

A Fiscal Evaluation of State Taxes – Hypothetical Power Plant Facility

## **A Fiscal Evaluation of State Taxes in Montana, Wyoming, or North Dakota for a Hypothetical Clean Coal Power Plant Facility**

By Dr. Scott Rickard  
Director  
Center for Applied Economic Research  
Montana State University - Billings

This paper reports the results of an evaluation of the impact of the “Clean and Green” property tax incentives proposed in Montana Senate Bill 562 for a hypothetical clean coal-fired power plant built in Montana. This evaluation compares the state tax burden of this facility with and without the property tax relief, as well as how this facility would be taxed in North Dakota and Wyoming. The analysis was conducted by Dr. Scott Rickard, Director of the Center for Applied Economic Research, Montana State University-Billings, under contract from Great Northern Power Development, LP.

### ***The Property Tax Incentives***

The property tax incentives proposed in Montana Senate Bill 562 (SB562) are an attempt to attract increased investment in Montana energy production and transportation infrastructure for clean energy projects such as clean coal, wind power, and biomass energy production<sup>1</sup>. Incentives range from a permanent reduction of 75% (relative to what would currently be paid) for electricity transmission lines carrying 100% clean electricity (produced from clean energy sources) to a 10-year 50% reduction in the property tax paid on equipment used in Montana-based research and development of clean technologies. See Appendix A for a summary of the tax incentives proposed by SB562.

A number of the specific tax incentives focus upon reducing the tax burden paid by coal-based energy conversion facilities which incorporate carbon sequestration technologies. These technologies reduce the amount of carbon dioxide (CO<sub>2</sub>) released into the environment as the electricity, gas, or liquid fuel is produced. For example, pipelines to carry the CO<sub>2</sub> captured by a coal conversion facility to a place where it can be safely sequestered would receive a 75% property tax reduction.

This proposed property tax package also includes disincentives for failing to deal with the generated CO<sub>2</sub>. For example, a new coal gasification project would face a doubling of some property taxes if this facility did not include ways to keep the generated carbon out of the atmosphere.

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<sup>1</sup> For the purposes of this paper, the technologies discussed in the “Clean and Green” property tax incentive will be called “clean technologies”.

## ***The Hypothetical Facility***

The hypothetical facility used for this evaluation is a coal-fueled electricity generation facility (a power plant) that uses Integrated Gasification Combined Cycle (IGCC) technology<sup>2</sup>. IGCC technology can significantly reduce the quantity of CO<sub>2</sub> released into the atmosphere if the appropriate equipment is included in the facility.

The author was asked by a representative of Great Northern Power Development to evaluate a 500 Megawatt IGCC electricity generating power plant with CO<sub>2</sub> capture/sequestration, a coal mining operation sufficient to fuel this facility, and 100 miles of electricity transmission lines and 100 miles of pipeline to be used to move the captured CO<sub>2</sub> to a final sequestration site.

To estimate the taxes paid on this combination, the author adapted the estimated facility costs of a prototype facility of similar size presented in a January 2007 paper written for The Wyoming Infrastructure Authority<sup>3</sup>. The costs presented in that paper were adjusted from 2004 to 2007 and then aggregated into group values that corresponded to the appropriate property tax classifications (and tax rates). The author used average energy values and energy efficiencies to estimate the volume of coal needed to feed this facility and thus estimate the mining costs. It was assumed that sub-bituminous coal would be the fuel source for the Wyoming-based facility and lignite coal would be the source for the North Dakota-based facility. Montana estimates were calculated for both sub-bituminous and lignite grade fuel. Transmission and pipeline values were estimated using an average per-mile value. All of these engineering-based estimates were vetted by industry representatives and found reasonable for tax comparison purposes.

