



# How Montana Returns “Unconventional” Oil Revenue to Local Governments

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## Introduction

This brief shows how Montana’s local governments receive production tax revenue from unconventional oil extraction. Fiscal policy is important for local communities for several reasons. Mitigating the acute impacts associated with drilling activity and related population growth requires that revenue is available in the amount, time, and location necessary to build and maintain infrastructure and to provide services. In addition, managing volatility over time requires different fiscal strategies, including setting aside a portion of oil revenue in permanent funds.<sup>1</sup>

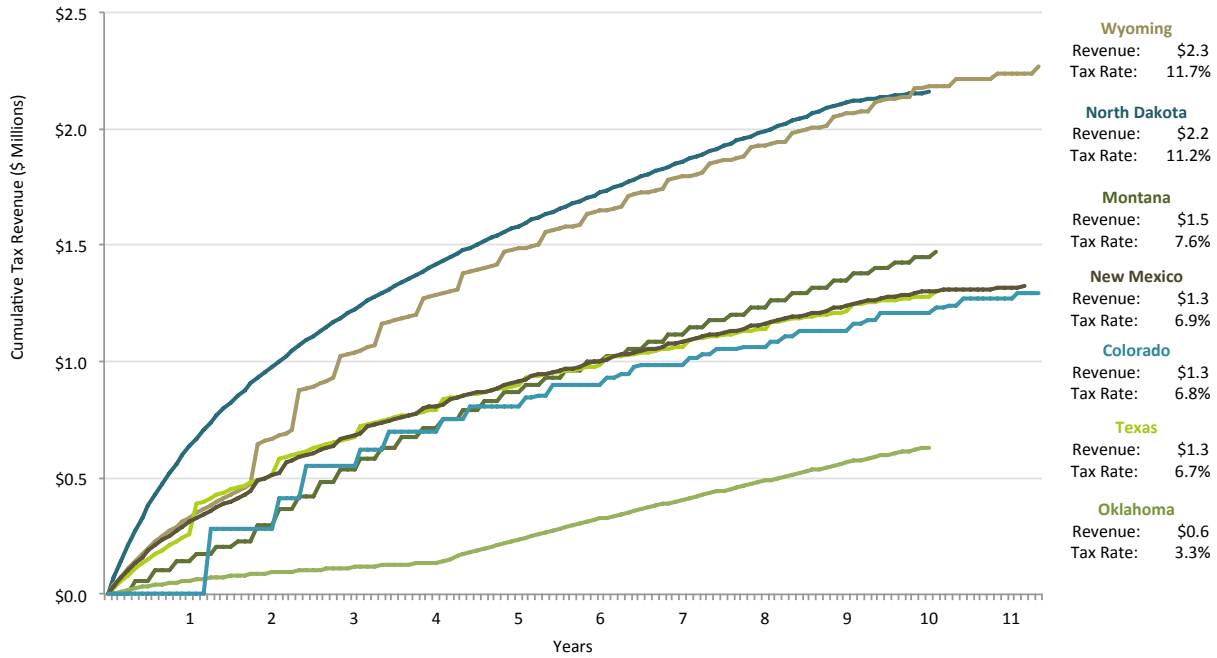
The focus on unconventional oil is important because horizontal drilling and hydraulic fracturing technologies have led a resurgence in oil production in the U.S. Unconventional oil plays require more wells to be drilled on a continuous basis to maintain production than comparable conventional oil fields. This expands potential employment, income, and tax benefits, but also heightens and extends public costs.

This brief is part of a larger project by Headwaters Economics that includes detailed fiscal profiles of major oil-producing states—Colorado, Montana, New Mexico, North Dakota, Oklahoma, Texas, and Wyoming—along with a summary report describing differences between these states. These profiles will be updated regularly. The various approaches to taxing oil make comparisons between states difficult, although not impossible. We apply each state’s fiscal policy, including production taxes and revenue distributions, to a typical unconventional oil well. This allows for a comparison of how states tax oil extracted using unconventional technologies, and how this revenue is distributed to communities. Detailed state profiles and the larger report are available at <http://headwaterseconomics.org/energy/state-energy-policies>.

