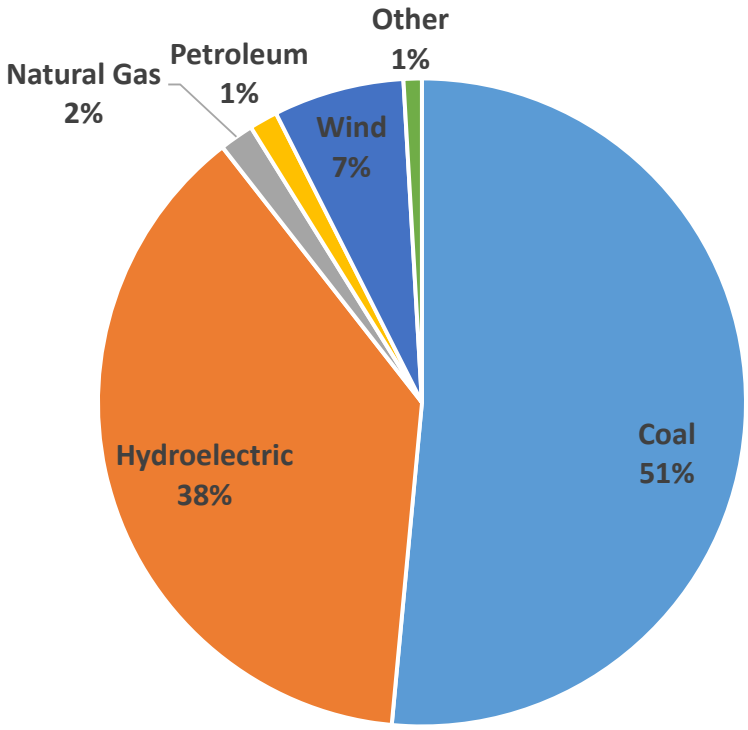
Source: U.S. Environmental Protection Agency

The implementation of 111(d) in Montana will require a larger percentage reduction in CO2 emission rates – comparing 2030 targets to the 2012 baseline – than any other state. Measuring the pounds of CO2 emissions from fossil fuel power plants per MWH of electrical generation puts Montana's 2012 emissions at 2,481 lbs./MWH, as shown in Figure 1.1. Compared to a status quo projection of 2,314 lbs./MWH for year 2020, meeting the goal of 1,305 lbs./MWH for the eight year compliance period commencing in year 2022 will require a 44 percent reduction in emissions. This is more than twice as large as the reduction of 21 percent that was set for Montana's emission rates in the preliminary rule.

The revision largely came about due to changes in the methodology used to calculate each state's emission target as well as a reformulation of baseline emission rates. The effect of these changes has been to give credit to states for actions already taken to reduce emissions, while requiring larger reductions from coal-dependent states who have kept their facilities in

operation. As shown in Figure 1.1, the required reductions are large for Montana, North Dakota and Wyoming which primarily depend on coal. States which have already retired coal plants got some credit in the Final Rule's computations, which resulted in a smaller required reduction in CO2 emission rates in places like Washington and California when compared to what was previously published.

Figure 1.2 Electricity Generation by Energy Source, Montana



Note: Data are for year 2013
Source: U.S. Energy Information Administration

Montana's Compliance Options

The large revision in Montana's required CO2 emission reduction has narrowed the choice set for compliance for our state. In the fall of 2014 a "white paper" analysis of the preliminary rule by the Montana Department of Environmental Quality was able to consider a list of compliance options that did not require the closure of the Colstrip SES. That analysis is no longer applicable in light of the revised rule.

To understand what options do exist we must first consider Montana's current power generation portfolio, shown in Figure 1.2 for the year 2013. Our fossil fuel-based generation is almost entirely based on coal. In 2013 almost 95 percent of fossil fuel-based electricity was generated with coal.

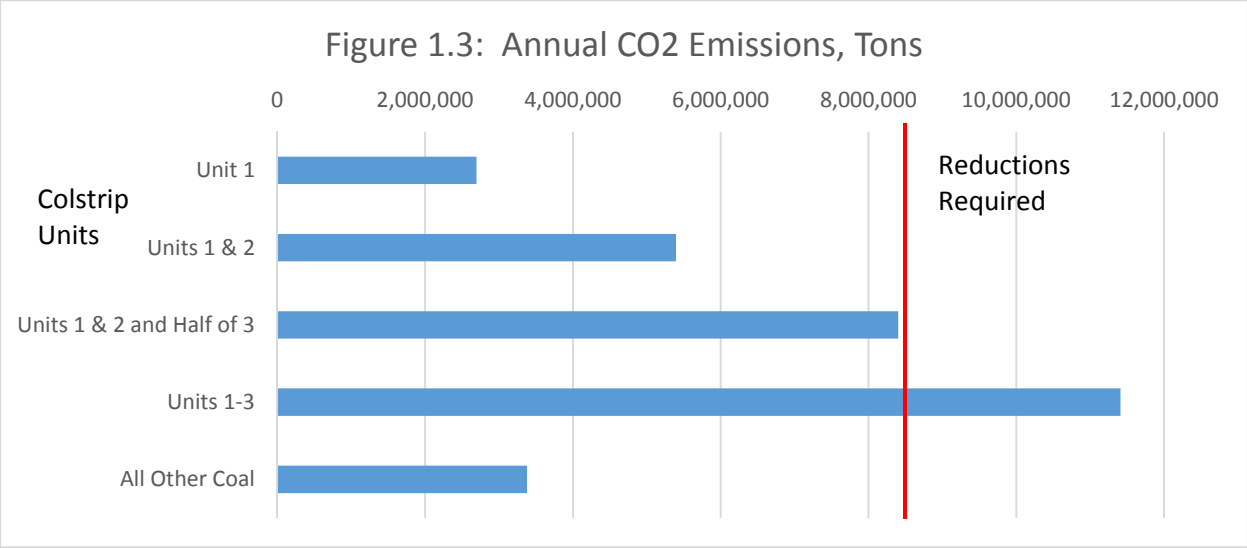
The Clean Power Plan presents states with two possible paths to compliance for existing fossil fuel-based generation facilities. Under the rate-based option, states must reduce (typically) the rate of CO2 emissions, expressed in pounds of CO2 per megawatt hour. On this basis,

Montana's target for compliance is 1,305 lbs. per MWH by year 2030, which is a 47 percent reduction from EPA's 2012 adjusted baseline rate for Montana of 2,481 lbs. per MWH.

Under current technology, achieving the target CO2 emission rate to meet the 111(d) goal at existing generating facilities remains technically and economically infeasible. Retiring coal-based units here also does very little to affect the overall emissions rate for the state, since doing so lowers both the numerator and the denominator of this fraction.

Montana's path to compliance will be based on pursuing the second path to compliance offered within 111(d), which is based on meeting a mass-based CO2 standard. That standard is to emit a maximum of 11,303,107 tons of CO2 in year 2030. Meeting this target would require a 41 percent reduction compared to the EPA's adjusted baseline for 2012.

To assess the scale of that challenge, consider the emissions of the current coal generators in the state shown in Figure 1.3. Those CO2 emissions represent an average annual emissions that are based on emissions data for 1998-2014. The individual units of the Colstrip SES are shown separately. The state's other, smaller coal-fired generators – Corrette (now decommissioned), Lewis & Clark, CELP, Yellowstone, and Hardin – are shown as a group.



Compared to the emissions data shown in the figure, the 111(d) mass-based target represents a required reduction of 8.5 million tons of CO2. It is apparent that the emissions reductions realized by closing Units 1 and 2 of Colstrip would not be large enough to achieve the reductions in CO2 required by 111(d). Taking the additional step of reducing, say, Unit 3 of that facility to half power, with some small adjustments to other coal plants statewide, would be required.

Given the ownership structure of the Colstrip facility, as well as the operating and economic parameters of the facility as a whole, the partial operation described above to achieve compliance could be difficult to accomplish, since all of the fixed costs of the facility would be borne by a smaller revenue stream.

These numerical allocations of CO2 emissions to individual generators are only instructive to give a perspective on the scale of Montana's compliance challenge. What will be more controlling are the actual policy decisions left to be made, and the opportunities might arise to purchase emissions credits from other states. Which coal-fired generation units will remain in

operation after 2022 will depend on how Montana allocates its emission credits to individual facilities.

Another uncertainty that arises in formulating a compliance scenario is the potential of purchasing emissions credits from other states. 111(d) could allow states whose emissions are below their targets to sell the rights to their unused emission credits to states like Montana that emit CO2 above their threshold. These transactions would occur on an exchange where prices would be set by supply and demand.

While this mechanism is appealing as an idea to reduce the costs of complying with the regulation, its uncertainties do not mesh well with realities of the power system's planning and operation. Given the fairly long lead times needed to complete the planning and building of generating facilities, transmission lines and other system infrastructure, the information that credits might be available in the future is difficult to integrate in the decision process. That is particularly so when the quantity and price of those credits is also unknown.

For these reasons, this study examines the consequences for a compliance scenario to 111(d) that includes the closure of the Colstrip facility. We do not present this scenario as a forecast of what will actually occur to comply with the regulation. But the size of the Montana's CO2 emissions that must occur under 111(d), and the considerable uncertainty attached to options that might head off its complete closure make the approach taken in this study of the economic consequences timely and relevant.

The Focus of This Study

To understand what the Clean Power Plan means for the Montana economy, we present a sequence of actions that can be taken that (i) comply with the rule and (ii) meet the energy needs of Montanans. This study focuses on the economic implications of such a compliance scenario. Other scenarios are certainly possible, but each should be subject to the same level of analysis and meet the same criteria before being compared to this one.

This study does not render an opinion on the efficacy of the Clean Power Plan nor do the authors advocate for a particular compliance scenario. Rather, we estimate the economic impact of a scenario in which the main emission reducing mechanism is the closure of Colstrip SES. As discussed in the next section, this closure is part of a sequence of actions that would address both 111(d) compliance as well as the continued operations of power delivery to customers.

The Colstrip plant is a significant driver of economic activity in Montana. It supplies approximately 2,300 MW of relatively inexpensive power necessary to meet peak days, and reduces rates for Montanan's directly but also through Montana's status as a net energy exporter – Montana has the 12th lowest electricity price in the country when averaged across all sectors. Colstrip also provides employment, pays property taxes, and supports transmission infrastructure as well as coal mining operations. Those, in turn, support employment, income and tax revenue across the state.

The report proceeds as follows: below we describe the compliance scenario under study and describe what implementation of 111(d) could look like for Montana. In section three we introduce our analytic framework and policy analysis with the REMI model. We then present results of the economic impacts of the Clean Power Plan, followed by summary and conclusions. A full set of tables with greater detail on the analytical results is presented in Appendix A.

2. Implementation of the Clean Power Plan in Montana

States are required to file compliance plans with the EPA detailing the actions they will take to meet the goals set forth in the plan by 2016, with an opportunity to apply for an extension to 2018. While Montana's actual plan is not yet available, the size of the CO2 emission rate reductions mandated by 111(d), and the limited opportunities to secure reductions on that scale, make the broad characteristics of whatever final plan is adopted apparent. We detail in this section of the report a 111(d) scenario that (a) complies with the requirements of the regulation, and (b) continues to provide Montana businesses, households, and other organizations with reliable electric power.

Our objective in formulating a 111(d) compliance scenario for Montana is to broadly characterize, in terms of investments, spending, and other economic changes, how compliance with the regulation will affect economic activity. The requirements of performing this economic projection fall considerably short of those involved with generation and transmission planning. The kind of power dispatch simulations over a broad choice set of resources that is involved with those processes was not conducted for this study. Rather, we have employed a top level assessment of the kind of capital and operating costs that would characterize any investment in new base load generation and transmission that might be necessitated by changes imposed by the regulation.

Unless low-cost emissions allowances credits become available in sufficient quantity, any compliance scenario for 111(d) in Montana will have two basic components:

- The retirement of existing coal-fired electric generating units, and
- The construction and operation of new generation to meet customer needs while conforming with the regulation.

While compliance and non-compliance are based on CO2 emission rates, which are associated with power generation, it is important to note that changes in generation plans can have profound impacts upstream (fuel supply) and downstream (transmission). Those changes are modeled as part of the scenarios. It must also be noted that the implementation of the Clean Power Plan in Montana is not occurring in a vacuum – the regulation is also taking effect in every other state. This has implications for regional wholesale electricity markets for buyers and sellers here.

The Compliance Scenario – Retirement of Coal-Fired Generation

Montana's compliance with 111(d) will come about through the mass-based option offered in the Final Rule, requiring a reduction in total CO2 emissions of approximately 8.5 million tons annually. As discussed in the previous section, this is a 41 percent reduction from EPA's calculation of its adjusted baseline in 2012. Given that there is only a small amount of natural gas-fired generation in the state, Montana's baseline CO2 emission rate per MWH from fossil fuel sources is nearly equal to that of its coal-fired generation units alone.

Such a sizable decline raises the possibility of the closure of all or part of the coal-fired Colstrip Steam Electric Station in southeast Montana, by far the largest generator of electricity in Montana and the largest industrial facility in the state. The four units of the Colstrip plant are operated by Talen Energy, and are jointly owned by Talen, NorthWestern Energy, Puget Sound Energy, Portland General Electric, Avista Corporation, and PacifiCorp. The plant is fueled by

Powder River Basin coal transported by conveyor from the adjacent Rosebud coal mine, owned and operated by Western Energy Company.

As a response to the mandate to reduce CO2 emissions under 111(d), we analyze the following scenario:

i. The closure of units 1-4 of the Colstrip SES, beginning in year 2022.

   While the closure of units 1-2 and a partial shutdown of 3 would reduce CO2 emissions by the goal set for Montana in 111(d), the operation of one and a half units in a stand-alone configuration would not be economically feasible, since the fixed cost of the entire remaining facility would rise significantly in proportion to total revenues.

ii. The closure of the adjacent Rosebud mine, commencing in 2022.

   The mine has no competitive access to transportation to sell its product to other power generators who, in any event, are pressed by 111(d) to shift away from coal.

iii. The teardown and remediation of both sites.

iv. The loss to the Colstrip owners measured as the book value of the undepreciated capital it represents on the date of its closure.

v. The closure and decommissioning of the 500 KV transmission line used to transport Colstrip power to customers outside Montana.

   The capacity of this line would be greatly diminished by the loss of the Colstrip base load generation. The closure of the Bonneville Power Authority's segment of the line west of Garrison in the event of a closure of Colstrip is specified in the operating agreement between BPA and Colstrip owners.

Discussion

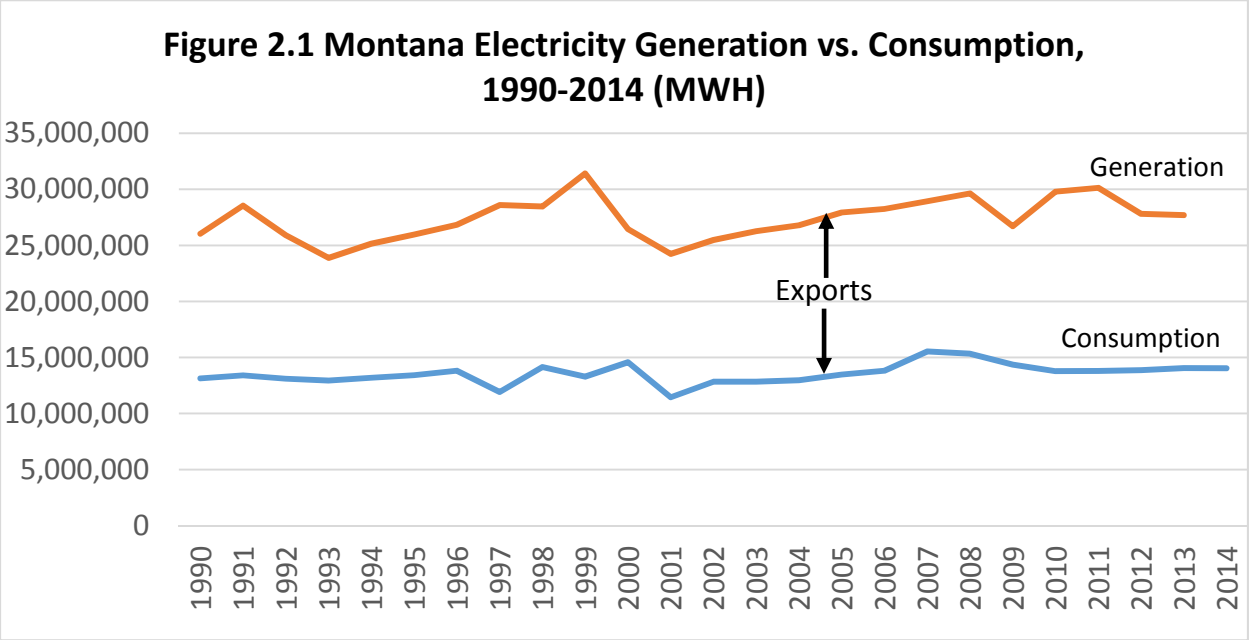
The mechanisms through which these changes work through the Montana economy are varied. The first is the loss of jobs and production at the facilities themselves. The Colstrip SES employs 370 full time workers in addition to the contractors who perform scheduled maintenance and other functions. The Rosebud mine produces 9.2 million tons of coal annually, employing 390 workers and paying $32 million in production-related taxes to the state of Montana each year.

These continuing economic contributions of the Colstrip SES, which was constructed in the 1970's and 1980's, were documented in a previous study (2010). Those contributions would be lost as part of the actions required to comply with 111(d). Those losses are reflected in the economic impacts reported in the next section.

Unlike the 2010 study, however, this research examines a scenario where the Colstrip facility is retired and torn down. There is economic activity generated as the site is remediated, which is estimated to be a $200 million project. When that activity is over, however, the city of Colstrip loses the $18.7 million in annual property tax revenue from the facility.

We also consider the downstream impacts from the Colstrip closure. As noted above, the 500 KV transmission line used to export power is lost. This greatly diminishes Montana's capacity to

export and import power. Montana loses 222 MW of baseload generation, which is NorthWestern Energy's ownership share of Unit 4 of Colstrip. (Replacement of that capacity is discussed below).



Source: U.S. Energy Information Administration

Overall, Montana loses approximately 2,300 MW of generation capacity, which has important implications for the cities, coops, and larger commercial and industrial customers who currently secure their power on the wholesale market from merchant power providers such as Talen Energy. It also impacts power purchases by NorthWestern Energy with consequent impacts on its customers.

Montana's historical status as a net exporter of electrical energy has benefitted consumers in several ways. First, large customers in Montana who purchase power directly from merchant power producers can largely avoid the transmission costs customers in other states pay to transport their power from the Northwest regional wholesale delivery point on the Columbia River in central Washington (referred to as "mid-C"). This is because the power source is Colstrip – either as a direct transaction, or as part of a power "swap" post-sale that substitutes the geographically closer Colstrip power with another buyer in the region.

In the 111(d) compliance scenario considered here, Montana's status as an energy exporter would end, and the capacity to make these transactions would be lost. Larger customers accustomed to getting discounts on their energy purchases relative to the mid-C delivery price would instead pay a premium reflecting the additional transmission costs to bring their power east. The swing from discount to premium could increase prices by as much as 15-20 percent.

The Compliance Scenario – Replacement Generation

The loss of Colstrip would have important implications for the availability and reliability of electric power delivery to customers in Montana. Not only is a source of baseload generation dedicated to Montana customers lost – NorthWestern Energy's share of Colstrip Unit 4 – but there would be serious imbalances on the transmission system that would make the probability of

destructive events unacceptably high. Thus another part of the 111(d) compliance scenario is the construction and operation of new generation and transmission to restore the system to its pre-111(d) state in meeting customer demand.

We emphasize again that the scenario here is not the result of the extensive modelling, simulation, or operating and dispatching analysis that would be conducted as part of generation and transmission planning. The scenario is intended to characterize the investments necessary to meet customers' electric power needs while complying with the CO2 emission mandates of 111(d).

We analyze a scenario for replacement generation with the following investments:

i. A new natural gas-fired 250 MW combined cycle combustion turbine to be located in Billings.

   This generator is sized to replace the Montana-dedicated capacity lost with the closure of Colstrip. Its location in Billings reflects the need for voltage support in that area, the costs of connecting to the transmission system and the costs of obtaining the firm fuel supply for the unit.

ii. The construction and operation of a 75-mile pipeline from Billings south to the Grizzly connection point to the Colorado Interstate Gas Company's system to supply natural gas to the new generator.

   This is necessary because there is not firm pipeline capacity available on the existing gas transmission system.

iii. A new 230 KV transmission line between Great Falls and Three Forks (135 miles) to support current needs and obligations.

   This new transmission line is necessary to offset the deleterious effects of the loss of both the coal-fired base generation at Colstrip as well as the 500 KV Colstrip transmission line.

iv. Other infrastructure support investments.

Alternative Scenario Formulation

Other scenarios of replacement generation to supplant all or part of the baseload generation dedicated to Montana customers that is removed from the system with the retirement of Colstrip were considered for this study. Of particular interest, given the objectives of 111(d) to reduce greenhouse gas emissions, were generation options that involve renewables, especially wind and solar power. Given the dramatic growth in the share of wind-powered generation in the power generation portfolios of many states, including Montana, exploration of this option was pursued.