From this process, the following describes the hypothetical project (with capital costs):

- A 500 MW IGCC Power Plant (\$1,284,000,000) including carbon capture equipment costing \$333 million.
- A coal mine producing 2,250,000 tons per year of sub-bituminous coal (\$60,000,000) or 3,000,000 tons per year of lignite (\$75,000,000).
- A 100 mile electricity transmission interconnect line (\$75,000,000).
- A 100 mile CO<sub>2</sub> pipeline (\$105,000,000).

## **Necessary Assumptions**

In order to compare tax burdens between states, the author made several simplifying assumptions. The broadest assumption was that the proposed facility would cost the

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<sup>2</sup> A detailed description of this technology can be found at the web site for Gasification Technologies Council: <http://www.gasification.org/Technology.htm>.

<sup>3</sup> “An Economic Impact Analysis of Proposed Tax Incentives to Attract Integrated Gasification Combined Cycle Power Generation Facilities to Wyoming”, by Roger Coupal, Robert Godby, David Bell, David Taylor, Jamison Pike, and Thomas Foulke, Tables 2 and 3.

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same to build or operate (ignoring taxes) if located in any of the three states. Differences in construction or operating costs could of course change the state and local tax liability, but would make comparing the tax burdens more difficult<sup>4</sup>. Similarly, differences in energy content outside generic sub-bituminous vs. lignite conversions would change the quantity of coal mined to support the facility. While ignoring these factors may mask a regional advantage (i.e. better quality coal in one location), the author does not believe that they detract from the overall validity of this evaluation.

State income taxes were calculated by estimating the net income for each project component, assuming a fixed return on equity and equity ratio. Income tax differences in this evaluation are due solely to differences in state income tax rates.

### **Montana Tax Burden under Current Laws**

In Montana, the property tax burden of an industrial facility depends a great deal upon its location within the state. This is due to the wide variation in property tax mill rates charged across the state (and sometimes even across a county). For the purposes of this analysis, the author assumed that the power plant and mine would be assessed at 218 mills (21.8% of assessed value)<sup>5</sup>. This is the current mill rate for rural Rosebud County home of the Colstrip generating complex. It is also assumed that the transmission lines and pipelines are assessed at 465 mills, which is the 2006 statewide rural average<sup>6</sup>.

#### **Montana Tax Burden with Current Laws - Lignite Fuel<sup>7</sup>**

<b>Tax Unit</b>	<b>Estimated State Tax Burden</b>
Power Plant	\$19,723,799
Coal Mine	\$5,051,566
Transmission Lines	\$5,078,880
Pipeline	\$6,282,612
<b>TOTAL</b>	<b>\$36,136,857</b>

The total estimated state tax burden for the mine/IGCC facility/transmission lines/pipelines is over \$36 million. Power plant taxes include \$13.7 million in property taxes, a 6.75% state income tax, and a per-kilowatt hour generation tax. Coal mining operations would represent over \$5 million in state taxes, including property taxes, income taxes, a 10% state severance tax, a Gross Proceeds tax, and Resource Indemnity

<sup>4</sup> A detailed location-specific evaluation would also mean that, in the end, simplifying assumptions would have to be made to “normalize” the state-level tax differences. The author chose to simplify at the start rather than at the end.

<sup>5</sup> Montana Department of Revenue Biennial Report, July 1, 2004 to June 30, 2006, pp. 116.

<sup>6</sup> *ibid.*

<sup>7</sup> Montana coal tax rates differ depending upon whether the coal is surface mined or from an underground mine. Tax rates also differ depending upon the BTU content of the coal. Taxes on sub-bituminous coal for the hypothetical facility consider here would be about \$750,000 less than for lignite.

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Trust Taxes<sup>8</sup>. The transmission line and pipeline components of the project would represent \$5 million and over \$6 million respectively in state property, income, and other taxes. See Appendix B for a breakdown of each element of these taxes.