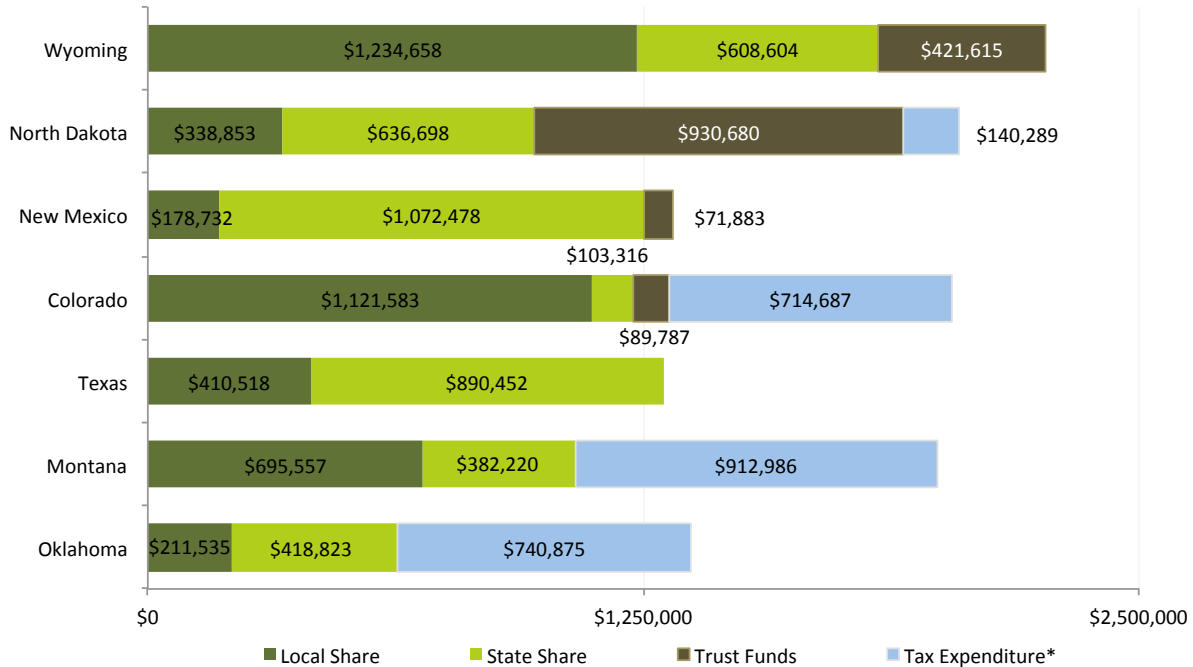
## Montana Summary

- Montana’s effective tax rate on a new unconventional oil well is 7.6 percent after ten years of production, ranking third of seven oil-producing states (Figure 1). The state taxes the working interest and non-working interests<sup>2</sup> in a well at different rates, and offers a drilling incentive tax rate of 0.5 percent for 18 months. The incentive lowers the effective tax rate paid by industry to 5.13 percent, sixth of seven oil-producing states.
- Montana allocates a share of production tax revenue to counties in lieu of local property tax collections. The share of revenue varies from county to county based on local mill levies. Counties receive from between 39 to 69.5 percent of the revenue generated locally, with the total distribution from production tax collections at about 50 percent. But distributions are delayed by up to 22 months from the start of production by the tax incentive. Distributions are only made to county governments and school districts, leaving cities with few direct revenues to manage impacts associated with drilling and related population growth.
- Montana does not save any oil production tax revenue in a trust fund for any purpose (Figure 2). Instead, the state chooses to spend oil production tax revenue annually, the largest share going to tax expenditures (46%). This means Montana is highly exposed to revenue volatility and could end up with lower funding if prices or production busts because property tax relief is guaranteed at a minimum level while production tax revenue to pay for it is not.