In the spirit of the logic that was used to frame the natural gas-based generation scenario described above, a wind-power generation scenario was expected to (i) meet the standard for CO2 emission compliance set forth in 111(d), and (ii) restore the power delivery system to the level of reliability that exists today. The fact that these efforts ultimately failed, and that we were not able to design a wind power-based option that presented a reasonable option that met these

criteria was largely due to the nature or type of power that is lost in baseload generation at Colstrip.

It is well known that the intermittency of the output of wind generation in actual applications presents challenges to management of power delivery systems. The presence of an intermittent generation source such as wind or solar requires that other dispatchable generators, such as diesel powered internal combustion units or natural gas-fired regulator units, operate in close coordination in order to smooth out the variations in power.

The application of wind power in the setting of this study is particularly demanding. The resource which is lost in a 111(d) compliance scenario for Montana is baseload, coal-fired generation. Not only is the percentage of time which these units operate at full output – referred to as the capacity factor – very high (typically 85 percent), but their availability in the hours of peak or super-peak demand on the system caused by extreme weather or other conditions, remains unchanged. Not only is wind power's capacity much lower, typically 40 percent or less, but its capacity during peak hours is a nearly negligible 3 percent.

Thus in designing a wind scenario that would truly represent a replacement option for the baseload generation dedicated to Montana that is lost at Colstrip, we have three basic options:

- add wind generation to the natural gas CCCT option described above,
- consider a very large addition – more than 2000 MW – to wind generation capacity that could pass the criteria of restoring the system to the pre-111(d) level of reliability and performance, or
- consider a hybrid natural gas/wind option that could be said to make the same contribution to Montana's power system as what would be lost in order to comply with 111(d).

Doing something different than what is laid out above – e.g., considering a wind-power option that does not replace the baseload generation lost to Montana from the retirement of Colstrip – cannot be said to be a replacement scenario as defined in this study.

It is readily apparent that the first two of these basic options are not attractive. Simply adding wind power generation to the natural gas CCCT scenario adds capital costs with little gain to the economy. The very large wind farm described in the second option fails on practical and economy grounds. Not only would the land area for such a facility be enormous, but its capital costs – in the neighborhood of $4 billion – make it infeasible as well.

The third option – a hybrid natural gas/wind option that presents the power delivery system with the equivalent in baseload generation to what is lost with the retirement of Colstrip – is challenged by economic considerations. From a technical perspective this is accomplished by building and operating quick-start, rapid ramp-up/ramp-down fossil-fueled generators that smooth the fluctuations in wind-power generation. Not only does the pattern of operation of these natural gas or diesel-fired units frequently conflict with a pattern that would optimize their heat rate and thus conform to lowest cost operation, but their addition to the wind farm's capital costs pushes the overall capital cost of the hybrid facility to levels that are uncompetitive with other options.

For these reasons, the study does not include a wind-power based option as part of a feasible 111(d) compliance scenario.

Discussion

The two major components of this compliance scenario present power producers in Montana (and in many cases, ratepayers) with a sizable price tag to get back to a situation of power supply that is acceptably close to what we have today. Part of that price tag comes from prematurely retiring assets of sizable value, and another is the cost of the replacement investments.

Top level estimates of the cost of carrying out the investments above are as follows:

i. New CCCT in Billings, $275 million

ii. New pipeline, including compressor station, $67.4 million

iii. New 230 KV line, $106 million

iv. Other infrastructure, $25 million

We consider a scenario where these investments come online in the beginning of 2022. To say this is aggressive would be an understatement. As NorthWestern Energy's experience with the now-abandoned MISTI project in central Montana demonstrates, the siting and permitting of new transmission lines is extremely difficult to carry out in a timely manner. It would likely true of the new gas supply line for the Billings CCCT, or a new 230 KV transmission line as well.

There are positive economic impacts that occur from carrying out these projects. Those impacts show up in the regions of the state that see new construction. There is also a positive impact of the continued operations of the Billings CCCT. These impacts are offset by the sizable rate increases passed to NorthWestern residential and commercial customers to pay for the new capacity.

However, it must be recognized that the economic footprint of a natural gas generating facility, and in particular one that is a tenth of the size of the coal-fired generation being retired, is quite limited. Based on operating information from other facilities currently online, we project employment at the generator to be 18 people. This is in stark contrast to the 370 Talen employees working at Colstrip and the 390 workers at the adjacent Rosebud mine.

3. Policy Analysis with the REMI Model

Economic impacts occur because of events or activities that affect expenditures. Changes in spending which are new and do not simply displace spending elsewhere in the region impacts economic activity directly but also affects downstream spending as the recipients of wages, sales and tax revenues reapportion their income in the local economy. Changes in the path of investment, migration, and prices and wages are possible as well.

The basic tool used in this study to assess the economic implications of 111(d) is an economic model, calibrated to represent the interactions in the Montana economy, leased from Regional Economic Models, Inc. (REMI). The REMI model is one of the best known and most respected analytical tools in the policy analysis arena, and has been used in more than a hundred previous studies as well as dozens of peer-reviewed articles in scholarly journals. It is a state-of-the-art econometric forecasting model that incorporates dynamic feedbacks between economic and demographic variables. The REMI model forecasts employment, income, expenditures and populations for counties and regions based on a model containing over 100 statistically estimated behavioral and dynamic relationships as well as a number of identities. A full explanation of the design and operation of the model can be found in Treyz (1988).

The model used in this study disaggregated the state economy into five regions: Northwest, Southwest, North Central, South Central, and Eastern. It explicitly recognizes trade flows that exist between these regions, as well as between the regions and the rest of the world. The definition of the regions is shown in Figure 3.1 below.

Figure 3.1
Economic Regions

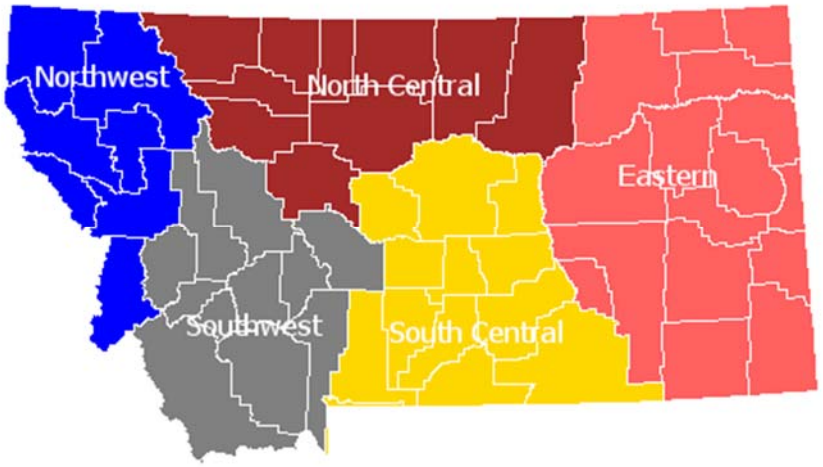
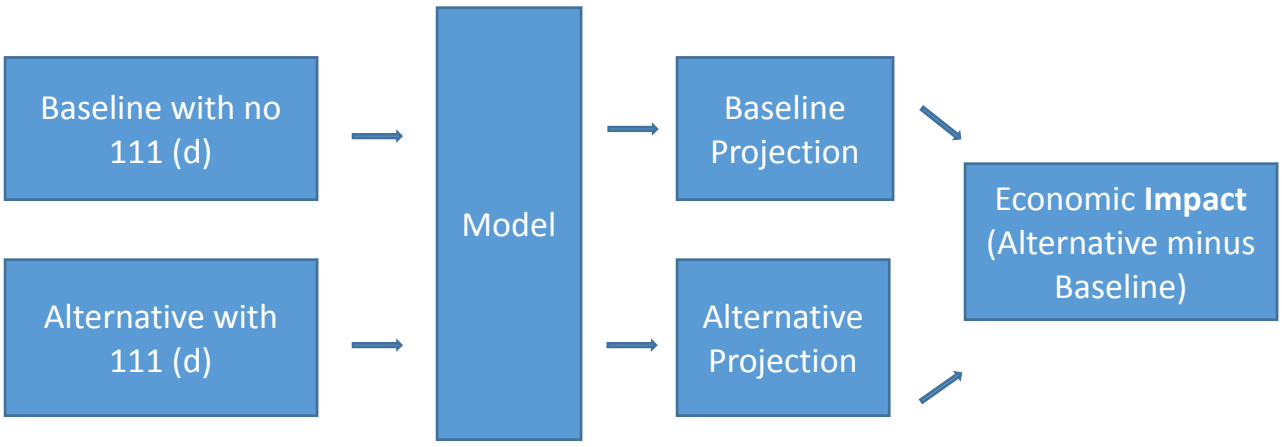
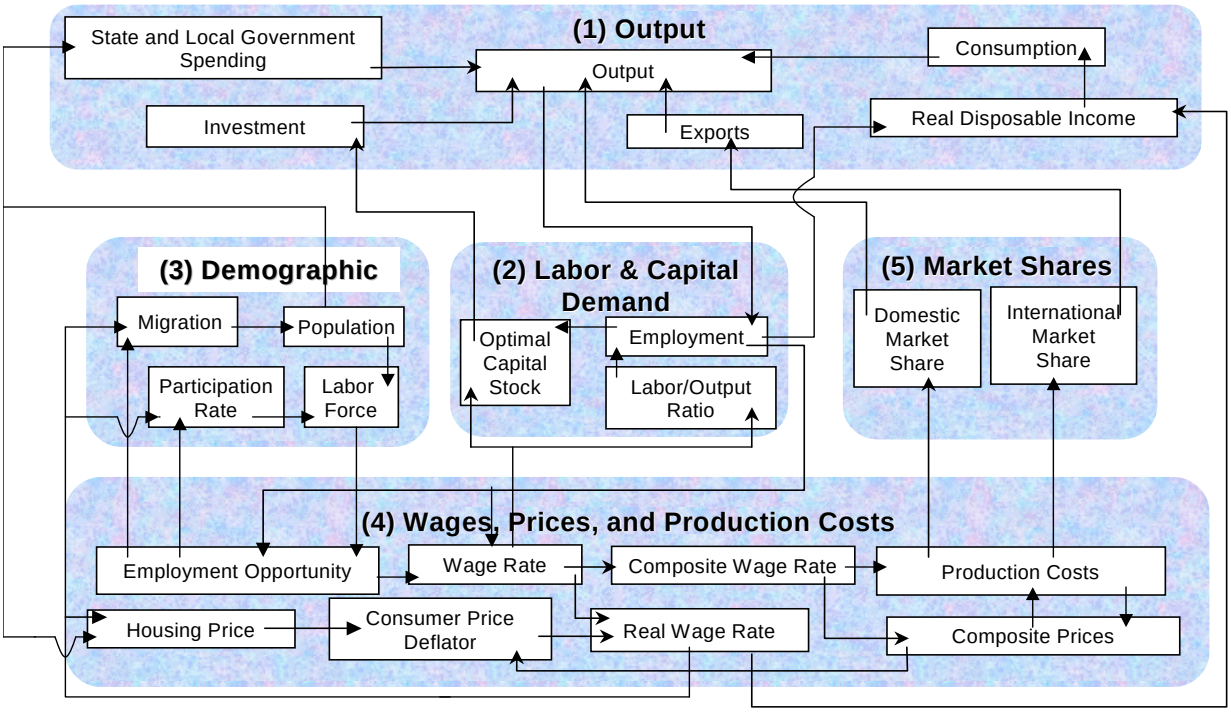


Figure 3.2: Policy Analysis with the REMI Model



The use of the model to derive the results of this study is illustrated graphically in Figure 3.2. First, a baseline projection of the economy is produced using the model, utilizing inputs and assumptions which extrapolate growth and conditions of recent history. The model is then used a second time, with identical inputs – except that in this alternative scenario, the changes that occur due to 111(d) are added. Thus the actions taken to comply with the regulation are inputs that ultimately produces a different economy, reflecting not only the direct effects in production, employment, and expenditures due to the policy, but also how the rest of the economy reacts to those changes. The difference between the baseline and alternative scenarios of the economy represents the economic impact of those compliance actions.

REMI Model Linkages (Excluding Economic Geography Linkages)



The model utilizes historical data on production, prices, trade flows, migration and technological change to calibrate the relationship between five basic blocks of the regional economy as depicted above: output, labor and capital demand, population and labor force, wages and prices and market shares. The changes in production, labor demand and intermediate demand caused by the changes that occur due to 111(d) causes these blocks of the economy to react and adjust to a new equilibrium. As described above, the difference between the baseline and the alternate scenario is the ultimate impact of actions taken to comply with the Clean Power Plan.

The essential philosophy of the model is that regions throughout the country compete for investment, jobs, and people. When events occur in a region, they set off a chain reaction of actions where dollars flow towards better investment and production opportunities, followed over time by a flow of workers and households towards employment opportunities and higher wages. The model embodies an 82-sector input-output matrix that describes the technological interdependence of production sectors of the economy, as well as extensive trade and capital flow data to determine the share of each sector's demand that can be met by local production.

The model is extremely well suited for the analysis described in this report. As seen in several of the energy studies listed in the references section, it has been used for similar analyses of energy-related investment and opportunities.

As powerful and flexible as the model is, the answers it provides are only as good as the questions posed to it. The majority of work in this study is carefully crafting the inputs used to construct a scenario of the Montana economy that reflects compliance with the Clean Power Plan. We now turn to the findings of the analysis.

4. The Economic Impacts of the Clean Power Plan in Montana

The purpose of this study is to gain an understanding of the potential implications of the EPA's Clean Power Plan for the Montana economy. This ultimately involves comparing the outcomes for the economy in a baseline, status quo, no 111(d) scenario, to how the economy would evolve when the actions necessary to comply with the are in force. We have used the well-respected REMI model, described in the previous section, to conduct the analysis.

Even though the results we present here specify economic outcomes at points of time in the future, they do not constitute a forecast of the economy, for at least three reasons. First, the precise set of actions that Montana will take to comply with 111(d) are not yet known. The state has until year 2016 to file its plan. Secondly, any number of legal and political events could occur to alter, delay, or even cancel the Plan itself. Finally, the practical difficulties in siting, permitting, and building the new infrastructure involved in replacing the power generation and transmission capacity that is lost in order to comply with 111(d) make it highly unlikely that such facilities could be completed and made operational according to the timetable specified in this analysis.

Yet the findings of this analysis remain extremely relevant. They have a direct bearing on the research question: what kind of event would the implementation of 111(d) be for the Montana economy? Our scenario of 111(d) compliance presented in section 2 of this report may differ in some respects to the actions Montana will take, but the basic components of any compliance plan – the reductions in all or part of the coal-fired generation at Colstrip and the investment in new capacity to replace what is lost – are well captured by the scenario we analyze. Carrying these actions through to assess their economic impact thus sheds light on what kinds of changes in the economy we can expect.

Summary of Findings

We have analyzed a specific scenario of compliance with 111(d) that complies with the rule and retains capacity and reliability. It is in conformance with the rule, which requires changes in existing facilities by the year 2022, and reductions in CO2 emission rates in conformance with the targets over the subsequent 8 year period. It provides for new generation and other infrastructure that replaces power that is currently supplied at facilities that would be shutdown, decommissioned, and remediated to conform with 111(d). And it reflects third-party projections of price changes that would result as the targets set by 111(d) come into effect regionally and nationally.

The BBER used its economic model, leased from Regional Economic Models, Inc. (REMI), and specifically calibrated to the Montana economy, to project two economic futures for our state. The first is a reference, status quo projection. The second is a projection of a future under compliance with 111(d). This future reflects a complete set of actions that would comply with the final rule, as well as changes in wholesale and retail electricity markets that result. These changes bring the economy to a different, lower, resting point as investment flows, population, and spending by businesses, governments and households respond.

Table 4.1 Summary of Impacts

Impacts Summary				
		Impacts by Year		
Category	**Units**	**2025**	**2035**	**2045**
Total Employment	Jobs	-7,137	-5,381	-3,715
Personal Income	$ Mill./Year	-515.9	-556.3	-482.2
Disposable Pers. Income	$ Mill./Year	-440.6	-481.2	-417.7
Selected State Revenues	$ Mill./Year	-145.6	-165.8	-152.0
Property Tax Revenues	$ Mill./Year	-44.4	-74.5	-78.5
Output	$ Mill./Year	-1,511.7	-1,407.4	-1,268.0
Population	People	-5,211	-10,731	-9,207

The difference between these two economic futures measures the economic impact of actions taken to comply with 111(d) in Montana. As shown in the Table 4.1, the impact of implementation is a significant loss to the state economy of jobs, income, output, tax revenues and population. By the year 2025, three years after the reductions in CO2 emissions commence, we project that the state:

- suffers a job loss of more than 7,100 jobs, reflecting not only the regular and contractor jobs at all four units of the Colstrip generation facility, but also the neighboring coal mine, as well as the local government jobs supported by the significant property tax bills those facilities pay, and all of the changes elsewhere in the economy that result from those losses;

- incurs a loss of over $500 million in annual income received by Montana households which is made larger by the fact that the jobs lost due to 111(d) pay well in excess of the Montana average;

- realizes a loss of more than $1.5 billion in gross output (sales) by Montana businesses and other organizations, as Montana swings from being a state with significant energy exports to a state that must rely on imported power from other states and regions in periods of heavy load or during generation curtailments;

- ultimately realizes a decline in population, particularly in working-aged families and their children, as economic opportunities in our state worsen relative to other states.

These changes in the economy reflect both positive and negative changes in the economy that are due to steps to comply with 111(d). For example, the construction activity in building new generation, a new gas supply pipeline and the new transmission line, the operation of those facilities, and even the jobs created in remediating the Colstrip site, all add to the state

economy. Capital and other costs incurred by NorthWestern Energy will ultimately show up in electric rates, although those will be spread out over a longer span of years.

But clearly the single largest negative outcome in 111(d) compliance is the cessation of generation at the Colstrip SES, which precipitates the closure of the Western Electric Company's Rosebud Mine. The 2010 study on the continuing contributions of the Colstrip SES estimated that about 3,600 jobs statewide were ultimately supported by that facilities operations. These losses figure prominently in the findings of this study as well.

The sequence of events that would occur with the closure of Colstrip, however, adds to these impacts. With the loss of the 500 KV transmission line running west from Colstrip comes the loss of property tax revenue to the jurisdictions it traverses, and also a reduction in the ability of Montana to both import and export power. This is one of several factors that will push up electric rates in the 111(d) scenario. The others include: (i) rate increases passed to NorthWestern Energy residential and commercial customers to pay for the new generation and transmission capacity required to replace the portion of Colstrip SES output dedicated to Montana customers, (ii) an increase in market prices paid by those who access wholesale power markets reflecting the increased costs of transporting the power they purchase from outside Montana, and (iii) the change in the marketplace in the entire Northwest region, reflecting closure of coal-fired plants targeted by the regulation.

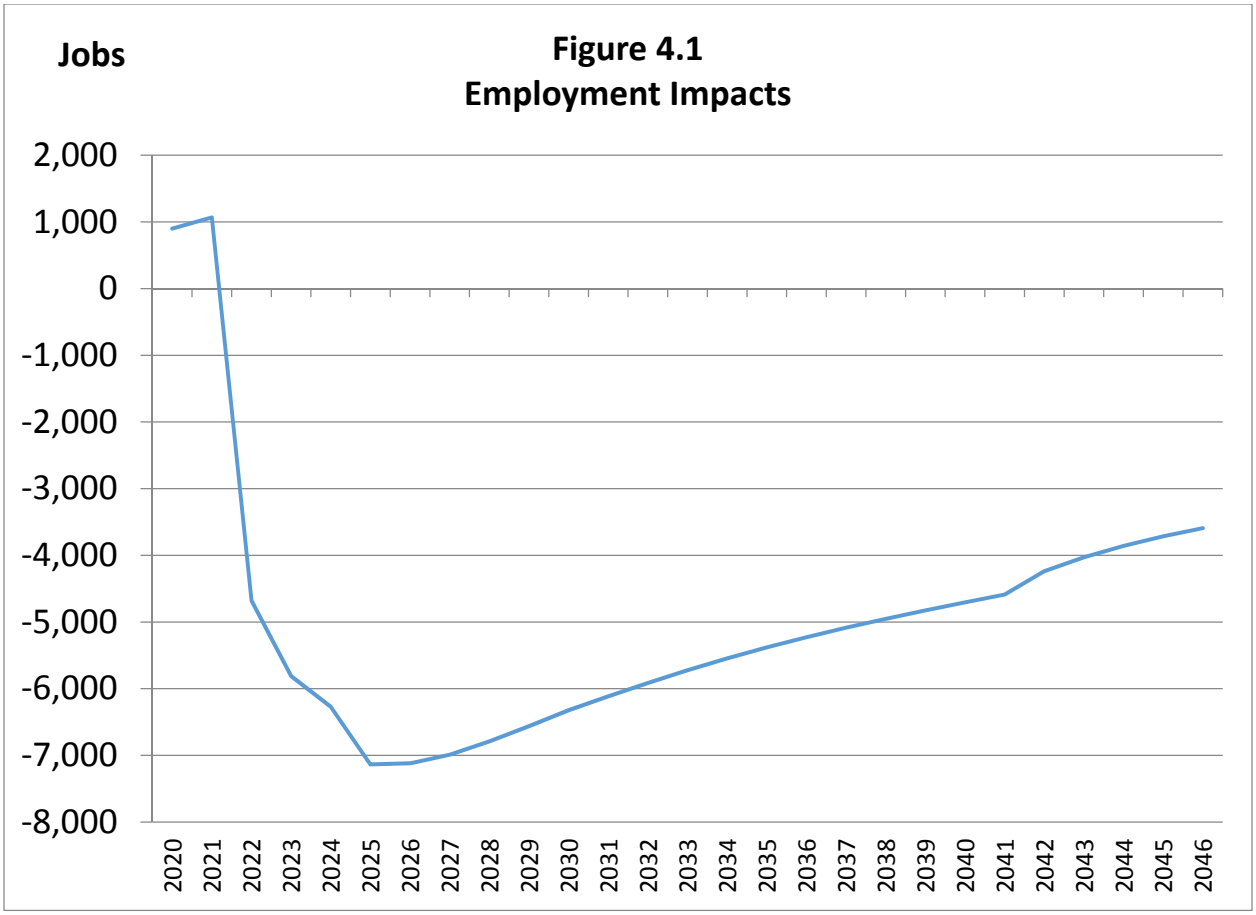
Increases in electric prices bring about increases in business operating costs and changing patterns of investment. Changes in electricity prices and declines in property tax and other state and local tax revenues are the two most important mechanisms that cause 111(d) impacts to propagate to all regions of the state.