### **Montana Tax Burden with SB562 Incentives**

If the property tax incentives proposed in SB562 were enacted into law, the annual state tax burden for the hypothetical facility would be \$21.8 million, a reduction of \$14.4 million compared to the estimated tax burden using current laws. Power plant taxes would decline by \$6.9 million to \$12.9 million annually. Coal mine taxes would be unchanged at a little over \$5 million. Annual state and county transmission line taxes would be \$1.9 million, an annual savings of \$3.1 million. Pipeline taxes would be reduced by \$4.2 million annually to \$1.9 million. See Appendix B for a breakdown of each element of these taxes.

#### **Montana Tax Burden with SB562 Incentives - Lignite Fuel**

<b>Tax Unit</b>	<b>Estimated State Tax Burden</b>
Power Plant	\$12,856,796
Coal Mine	\$5,051,566
Transmission Lines	\$1,941,008
Pipeline	\$1,889,591
<b>TOTAL</b>	<b>\$21,738,960</b>

#### **Annual Montana Tax Savings with SB562 - Lignite Fuel**

<b>Tax Unit</b>	<b>Estimated State Tax Savings</b>
Power Plant	\$6,867,003
Coal Mine	\$0
Transmission Lines	\$3,137,872
Pipeline	\$4,193,021
<b>TOTAL</b>	<b>\$14,397,897</b>

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<sup>8</sup> It was assumed that 70% of the gross value of coal mined was taxable.

### **Wyoming Tax Burden**

Wyoming relies upon a different tax base than does Montana and thus has a different tax structure. For the purposes of this evaluation, it is assumed that if this facility were located in Wyoming it would face the Wyoming 2006 state average property tax mill rate of 62.118 mills<sup>9</sup>.

In Wyoming, the estimated annual tax burden for the hypothetical facility is \$11 million. The power plant facility would pay about \$7.5 million in annual state taxes, all property taxes.<sup>10</sup> Coal mine taxes would total nearly \$4.2 million, including property taxes, an ad valorem tax, and a 7% severance tax rate<sup>11</sup>. Transmission lines and pipelines would account for \$280,000 and \$400,000 respectively. See Appendix B for a breakdown of each element of these taxes.

#### **Wyoming Tax Burden - Sub-bituminous Fuel**

<b>Tax Unit</b>	<b>Estimated State Tax Burden</b>
Power Plant	\$7,488,334
Coal Mine	\$2,805,439
Transmission Lines	\$279,531
Pipeline	\$391,343
<b>TOTAL</b>	<b>\$10,964,648</b>

### **North Dakota Tax Burden**

The North Dakota tax structure offers a number of incentives for power plant construction. The taxes used for this evaluation are based upon operation after several temporary tax incentives have expired, and thus actual burdens would be somewhat lower in the early years of operation than this estimate.

#### **North Dakota Tax Burden - Lignite Fuel**

<b>Tax Unit</b>	<b>Estimated State Tax Burden</b>
Power Plant	\$7,686,096
Coal Mine	\$1,509,140
Transmission Lines	\$322,500
Pipeline	\$1,661,468
<b>TOTAL</b>	<b>\$11,179,204</b>

<sup>9</sup> Wyoming Department of Revenue Annual Report 2006, Edmund J. Schmidt, Director.

<sup>10</sup> Wyoming also has a 4% sales tax on retail electricity sales. However, this tax does not apply to wholesale electricity exported from Wyoming.

<sup>11</sup> Again, the author assumed that only 70% of the coal gross value was taxable.

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Total North Dakota state taxes for the hypothetical facility are \$11.2 million. Annual state taxes for the facility power plant are nearly \$7.7 million, with two-thirds of this value coming from a 6.5% income tax rate and the rest from coal conversion and property taxes. The coal mine would represent \$1.5 million in annual taxes, with most of the cost coming from a \$0.395 per ton severance tax, along with income and property taxes. Transmission lines are taxed at a per-mile rate of \$300 and with income taxes represent approximately \$325,000 in annual taxes. The pipeline component would be taxed by North Dakota at \$1.7 million, with most of the tax coming from property taxes. See Appendix B for a breakdown of each element of these taxes.