**Figure 1: Comparison of Production Tax Revenue Collected from a Typical Unconventional Oil Well**



**Figure 2: Comparison of Distribution of Production Tax Revenue from a Typical Unconventional Oil Well**



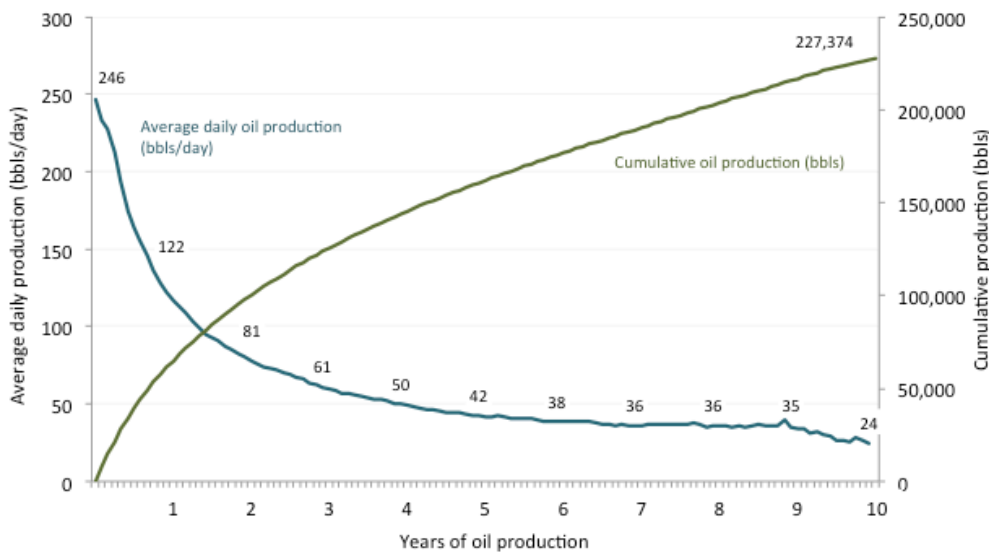
\*"Tax Expenditure" refers to the value of production tax incentives and tax relief funded with production tax revenue.

## Unconventional Oil Well Performance

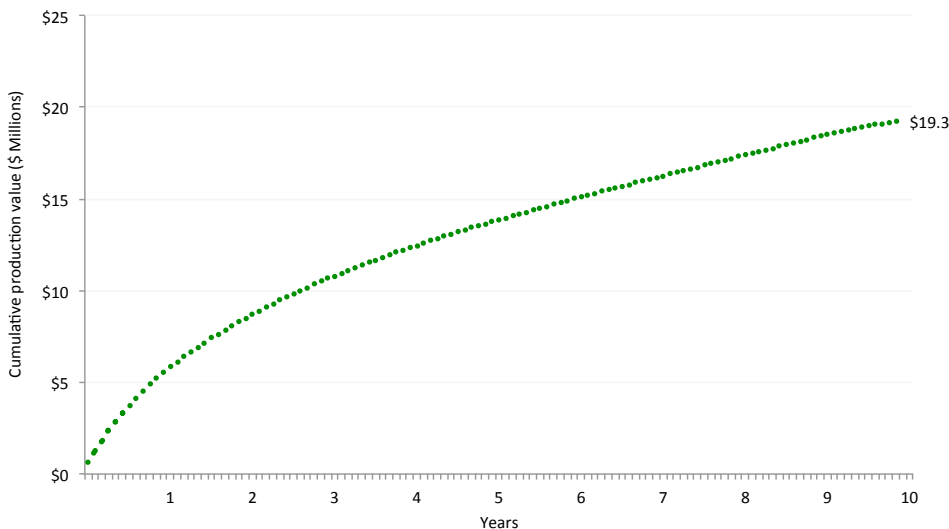
Unconventional oil is produced using horizontal drilling and hydraulic fracturing technologies. While no two wells are identical, unconventional wells all share a typical production profile, characterized by relatively high rates of initial production followed by steep production declines.<sup>3</sup> This makes it possible to construct a typical well profile—in this case using data from Montana’s Elm Coulee field in the Bakken formation. We use this well profile to determine how a state’s taxation and distribution policies combine to deliver revenue to local governments over ten years in terms of amount, timing, location, and predictability.<sup>4</sup>

There were 789 horizontal oil wells drilled in the Elm Coulee between 2000 and 2012.<sup>5</sup> Average oil production peaked at 246 barrels per day in the first month, declining to 122 barrels per day after one year—a 51 percent decline in the first year. Cumulatively, the average Elm Coulee well produces 227,374 barrels of oil over ten years (Figure 3). At a fixed price of \$85 per barrel, the typical well generates \$19.3 million in cumulative production value over ten years (Figure 4).