Employment Impacts

One of the most basic measures of economic activity is employment. A closer look at the job losses which result in the economy from compliance with 111(d) gives a measure of the impact that is easy to understand, as well as revealing how the actions taken to comply with the regulation affect different industries and regions within the state.

The changes in Montana employment that come about from actions taken to comply with 111(d), as we have laid out in the compliance scenario described in section 2, vary from year to year, as shown in Figure 4.1. Before the year 2022, compliance actions produce an increase in employment, due to the construction of the new natural gas fired generator in Billings, the pipeline for its gas supply, and the new 230 KV transmission line. The costs of those projects is reflected in electricity prices, but those are spread out over a longer period.

Beginning in year 2022, as is apparent from the Figure, employment changes turn sharply negative. There is some moderation in employment impacts over the next several decades, although the difference between the status quo baseline projection and the projection with 111(d) remains large throughout the entire period. Some of this moderation in the impact is due to the rolling off of rates as new infrastructure is paid for. It is also due to the productivity improvements that occur over this long span of time – with more output per job, output changes produce smaller job changes.



The job losses suffered due to 111(d) extend far beyond the utilities and the mining industries. As shown in Table 4.2, the largest number of jobs in year 2025 occurs in construction industries, which decline by 1,760 jobs in that year. The second largest job decline among major industries occurs in state and local government. The size of the declines reflects in part the higher labor-intensity of these industries, compared to the capital-intensive nature of mining and utilities businesses. But it also reflects negative impacts on the drivers of those particular industries.

Construction is hit hardest at the very beginning of the compliance period which commences in 2022. With sizable declines in demand occurring for almost all Montana industries – because of the loss of spending associated with job loss and business closures – Montana businesses find themselves having more plant and capital on hand than they need. This has an outsized impact on construction workers, who would otherwise be employed to both add capacity as well as replace worn out plants and buildings.

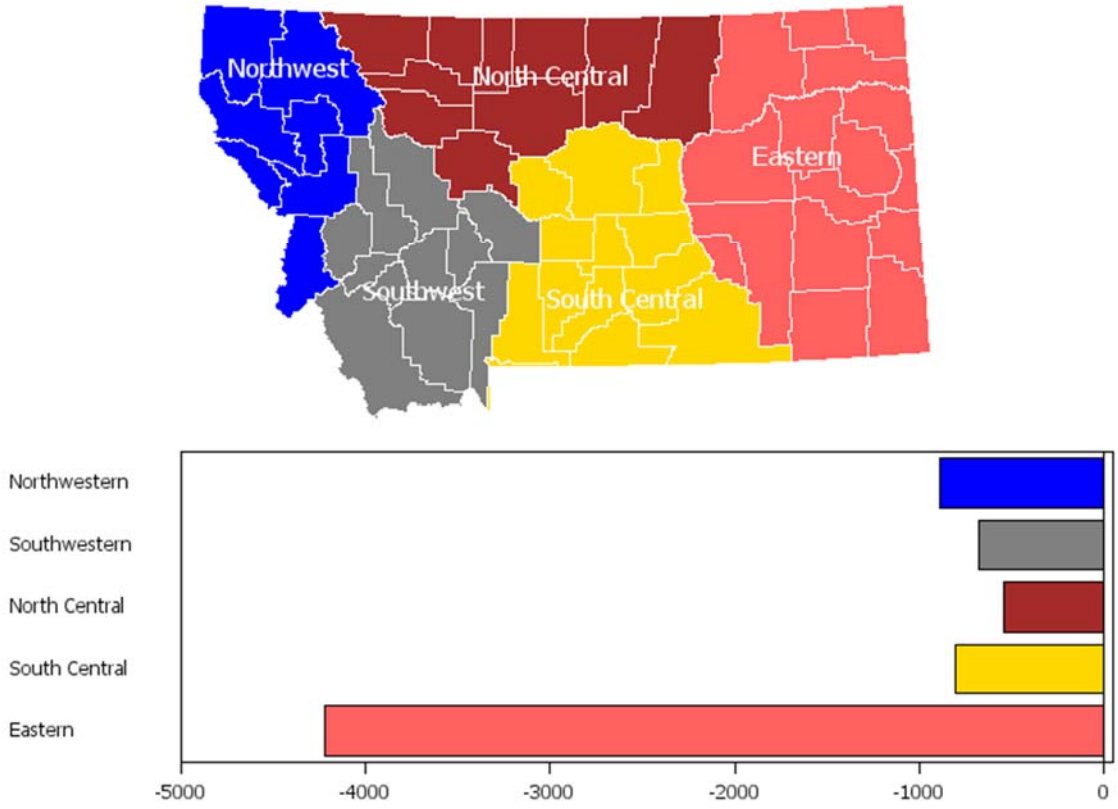
State and local government suffer comparatively large declines for two reasons. The first is the outsized impact of 111(d) on property tax and natural resource-related revenues. In eastern Montana these impacts are most pronounced – half of the Colstrip high school budget and one third of the elementary school budget would be exposed by the revenue shortfall caused by 111(d). There is also a close relationship between state and local government employment and population. With more than 10,000 fewer people living in Montana as a result of 111(d) compliance actions, demand for state and local government services is lower.

Table 4.2: Employment Impacts

	Impacts by Year		
Industry	**2025**	**2035**	**2045**
Forestry, Fishing, Related Activities, and Other	-14	-6	-4
Mining	-620	-410	-336
Utilities	-339	-230	-156
Construction	-1,760	-844	-411
Manufacturing	-85	-52	-27
Wholesale Trade	-74	-31	-4
Retail Trade	-719	-561	-386
Transportation and Warehousing	-68	-27	-23
Information	-31	-16	-8
Finance and Insurance	-145	-83	-61
Real Estate and Rental and Leasing	-123	-83	-53
Professional and Technical Services	-264	-243	-180
Management of Companies and Enterprises	-13	-8	-4
Administrative and Waste Services	-109	-11	76
Educational Services	-36	-9	9
Health Care and Social Assistance	-384	-298	-221
Arts, Entertainment, and Recreation	-111	-61	-25
Accommodation and Food Services	-427	-299	-95
Other Services, except Public Administration	-253	-152	-100
State and Local Government	-1,510	-1,927	-1,688
Federal Government	-7	-4	-3
Farm	-43	-26	-16
TOTAL	**-7,137**	**-5,381**	**-3,715**

It is clear from Table 4.2 that the effects of 111(d) compliance extend well beyond the electric power industry. Higher electricity prices together with lower demand cause cutbacks in almost every Montana industry, including health care, retail sales, professional services and accommodation and food services industries, in addition to the larger impacts on government and construction.

Figure 4.2: Employment Impacts by Region, 2025



The job losses that occur due to 111(d) in the state economy are highest in the 14-county eastern region, as shown in Figure 4.2. Given the location of the Colstrip SES and the Western Energy Company mine in Rosebud County, this is to be expected. The 4,200 jobs lost in the region in 2025 represent more than 7 percent of total regional employment. But as the Figure shows, there are significant job declines occurring in other parts of the state, geographically distant from Colstrip. These losses occur due to the effects on investment of higher electricity prices, as well as the impacts of lower government tax revenues.

Impacts on Business Gross Receipts

Another way of detailing changes in the economy is to examine impacts on economic output, defined as gross receipts of Montana businesses and other organizations. As shown in the summary Table 4.1, gross receipts statewide are expected to be more the $1.5 billion lower, on an annual, inflation-corrected basis, in year 2025 due to actions taken to comply with 111(d). Table 4.3 shows how those impacts are spread across most major industries statewide.

The pattern of output impacts shown in Table 4.2 underscores the impact of 111(d) compliance on more capital intensive industries that, for that reason, have comparatively smaller employment impacts. The prominence of the negative impacts on the high-paying, capital intensive utilities and mining industries is especially apparent. The figures in this table have relevance for business owners and managers in these industries, as the data portray the loss of sales, measured in millions of dollars, their industries can expect to experience as a result of

compliance with 111(d). In the eastern portion of the state, compliance with 111(d) will cause a loss in gross receipts of businesses and other organizations located there in excess of 10 percent.

Table 4.3: Impacts on Gross Receipts

Output Impacts, $ Millions per Year			
	Impacts by Year		
Industry	**2025**	**2035**	**2045**
Forestry, Fishing, Related Activities, and Other	-1.2	-0.4	-0.2
Mining	-327.4	-276.3	-259.0
Utilities	-413.2	-406.8	-393.2
Construction	-209.5	-125.5	-83.5
Manufacturing	-47.5	-32.1	-24.6
Wholesale Trade	-23.0	-23.7	-20.5
Retail Trade	-80.1	-88.6	-81.6
Transportation and Warehousing	-15.2	-4.4	-3.0
Information	-17.1	-15.9	-13.6
Finance and Insurance	-32.9	-26.2	-22.2
Real Estate and Rental and Leasing	-33.8	-31.9	-24.8
Professional and Technical Services	-34.7	-39.7	-35.1
Management of Companies and Enterprises	-3.6	-3.5	-3.1
Administrative and Waste Services	-10.9	-11.4	-9.2
Educational Services	-2.0	-1.8	-1.5
Health Care and Social Assistance	-39.3	-41.1	-39.5
Arts, Entertainment, and Recreation	-6.0	-5.3	-4.2
Accommodation and Food Services	-37.7	-44.1	-35.4
Other Services, except Public Administration	-17.9	-13.6	-10.7
State and Local Government	-148.3	-206.9	-196.7
Federal Government	-1.5	-1.1	-1.0
Farm	-9.5	-7.6	-5.9
TOTAL	**-1,512.3**	**-1,407.9**	**-1,268.5**

Personal Income and Compensation Impacts

Of particular importance to Montanans are changes to the economy that affect the income they receive, both from employment and other sources. Personal income, measured in dollars per year, is the aggregation of income of all Montana residents. Given the declines in both jobs and population that occur because of 111(d) compliance, it is not a surprise to learn that impacts on personal income are sharply negative due to actions taken to comply with the regulation.

Table 4.4: Personal Income Impacts

Impacts ($ millions per year)				
		Impacts by Year		
Category		**2025**	**2035**	**2045**
Total Earnings by Place of Work		-469.2	-399.3	-296.9
	Total Wage and Salary Disbursements	-340.3	-298.3	-226.1
Supplements to Wages and Salaries		-92.5	-97.8	-83.7
	Employer contributions for employee pension and insurance funds	-59.7	-63.1	-54.1
	Employer contributions for government social insurance	-32.8	-34.7	-29.7
	Proprietors' income with inventory valuation and capital consumption adjustments	-50.1	-12.0	6.3
Less: Contributions for government social insurance		-68.5	-65.3	-52.8
	Employee and self-employed contributions for government social insurance	-35.6	-30.6	-23.1
	Employer contributions for government social insurance	-32.8	-34.7	-29.7
Plus: Adjustment for residence		5.0	3.0	2.9
	Gross In	-8.9	-8.3	-6.2
	Gross Out	-13.9	-11.3	-9.1
Equals: Net earnings by place of residence		-457.8	-375.7	-275.7
Plus: Rental, interest, and dividend income		-35.1	-90.4	-106.9
Plus: Personal current transfer receipts		-23.0	-90.2	-99.7
Equals: Personal Income		-515.9	-556.3	-482.2
Less: Personal current taxes		-7.6	-17.4	-18.5
Equals: Disposable personal income		-440.6	-481.2	-417.7

The standard accounting for personal income impacts for the state as a whole are shown in Table 4.4. Earnings, which is the sum of wages and salaries, benefits, and business proprietor income, makes up the largest fraction of the more than half billion dollars lost in income to households throughout the state in 2025 due to 111(d) implementation. But the smaller economy that evolves in a 111(d) compliance scenario, all forms of income are negatively affected. Rental income and dividends, for instance, are reduced in Montana as a result of 111(d).

Table 4.5: Compensation Impacts

		Impacts by Year		
Category	**Units**	**2025**	**2035**	**2045**
Wages and Salaries	$ Mill./Year	-340.3	-298.3	-226.1
Compensation	$ Mill./Year	-423.2	-388.4	-303.9
Earnings	$ Mill./Year	-469.2	-399.3	-296.9
Earnings per Job, Lost Jobs	$ Dollars	65,742	74,216	79,926

By focusing on earnings and compensation impacts, as we do in Table 4.5, a particularly unappealing aspect of the 111(d) impacts emerges: the negative impacts of the regulation for Montana disproportionately affect high paying jobs. The average earnings of the jobs lost, more than $65,000 per year in 2025, are almost double the state average.

This occurs for two reasons. First, the direct effects of complying with the regulation fall most heavily on two of the state's highest paying industries, utilities and mining. The second is the impact of higher electricity prices. Higher energy prices affect industries which consume relatively more, which tend to be more capital intensive industries. Those kinds of industries tend to pay higher than average wages.

Not all jobs lost have high wages, of course. But on average, the jobs lost pay substantially higher than average. This is one reason why the impacts are as large as they are. In a state that struggles to move up from the bottom of nationwide rankings of states for earnings per job, the impact of compliance with the regulation makes the gap in pay between Montana and other states larger and thus makes the challenge larger as well.

Tax and Non-Tax Revenue Impacts

State and local government is an important employer in most parts of Montana. Compliance with 111(d) has impacts on government activity, working through two basic mechanisms. First, the size of government at the state and local level closely follows changes in overall economic activity, particularly when those changes affect school-aged population. In this sense, changes in government activity – measured by either revenues or spending – are caused by effects elsewhere in the economy.

The special tax consequences of 111(d) compliance, however, operate in the other direction as well, with changes in government activity causing changes in the underlying economy. This is because (i) utility generation and transmission are large contributors to the property tax base that ultimately supports local government, and (ii) the payments made by the coal industry to state and local governments, including production-based taxes, lease payments and other payments, are substantial. Since 111(d) targets these activities specifically, tax impacts in this study are significant, and cause 111(d) impacts to propagate beyond eastern Montana.

Table 4.6: Selected State Revenue Impacts

Impacts, $ Millions per Year			
	Impacts by Year		
Industry	**2025**	**2035**	**2045**
Intergovernmental Revenue	-11.1	-22.8	-19.6
Selective Sales Tax	-9.7	-12.2	-12.0
License Taxes	-2.6	-3.3	-3.2
Individual Income Tax	-16.4	-15.5	-12.7
Corporate Income Tax	-5.5	-5.3	-5.0
Other Taxes	-40.0	-40.5	-39.6
Current Charges	-15.2	-15.8	-14.8
Miscellaneous General Revenue	-5.6	-6.0	-5.2
Utility Revenue	0.0	0.0	0.0
Liquor Store Revenue	-1.1	-1.2	-1.0
Insurance Trust Revenue	-28.8	-31.0	-26.9
TOTAL	**-145.6**	**-165.8**	**-152.0**

The revenue impacts on the state of Montana due to 111(d) compliance by themselves are substantial, as shown in Table 4.6. The categories shown in the table correspond to categories of tax and non-tax revenue used in the Census of Governments. Selective sales taxes, as listed above, contain the coal production and energy transmission taxes that would be directly impacted by compliance with 111(d). The closure of the Western Energy Company mine would result in a loss of about $34 million in severance taxes and other production taxes. The loss in the state's share of the $16 million paid by the mine in Federal royalties, which is $8 million, is included in the category Current Charges shown in the table.

Taken as a whole, compliance with 111(d) will cause state revenues to be lower by about $146 million in year 2025. These changes are due to specific declines in resources and energy taxes as well as declines in the economy and population.

Local taxes – specifically property taxes – are significantly impacted by 111(d) as well. The Colstrip SES pays approximately $18.7 million per year in property taxes, with another $6 million paid by the Rosebud mine annually. The loss of these tax revenues is partially offset (at least on a statewide basis) by the property taxes paid by the 250 MW natural gas turbine in

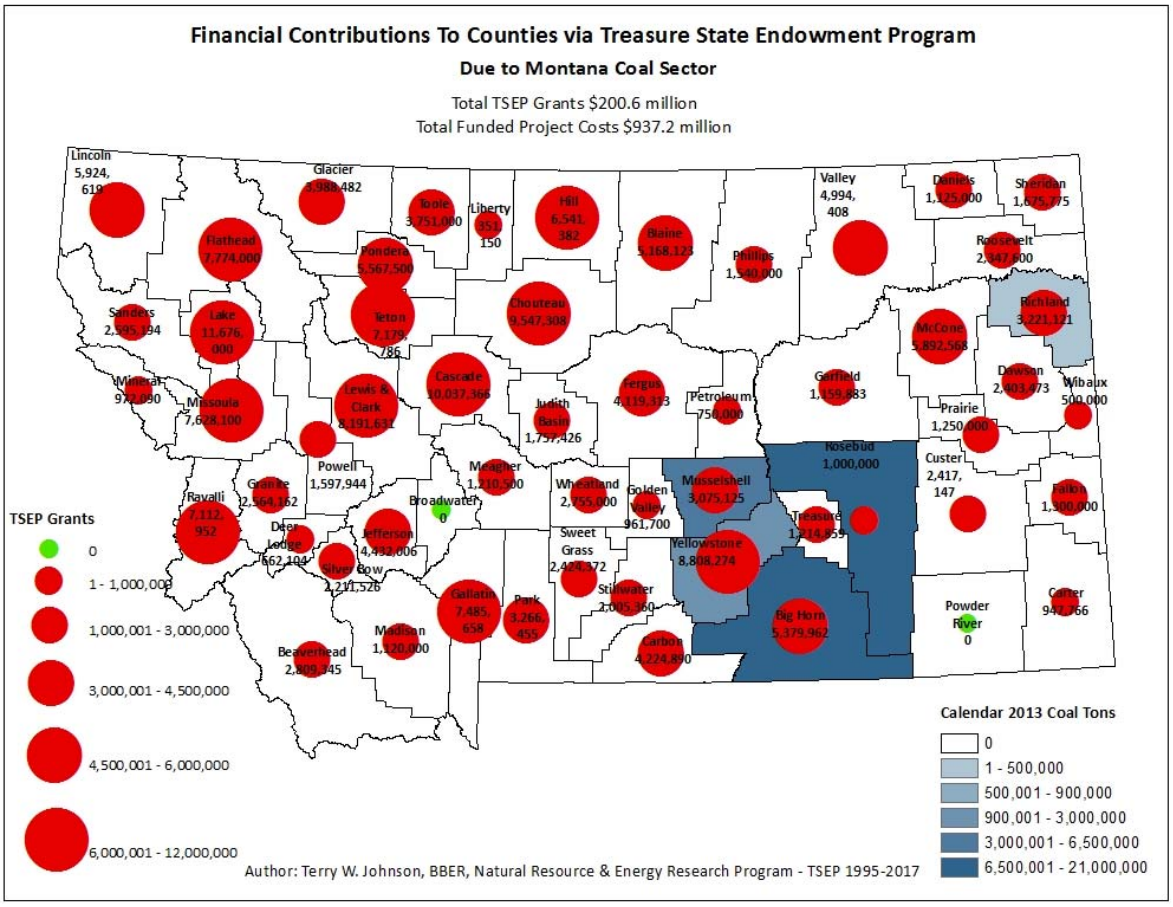
Billings, just as the $8.8 million in property tax revenue lost by jurisdictions along the 500 KV line linking the Colstrip SES with the western states would be partially offset by new property tax revenue of a new 230 KV line. In both cases, however, the net result is a sizable decline. Additionally, there are also the declines in property tax base that are induced elsewhere in the economy, from both commercial and residential development. We estimate those declines to be $17.8 million, with most of that total hitting eastern Montana.