### **State Comparison of Tax Burdens**

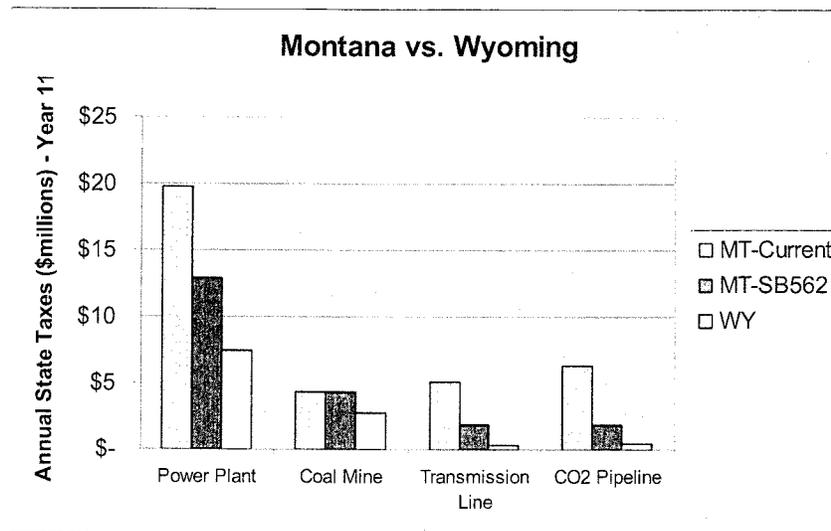
In comparing state tax burdens between Montana and Wyoming and Montana and North Dakota, it should be remembered that the MT-WY comparison assumed that the coal source is sub-bituminous and the MT-ND comparison assumes that the coal is lignite. This coal quality difference changes the Montana taxes associated with the coal mine by around \$750,000.

Under current tax laws, a hypothetical power generation facility as described in this paper would pay an additional \$24.4 million in annual state taxes in Montana than it would in Wyoming. However, if the incentives proposed by SB562 were to become law, Montana taxes would drop by 40% and the difference in annual state taxes between Montana and Wyoming would be reduced to \$10 million.

**Annual Tax Burden Comparison – MT vs. WY (millions)  
- Sub-bituminous Fuel**

	<b>MT- Current</b>	<b>MT- SB562</b>	<b>WY</b>
<b>Power Plant</b>	\$ 19.72	\$ 12.86	\$ 7.49
<b>Coal Mine</b>	\$ 4.30	\$ 4.30	\$ 2.81
<b>Transmission Line</b>	\$ 5.08	\$ 1.94	\$ 0.28
<b>CO2 Pipeline</b>	\$ 6.28	\$ 1.89	\$ 0.39
<b>Total</b>	\$ 35.39	\$ 20.99	\$ 10.96

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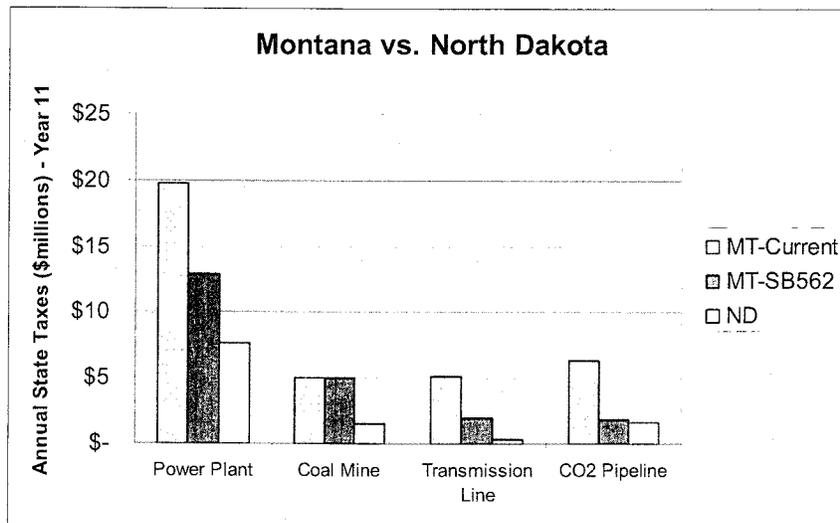


Using the slightly different tax implications of employing lignite coal in North Dakota, the hypothetical facility would pay \$25 million less in annual state taxes if it were located in North Dakota as compared to Montana. If all of the incentives proposed in SB562 were to become law, this tax burden difference would fall to \$10.5 million. However, certain temporary tax incentives offered in North Dakota would increase this difference in tax burdens to about \$13 million during the first five years of operation.