**Figure 3: Production Profile from a Typical Unconventional Oil Well**



**Figure 4: Cumulative Production Value from a Typical Unconventional Oil Well**



## Profile of Montana Production Taxes

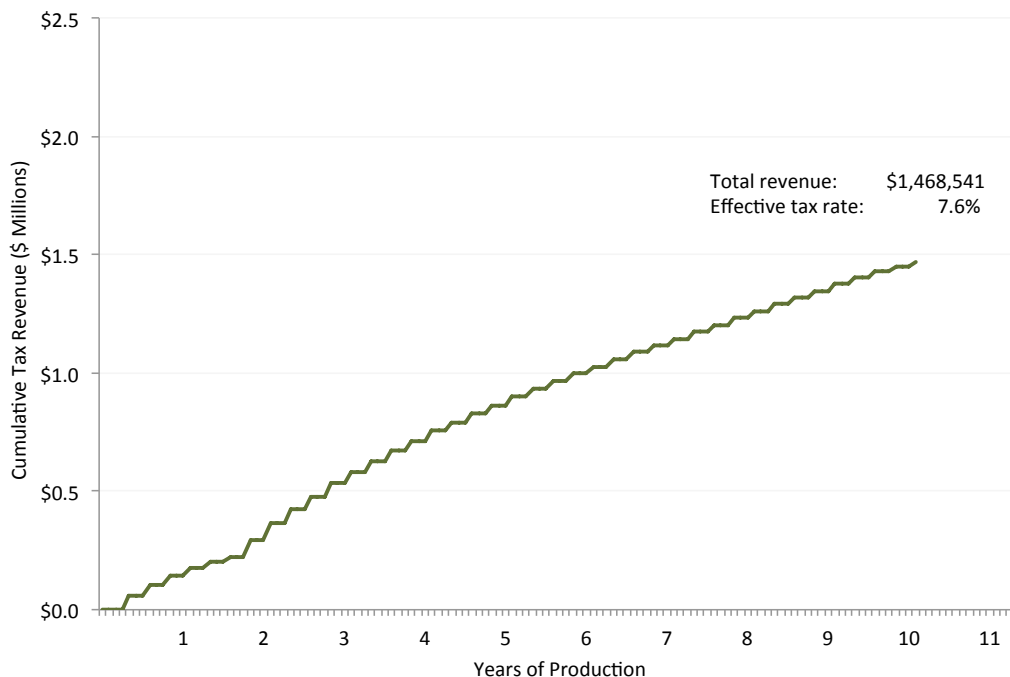
Montana levies a single gross production tax on oil and natural gas at the state level. The base tax rate paid varies considerably from well to well based on a complex list of criteria including the method of production, the age of the well, the previous year's production, and the price of oil and natural gas.<sup>6</sup> Different rates also apply to the working and non-working interests in a well. The tax rate that applies to primary production from the typical oil well presented here is 9 percent for the working interest, and 14.8 percent to the non-working interest, and each will pay two additional fees: 0.09 percent to the Board of Oil and Gas Conservation and 0.17 percent to a community impact fund.<sup>7</sup>

The state also offers a drilling incentive that lowers the tax rate on the working interest only to 0.5 percent for 18 months on newly completed horizontal wells, and 12 months on newly completed vertical wells. As a result, the base tax rate that applies to primary production from an unconventional oil well varies from 0.76 percent to 15.06 percent. The effective tax rate on total production over ten years from a typical unconventional oil well is 7.6 percent, which ranks Montana third of seven states. The effective tax rate on the working interest is 5.13 percent, or sixth of seven oil-producing states.

By comparison, the average tax rate on all production occurring across the state is more than 10 percent in many years.<sup>8</sup> The higher average tax rate reflects the fact that conventional production from existing fields pays a higher tax rate, and that in any one year the number of producing wells paying the "holiday" tax rate is small. When drilling rates were much higher in the Elm Coulee in 2005 and 2006 and a larger share of production was coming from new wells still paying the holiday tax rate, the effective tax rate averaged across all production statewide fell to 8.6 percent.<sup>9</sup> If Montana enters a new period of booming oil production, the total statewide effective tax rate will fall again.

This section provides a detailed look at how the production tax applies to a typical unconventional oil well profile defined in the previous section. The results are displayed in Figure 5 and Table 1.

**Figure 5: Montana Tax Policy Applied to a Typical Unconventional Oil Well**





Stripper Wells: The reduced rate is 5.5 percent for wells producing less than 10 bbls/day, only when the price of oil falls below \$30/bbl.<sup>14</sup> If the price of oil is below \$38, stripper wells producing less than 3 barrels per day pay only 0.5 percent. Stripper well exemptions only apply to the working interest. Because the current price of oil is well above the price thresholds, the stripper well exemptions do not currently apply.

Production Incentives: Montana offers an incentive rate on the working interest of 0.5 percent for 18 months on newly completed horizontal wells, and 12 months on newly completed vertical wells.<sup>15</sup> As a result, tax rates on production from a typical unconventional oil well vary from 0.5 to 14.8 percent. The value of the horizontal drilling incentive based on production from a typical unconventional oil well is \$537,874. The effective tax rate (not including the privilege and license tax) with the incentive is 7.34 percent over ten years. Without the tax incentive, the effective tax rate over ten years would be higher (10.12 %). The 18-month drilling incentive only applies to 15 percent of the production period over ten years, but the tax expenditure (the value of the tax incentive) accounts for 38 percent of the production tax over ten years because the incentive is applied during the most productive months of initial well production.