Loss of tax revenues results in restrained spending at the state and local level. Spending that is associated with coal tax revenues is of particular note due to its special structure in Montana law. The coal severance tax is by far the largest of the four production-related taxes on coal in Montana. Since 1976 the severance tax has generated about $2.1 billion in state revenue and an additional $1.5 billion from investment earnings from the state's coal severance trust fund. The state's general fund receives the largest portion of the earnings, but they are also directed towards a number of sub-trusts, which are managed by the state Board of Investments. They are used to fund a variety of programs that would otherwise not receive public support.

Since its creation as a sub-trust in 1992, the Treasure State Endowment Program (TSEP) has awarded more than $200 million to local governments and special districts to help fund infrastructure projects addressing critical needs in Montana communities. The grants, which are limited by law to a maximum of $750,000, are often leveraged against other local or federal sources, resulting in over $900 million of total project spending. A list of projects funded by county for the programs history is found in Appendix B.

As can be seen from Figure 4.3, these projects have occurred throughout the state, and are supported by the revenues coming from just the five counties in Montana with coal production. The continued level of spending on these kinds of projects in support of infrastructure in all parts of the state is dependent on the status of the state's coal industry, which is seriously challenged by the implementation of 111(d).

Figure 4.3: Cumulative Expenditures from TSEP, 1992-2013

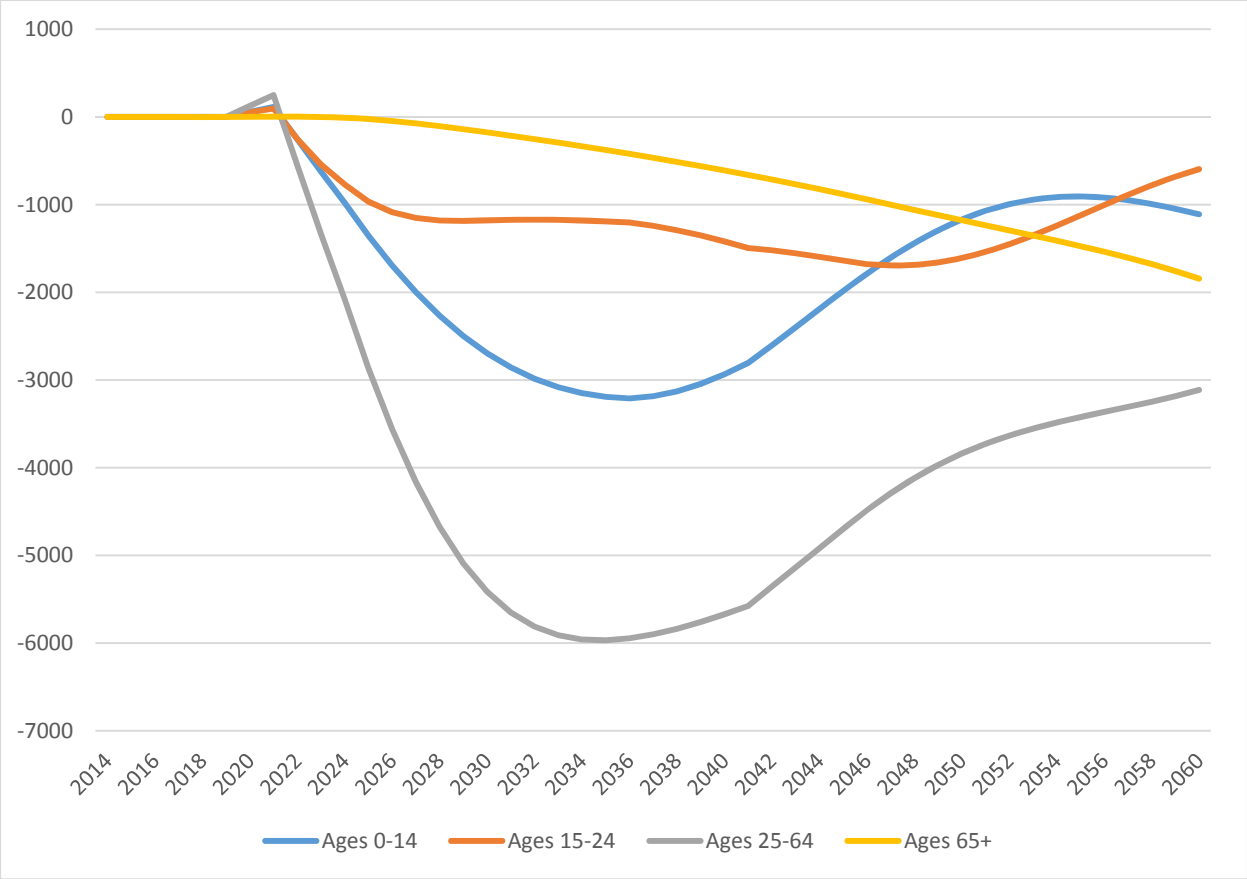


Population Impacts

A fundamental underpinning of a market-based economy is the flow of both investment dollars and skilled people towards economic opportunity. States and regions with greater job opportunities – both job availability and high wages – attract people from elsewhere. The opposite is also true, with economic setbacks in a state or region producing a net out-migration of working aged people, causing population to be lower than the baseline and producing other demographic outcomes.

Those kinds of impacts are apparent for the Montana economy when comparing the baseline projection of the future to the potential outcomes under compliance with 111(d). They would be most pronounced in the city of Colstrip itself, whose economic base would be very hard hit by the loss of its two largest employers, which includes the largest industrial facility in the entire state. There is loss of population in all regions of the state, however, as job opportunities worsen relative to the rest of the nation.

Figure 4.4: Population Impacts by Age Group



Population impacts occur initially due to migration, with subsequent impacts on births and younger age groups. Migration is a delayed response to changes in economic opportunity. Thus it can be seen from Figure 4.4 that the decline in working-age population peaks around year 2035, ten years after the peak employment impacts of 111(d). With declines in the number of households comes lower construction rates for new homes, lower demand for government services, and even lower payments from Federal programs based on population.

Of particular concern are the declines in school-aged population due to 111(d). These are projected to be roughly 3,000 lower than the baseline, with much of the drop off occurring in eastern Montana. These kinds of declines will threaten the viability of schools in some of our state's smaller communities.

Consumption Impacts

Most spending by Montana consumers contains at least a partial Montana component, as goods and services sourced in other states is delivered here through the supply chain. That is why the decline in spending by Montana households that is due to actions taken to comply with 111(d) is of concern to Montana businesses who capture at least part of the revenue from that spending. In total, spending by Montana consumers will be more than half a billion dollars lower in year 2025 due to actions taken to comply with 111(d).

Table 4.7: Consumption Spending Impacts

Spending ($ millions per year)			
	Impacts by Year		
Category	**2025**	**2035**	**2045**
Clothing and footwear	-17.9	-20.2	-17.1
Food and beverage	-28.1	-35.5	-29.7
Fuel oil and other fuels	-0.3	-0.3	-0.3
Furnishings and household durables	-17.9	-18.2	-16.7
Healthcare	-80.8	-101.0	-106.9
Household utilities	-35.9	-38.5	-23.7
Housing	-64.5	-84.2	-71.8
Motor vehicle fuels, lubricants, etc.	-12.9	-17.8	-15.2
Motor vehicles and parts	-25.9	-25.1	-21.9
Other nondurable goods	-48.2	-53.0	-55.4
Recreation and other services	-170.0	-164.6	-145.5
Recreational goods	-44.8	-44.6	-41.5
Transportation services	-19.0	-14.9	-12.6
TOTAL	**-566.1**	**-617.9**	**-558.3**

Of the consumption categories shown in Table 4.7 above, the largest impacts pertain to items with a large locally produced component: housing, health care, and general services. These lower levels of spending support less activity and employment in the industries that provide them, which explains the employment impacts described earlier in this section. But even consumer spending on items such as new cars made outside the state has important impacts here on Montana transportation, retailing and finance and insurance businesses. The table provides another way of translating the economic impacts of 111(d) into the prospects for businesses around the state.

Summary

The actions taken to bring about compliance with the 111(d) regulation in Montana, while continuing to provide reliable electric power to customers across the state, ultimately cause the economy to be smaller, less prosperous, and less populous. This analysis has detailed the changes in employment, income, tax revenue, spending and population that such actions could bring about. While some of the building and operating of replacement capacity to offset the retirement of coal-fired generation would have positive impacts, on balance the compliance actions produce a significant contraction in economic activity statewide.

We find that compared to a baseline, status quo projection of the state economy, compliance actions mandated by 111(d) would:

- reduce employment statewide by more than 7,100 jobs, which have average annual earnings of more than $65,000;

- cause a loss of more than a half billion dollars of income received by Montana households;

- reduce gross receipts of Montana businesses and other organizations by more the $1.5 billion;

- produce a contraction of $145 million in state revenues, as well as a loss of property tax revenue paid to local jurisdictions of more than $45 million;

- ultimately reduce state population by more than 10,000 people, with a reduction in school-aged population of over 3,000.

These findings make it clear that 111(d) could be a significant event for the Montana economy. Indeed, in the scenario presented here the loss in personal income caused by compliance with the regulation is roughly half as large as the downturn that occurred during the Great Recession years for the state.

The question for many is, why are these impacts so sharply negative? We believe that there are several reasons that could be offered.

The first and perhaps the most obvious is that the operations of the Colstrip SES ultimately support a lot of economic activity across the state. That was the clear conclusion of the 2010 study, and those impacts are quite apparent in this analysis as well. In terms of economic activity, this facility – including the adjacent mine – is a powerful generator of wealth as well as electricity. Its purchases are dominated by a made-in-Montana product – coal – it is capital intensive and thus pays high wages, and it exports a high value product outside the state, thus bringing income from the spending of those outside Montana back to the state.

Closing that facility before the end of its productive life terminates those benefits. Bringing on new capacity – and paying for it – before the end of the old capacity's productive life entails higher costs than would otherwise be the case.

Another factor that is prominent in these results is what might be call the "terms of trade" between coal-fired generators and other sources of power generation. What replaces Colstrip has a much smaller economic footprint. Not only is the natural gas-fired 250 MW generator considered in this study much smaller from a capacity point of view, the number of jobs it supports is a tiny fraction of those supported by Colstrip. Part of this is due to the fuel and the technology – for example, there are no material-handling processes at work in a natural gas plant as there are for a coal-fired generator.

Finally there is the important role that the Colstrip generator plays in our state's power grid. Because of Colstrip, we have a high capacity 500 KV line that greatly facilitates the import and export of power. Because of Colstrip, purchasers of power in the state see lower prices. Because of Colstrip, Montana has been a net exporter of electrical energy for more than 30 years. All of these advantages could be seriously challenged, if not reversed, in a future that complies with 111(d), and that is why the ultimate economic outcomes have turned out as described in this report.

5. Summary and Conclusions

This report has detailed the findings of an analysis conducted by the University of Montana's Bureau of Business and Economic Research to address the implications of the Environmental Protection Agency's Clean Power Plan for the Montana economy. The plan, referred to as 111(d) in reference to the section of the Clean Air Act that is cited as the authority for it promulgation, sets a CO2 emission rate goal for Montana in 2030 that is the largest of that set for any other state. It mandates a plan, and ultimately a set of actions by the state to bring its CO2 emissions from electric generation units on a trajectory to meet the 2030 target beginning in 2022.

While Montana's actual compliance plan has not yet been formulated, the power generation landscape of our state, combined with the magnitude of the CO2 emission reduction mandated by 111(d), constrain our choice set and make at least the basic elements of any plan apparent. A significant portion of our current coal-fired generation will be prematurely retired, and a significant new investment in new generation that can comply with the regulation will be required. Understanding how that kind of transformation could come about, the investments and costs it would entail, and ultimately how the economy as a whole would perform as a result has been the objective of this study.

Our basic finding is that the circumstances of the Montana economy, the central role played by coal-fired generation on our power grid, and the size of the CO2 emissions reduction required by 111(d) combine to make compliance with the regulation costly to the state economy in terms of jobs, income, production and sales.

6. References

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Alternative Forecast
Economic Summary

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Regional Simulation 3 – Levels
Region = All Regions
Economic Summary

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total Employment	Thousands (Jobs)	688.191	691.949	694.376	690.377	689.417	688.721	687.986	687.301	687.107	686.671
Private Non-Farm Employment	Thousands (Jobs)	566.666	570.941	573.929	571.137	571.222	571.358	571.707	571.894	572.540	572.880
Residence Adjusted Employment	Thousands	679.968	683.765	686.231	682.298	681.400	680.748	680.062	679.419	679.259	678.855
Population	Thousands	1049.267	1057.978	1066.739	1073.705	1080.443	1086.927	1093.065	1099.103	1105.055	1110.816
Labor Force	Thousands	526.114	529.147	532.158	533.900	536.605	539.213	541.612	544.309	547.177	550.303
Gross Domestic Product	Millions of Fixed (2015) D	55413.991	56820.978	58064.153	58305.078	59321.184	60378.726	61414.109	62508.904	63636.408	64770.609
Output	Millions of Fixed (2015) D	98036.401	100249.969	102186.810	102656.528	104313.106	106123.856	107856.084	109623.789	111396.593	113252.916
Value Added	Millions of Fixed (2015) D	56976.235	58399.758	59662.241	59921.059	60954.839	62030.600	63084.310	64198.901	65346.767	66500.203
Personal Income	Millions of Fixed (2015) D	46276.683	47664.005	49059.507	50191.889	51292.854	52396.893	53799.180	55120.973	56372.688	57568.231
Disposable Personal Income	Millions of Fixed (2015) D	40684.566	41882.150	43081.630	44076.969	45001.265	45918.099	47137.462	48282.567	49353.183	50366.264
Real Disposable Personal Income	Millions of Fixed (2015) D	40684.566	41881.365	43079.039	43912.112	44845.419	45766.237	46988.099	48133.839	49203.926	50215.640
PCE-Price Index	2009=100 (Nation)	129.019	131.630	134.282	137.473	140.208	143.014	145.858	148.747	151.683	154.691

Alternative Forecast
Economic Summary

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Regional Simulation 3 - Levels
Region = All Regions
Economic Summary

2029	2030	2035	2045	2055
685.930	685.471	698.613	731.245	768.738
572.922	573.251	591.328	631.427	673.145
678.153	677.737	691.220	724.454	762.354
1116.267	1121.416	1143.680	1179.911	1232.121
553.648	556.844	572.313	612.877	644.445
65922.950	67099.260	72195.004	83999.057	98336.952
115086.367	116893.691	125129.909	144387.448	167359.887
67672.102	68868.475	74032.399	85975.591	100446.789
58713.602	59818.906	63413.440	72119.097	85148.973
51326.185	52242.597	55192.144	62265.348	72819.489
51173.625	52087.735	55024.972	62108.322	72627.368
157.747	160.848	177.433	216.030	263.564

Alternative Forecast

Employment | Industry | Private Non-Farm | Private Non-Farm Employment | Sector Level

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Regional Simulation 3 - Levels
Region = All Regions
Sector Level

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Forestry, Fishing, and Related Activities	Thousands (Jobs)	7.442	7.350	7.273	7.193	7.118	7.039	6.961	6.870	6.780	6.684
Mining	Thousands (Jobs)	16.807	16.871	16.954	16.440	16.442	16.454	16.482	16.496	16.519	16.519
Utilities	Thousands (Jobs)	2.938	2.949	2.887	2.379	2.333	2.289	2.245	2.201	2.158	2.117
Construction	Thousands (Jobs)	57.039	58.983	60.223	59.745	59.874	60.217	60.463	61.056	61.771	62.514
Manufacturing	Thousands (Jobs)	22.673	22.586	22.544	22.470	22.441	22.407	22.385	22.337	22.306	22.260
Wholesale Trade	Thousands (Jobs)	20.486	20.449	20.364	20.153	20.017	19.890	19.776	19.640	19.512	19.383
Retail Trade	Thousands (Jobs)	78.635	78.906	78.928	78.112	77.656	77.197	76.778	76.295	75.825	75.299
Transportation and Warehousing	Thousands (Jobs)	19.769	19.588	19.422	19.194	19.006	18.831	18.679	18.520	18.383	18.252
Information	Thousands (Jobs)	7.881	7.729	7.582	7.408	7.253	7.107	6.976	6.849	6.738	6.627
Finance and Insurance	Thousands (Jobs)	28.420	28.466	28.440	28.192	28.042	27.899	27.799	27.653	27.538	27.425
Real Estate and Rental and Leasing	Thousands (Jobs)	29.548	29.667	29.778	29.775	29.808	29.834	29.877	29.884	29.902	29.901
Professional, Scientific, and Technical Serv	Thousands (Jobs)	39.075	39.585	40.090	40.382	40.761	41.173	41.622	42.036	42.490	42.936
Management of Companies and Enterprise	Thousands (Jobs)	2.312	2.285	2.258	2.217	2.184	2.153	2.124	2.092	2.063	2.035
Administrative and Waste Management Se	Thousands (Jobs)	28.225	28.465	28.669	28.747	28.855	28.967	29.099	29.197	29.305	29.406
Educational Services	Thousands (Jobs)	9.393	9.475	9.541	9.547	9.569	9.580	9.594	9.590	9.594	9.584
Health Care and Social Assistance	Thousands (Jobs)	81.062	82.238	83.405	84.239	85.189	85.977	86.753	87.419	88.185	88.860
Arts, Entertainment, and Recreation	Thousands (Jobs)	20.721	20.777	20.843	20.808	20.837	20.856	20.898	20.921	20.953	20.972
Accommodation and Food Services	Thousands (Jobs)	58.571	58.905	59.134	58.907	58.826	58.705	58.609	58.453	58.320	58.127
Other Services, except Public Administrati	Thousands (Jobs)	35.669	35.667	35.594	35.229	35.010	34.780	34.588	34.384	34.197	33.981

Alternative Forecast

Employment | Industry | Private Non-Farm | Private Non-Farm Employment | Sector Level

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Regional Simulation 3 - Levels
Region = All Regions
Sector Level

2029	2030	2035	2045	2055
6.583	6.482	6.144	5.510	4.856
16.507	16.501	16.938	17.886	18.700
2.074	2.032	1.886	1.622	1.375
63.253	64.047	69.945	81.730	92.323
22.210	22.174	22.669	23.746	24.624
19.244	19.114	18.990	18.531	17.727
74.697	74.108	73.009	70.887	68.653
18.124	18.018	18.125	18.392	18.505
6.516	6.414	6.090	5.492	4.924
27.284	27.178	27.339	27.763	28.179
29.878	29.864	30.565	32.010	33.417
43.386	43.863	47.595	55.706	64.283
2.006	1.978	1.899	1.722	1.526
29.489	29.581	30.887	33.545	36.155
9.562	9.548	9.698	9.887	9.844
89.490	90.136	96.612	112.379	131.548
20.979	21.000	21.637	23.081	24.843
57.888	57.668	57.875	58.354	58.751
33.752	33.546	33.426	33.184	32.911

Alternative Forecast

Employment | Industry | Government

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Regional Simulation 3 – Levels
Region = All Regions
Government

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
State and Local	Thousands (Jobs)	76.095	76.302	76.422	75.916	75.444	75.155	74.592	74.269	73.965	73.696
Federal Civilian	Thousands (Jobs)	12.364	12.235	12.114	11.993	11.875	11.763	11.671	11.579	11.498	11.430
Federal Military	Thousands (Jobs)	7.721	7.674	7.638	7.610	7.565	7.522	7.483	7.441	7.408	7.376

Alternative Forecast

Employment | Industry | Government

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Regional Simulation 3 - Levels
Region = All Regions
Government

2029	2030	2035	2045	2055
73.415	73.125	70.867	67.587	66.529
11.375	11.334	11.138	10.858	10.643
7.341	7.303	6.980	6.416	5.987

Alternative Forecast
Personal Income

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Regional Simulation 3 – Levels
Region = All Regions
Personal Income