**Annual Tax Burden Comparison – MT vs. ND (million)**

	<b>MT- Current</b>	<b>MT- SB562</b>	<b>ND</b>
<b>Power Plant</b>	\$ 19.72	\$ 12.86	\$ 7.69
<b>Coal Mine</b>	\$ 5.05	\$ 5.05	\$ 1.51
<b>Transmission Line</b>	\$ 5.08	\$ 1.94	\$ 0.32
<b>CO2 Pipeline</b>	\$ 6.28	\$ 1.89	\$ 1.66
<b>Total</b>	\$ 36.14	\$ 21.74	\$ 11.18

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### **Summary**

Based upon an evaluation of tax burdens in Montana, Wyoming, and North Dakota, a hypothetical energy conversion facility which included a coal mine, IGCC power plant with carbon capture/sequestration, transmission lines, and pipelines for CO2 transport, would pay substantially more in state taxes if it were constructed and operated in Montana than if it was located in Wyoming or North Dakota. Under current tax laws, the additional annual state tax burden in Montana is about \$25 million compared to Wyoming or North Dakota. If the relevant property tax reductions proposed in Montana SB562 were placed into the Montana tax code, the additional tax burden paid for Montana operation relative to Wyoming or North Dakota would be about \$10 million annually.



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**Appendix B. Detailed Project Tables**

**Montana Tax Summary**

**Current Laws**

**Using Sub-bituminous Coal**

Power Plant

Property Taxes	\$	13,734,006
Income Taxes @ 6.75%	\$	5,201,394
Generation Tax @ \$0.00020/kWh	\$	<u>788,400</u>
Total	\$	19,723,799

Coal Mine

Property Taxes	\$	399,983
Income Taxes @ 6.75%	\$	243,000
Severance Taxes @ 15%	\$	2,690,415
Gross Proceeds Taxes @ 5%	\$	896,805
RIT Taxes @ 0.4%	\$	<u>71,744</u>
Total	\$	4,301,948

Transmission Line

Property Taxes	\$	4,183,830
Income Taxes @ 6.75%	\$	303,750
WET Tax @ \$0.00015/kWh	\$	<u>591,300</u>
Total	\$	5,078,880

Pipeline

Property Taxes	\$	5,857,362
Income Taxes @ 6.75%	\$	<u>425,250</u>
Total	\$	6,282,612

<b>TOTAL TAXES</b>	<b>\$</b>	<b>35,387,239</b>
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**Montana Tax Summary**  
**Assuming SB562 Tax Rates**  
**Using Sub-Bituminous Coal**

Power Plant		
Property Taxes	\$	6,867,003
Income Taxes @ 6.75%	\$	5,201,394
Generation Tax @ \$0.00020/kWh	\$	788,400
Total	\$	12,856,796
Coal Mine		
Property Taxes	\$	399,983
Income Taxes @ 6.75%	\$	243,000
Severance Taxes @ 15%	\$	2,690,415
Gross Proceeds Taxes @ 5%	\$	896,805
RIT Taxes @ 0.4%	\$	71,744
Total	\$	4,301,948
Transmission Line		
Property Taxes	\$	1,045,958
Income Taxes @ 6.75%	\$	303,750
WET Tax @ \$0.00015/kWh	\$	591,300
Total	\$	1,941,008
Pipeline		
Property Taxes	\$	1,464,341
Income Taxes @ 6.75%	\$	425,250
Total	\$	1,889,591
<b>TOTAL TAXES</b>	<b>\$</b>	<b>20,989,342</b>