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total Earnings by Place of Work	Millions of Fixed (2015) D	29985.958	30813.390	31573.639	31937.788	32538.175	33155.721	33758.308	34359.054	34980.845	35602.452
Total Wages and Salaries	Millions of Fixed (2015) D	20114.024	20674.617	21188.149	21416.151	21819.588	22233.256	22631.711	23027.137	23435.994	23843.562
Supplements to Wages and Salaries	Millions of Fixed (2015) D	5193.899	5337.617	5471.904	5531.059	5637.875	5747.068	5854.578	5961.032	6070.349	6179.607
Employer contributions for employee pe	Millions of Fixed (2015) D	3332.394	3424.115	3510.305	3552.179	3623.108	3696.504	3765.205	3833.278	3903.189	3973.042
Employer contributions for government	Millions of Fixed (2015) D	1861.505	1913.502	1961.599	1978.881	2014.767	2050.564	2089.373	2127.754	2167.160	2206.565
Proprietors' income with inventory valua	Millions of Fixed (2015) D	4638.924	4758.249	4869.439	4936.855	5026.238	5121.569	5218.914	5316.861	5419.654	5524.283
Less: Contributions for Government Social	Millions of Fixed (2015) D	3811.539	3917.977	4015.761	4046.450	4118.004	4188.998	4267.406	4344.523	4423.889	4503.190
Employee and Self-Employed Contributior	Millions of Fixed (2015) D	1950.034	2004.475	2054.162	2067.569	2103.237	2138.434	2178.033	2216.768	2256.729	2296.625
Employer contributions for government s	Millions of Fixed (2015) D	1861.505	1913.502	1961.599	1978.881	2014.767	2050.564	2089.373	2127.754	2167.160	2206.565
Plus: Adjustment for Residence	Millions of Fixed (2015) D	68.792	69.765	71.279	77.012	79.863	82.005	84.748	86.685	88.569	90.488
Gross Inflow	Millions of Fixed (2015) D	726.996	745.972	763.949	774.810	791.041	807.400	823.215	838.448	853.997	869.476
Gross Outflow	Millions of Fixed (2015) D	658.204	676.207	692.670	697.798	711.178	725.396	738.467	751.763	765.428	778.988
Equals: Net Earnings by Place of Residenc	Millions of Fixed (2015) D	26482.144	27204.921	27877.255	28180.663	28723.325	29286.383	29826.759	30359.897	30911.513	31464.376
Plus: Property Income	Millions of Fixed (2015) D	11025.594	11390.245	11765.687	12137.073	12483.961	12828.816	13177.269	13503.275	13829.493	14154.171
Personal Dividend Income	Millions of Fixed (2015) D	3980.814	4152.164	4330.108	4509.246	4679.978	4852.335	5028.446	5196.256	5366.298	5537.889
Personal Interest Income	Millions of Fixed (2015) D	4468.032	4610.248	4756.132	4899.644	5032.830	5164.486	5296.854	5419.835	5542.193	5663.207
Rental Income of Persons	Millions of Fixed (2015) D	2576.748	2627.833	2679.447	2728.183	2771.153	2811.996	2851.969	2887.185	2921.002	2953.074
Plus: Personal Current Transfer Receipts	Millions of Fixed (2015) D	8768.946	9068.839	9416.565	9874.153	10085.569	10281.694	10795.152	11257.800	11631.682	11949.684
Equals: Personal Income	Millions of Fixed (2015) D	46276.683	47664.005	49059.507	50191.889	51292.854	52396.893	53799.180	55120.973	56372.688	57568.231
Less: Personal current taxes	Millions of Fixed (2015) D	5592.118	5781.855	5977.876	6114.920	6291.589	6478.794	6661.718	6838.406	7019.504	7201.967
Equals: Disposable personal income	Millions of Fixed (2015) D	40684.566	41882.150	43081.630	44076.969	45001.265	45918.099	47137.462	48282.567	49353.183	50366.264

Alternative Forecast
Personal Income

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Regional Simulation 3 - Levels
Region = All Regions
Personal Income

2029	2030	2035	2045	2055
36237.460	36887.709	38988.145	44091.007	51256.314
24259.606	24685.691	26028.700	29359.879	34157.090
6290.485	6403.698	6753.041	7627.415	8885.551
4043.918	4116.279	4338.908	4896.449	5699.905
2246.567	2287.419	2414.133	2730.967	3185.646
5630.975	5740.406	6114.368	6929.106	7934.744
4583.651	4665.842	4918.578	5548.821	6456.312
2337.084	2378.424	2504.445	2817.854	3270.665
2246.567	2287.419	2414.133	2730.967	3185.646
92.539	94.714	101.817	118.046	136.245
885.088	901.063	949.991	1068.454	1238.601
792.550	806.349	848.174	950.408	1102.356
32025.875	32600.198	34387.467	38719.019	44801.576
14477.430	14797.683	15932.014	18834.160	23095.873
5711.062	5885.171	6556.887	8274.041	10785.980
5782.910	5900.650	6301.980	7307.583	8753.719
2983.459	3011.863	3073.147	3252.536	3556.173
12210.297	12421.025	13093.959	14565.918	17251.524
58713.602	59818.906	63413.440	72119.097	85148.973
7387.417	7576.309	8221.295	9853.749	12329.484
51326.185	52242.597	55192.144	62265.348	72819.489

Alternative Forecast

Output and Demand | Output | Private Non-Farm | Sector Level

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Regional Simulation 3 – Levels
Region = All Regions
Sector Level

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Forestry, Fishing, and Related Activities	Millions of Fixed (2015) D	476.131	482.664	490.080	497.152	504.315	511.676	518.540	524.501	529.969	535.313
Mining	Millions of Fixed (2015) D	6231.591	6324.532	6431.109	6238.806	6331.978	6433.764	6531.658	6621.725	6707.661	6791.330
Utilities	Millions of Fixed (2015) D	2160.062	2247.413	2280.044	1845.365	1875.589	1907.948	1940.300	1970.556	2000.373	2031.719
Construction	Millions of Fixed (2015) D	6235.765	6638.074	6899.876	6946.921	7091.764	7273.045	7404.520	7618.056	7844.758	8088.875
Manufacturing	Millions of Fixed (2015) D	13041.912	13279.982	13516.131	13708.028	13952.779	14220.137	14490.401	14754.186	15018.858	15296.523
Wholesale Trade	Millions of Fixed (2015) D	4473.143	4604.263	4722.867	4808.926	4923.259	5047.232	5172.249	5293.989	5415.287	5544.249
Retail Trade	Millions of Fixed (2015) D	6994.319	7213.271	7408.067	7518.336	7679.661	7851.528	8022.750	8190.395	8354.186	8522.836
Transportation and Warehousing	Millions of Fixed (2015) D	4109.113	4176.659	4244.227	4294.781	4362.703	4438.151	4514.980	4590.019	4666.181	4748.945
Information	Millions of Fixed (2015) D	2775.758	2830.460	2886.133	2928.403	2985.039	3046.424	3108.452	3168.587	3228.363	3291.163
Finance and Insurance	Millions of Fixed (2015) D	5871.196	6016.678	6139.603	6211.298	6315.625	6429.432	6546.118	6657.637	6769.060	6887.409
Real Estate and Rental and Leasing	Millions of Fixed (2015) D	6650.748	6789.382	6921.395	7020.021	7143.275	7274.499	7405.062	7528.661	7649.781	7775.830
Professional, Scientific, and Technical Serv	Millions of Fixed (2015) D	4417.285	4542.727	4664.737	4757.974	4874.011	4999.618	5127.392	5254.134	5382.122	5517.580
Management of Companies and Enterprise	Millions of Fixed (2015) D	442.864	454.935	466.530	474.764	485.835	497.970	510.191	522.170	534.228	547.200
Administrative and Waste Management Se	Millions of Fixed (2015) D	1804.299	1840.900	1874.805	1897.938	1926.455	1957.248	1988.163	2017.325	2045.764	2075.841
Educational Services	Millions of Fixed (2015) D	378.943	385.672	391.431	394.224	398.437	402.686	406.661	409.892	413.055	416.065
Health Care and Social Assistance	Millions of Fixed (2015) D	8113.298	8304.075	8492.315	8647.420	8829.181	9006.083	9174.997	9333.701	9495.313	9658.955
Arts, Entertainment, and Recreation	Millions of Fixed (2015) D	900.709	913.847	926.909	934.625	947.360	960.867	974.603	987.547	1000.255	1013.433
Accommodation and Food Services	Millions of Fixed (2015) D	3947.122	4029.847	4103.476	4141.218	4197.339	4255.380	4311.735	4363.779	4413.529	4463.496
Other Services, except Public Administrati	Millions of Fixed (2015) D	2204.067	2232.201	2254.832	2257.302	2274.037	2292.870	2311.928	2330.671	2348.726	2367.415

Alternative Forecast

Output and Demand | Output | Private Non-Farm | Sector Level

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Regional Simulation 3 - Levels
Region = All Regions
Sector Level

2029	2030	2035	2045	2055
540.192	544.523	560.083	593.048	611.163
6869.283	6940.596	7225.232	7871.372	8504.490
2062.134	2091.743	2214.900	2490.423	2778.357
8338.816	8594.181	9877.148	12871.174	16404.974
15572.548	15846.701	17111.821	19859.675	22773.603
5672.902	5801.136	6423.025	7838.046	9488.343
8685.532	8843.340	9552.633	11223.878	13307.487
4833.307	4919.378	5351.811	6334.041	7416.026
3352.630	3412.619	3687.507	4315.420	5063.915
7004.045	7120.338	7655.615	8935.277	10538.741
7898.663	8018.072	8542.301	9757.714	11222.930
5654.821	5793.069	6468.496	8057.248	9996.637
560.249	573.347	637.821	782.519	948.806
2105.130	2133.992	2261.084	2551.947	2897.125
418.574	420.992	427.166	437.701	443.134
9820.751	9976.297	10738.145	12689.282	15259.464
1026.331	1038.981	1091.053	1214.828	1376.508
4510.228	4553.955	4708.993	5077.260	5520.338
2385.633	2403.528	2471.875	2636.340	2842.676

Alternative Forecast

Output and Demand | Output | Government

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Regional Simulation 3 - Levels
Region = All Regions
Government

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
State and Local Government	Millions of Fixed (2015) D	7796.509	7883.464	7962.380	7980.295	8000.562	8038.948	8051.226	8085.215	8121.039	8160.440
Federal Civilian	Millions of Fixed (2015) D	2429.296	2425.939	2423.885	2421.608	2419.586	2418.813	2421.666	2424.611	2429.665	2437.294
Federal Military	Millions of Fixed (2015) D	2196.971	2202.093	2210.075	2220.326	2225.784	2231.776	2238.956	2245.172	2253.753	2263.073

Alternative Forecast

Output and Demand | Output | Government

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Regional Simulation 3 - Levels
Region = All Regions
Government

2029	2030	2035	2045	2055
8198.485	8235.366	8324.124	8633.086	9241.255
2447.743	2461.237	2531.198	2702.460	2901.358
2271.258	2278.468	2270.719	2269.182	2302.108

Alternative Forecast

Compensation and Earnings | Private Non-Farm | Wages and Salaries | Sector Level

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Regional Simulation 3 – Levels
Region = All Regions
Sector Level

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Forestry, Fishing, and Related Activities	Millions of Fixed (2015) D	122.301	124.346	126.531	128.483	130.787	133.014	135.140	136.912	138.615	140.196
Mining	Millions of Fixed (2015) D	776.628	792.049	806.702	772.068	780.058	789.215	799.102	808.500	818.570	827.874
Utilities	Millions of Fixed (2015) D	219.130	229.454	233.094	187.987	191.314	194.662	197.857	200.816	203.842	206.994
Construction	Millions of Fixed (2015) D	1536.171	1632.541	1708.441	1720.468	1765.631	1817.015	1863.906	1921.697	1983.930	2048.727
Manufacturing	Millions of Fixed (2015) D	880.866	905.391	930.711	953.202	979.768	1006.725	1034.211	1060.167	1086.991	1113.716
Wholesale Trade	Millions of Fixed (2015) D	1015.292	1050.008	1082.208	1106.490	1136.148	1166.560	1197.591	1227.077	1257.320	1288.183
Retail Trade	Millions of Fixed (2015) D	1714.331	1776.282	1833.013	1868.756	1914.932	1961.253	2008.089	2052.413	2097.061	2141.009
Transportation and Warehousing	Millions of Fixed (2015) D	773.435	789.335	805.403	817.327	832.175	847.519	863.289	878.166	893.839	910.020
Information	Millions of Fixed (2015) D	316.461	324.440	332.571	339.011	346.210	353.600	361.278	368.635	376.418	384.082
Finance and Insurance	Millions of Fixed (2015) D	1082.587	1115.978	1146.287	1166.885	1191.752	1216.792	1243.534	1267.515	1292.897	1318.744
Real Estate and Rental and Leasing	Millions of Fixed (2015) D	197.008	202.522	207.814	211.793	216.499	221.213	225.970	230.414	234.969	239.492
Professional, Scientific, and Technical Serv	Millions of Fixed (2015) D	1403.879	1450.587	1497.084	1534.256	1576.256	1619.677	1664.540	1707.883	1753.255	1798.999
Management of Companies and Enterprise	Millions of Fixed (2015) D	173.345	178.918	184.401	188.584	193.564	198.747	204.104	209.297	214.674	220.196
Administrative and Waste Management Se	Millions of Fixed (2015) D	561.887	576.001	589.239	599.223	610.471	621.682	633.053	643.332	653.693	664.011
Educational Services	Millions of Fixed (2015) D	172.956	176.885	180.452	182.671	185.176	187.461	189.684	191.423	193.246	194.801
Health Care and Social Assistance	Millions of Fixed (2015) D	2674.969	2750.703	2826.513	2890.677	2960.990	3026.845	3090.846	3148.696	3209.217	3267.521
Arts, Entertainment, and Recreation	Millions of Fixed (2015) D	313.721	319.495	325.425	329.509	335.041	340.434	345.986	351.004	356.176	361.198
Accommodation and Food Services	Millions of Fixed (2015) D	893.697	916.668	937.790	950.748	966.107	980.693	995.208	1007.950	1020.802	1032.809
Other Services, except Public Administrati	Millions of Fixed (2015) D	608.981	621.282	631.919	636.455	644.124	651.287	658.541	664.978	671.339	677.032

Alternative Forecast

Compensation and Earnings | Private Non-Farm | Wages and Salaries | Sector Level

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Regional Simulation 3 - Levels
Region = All Regions
Sector Level

2029	2030	2035	2045	2055
141.740	143.221	144.222	147.372	152.973
837.597	847.903	867.718	917.578	993.506
210.140	213.090	219.370	233.983	255.111
2116.376	2187.238	2468.729	3119.882	3948.086
1141.039	1169.259	1268.729	1500.989	1794.748
1319.875	1352.646	1467.032	1728.809	2072.658
2184.844	2229.270	2358.816	2675.088	3139.860
927.112	945.279	1006.759	1150.113	1334.105
391.881	400.042	424.493	482.062	563.181
1344.542	1372.267	1455.143	1663.644	1971.314
244.135	248.933	262.882	296.302	343.867
1847.055	1897.045	2075.138	2494.369	3062.678
225.899	231.825	252.968	300.162	361.148
674.487	685.155	711.198	774.237	869.512
196.238	197.781	196.261	193.101	192.507
3327.034	3386.776	3570.353	4071.605	4848.779
366.373	371.774	382.809	412.693	465.519
1044.736	1056.817	1069.533	1110.424	1192.640
682.840	688.936	690.700	700.731	732.951

Alternative Forecast

Population | Four Age Groups | All Races

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Regional Simulation 3 - Levels
Region = All Regions
All Races

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Ages 0-14	Thousands	189.147	190.496	191.703	192.072	192.655	193.349	194.158	195.142	195.989	196.844
Ages 15-24	Thousands	120.068	119.311	119.982	120.737	121.405	121.925	122.233	122.260	122.650	122.885
Ages 25-64	Thousands	533.241	534.122	534.023	532.905	531.721	530.969	530.036	529.637	529.764	530.445
Ages 65+	Thousands	206.811	214.049	221.031	227.991	234.663	240.684	246.638	252.065	256.652	260.642

Alternative Forecast

Population | Four Age Groups | All Races

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Regional Simulation 3 - Levels
Region = All Regions
All Races

2029	2030	2035	2045	2055
197.633	198.143	197.898	198.217	208.971
123.056	123.284	125.054	130.238	130.498
531.609	533.701	550.693	581.977	603.769
263.968	266.288	270.035	269.478	288.883

Baseline Forecast
Economic Summary

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Regional Simulation 1 – Levels
Region = All Regions
Economic Summary

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total Employment	Thousands (Jobs)	688.191	691.051	693.309	695.055	695.229	694.992	695.123	694.421	694.096	693.460
Private Non-Farm Employment	Thousands (Jobs)	566.666	570.108	572.972	575.359	576.168	576.534	577.284	577.317	577.734	577.806
Residence Adjusted Employment	Thousands	679.968	682.875	685.173	686.951	687.176	686.987	687.165	686.512	686.229	685.632
Population	Thousands	1049.267	1057.743	1066.278	1074.756	1082.940	1090.772	1098.276	1105.492	1112.449	1119.047
Labor Force	Thousands	526.114	528.963	531.817	534.480	538.212	541.679	544.931	548.257	551.601	555.086
Gross Domestic Product	Millions of Fixed (2015) Dollars	55413.991	56661.740	57890.462	59102.553	60214.944	61320.162	62450.970	63557.588	64687.880	65818.587
Output	Millions of Fixed (2015) Dollars	98036.401	100020.246	101933.729	103776.779	105594.147	107483.209	109367.802	111150.419	112921.826	114767.517
Value Added	Millions of Fixed (2015) Dollars	56976.235	58240.809	59488.706	60722.187	61853.900	62977.976	64128.721	65255.046	66405.429	67555.003
Personal Income	Millions of Fixed (2015) Dollars	46276.683	47611.284	48993.386	50492.785	51680.808	52838.846	54315.114	55664.735	56934.402	58140.358
Disposable Personal Income	Millions of Fixed (2015) Dollars	40684.566	41837.202	43025.190	44333.156	45331.920	46295.204	47578.034	48747.666	49834.425	50857.185
Real Disposable Personal Income	Millions of Fixed (2015) Dollars	40684.566	41837.202	43025.190	44333.156	45331.920	46295.204	47578.034	48747.666	49834.425	50857.185
PCE-Price Index	2009=100 (Nation)	129.019	131.629	134.275	136.957	139.720	142.539	145.393	148.285	151.221	154.225

Baseline Forecast
Economic Summary

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Regional Simulation 1 - Levels
Region = All Regions
Economic Summary

2029	2030	2035	2045	2055
692.492	691.795	703.994	734.959	771.631
577.572	577.631	594.752	633.434	674.575
684.707	684.059	696.608	728.173	765.249
1125.184	1130.884	1154.411	1189.117	1239.049
558.686	562.064	577.733	617.387	648.105
66965.371	68134.991	73194.638	84917.853	99245.308
116586.142	118376.121	126537.343	145655.491	168604.465
68720.932	69910.180	75036.199	86897.043	101357.386
59291.554	60398.854	63969.763	72601.322	85607.857
51822.812	52741.553	55673.344	62683.068	73213.612
51822.812	52741.553	55673.344	62683.068	73213.612
157.275	160.368	176.893	215.482	262.864

Baseline Forecast

Employment | Industry | Private Non-Farm | Private Non-Farm Employment | Sector Level

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Regional Simulation 1 – Levels
Region = All Regions
Sector Level

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027
Forestry, Fishing, and Related Activities	Thousands (Jobs)	7.442	7.349	7.272	7.209	7.134	7.054	6.975	6.883	6.792
Mining	Thousands (Jobs)	16.807	16.851	16.927	17.040	17.075	17.088	17.102	17.092	17.088
Utilities	Thousands (Jobs)	2.938	2.873	2.814	2.763	2.702	2.642	2.584	2.525	2.469
Construction	Thousands (Jobs)	57.039	58.603	59.777	60.549	61.124	61.643	62.223	62.767	63.387
Manufacturing	Thousands (Jobs)	22.673	22.561	22.515	22.541	22.522	22.489	22.471	22.420	22.385
Wholesale Trade	Thousands (Jobs)	20.486	20.436	20.350	20.226	20.094	19.966	19.850	19.709	19.576
Retail Trade	Thousands (Jobs)	78.635	78.838	78.847	78.690	78.308	77.877	77.497	77.009	76.527
Transportation and Warehousing	Thousands (Jobs)	19.769	19.580	19.413	19.267	19.081	18.902	18.747	18.581	18.437
Information	Thousands (Jobs)	7.881	7.726	7.579	7.440	7.286	7.140	7.007	6.878	6.766
Finance and Insurance	Thousands (Jobs)	28.420	28.453	28.425	28.329	28.187	28.042	27.944	27.790	27.667
Real Estate and Rental and Leasing	Thousands (Jobs)	29.548	29.649	29.756	29.872	29.920	29.952	30.000	30.005	30.020
Professional, Scientific, and Technical Services	Thousands (Jobs)	39.075	39.523	40.018	40.564	40.984	41.418	41.887	42.305	42.760
Management of Companies and Enterprises	Thousands (Jobs)	2.312	2.283	2.256	2.229	2.197	2.166	2.137	2.105	2.075
Administrative and Waste Management Services	Thousands (Jobs)	28.225	28.441	28.642	28.848	28.967	29.077	29.207	29.298	29.396
Educational Services	Thousands (Jobs)	9.393	9.473	9.539	9.589	9.609	9.619	9.630	9.624	9.624
Health Care and Social Assistance	Thousands (Jobs)	81.062	82.196	83.357	84.568	85.552	86.349	87.136	87.795	88.551
Arts, Entertainment, and Recreation	Thousands (Jobs)	20.721	20.769	20.834	20.921	20.954	20.971	21.010	21.027	21.053
Accommodation and Food Services	Thousands (Jobs)	58.571	58.873	59.095	59.254	59.212	59.109	59.036	58.878	58.738
Other Services, except Public Administration	Thousands (Jobs)	35.669	35.630	35.555	35.462	35.261	35.030	34.841	34.624	34.424

Baseline Forecast

Employment | Industry | Private Non-Farm | Private Non-Farm Employment | Sector Level

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Regional Simulation 1 - Levels
Region = All Regions
Sector Level

2028	2029	2030	2035	2045	2055
6.694	6.592	6.490	6.150	5.513	4.859
17.060	17.021	16.988	17.348	18.223	18.999
2.414	2.359	2.304	2.116	1.777	1.484
64.012	64.626	65.300	70.789	82.141	92.671
22.335	22.280	22.240	22.721	23.773	24.638
19.442	19.298	19.163	19.020	18.535	17.721
75.983	75.362	74.752	73.570	71.273	68.938
18.299	18.166	18.056	18.152	18.415	18.527
6.653	6.540	6.436	6.106	5.500	4.929
27.545	27.396	27.283	27.423	27.824	28.229
30.013	29.986	29.967	30.648	32.062	33.460
43.205	43.652	44.124	47.838	55.886	64.421
2.046	2.016	1.988	1.906	1.726	1.529
29.486	29.559	29.640	30.898	33.469	36.036
9.611	9.587	9.569	9.707	9.878	9.826
89.214	89.832	90.468	96.910	112.599	131.727
21.066	21.068	21.083	21.698	23.106	24.850
58.533	58.280	58.044	58.174	58.449	58.742
34.194	33.953	33.735	33.578	33.284	32.991

Baseline Forecast

Employment | Industry | Government

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Regional Simulation 1 - Levels
Region = All Regions
Government

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
State and Local	Thousands (Jobs)	76.095	76.236	76.311	76.315	76.257	76.197	76.103	75.919	75.715	75.517	75.287	75.030
Federal Civilian	Thousands (Jobs)	12.364	12.235	12.114	11.999	11.880	11.768	11.675	11.583	11.502	11.433	11.378	11.337
Federal Military	Thousands (Jobs)	7.721	7.674	7.638	7.612	7.567	7.524	7.485	7.443	7.410	7.378	7.343	7.305

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Regional Simulation 1 - Levels
Region = All Regions
Government

2035	2045	2055
72.794	69.276	67.979
11.141	10.860	10.645
6.982	6.417	5.987

Baseline Forecast
Personal Income

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Regional Simulation 1 – Levels
Region = All Regions
Personal Income

Category	Units	2019	2020	2021	2022	2023	2024
Total Earnings by Place of Work	Millions of Fixed (2015) Dollars	29985.958	30757.829	31505.645	32223.824	32903.607	33562.997
Total Wages and Salaries	Millions of Fixed (2015) Dollars	20114.024	20637.320	21142.074	21627.009	22086.112	22529.996
Supplements to Wages and Salaries	Millions of Fixed (2015) Dollars	5193.899	5328.019	5460.182	5585.840	5707.632	5825.257
Employer contributions for employee pension and insurance funds	Millions of Fixed (2015) Dollars	3332.394	3417.977	3502.800	3587.487	3668.058	3746.938
Employer contributions for government social insurance	Millions of Fixed (2015) Dollars	1861.505	1910.042	1957.383	1998.353	2039.574	2078.320
Proprietors' income with inventory valuation and capital consumption adjustments	Millions of Fixed (2015) Dollars	4638.924	4748.691	4858.307	4968.165	5067.433	5166.283
Less: Contributions for Government Social Insurance	Millions of Fixed (2015) Dollars	3811.539	3910.814	4007.001	4089.104	4171.387	4248.159
Employee and Self-Employed Contributions for Government Social Insurance	Millions of Fixed (2015) Dollars	1950.034	2000.773	2049.618	2090.751	2131.813	2169.839
Employer contributions for government social insurance	Millions of Fixed (2015) Dollars	1861.505	1910.042	1957.383	1998.353	2039.574	2078.320
Plus: Adjustment for Residence	Millions of Fixed (2015) Dollars	68.792	70.108	71.685	73.508	75.486	77.547
Gross Inflow	Millions of Fixed (2015) Dollars	726.996	744.966	762.679	780.520	797.985	815.178
Gross Outflow	Millions of Fixed (2015) Dollars	658.204	674.858	690.994	707.012	722.499	737.631
Equals: Net Earnings by Place of Residence	Millions of Fixed (2015) Dollars	26482.144	27153.740	27815.107	28472.633	29087.249	29687.897
Plus: Property Income	Millions of Fixed (2015) Dollars	11025.594	11388.722	11762.634	12143.609	12500.024	12854.153
Personal Dividend Income	Millions of Fixed (2015) Dollars	3980.814	4151.609	4328.984	4511.674	4686.000	4861.918
Personal Interest Income	Millions of Fixed (2015) Dollars	4468.032	4609.631	4754.898	4902.283	5039.306	5174.685
Rental Income of Persons	Millions of Fixed (2015) Dollars	2576.748	2627.482	2678.752	2729.652	2774.719	2817.549
Plus: Personal Current Transfer Receipts	Millions of Fixed (2015) Dollars	8768.946	9068.821	9415.645	9876.543	10093.535	10296.796
Equals: Personal Income	Millions of Fixed (2015) Dollars	46276.683	47611.284	48993.386	50492.785	51680.808	52838.846
Less: Personal current taxes	Millions of Fixed (2015) Dollars	5592.118	5774.082	5968.196	6159.630	6348.888	6543.642
Equals: Disposable personal income	Millions of Fixed (2015) Dollars	40684.566	41837.202	43025.190	44333.156	45331.920	46295.204

Baseline Forecast
Personal Income

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Regional Simulation 1 - Levels
Region = All Regions
Personal Income

2025	2026	2027	2028	2029	2030	2035	2045	2055
34227.510	34840.852	35465.462	36083.109	36710.553	37350.744	39387.484	44387.898	51517.858
22972.035	23377.569	23789.651	24195.559	24607.280	25027.135	26327.025	29586.024	34356.567
5947.069	6057.676	6169.592	6280.336	6392.047	6505.546	6850.807	7711.142	8961.855
3824.878	3895.632	3967.222	4038.035	4109.452	4182.000	4402.007	4950.507	5749.167
2122.191	2162.044	2202.370	2242.300	2282.595	2323.546	2448.800	2760.635	3212.688
5268.971	5364.883	5464.147	5564.425	5666.489	5771.284	6126.397	6922.831	7926.446
4335.861	4415.334	4495.830	4575.393	4655.630	4737.220	4983.858	5601.580	6503.541
2213.670	2253.290	2293.460	2333.093	2373.034	2413.674	2535.058	2840.944	3290.853
2122.191	2162.044	2202.370	2242.300	2282.595	2323.546	2448.800	2760.635	3212.688
79.748	81.840	83.992	86.189	88.496	90.922	98.799	115.159	133.291
832.122	847.687	863.416	878.944	894.519	910.397	958.305	1074.662	1243.806
752.374	765.847	779.424	792.755	806.023	819.475	859.506	959.503	1110.516
30284.576	30827.216	31379.270	31926.405	32478.955	33042.166	34763.192	38994.675	45042.276
13212.351	13547.187	13881.449	14213.352	14543.100	14869.174	16022.366	18941.030	23217.594
5041.833	5213.154	5386.459	5561.044	5736.968	5913.603	6594.072	8320.990	10842.825
5310.956	5437.460	5563.015	5686.886	5809.141	5929.157	6337.719	7349.048	8799.853
2859.562	2896.574	2931.976	2965.422	2996.992	3026.414	3090.575	3270.992	3574.915
10818.188	11290.332	11673.682	12000.600	12269.498	12487.514	13184.205	14665.616	17347.987
54315.114	55664.735	56934.402	58140.358	59291.554	60398.854	63969.763	72601.322	85607.857
6737.080	6917.069	7099.977	7283.173	7468.741	7657.301	8296.419	9918.254	12394.245
47578.034	48747.666	49834.425	50857.185	51822.812	52741.553	55673.344	62683.068	73213.612

Baseline Forecast

Output and Demand | Output | Private Non-Farm | Sector Level

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Regional Simulation 1 – Levels
Region = All Regions
Sector Level

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026
Forestry, Fishing, and Related Activities	Millions of Fixed (2015) Dollars	476.131	482.612	490.016	498.342	505.551	512.894	519.731	525.602
Mining	Millions of Fixed (2015) Dollars	6231.591	6317.600	6422.865	6548.536	6655.821	6761.684	6859.104	6944.728
Utilities	Millions of Fixed (2015) Dollars	2160.062	2190.234	2222.672	2258.087	2288.843	2321.347	2353.470	2383.119
Construction	Millions of Fixed (2015) Dollars	6235.765	6530.463	6783.517	6990.182	7193.142	7401.287	7614.009	7827.347
Manufacturing	Millions of Fixed (2015) Dollars	13041.912	13267.638	13502.544	13746.298	13996.190	14265.483	14537.881	14800.666
Wholesale Trade	Millions of Fixed (2015) Dollars	4473.143	4601.258	4719.511	4826.718	4943.519	5068.853	5195.266	5317.472
Retail Trade	Millions of Fixed (2015) Dollars	6994.319	7206.828	7400.191	7574.885	7746.448	7924.326	8102.894	8273.280
Transportation and Warehousing	Millions of Fixed (2015) Dollars	4109.113	4175.419	4242.907	4311.324	4379.403	4454.097	4530.148	4603.536
Information	Millions of Fixed (2015) Dollars	2775.758	2829.141	2884.549	2942.451	3000.607	3062.737	3125.563	3185.824
Finance and Insurance	Millions of Fixed (2015) Dollars	5871.196	6012.869	6135.314	6238.870	6346.308	6461.084	6578.978	6690.013
Real Estate and Rental and Leasing	Millions of Fixed (2015) Dollars	6650.748	6784.879	6915.804	7043.543	7171.675	7305.808	7438.835	7563.322
Professional, Scientific, and Technical Services	Millions of Fixed (2015) Dollars	4417.285	4535.240	4655.787	4779.810	4901.683	5030.847	5162.109	5290.497
Management of Companies and Enterprises	Millions of Fixed (2015) Dollars	442.864	454.511	466.048	477.475	489.011	501.389	513.795	525.811
Administrative and Waste Management Services	Millions of Fixed (2015) Dollars	1804.299	1839.340	1872.983	1905.408	1935.601	1967.274	1999.069	2028.573
Educational Services	Millions of Fixed (2015) Dollars	378.943	385.592	391.333	396.057	400.376	404.687	408.698	411.938
Health Care and Social Assistance	Millions of Fixed (2015) Dollars	8113.298	8300.189	8487.763	8677.990	8864.158	9043.176	9214.256	9373.517
Arts, Entertainment, and Recreation	Millions of Fixed (2015) Dollars	900.709	913.570	926.601	939.950	953.059	966.735	980.569	993.505
Accommodation and Food Services	Millions of Fixed (2015) Dollars	3947.122	4027.730	4100.861	4167.067	4228.088	4289.548	4349.394	4403.335
Other Services, except Public Administration	Millions of Fixed (2015) Dollars	2204.067	2229.618	2252.017	2272.101	2290.578	2309.893	2329.874	2348.245

Baseline Forecast

Output and Demand | Output | Private Non-Farm | Sector Level

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Regional Simulation 1 - Levels
Region = All Regions
Sector Level

2027	2028	2029	2030	2035	2045	2055
530.972	536.218	541.003	545.245	560.501	593.204	611.263
7024.718	7101.907	7173.509	7238.605	7501.544	8130.355	8760.079
2412.202	2442.527	2472.232	2501.189	2621.660	2883.635	3171.870
8047.178	8281.049	8519.494	8763.168	10002.681	12954.681	16500.032
15063.730	15339.530	15613.608	15885.836	17143.892	19884.277	22798.561
5439.027	5568.134	5696.845	5825.068	6446.681	7858.510	9507.463
8438.976	8608.962	8772.605	8931.020	9641.210	11305.495	13386.731
4678.007	4759.196	4842.145	4926.982	5356.243	6337.064	7419.379
3245.590	3308.303	3369.632	3429.447	3703.432	4329.005	5076.680
6800.713	6918.249	7034.056	7149.532	7681.844	8957.489	10560.127
7684.784	7810.836	7933.442	8052.464	8574.241	9782.525	11246.074
5419.603	5555.856	5693.653	5832.262	6508.191	8092.368	10028.844
537.863	550.812	563.830	576.897	641.325	785.659	951.768
2057.210	2087.397	2116.733	2145.598	2272.451	2561.136	2905.162
415.100	418.100	420.591	422.987	429.010	439.159	444.316
9535.429	9699.219	9861.104	10016.685	10779.208	12728.763	15299.522
1006.172	1019.290	1032.116	1044.687	1096.348	1219.045	1380.192
4454.513	4505.538	4553.061	4597.360	4753.094	5112.693	5550.279
2365.799	2383.937	2401.614	2418.991	2485.491	2646.999	2852.309

Baseline Forecast

Output and Demand | Output | Government

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Regional Simulation 1 - Levels
Region = All Regions
Government

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
State and Local Government	Millions of Fixed (2015) Dollars	7796.509	7876.591	7950.583	8017.942	8079.366	8141.044	8199.552	8248.822	8296.158	8344.371
Federal Civilian	Millions of Fixed (2015) Dollars	2429.296	2425.939	2423.885	2422.828	2420.709	2419.850	2422.625	2425.502	2430.497	2438.076
Federal Military	Millions of Fixed (2015) Dollars	2196.971	2202.093	2210.075	2220.940	2226.378	2232.357	2239.527	2245.737	2254.318	2263.640

Baseline Forecast

Output and Demand | Output | Government

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Regional Simulation 1 - Levels
Region = All Regions
Government

2029	2030	2035	2045	2055
8389.186	8431.221	8531.033	8829.787	9424.572
2448.483	2461.944	2531.827	2703.006	2901.848
2271.824	2279.029	2271.231	2269.594	2302.428

Baseline Forecast

Compensation and Earnings | Private Non-Farm | Wages and Salaries | Sector Level

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Regional Simulation 1 – Levels
Region = All Regions
Sector Level

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026
Forestry, Fishing, and Related Activities	Millions of Fixed (2015) Dollars	122.301	124.330	126.507	128.829	131.207	133.477	135.635	137.412
Mining	Millions of Fixed (2015) Dollars	776.628	791.150	805.419	819.271	831.662	842.756	853.455	862.576
Utilities	Millions of Fixed (2015) Dollars	219.130	222.536	226.134	230.275	233.648	236.892	240.026	242.896
Construction	Millions of Fixed (2015) Dollars	1536.171	1618.626	1691.912	1754.508	1814.670	1873.376	1933.305	1991.526
Manufacturing	Millions of Fixed (2015) Dollars	880.866	904.023	929.026	956.288	983.735	1011.205	1039.127	1065.169
Wholesale Trade	Millions of Fixed (2015) Dollars	1015.292	1049.081	1081.058	1110.852	1141.573	1172.598	1204.161	1233.780
Retail Trade	Millions of Fixed (2015) Dollars	1714.331	1774.481	1830.692	1882.893	1932.311	1980.556	2029.452	2074.515
Transportation and Warehousing	Millions of Fixed (2015) Dollars	773.435	788.961	804.937	821.300	836.954	852.693	868.834	883.655
Information	Millions of Fixed (2015) Dollars	316.461	324.248	332.313	340.690	348.222	355.803	363.651	371.057
Finance and Insurance	Millions of Fixed (2015) Dollars	1082.587	1115.225	1145.342	1172.179	1198.126	1223.723	1250.970	1275.025
Real Estate and Rental and Leasing	Millions of Fixed (2015) Dollars	197.008	202.313	207.551	212.698	217.677	222.558	227.478	231.972
Professional, Scientific, and Technical Services	Millions of Fixed (2015) Dollars	1403.879	1447.989	1493.851	1541.572	1586.040	1631.011	1677.268	1721.261
Management of Companies and Enterprises	Millions of Fixed (2015) Dollars	173.345	178.725	184.162	189.642	194.881	200.215	205.684	210.910
Administrative and Waste Management Services	Millions of Fixed (2015) Dollars	561.887	575.437	588.538	601.498	613.276	624.701	636.223	646.447
Educational Services	Millions of Fixed (2015) Dollars	172.956	176.828	180.368	183.504	186.077	188.390	190.619	192.337
Health Care and Social Assistance	Millions of Fixed (2015) Dollars	2674.969	2749.063	2824.393	2901.426	2974.247	3041.460	3106.604	3164.746
Arts, Entertainment, and Recreation	Millions of Fixed (2015) Dollars	313.721	319.377	325.270	331.428	337.185	342.691	348.308	353.315
Accommodation and Food Services	Millions of Fixed (2015) Dollars	893.697	916.070	936.988	956.488	973.018	988.308	1003.466	1016.392
Other Services, except Public Administration	Millions of Fixed (2015) Dollars	608.981	620.536	631.043	640.712	649.136	656.621	664.211	670.622

Baseline Forecast

Compensation and Earnings | Private Non-Farm | Wages and Salaries | Sector Level

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Regional Simulation 1 - Levels
Region = All Regions
Sector Level

2027	2028	2029	2030	2035	2045	2055
139.103	140.661	142.177	143.626	144.465	147.457	153.007
871.825	879.918	888.354	897.320	910.336	954.562	1029.411
245.822	248.829	251.927	254.808	259.992	271.750	292.154
2052.356	2114.644	2179.312	2247.010	2513.820	3147.231	3973.114
1091.945	1118.523	1145.638	1173.615	1271.695	1501.792	1794.538
1263.969	1294.634	1326.032	1358.445	1470.655	1728.894	2071.119
2119.516	2163.511	2207.207	2251.359	2378.134	2688.700	3151.104
899.091	914.928	931.622	949.369	1009.080	1151.125	1335.036
378.835	386.451	394.176	402.245	426.122	482.829	563.595
1300.329	1325.985	1351.525	1378.958	1460.185	1666.555	1973.520
236.529	241.020	245.611	250.343	263.884	296.710	344.054
1766.991	1812.864	1860.908	1910.778	2087.133	2502.066	3068.130
216.284	221.781	227.444	233.323	254.187	300.857	361.607
656.667	666.779	677.008	687.402	711.950	772.390	866.328
194.124	195.631	197.012	198.493	196.633	192.978	192.174
3225.217	3283.200	3342.237	3401.397	3581.427	4076.750	4851.265
358.432	363.368	368.439	373.723	384.101	412.991	465.356
1029.243	1041.095	1052.774	1064.540	1075.062	1111.145	1190.986
676.863	682.368	687.960	693.824	694.400	702.797	734.477

Baseline Forecast

Population | Four Age Groups | All Races

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Regional Simulation 1 - Levels
Region = All Regions
All Races

Category	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Ages 0-14	Thousands	189.147	190.438	191.589	192.327	193.277	194.329	195.513	196.836	197.988	199.111	200.132	200.838
Ages 15-24	Thousands	120.068	119.259	119.885	120.989	121.948	122.696	123.199	123.346	123.802	124.066	124.243	124.465
Ages 25-64	Thousands	533.241	533.997	533.774	533.453	533.051	533.052	532.901	533.199	533.932	535.122	536.701	539.116
Ages 65+	Thousands	206.811	214.049	221.030	227.988	234.664	240.695	246.663	252.111	256.726	260.748	264.108	266.465

Baseline Forecast

Population | Four Age Groups | All Races

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Regional Simulation 1 - Levels
Region = All Regions
All Races

2035	2045	2055
201.090	200.202	209.879
126.247	131.877	131.622
556.662	586.679	607.192
270.411	270.360	290.356

TSEP Projects Funded History by County

NOTE: Biennial year listed: i.e. 2013 Legislative session is for 2015 Biennium funded projects
NOTE: Projects that did not meet award conditions and have had a terminated award are not listed.