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**Wyoming Tax Summary**  
**Current Laws**  
**Using Sub-Bituminous Coal**

Power Plant		
Property Taxes	\$	7,488,334
Total	\$	<u>7,488,334</u>
Coal Mine		
Property Taxes	\$	435,758
Ad Valorem Taxes	\$	1,114,155
Severance Taxes @ 7%	\$	<u>1,255,527</u>
Total	\$	2,805,439
Transmission Line		
Property Taxes	\$	<u>279,531</u>
Total	\$	279,531
Pipeline		
Property Taxes	\$	<u>391,343</u>
Total	\$	391,343
<b>TOTAL TAXES</b>	<b>\$</b>	<b>10,964,648</b>

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**Montana Tax Summary**

**Current Laws**

**Using Lignite Coal**

Power Plant		
Property Taxes	\$	13,734,006
Income Taxes @ 6.75%	\$	5,201,394
Generation Tax @ \$0.00020/kWh	\$	788,400
Total	\$	19,723,799
Coal Mine		
Property Taxes	\$	498,340
Income Taxes @ 6.75%	\$	303,750
Severance Taxes @ 10% (lignite)	\$	2,759,400
Gross Proceeds Taxes @ 5%	\$	1,379,700
RIT Taxes @ 0.4%	\$	110,376
Total	\$	5,051,566
Transmission Line		
Property Taxes	\$	4,183,830
Income Taxes @ 6.75%	\$	303,750
WET Tax @ \$0.00015/kWh	\$	591,300
Total	\$	5,078,880
Pipeline		
Property Taxes	\$	5,857,362
Income Taxes @ 6.75%	\$	425,250
Total	\$	6,282,612
<b>TOTAL TAXES</b>	<b>\$</b>	<b>36,136,857</b>

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**Montana Tax Summary**  
**Assuming SB562 Tax Rates**  
**Using Lignite Coal**

Power Plant		
Property Taxes	\$	6,867,003
Income Taxes @ 6.75%	\$	5,201,394
Generation Tax @ \$0.00020/kWh	\$	<u>788,400</u>
Total	\$	12,856,796
Coal Mine		
Property Taxes	\$	498,340
Income Taxes @ 6.75%	\$	303,750
Severance Taxes @ 10% (lignite)	\$	2,759,400
Gross Proceeds Taxes @ 5%	\$	1,379,700
RIT Taxes @ 0.4%	\$	<u>110,376</u>
Total	\$	5,051,566
Transmission Line		
Property Taxes	\$	1,045,958
Income Taxes @ 6.75%	\$	303,750
WET Tax @ \$0.00015/kWh	\$	<u>591,300</u>
Total	\$	1,941,008
Pipeline		
Property Taxes	\$	1,464,341
Income Taxes @ 6.75%	\$	<u>425,250</u>
Total	\$	1,889,591
<b>TOTAL TAXES</b>	<b>\$</b>	<b>21,738,960</b>

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**North Dakota Tax Summary**

**Current Laws**

**Using Lignite Coal**

Power Plant		
Coal Conversion Taxes	\$	2,522,880
Property Taxes	\$	154,467
Income Taxes @ 6.5%	\$	<u>5,008,749</u>
Total	\$	7,686,096
Coal Mine		
Property Taxes	\$	18,879
Income Taxes @ 6.5%	\$	292,500
Severance Taxes @ \$0.395/ton	\$	<u>1,197,762</u>
Total	\$	1,509,140
Transmission Line		
Property Taxes	\$	30,000
Income Taxes @ 6.5%	\$	<u>292,500</u>
Total	\$	322,500
Pipeline		
Property Taxes	\$	1,251,968
Income Taxes @ 6.5%	\$	<u>409,500</u>
Total	\$	1,661,468
<b>TOTAL TAXES</b>	<b>\$</b>	<b>11,179,204</b>