City/Town, County, District	County	Biennial funded year	Project Type	TSEP Funds	Total Project Cost
Anaconda Deer Lodge County					
Anaconda Deer Lodge County	Anaconda Deer Lodge	2015 Biennium	Bridge	$ 312,104	$624,209
Anaconda/Deer Lodge County	Anaconda/ Deer Lodge	1995 Biennium	Water	$ 350,000	$4,965,000
			Total	**$ 662,104**	**$5,589,209**
Beaverhead County					
Beaverhead County	Beaverhead	1995 Biennium	Solid Waste	$ 160,000	$320,000
Beaverhead County	Beaverhead	1997 Biennium	Bridge	$ 23,000	$46,000
Beaverhead Co. District (Wisdom, Town of	Beaverhead	2005 Biennium	Wastewater	$ 500,000	$1,266,000
Beaverhead County	Beaverhead	2007 Biennium	Bridge	$ 84,886	$169,772
Beaverhead County	Beaverhead	2011 Biennium	Bridge	$ 290,668	$581,336
Melrose W & S District	Beaverhead	2013 Biennium	Wastewater	$ 162,000	$343,817
Beaverhead County	Beaverhead	2013 Biennium	Bridge	$ 426,941	$853,882
			Total	**$ 1,647,495**	**$3,580,807**
Big Horn County					
Crow Tribe	Big Horn	2007 Biennium	Wastewater	$ 500,000	$1,922,000
Big Horn County	Big Horn	2007 Biennium	Bridge	$ 142,500	$285,000
Crow Tribe (for Crow Agency)	Big Horn	2009 Biennium	Wastewater	$ 750,000	$2,604,000
Fort Smith W&S District	Big Horn	2011 Biennium	Water	$ 500,000	$1,582,757
Hardin, City of	Big Horn	2011 Biennium	Wastewater	$ 500,000	$5,062,712
Crow Tribe for Crow Tribe	Big Horn	2011 Biennium	W & WW	$ 750,000	$3,973,000
Crow Tribe for Crow Tribe	Big Horn	2013 Biennium	Water	$ 750,000	$3,205,000
Hardin, City of	Big Horn	2013 Biennium	Water	$ 500,000	$2,130,780
Lodge Grass, Town of	Big Horn	2015 Biennium	Wastewater	$ 750,000	$3,721,000
Big Horn County	Big Horn	2015 Biennium	Bridge	$ 237,462	$474,925
			Total	**$ 5,379,962**	**$24,961,174**
Blaine County					
Harlem, City of	Blaine	1995 Biennium	Water	$ 217,300	$742,077
Chinook, City of	Blaine	1999 Biennium	Water	$ 313,555	$627,110
Chinook, City of	Blaine	2005 Biennium	Wastewater	$ 500,000	$3,322,700
Blaine County	Blaine	2005 Biennium	Bridge	$ 322,782	$645,564
Harlem, City of	Blaine	2009 Biennium	Water	$ 750,000	$2,230,000
Blaine County	Blaine	2009 Biennium	Bridge	$ 617,017	$1,234,035
Blaine County	Blaine	2011 Biennium	Bridge	$ 384,160	$799,758
Blaine County	Blaine	2013 Biennium	Bridge	$ 434,309	$901,890
Chinook, City of	Blaine	2015 Biennium	Water	$ 750,000	$2,998,900
Harlem, City of	Blaine	2015 Biennium	Wastewater	$ 625,000	$2,363,829
Blaine County	Blaine	2015 Biennium	Bridge	$ 254,000	$509,347
			Total	**$ 5,168,123**	**$16,375,210**
Butte - Silver Bow County					
Butte-Silver Bow County	Butte Silver Bow	1995 Biennium	Water	$ 300,000	$24,706,000
Butte-Silver Bow County	Butte Silver Bow	1997 Biennium	Wastewater	$ 500,000	$6,304,485
Ramsay County District	Butte Silver Bow	2005 Biennium	Water	$ 255,000	$519,000
Butte-Silver Bow County	Butte Silver Bow	2009 Biennium	Water	$ 750,000	$4,924,431
			Total	**$ 1,805,000**	**$36,453,916**

Carbon County						
Carbon County	Carbon	1995 Biennium	Bridge	$	25,000	$120,100
Redlodge, City of	Carbon	2001 Biennium	Wastewater	$	500,000	$4,909,000
Carbon County	Carbon	2007 Biennium	Bridge	$	97,100	$194,200
Red Lodge, City of	Carbon	2009 Biennium	Water	$	750,000	$3,770,000
Carbon County	Carbon	2011 Biennium	Bridge	$	492,915	$985,830
Roberts - Carbon Co W & S District	Carbon	2013 Biennium	Wastewater	$	500,000	$1,189,632
Joliet, Town of	Carbon	2015 Biennium	Wastewater	$	154,200	$2,388,000
Carbon County	Carbon	2015 Biennium	Bridge	$	455,675	$911,350
			Total	**$**	**2,974,890**	**$14,468,112**
Carter County						
Ekalaka, Town of	Carter	2001 Biennium	Wastewater	$	87,200	$178,400
Ekalaka, Town of	Carter	2005 Biennium	Wastewater	$	154,197	$435,395
Ekalaka, Town of	Carter	2009 Biennium	W & WW	$	706,369	$1,412,738
			Total	**$**	**947,766**	**$2,026,533**
Cascade County						
Neihart, Town of	Cascade	1995 Biennium	Water	$	544,673	$724,673
Neihart, Town of	Cascade	1999 Biennium	Water	$	261,028	$361,028
Cascade, Town of	Cascade	1999 Biennium	Wastewater	$	500,000	$2,336,500
Black Eagle District	Cascade	2005 Biennium	Wastewater	$	214,200	$428,400
Upper-Lower River Road District (Cascade	Cascade	2005 Biennium	W & WW	$	500,000	$3,412,000
Cascade County	Cascade	2005 Biennium	Bridge	$	230,840	$468,680
Cascade, Town of	Cascade	2007 Biennium	Water	$	500,000	$1,283,500
Upper-Lower River Road District (Cascade	Cascade	2007 Biennium	W & WW	$	500,000	$2,907,700
Black Eagle Water & Sewer District	Cascade	2009 Biennium	Water	$	365,000	$730,000
Neihart, Town of	Cascade	2009 Biennium	Water	$	223,000	$448,000
Cascade, Town of	Cascade	2011 Biennium	Water	$	625,000	$1,403,000
Gore Hill Co. Water District	Cascade	2011 Biennium	Water	$	250,300	$895,900
Homestead Acres W&S District	Cascade	2011 Biennium	Water	$	573,325	$1,146,650
Upper & Lower River Rd W&S District	Cascade	2011 Biennium	W & WW	$	500,000	$1,667,600
Brady County W & S District	Cascade	2013 Biennium	Water	$	750,000	$1,657,000
Sun Prairie Village Co W & S District	Cascade	2013 Biennium	Water	$	625,000	$3,576,000
Cascade, Town of	Cascade	2015 Biennium	Water	$	750,000	$2,069,051
Belt, Town of	Cascade	2015 Biennium	Wastewater	$	625,000	$2,480,205
Vaughn Co WSD	Cascade	2015 Biennium	Wastewater	$	750,000	$1,972,645
South Wind WSD	Cascade	2015 Biennium	W & WW	$	750,000	$1,974,500
			Total	**$**	**10,037,366**	**$31,943,032**
Chouteau County						
Fort Benton, City of	Chouteau	1999 Biennium	Water	$	480,244	$1,020,667
Highwood Water & Sewer District	Chouteau	2001 Biennium	Water	$	400,000	$803,560
Geraldine, Town of	Chouteau	2001 Biennium	Wastewater	$	300,000	$811,007
Geraldine, Town of	Chouteau	2003 Biennium	Water	$	167,460	$335,032
Geraldine, Town of	Chouteau	2005 Biennium	Water	$	500,000	$1,235,660
Carter Chouteau County W&S District	Chouteau	2007 Biennium	Water	$	500,000	$1,246,600
Carter-Chouteau County Water & Sewer D	Chouteau	2009 Biennium	Water	$	750,000	$1,500,000
Tri County Water & Sewer District	Chouteau	2009 Biennium	Water	$	313,500	$627,000
Big Sandy, Town of	Chouteau	2009 Biennium	Wastewater	$	750,000	$2,049,318
Fort Benton, City of	Chouteau	2009 Biennium	Solid	$	750,000	$1,542,500
Carter Chouteau Co. W&S District	Chouteau	2011 Biennium	Water	$	750,000	$1,600,000
Loma County W&S District	Chouteau	2011 Biennium	Water	$	750,000	$2,235,800
Big Sandy, Town of	Chouteau	2011 Biennium	Wastewater	$	500,000	$2,707,015
Carter Chouteau County W & S District	Chouteau	2013 Biennium	Water	$	750,000	$1,998,000
Fort Benton, City of	Chouteau	2015 Biennium	Wastewater	$	750,000	$4,230,000
Chouteau County	Chouteau	2015 Biennium	Bridge	$	178,920	$357,840
			Total	**$**	**8,590,124**	**$24,299,999**
Custer County						

Miles City, City of	Custer	1999 Biennium	Water	$	136,000	$273,000
Miles City, City of	Custer	2007 Biennium	Water	$	500,000	$2,517,000
Custer County	Custer	2009 Biennium	Bridge	$	63,750	$127,500
Custer County	Custer	2013 Biennium	Wastewater	$	750,000	$1,998,000
Miles City, City of	Custer	2015 Biennium	Wastewater	$	500,000	$8,400,800
			Total	**$**	**1,949,750**	**$13,316,300**
Daniels County						
Scobey, City of	Daniels	2005 Biennium	Wastewater	$	500,000	$1,936,000
			Total	**$**	**500,000**	**$1,936,000**
Dawson County						
Glendive, City of	Dawson	1999 Biennium	Water	$	500,000	$1,153,918
Richey, Town of	Dawson	1999 Biennium	Water	$	264,340	$537,100
Glendive, City of	Dawson	2005 Biennium	Storm	$	139,133	$305,083
Dawson Co/ WestGlendive	Dawson	2015 Biennium	Wastewater	$	750,000	$3,047,631
Glendive, City of	Dawson	2015 Biennium	Wastewater	$	750,000	$8,879,392
			Total	**$**	**2,403,473**	**$13,923,124**
Fallon County						
Fallon Co. North Baker W&S District	Fallon	2011 Biennium	Wastewater	$	120,000	$1,785,585
Plevna, Town of	Fallon	2015 Biennium	Water	$	500,000	$1,100,000
			Total	**$**	**620,000**	**$2,885,585**
Fergus County						
Lewistown, City of	Fergus	1995 Biennium	Storm	$	60,000	$165,264
Lewistown, City of	Fergus	1997 Biennium	Water	$	500,000	$6,516,600
Denton, Town of	Fergus	2001 Biennium	Wastewater	$	415,000	$865,200
Fergus County	Fergus	2009 Biennium	Bridge	$	238,362	$476,724
Winifred, Town of	Fergus	2011 Biennium	Wastewater	$	500,000	$1,352,500
Fergus County	Fergus	2011 Biennium	Bridge	$	167,200	$335,009
Fergus County	Fergus	2013 Biennium	Bridge	$	276,157	$552,314
Moore, Town of	Fergus	2015 Biennium	Wastewater	$	625,000	$1,880,000
Winifred, Town of	Fergus	2015 Biennium	Wastewater	$	500,000	$2,498,000
			Total	**$**	**3,281,719**	**$14,641,611**
Flathead County						
Coram Water & Sewer District	Flathead	1999 Biennium	Water	$	500,000	$1,053,722
Lakeside Water District	Flathead	1999 Biennium	Water	$	500,000	$1,100,000
Columbia Falls, City of	Flathead	2001 Biennium	Wastewater	$	500,000	$3,277,000
Whitefish, City of	Flathead	2003 Biennium	Wastewater	$	500,000	$1,132,690
Ranch County Water District (Flathead Co.	Flathead	2007 Biennium	Water	$	500,000	$1,050,000
Whitefish, City of	Flathead	2007 Biennium	Water	$	457,500	$915,000
Panoramic Mountain River Heights County Water District	Flathead	2009 Biennium	Water	$	191,500	$383,000
RAE Water & Sewer District	Flathead	2009 Biennium	Water	$	750,000	$1,608,051
Whitefish, City of	Flathead	2009 Biennium	Water	$	750,000	$1,774,480
Columbia Falls, City of	Flathead	2009 Biennium	Wastewater	$	750,000	$3,900,000
Flathead Co. WD #8 (Happy Valley)	Flathead	2011 Biennium	Water	$	500,000	$1,212,000
Whitefish, City of	Flathead	2011 Biennium	Wastewater	$	500,000	$1,599,650
Flathead County for Bigfork	Flathead	2011 Biennium	Storm	$	625,000	$1,515,000
			Total	**$**	**7,024,000**	**$20,520,593**
Gallatin County						
Gallatin Co./Rae Subdivision	Gallatin	1995 Biennium	Water	$	33,245	$66,490
Rae Water & Sewer District (Gallatin Co.)	Gallatin	2001 Biennium	Wastewater	$	485,850	$971,700
Willow Creek Sewer District	Gallatin	2001 Biennium	Wastewater	$	500,000	$1,031,400
Manhattan, Town of	Gallatin	2003 Biennium	Wastewater	$	500,000	$2,726,068
Gallatin County	Gallatin	2005 Biennium	Bridge	$	500,000	$1,015,400
Manhattan, Town of	Gallatin	2009 Biennium	Water	$	600,000	$2,652,000

Bozeman, City of	Gallatin	2011 Biennium	Wastewater	$	500,000	$58,215,000
Bridger Pines Co. W&S District	Gallatin	2011 Biennium	Wastewater	$	400,000	$2,093,500
Gallatin Gateway County W & S District	Gallatin	2013 Biennium	Wastewater	$	750,000	$4,315,000
Hebgen Lake Estates Co W & S District	Gallatin	2013 Biennium	Wastewater	$	720,000	$1,477,448
West Yellowstone/Hebgen Basin Refuge	Gallatin	2013 Biennium	Solid Waste	$	246,563	$493,126
Manhattan, Town of	Gallatin	2015 Biennium	Water	$	750,000	$1,855,000
Amsterdam/Churchill Sewer Dist	Gallatin	2015 Biennium	Wastewater	$	750,000	$3,160,368
Three Forks, City of	Gallatin	2015 Biennium	Wastewater	$	750,000	$4,529,155
Jordan, Town of	Garfield	2005 Biennium	Water	$	459,883	$1,228,981
Jordan, Town of	Garfield	2009 Biennium	Wastewater	$	700,000	$1,422,953
			Total	**$**	**8,645,541**	**$87,253,589**
Glacier County						
East Glacier Water & Sewer District	Glacier	1997 Biennium	Water	$	306,555	$747,510
Cut Bank, City of	Glacier	2001 Biennium	Water	$	500,000	$3,234,000
Browning, Town of/Blackfeet Tribe	Glacier	2003 Biennium	Water	$	500,000	$11,210,000
Essex Water & Sewer District	Glacier	2003 Biennium	Water	$	225,000	$827,292
Glacier County	Glacier	2007 Biennium	Bridge	$	500,000	$1,880,418
Cut Bank, City of	Glacier	2009 Biennium	Water	$	550,000	$1,329,000
Cut Bank, City of	Glacier	2011 Biennium	Water	$	500,000	$1,100,000
Cut Bank, City of	Glacier	2015 Biennium	Wastewater	$	625,000	$8,131,000
Glacier County	Glacier	2015 Biennium	Bridge	$	281,927	$563,854
			Total	**$**	**3,988,482**	**$29,023,074**
Golden Valley County						
Lavina, Town of	Golden Valley	2003 Biennium	Wastewater	$	483,000	$994,000
Ryegate, Town of	Golden Valley	2005 Biennium	Water	$	478,700	$957,449
			Total	**$**	**961,700**	**$1,951,449**
Granite County						
Philipsburg, Town of	Granite	2001 Biennium	Water	$	121,900	$629,253
Drummond, Town of	Granite	2001 Biennium	Wastewater	$	292,850	$595,880
Philipsburg, Town of	Granite	2011 Biennium	Wastewater	$	750,000	$6,053,822
Granite County	Granite	2011 Biennium	Solid Waste	$	197,000	$403,700
Granite County	Granite	2013 Biennium	Bridge	$	276,408	$552,816
Philipsburg, Town of	Granite	2015 Biennium	Water	$	550,000	$1,120,000
Granite County	Granite	2015 Biennium	Bridge	$	376,004	$752,008
			Total	**$**	**2,564,162**	**$10,107,479**
Hill County						
Hill County Water District	Hill	1997 Biennium	Water	$	500,000	$1,150,000
Box Elder Water District	Hill	1999 Biennium	Wastewater	$	462,000	$929,000
Havre, City of	Hill	2001 Biennium	Water	$	303,747	$793,606
Havre, City of	Hill	2003 Biennium	Water	$	500,000	$1,043,000
Hill County	Hill	2005 Biennium	Bridge	$	175,803	$360,684
Havre, City of	Hill	2007 Biennium	Water	$	500,000	$1,150,000
Rudyard County Water and Sewer District	Hill	2007 Biennium	Wastewater	$	524,503	$883,903
Hill County	Hill	2007 Biennium	Bridge	$	450,750	$901,598
Gildford Co. W&S District	Hill	2011 Biennium	Wastewater	$	538,000	$1,097,800
Rudyard County W&S District	Hill	2011 Biennium	Wastewater	$	319,000	$648,000
North Havre County Water District	Hill	2013 Biennium	Water	$	590,000	$181,250
Hill County	Hill	2013 Biennium	Bridge	$	174,082	$348,164
Havre, City of	Hill	2015 Biennium	Wastewater	$	500,000	$8,966,411
Hill County - N Havre	HIll	2015 Biennium	Wastewater	$	211,500	$423,000
			Total	**$**	**5,749,385**	**$18,876,416**
Whitehall, Town of	Jefferson	1997 Biennium	Water	$	500,000	$1,275,000
Whitewater Water & Sewer District	Jefferson	2003 Biennium	Water	$	500,000	$1,062,969
Whitehall, Town of	Jefferson	2009 Biennium	Wastewater	$	750,000	$3,462,100
Jefferson County	Jefferson	2009 Biennium	Bridge	$	295,800	$591,600
Jefferson County	Jefferson	2011 Biennium	Bridge	$	160,690	$321,380

Jefferson County	Jefferson	2013 Biennium	Bridge	$	218,634	$437,268
Boulder, City of	Jefferson	2015 Biennium	Wastewater	$	625,000	$4,882,000
Jefferson County	Jefferson	2015 Biennium	Bridge	$	381,882	$763,764
Boulder, City of	Jefferson	2001 Biennium	Water	$	500,000	$1,917,000
			Total	**$**	**3,932,006**	**$14,713,081**
Judith Basin County						
Stanford, Town of	Judith Basin	2003 Biennium	Wastewater	$	500,000	$1,655,500
Geyser District/Judith Basin County	Judith Basin	2005 Biennium	Water	$	330,000	$1,249,000
Stanford, Town of	Judith Basin	2005 Biennium	Water	$	500,000	$1,936,900
Judith Basin County	Judith Basin	2009 Biennium	Bridge	$	192,215	$384,430
Judith Basin County	Judith Basin	2015 Biennium	Bridge	$	235,211	$470,423
			Total	**$**	**1,757,426**	**$5,696,253**
Lake County						
Ronan, City of	Lake	1995 Biennium	Wastewater	$	100,000	$879,662
Arlee Water & Sewer District	Lake	2001 Biennium	Wastewater	$	500,000	$2,589,033
Charlo Sewer District	Lake	2003 Biennium	Wastewater	$	500,000	$1,520,029
Polson, City of	Lake	2005 Biennium	Water	$	500,000	$1,236,918
Sheaver's Creek District (Lake Co.)	Lake	2005 Biennium	Water	$	500,000	$1,948,000
Pablo-Lake County Water & Sewer District	Lake	2005 Biennium	Wastewater	$	500,000	$3,180,654
Lake County Solid Waste District	Lake	2005 Biennium	Solid Waste	$	500,000	$2,197,000
Woods Bay Homesites Lake County W&S District	Lake	2007 Biennium	Water	$	500,000	$1,258,125
Big Fork County Water & Sewer District	Lake	2007 Biennium	Wastewater	$	460,000	$729,100
St. Ignatius, Town of	Lake	2007 Biennium	Wastewater	$	500,000	$3,919,000
Polson, City of	Lake	2009 Biennium	Water	$	750,000	$1,072,750
Thompson Falls, City of	Lake	2009 Biennium	Water	$	363,000	$735,250
Bigfork County Water & Sewer District	Lake	2009 Biennium	Wastewater	$	750,000	$1,949,000
Jette Meadows W&S District	Lake	2011 Biennium	Water	$	750,000	$2,533,490
Ronan, City of	Lake	2011 Biennium	Water	$	750,000	$5,795,000
St. Ignatius, Town of	Lake	2011 Biennium	Water	$	253,000	$506,000
Bigfork Co. W&S District	Lake	2011 Biennium	Wastewater	$	750,000	$5,634,000
Bigfork W & S District	Lake	2013 Biennium	Water	$	750,000	$2,654,000
Polson, City of	Lake	2013 Biennium	Water	$	625,000	$2,414,500
Polson, City of	Lake	2015 Biennium	Water	$	625,000	$1,480,620
			Total	**$**	**10,926,000**	**$44,232,131**
Lewis & Clark County						
Augusta Water & Sewer District	Lewis & Clark	2001 Biennium	Wastewater	$	500,000	$1,526,000
Helena, City of	Lewis & Clark	1995 Biennium	Water	$	338,633	$1,100,271
Lewis and Clark County	Lewis & Clark	1999 Biennium	Bridge	$	64,125	$258,250
Helena, City of	Lewis & Clark	2001 Biennium	Water	$	500,000	$9,200,000
La Casa Grande District (Lewis & Clark Co	Lewis & Clark	2001 Biennium	Water	$	500,000	$1,045,000
Lewis and Clark County	Lewis & Clark	2001 Biennium	Bridge	$	500,000	$1,165,985
Lewis and Clark County		2003 Biennium	Bridge	$	500,000	$1,038,000
Lewis and Clark County	Lewis & Clark	2005 Biennium	Bridge	$	170,575	$341,150
Lewis & Clark County	Lewis & Clark	2007 Biennium	Wastewater	$	288,757	$1,094,506
Lewis & Clark County	Lewis & Clark	2009 Biennium	Water	$	596,420	$1,404,768
Wolf Creek Co. W&S District	Lewis & Clark	2011 Biennium	Wastewater	$	750,000	$2,254,820
Lewis and Clark County	Lewis & Clark	2011 Biennium	Bridge	$	456,628	$913,256
Augusta W & S District	Lewis & Clark	2013 Biennium	Wastewater	$	295,000	$590,000
East Helena, City of	Lewis & Clark	2013 Biennium	Wastewater	$	750,000	$5,081,052
Craig WSD	Lewis & Clark	2015 Biennium	Wastewater	$	750,000	$3,332,755
Lewis & Clark Co	Lewis & Clark	2015 Biennium	Bridge	$	231,493	$447,986
Helena, City of	Lewis& Clark	1999 Biennium	Wastewater	$	500,000	$8,921,367
			Total	**$**	**7,691,631**	**$39,715,166**
Liberty County						
Chester, Town of	Liberty	2001 Biennium	Water	$	220,150	$440,300
South Chester County Water District	Liberty	2011 Biennium	Water	$	131,000	$244,072

			Total	**$**	**351,150**	**$684,372**
Lincoln County						
Troy, City of	Lincoln	1997 Biennium	Wastewater	$	500,000	$4,691,825
Eureka, Town of	Lincoln	2003 Biennium	Water	$	369,000	$791,500
Troy, City of	Lincoln	2005 Biennium	Water	$	500,000	$2,030,800
Libby, City of	Lincoln	2005 Biennium	W & WW	$	500,000	$1,221,275
Libby, City of	Lincoln	2007 Biennium	Wastewater	$	500,000	$2,591,000
Em-Kayan Co. W&S District	Lincoln	2011 Biennium	Water	$	290,619	$581,238
Eureka, Town of	Lincoln	2011 Biennium	Water	$	625,000	$1,785,000
Troy, City of	Lincoln	2011 Biennium	Water	$	715,000	$1,536,000
Eureka, Town of	Lincoln	2013 Biennium	Wastewater	$	625,000	$2,590,000
Eureka, Town of	Lincoln	2015 Biennium	Water	$	550,000	$1,100,000
Libby, City of	Lincoln	2015 Biennium	Water	$	750,000	$8,797,000
			Total	**$**	**5,924,619**	**$27,715,638**
Madison County						
Ennis, Town of	Madison	1995 Biennium	Water	$	100,000	$1,114,600
Twin Bridges, Town of	Madison	1999 Biennium	Water	$	500,000	$1,268,500
Harrison Water & Sewer District	Madison	2001 Biennium	Wastewater	$	500,000	$1,600,000
Virginia City, Town of	Madison	2003 Biennium	Wastewater	$	500,000	$1,847,460
Madison County	Madison	2005 Biennium	Bridge	$	174,529	$349,058
Ennis, Town of	Madison	2007 Biennium	Wastewater	$	204,894	$409,788
Madison County	Madison	2007 Biennium	Bridge	$	179,911	$359,822
Twin Bridges, Town of	Madison	2009 Biennium	Wastewater	$	750,000	$2,942,100
Madison County	Madison	2009 Biennium	Bridge	$	370,100	$740,200
Madison County	Madison	2011 Biennium	Bridge	$	413,203	$826,406
Sheridan, Town of	Madison	2013 Biennium	Wastewater	$	750,000	$7,114,400
Madison County	Madison	2013 Biennium	Bridge	$	699,931	$1,399,862
			Total	**$**	**5,142,568**	**$19,972,196**
McCone County						
Circle, Town of	McCone	1995 Biennium	Water	$	370,000	$2,842,360
Circle, Town of	McCone	2009 Biennium	Wastewater	$	750,000	$1,528,000
			Total	**$**	**1,120,000**	**$4,370,360**
Meagher County						
White Sulphur Springs, City of	Meagher	2015 Biennium	Wastewater	$	460,500	$988,000
			Total	**$**	**460,500**	**$988,000**
Mineral County						
Mineral County	Mineral	2007 Biennium	Bridge	$	80,090	$160,180
Superior, Town of	Mineral	2009 Biennium	Water	$	600,000	$1,236,032
Alberton, Town of	Mineral	2015 Biennium	Wastewater	$	292,000	$623,000
			Total	**$**	**972,090**	**$2,019,212**
Missoula County						
Missoula County (Sunset West Subdivisior	Missoula	1995 Biennium	Water	$	154,107	$309,107
Seeley Lake Sewer District	Missoula	1997 Biennium	Water	$	464,364	$1,321,464
East Missoula Sewer District	Missoula	1999 Biennium	Wastewater	$	500,000	$4,600,000
Missoula, City of	Missoula	1999 Biennium	Wastewater	$	500,000	$3,294,000
Missoula, City of	Missoula	2001 Biennium	Wastewater	$	500,000	$5,532,607
Alder Water & Sewer District	Missoula	2003 Biennium	Wastewater	$	500,000	$1,722,500
Missoula, City of	Missoula	2005 Biennium	Wastewater	$	500,000	$5,825,267
Spring Meadows County Water District (Missoula Co.)	Missoula	2007 Biennium	Water	$	487,500	$1,024,700
Missoula County	Missoula	2007 Biennium	Bridge	$	275,172	$550,334
Elk Meadows Ranchettes County Water Di	Missoula	2009 Biennium	Water	$	410,000	$837,630
Goodan-Keil County Water District	Missoula	2009 Biennium	Water	$	532,250	$1,079,464
Seeley Lake - Missoula County Water Dist	Missoula	2009 Biennium	Water	$	750,000	$3,831,000

Sunny Meadows Missoula County Water & Sewer District	Missoula	2009 Biennium	Water	$	325,000	$669,500
Seeley Lake Sewer District	Missoula	2015 Biennium	Wastewater	$	750,000	$6,907,000
Missoula County	Missoula	2015 Biennium	Bridge	$	480,372	$960,745
Missoula County	Missoulla	2005 Biennium	Wastewater	$	499,335	$2,105,155
			Total	**$**	**7,628,100**	**$40,570,473**
Musselshell County						
Roundup, City of	Musselshell	1999 Biennium	Wastewater	$	500,000	$2,391,187
Melstone, Town of	Musselshell	2011 Biennium	Water	$	625,000	$2,307,372
Roundup, City of	Musselshell	2013 Biennium	Water	$	500,000	$1,260,000
Musselshell Co WSD	Musselshell	2015 Biennium	Water	$	450,125	$900,250
Roundup, City of	Musselshell	2015 Biennium	Water	$	500,000	$1,250,273
			Total	**$**	**2,575,125**	**$8,109,082**
Park County						
Livingston, City of	Park	1995 Biennium	Storm	$	100,000	$200,000
Gardiner-Park County District	Park	1997 Biennium	Water	$	300,000	$1,085,000
Gardiner-Park County District	Park	2003 Biennium	Water	$	398,500	$798,343
Park City County Water & Sewer District	Park	2003 Biennium	Wastewater	$	500,000	$1,579,690
Cooke City-Park County District	Park	2005 Biennium	Water	$	500,000	$1,382,000
Gardiner-Park County District	Park	2005 Biennium	Water	$	500,000	$1,511,800
Gardiner Park Co. W&S District	Park	2011 Biennium	Wastewater	$	358,000	$721,145
Livingston, City of	Park	2011 Biennium	Solid Waste	$	500,000	$1,468,250
Park County	Park	2015 Biennium	Bridge	$	109,955	$219,990
			Total	**$**	**3,266,455**	**$8,966,218**
Petroleum County						
Winnett, Town of	Petroleum	2015 Biennium	Wastewater	$	750,000	$2,304,000
			Total	**$**	**750,000**	**$2,304,000**
Phillips County						
Green Meadow District (Phillips County)	Phillips	2005 Biennium	Water	$	112,500	$255,400
Dodson, Town of	Phillips	2007 Biennium	Wastewater	$	427,500	$1,058,862
Malta, City of	Phillips	2007 Biennium	Wastewater	$	500,000	$4,791,000
Malta, City of	Phillips	2015 Biennium	Water	$	500,000	$6,157,500
			Total	**$**	**1,540,000**	**$12,262,762**
Pondera County						
Conrad, City of	Pondera	1997 Biennium	Water	$	180,000	$360,000
Valier, Town of	Pondera	1999 Biennium	Wastewater	$	500,000	$1,200,000
Conrad, City of	Pondera	2005 Biennium	Water	$	500,000	$3,980,300
Pondera County	Pondera	2005 Biennium	Bridge	$	137,500	$275,000
Conrad, City of	Pondera	2007 Biennium	Wastewater	$	500,000	$1,697,700
Valier, Town of	Pondera	2007 Biennium	Wastewater	$	500,000	$1,919,000
Brady County Water & Sewer District	Pondera	2009 Biennium	Wastewater	$	750,000	$3,208,000
Valier, Town of	Pondera	2011 Biennium	Water	$	625,000	$2,165,692
Conrad, City of	Pondera	2015 Biennium	Water	$	625,000	$1,479,995
Valier, Town of	Pondera	2015 Biennium	Wastewater	$	750,000	$1,983,930
			Total	**$**	**5,067,500**	**$18,269,617**
Powell County						
Powell County	Powell	1997 Biennium	Bridge	$	51,334	$123,934
Powell County	Powell	2007 Biennium	Bridge	$	158,348	$316,696
Powell County	Powell	2009 Biennium	Bridge	$	263,074	$526,148
Powell County	Powell	2011 Biennium	Bridge	$	304,248	$608,496
Deer Lodge, City of	Powell	2013 Biennium	Wastewater	$	500,000	$4,745,312
Powell County	Powell	2015 Biennium	Bridge	$	320,940	$641,880
			Total	**$**	**1,597,944**	**$6,962,466**
Prairie County						

Terry, Town of	Prairie	1999 Biennium	Wastewater	$	500,000	$1,495,200
			Total	**$**	**500,000**	**$1,495,200**
Ravalli County						
Hamilton, City of	Ravalli	1997 Biennium	Wastewater	$	137,632	$662,632
Hamilton, City of	Ravalli	1999 Biennium	Wastewater	$	500,000	$1,031,000
Corvallis Sewer District	Ravalli	2001 Biennium	Wastewater	$	410,760	$1,034,250
Florence Water & Sewer District	Ravalli	2003 Biennium	Wastewater	$	500,000	$5,440,000
Hamilton, City of	Ravalli	2005 Biennium	Water	$	500,000	$1,971,787
Darby, Town of	Ravalli	2009 Biennium	Water	$	750,000	$5,643,111
Pinesdale, Town of	Ravalli	2009 Biennium	Water	$	750,000	$1,759,819
Hamilton, City of	Ravalli	2009 Biennium	Wastewater	$	750,000	$3,101,000
Stevensville, Town of	Ravalli	2011 Biennium	Water	$	500,000	$3,970,000
Ravalli County	Ravalli	2011 Biennium	Bridge	$	137,193	$274,387
Ravalli County	Ravalli	2013 Biennium	Bridge	$	142,616	$285,232
Pinesdale, Town of	Ravalli	2015 Biennium	Water	$	750,000	$2,541,939
Hamilton, City of	Ravalli	2015 Biennium	Wastewater	$	322,262	$2,301,000
Stevensville, Town of	Ravalli	2015 Biennium	Wastewater	$	750,000	$3,755,620
Ravalli County	Ravalli	2015 Biennium	Bridge	$	212,489	$439,978
			Total	**$**	**7,112,952**	**$34,211,755**
Richland County						
Richland County	Richland	2005 Biennium	Bridge	$	351,625	$703,250
Richland County	Richland	1995 Biennium	Solid Waste	$	285,000	$1,180,000
Fairview, Town of	Richland	1997 Biennium	Water	$	500,000	$1,595,000
Richland County	Richland	2001 Biennium	Bridge	$	181,155	$362,310
Lambert County Water & Sewer District	Richland	2003 Biennium	Water	$	403,000	$806,450
Richland County		2003 Biennium	Bridge	$	296,500	$593,000
Richland County	Richland	2007 Biennium	Bridge	$	453,841	$907,682
Richland Co -Savage 2M	Richland	2015 Biennium	Wastewater	$	750,000	$2,165,000
			Total	**$**	**3,221,121**	**$8,312,692**
Roosevelt County						
Froid, Town of	Roosevelt	1995 Biennium	Water	$	117,000	$576,600
Froid, Town of	Roosevelt	2003 Biennium	Wastewater	$	390,600	$781,200
Wolf Point, City of	Roosevelt	2005 Biennium	Wastewater	$	500,000	$1,966,500
Bainville, Town of	Roosevelt	2009 Biennium	Wastewater	$	715,000	$1,468,608
			Total	**$**	**1,722,600**	**$4,792,908**
Rosebud County						
Ashland Water & Sewer District	Rosebud	2003 Biennium	Wastewater	$	500,000	$1,467,500
Forsyth, City of	Rosebud	2015 Biennium	Wastewater	$	500,000	$3,434,700
			Total	**$**	**1,000,000**	**$4,902,200**
Sanders County						
Thompson Falls, City of	Sanders	1997 Biennium	Wastewater	$	400,644	$1,477,144
Thompson Falls, City of	Sanders	2001 Biennium	Water	$	500,000	$2,671,300
Hot Springs, Town of	Sanders	2003 Biennium	Water	$	500,000	$2,843,591
Hot Springs, Town of	Sanders	2015 Biennium	Water	$	592,550	$1,185,100
			Total	**$**	**1,993,194**	**$8,177,135**
Sheridan County						
Sheridan County	Sheridan	2005 Biennium	Bridge	$	210,775	$421,550
Sheridan, Town of	Sheridan	2007 Biennium	Water	$	500,000	$1,561,400
			Total	**$**	**710,775**	**$1,982,950**
Stillwater County						
Stillwater County (Reedpoint)	Stillwater	1995 Biennium	Wastewater	$	200,000	$1,312,645
Stillwater County	Stillwater	2005 Biennium	Bridge	$	500,000	$919,134
Stillwater County	Stillwater	2007 Biennium	Bridge	$	399,853	$799,706
Stillwater County	Stillwater	2009 Biennium	Bridge	$	407,500	$815,000

Stillwater County	Stillwater	2011 Biennium	Bridge	$	292,979	$585,958
Stillwater County	Stillwater	2015 Biennium	Bridge	$	205,028	$410,056
			Total	**$**	**2,005,360**	**$4,842,499**
Sweet Grass County						
Big Timber, City of	Sweet Grass	2001 Biennium	Wastewater	$	500,000	$1,796,275
Sweetgrass Community Water & Sewer Di	Sweet Grass	2001 Biennium	Wastewater	$	213,000	$631,000
Sweet Grass County	Sweet Grass	2005 Biennium	Bridge	$	235,954	$471,908
Sweet Grass County	Sweet Grass	2007 Biennium	Bridge	$	144,989	$289,978
Sweet Grass County	Sweet Grass	2009 Biennium	Bridge	$	151,493	$302,986
Sweet Grass Community Co. W&S District	Sweet Grass	2011 Biennium	Water	$	625,000	$1,424,740
Sweet Grass County	Sweet Grass	2011 Biennium	Bridge	$	93,360	$186,720
Sweet Grass County	Sweet Grass	2013 Biennium	Bridge	$	156,678	$313,357
			Total	**$**	**2,120,474**	**$5,416,964**
Teton County						
Dutton, Town of	Teton	1995 Biennium	Water	$	50,000	$118,700
Power/Teton County Water & Sewer Distri	Teton	2003 Biennium	Water	$	425,000	$835,000
Choteau, City of	Teton	2003 Biennium	Wastewater	$	500,000	$1,528,935
Power-Teton County District	Teton	2005 Biennium	Water	$	500,000	$939,900
Choteau, City of	Teton	2007 Biennium	Water	$	500,000	$2,400,000
Power-Teton County Water & Sewer Distri	Teton	2009 Biennium	Water	$	604,286	$805,714
Fairfield, Town of	Teton	2009 Biennium	Wastewater	$	750,000	$2,391,200
Bynum/Teton Co. W&S District	Teton	2011 Biennium	Water	$	567,000	$1,450,000
Choteau, City of	Teton	2011 Biennium	Wastewater	$	500,000	$1,240,200
Dutton, Town of	Teton	2011 Biennium	Wastewater	$	500,000	$1,782,000
Fairfield, Town of	Teton	2013 Biennium	Water	$	500,000	$10,000,000
Dutton, Town of	Teton	2015 Biennium	Water	$	408,500	$832,555
Choteau, City of	Teton	2015 Biennium	Wastewater	$	750,000	$7,804,370
Fairfield, Town of	Teton	2015 Biennium	Wastewater	$	625,000	$2,629,753
			Total	**$**	**7,179,786**	**$34,758,327**
Toole County						
Shelby, City of	Toole	1995 Biennium	Wastewater	$	366,000	$1,051,300
Shelby, City of	Toole	2003 Biennium	Water	$	500,000	$1,238,000
Kevin, Town of	Toole	2003 Biennium	Wastewater	$	385,000	$770,000
Shelby, City of	Toole	2009 Biennium	Water	$	750,000	$1,500,000
Kevin, Town of	Toole	2011 Biennium	Water	$	500,000	$1,231,000
Shelby, City of	Toole	2015 Biennium	Storm	$	625,000	$2,116,799
Shelby, City of	Toole	2011 Biennium	Wastewater	$	625,000	$1,500,000
			Total	**$**	**3,751,000**	**$9,407,099**
Treasure County						
Hysham, Town of	Treasure	1997 Biennium	Wastewater	$	127,500	$405,000
Hysham, Town of	Treasure	2007 Biennium	Water	$	462,359	$924,719
			Total	**$**	**589,859**	**$1,329,719**
Valley County						
Fort Peck Water District	Valley	1999 Biennium	Water	$	500,000	$7,300,000
Glasgow, City of	Valley	1999 Biennium	Wastewater	$	500,000	$2,048,000
Glasgow, City of	Valley	2001 Biennium	Wastewater	$	500,000	$1,600,000
Hinsdale Water & Sewer District	Valley	2003 Biennium	Wastewater	$	329,000	$659,000
Nashua, Town of	Valley	2003 Biennium	Wastewater	$	500,000	$1,333,935
Glasgow, City of	Valley	2007 Biennium	Wastewater	$	500,000	$1,607,900
North Valley County Water & Sewer Distric	Valley	2009 Biennium	Water	$	750,000	$2,092,500
Nashua, Town of	Valley	2011 Biennium	Water	$	421,300	$855,820
			Total	**$**	**4,000,300**	**$17,497,155**
Wheatland County						
Judith Gap, Town of	Wheatland	1999 Biennium	Wastewater	$	130,000	$630,000

Harlowton, Town of	Wheatland	2011 Biennium	Water	$	500,000	$1,408,778
Judith Gap, Town of	Wheatland	2011 Biennium	W & WW	$	750,000	$1,668,000
Harlowton	Wheatland	2015 Biennium	Wastewater	$	625,000	$1,611,000
			Total	**$**	**2,005,000**	**$5,317,778**
Wibaux County						
Wibaux, Town of	Wibaux	2011 Biennium	Wastewater	$	500,000	$1,032,000
			Total	**$**	**500,000**	**$1,032,000**
Yellowstone County						
Yellowstone County	Yellowstone	1995 Biennium	Bridge	$	95,500	$193,110
South Hills Water & Sewer District (Yellowstone Co.)	Yellowstone	2001 Biennium	Water	$	500,000	$1,035,000
Lockwood Water & Sewer District	Yellowstone	2003 Biennium	Wastewater	$	500,000	$8,637,453
Worden-Ballantine Water & Sewer District	Yellowstone	2005 Biennium	Water	$	500,000	$1,474,522
Custer Area-Yellowstone Co. W&S District	Yellowstone	2007 Biennium	Wastewater	$	500,000	$1,369,816
Yellowstone County		2003 Biennium	Bridge	$	300,000	$1,043,000
Laurel, City of	Yellowstone	2007 Biennium	Wastewater	$	500,000	$1,033,000
Yellowstone County	Yellowstone	2007 Biennium	Bridge	$	187,800	$375,600
Laurel, City of	Yellowstone	2009 Biennium	Wastewater	$	750,000	$4,632,500
Yellowstone County	Yellowstone	2009 Biennium	Bridge	$	97,079	$194,158
Broadview, Town of	Yellowstone	2011 Biennium	Water	$	500,000	$1,224,000
Laurel, City of	Yellowstone	2011 Biennium	Water	$	625,000	$3,167,710
Lockwood Sewer District	Yellowstone	2011 Biennium	Wastewater	$	500,000	$8,253,534
Yellowstone County	Yellowstone	2011 Biennium	Bridge	$	228,753	$457,507
Lockwood W & S District	Yellowstone	2013 Biennium	Wastewater	$	750,000	$17,086,000
Yellowstone County	Yellowstone	2013 Biennium	Bridge	$	157,227	$314,454
Yellowstone County	Yellowstone	2015 Biennium	Bridge	$	218,439	$435,878
			Total	**$**	**6,909,798**	**$50,927,242**