By comparison, in many years the average tax rate on all production (including conventional and secondary oil production) occurring across the state is more than 10 percent.<sup>16</sup> The higher average tax rate reflects the fact that conventional production from existing fields pays a higher tax rate, and that in any one year the number of producing wells paying the “holiday” tax rate is small. During periods of rapid drilling activity when a large share of total production from wells is still within the 18-month holiday period, the effective tax rate drops. For example, in FY 2006 when the Elm Coulee field was being developed the state’s effective tax rate dropped to 8.5 percent.<sup>17</sup> By FY 2010, after drilling activity in the Elm Coulee field had largely played out, the statewide effective tax rate had risen to 10.5 percent. The statewide effect of the tax holiday is to drive down total tax collections during drilling booms, and to maintain higher effective tax rates after drilling activity slows.

Timing of Collections: The gross production tax is collected quarterly. Tax payments are due within 60 days following the close of each calendar quarter. Quarterly collections delay revenue collections and distributions to counties by several months compared to other states that typically collect and distribute taxes monthly.

More important is the delay in revenue collections introduced by the horizontal drilling incentive. The working interest, which accounts for more than 80 percent of all production in Montana, pays only 0.5 percent for 18 months. Once the tax rate returns to the base rate of 9 percent, it is still about six months before communities will receive distributions from the new higher taxes on production, extending the “holiday” for communities to two years after well completion. The first finding reported in the draft Regional Impact Analysis prepared for the Eastern Montana Impact Coalition is that “local communities will experience the impact of energy development well in advance of receiving any revenue benefit.”<sup>18</sup>

Additional Considerations: The production tax also offers a host of exemptions and incentives for different kinds of production. Incremental production from secondary or tertiary recovery projects, and production from horizontally recompleted wells can receive incentives. Incremental production incentives are tied to a price trigger (i.e., incentives are only active when the price of oil is less than \$30 /barrel). These various provisions are not considered in this study as they do not apply directly to oil produced from new unconventional oil wells. As unconventional plays age, and secondary production and recompletions become more common, these additional provisions in the tax code may become more important.

### **Privilege and License Tax**

Base Rate: The Montana Board of Oil and Gas Conservation levies a 0.09 percent privilege and license tax<sup>19</sup> that funds the department's activities, and 0.17 percent is directed to the natural resources account that funds local impact grants.<sup>20</sup>

Stripper Wells: None.

Production Incentives: None.

Timing of Collections: Quarterly.

## **Profile of Montana Production Tax Distribution Policies**

Montana's revenue distribution system shares roughly half of the production tax collections with local governments in lieu of local property taxes.

The following section describes allocation of production taxes between the state government, local governments, permanent trust funds, and tax expenditures.

Montana's legislature made several recent changes to the distribution policy, capping revenue to local school districts and allocating the excess revenue to several new state and local government accounts,<sup>21</sup> and directing a significant portion of the state's share of production tax collections to tax relief by lowering school district property tax levies in oil-impacted communities.<sup>22</sup>

State Share: The state share of production tax revenue is shared between several funds, with the majority (90.22%) going to the state general fund. The state also receives a portion of the local share of production tax revenue where distributions exceed 130 percent of the maximum budget of recipient school districts. These excess funds are directed to a state guarantee account (70% of excess funds) and a state impact account (5% of excess funds).

Local Share: Counties are assigned a share of production tax revenue generated within each county based on historic mill levies. Local share ranges from 39 (Rosebud) to 70 percent (Custer County).<sup>23</sup> The average distribution is 52 percent. Distributions are only made to county governments and school districts, with cities receiving little in the form of direct distributions. Local governments, including cities and towns, do receive impact grants from the natural resources account, and from excess school district allocations.

**Table 3: Distribution of Production Taxes to Counties**

County	Share of Production Tax
Big Horn	45.05%
Blaine	58.39%
Carbon	48.27%
Chouteau	58.14%
Custer	69.53%
Daniels	50.81%
Dawson	47.79%
Fallon	41.78%
Fergus	69.18%
Garfield	45.96%
Glacier	58.83%
Golden Valley	58.37%
Hill	64.51%
Liberty	57.94%
McCone	49.92%
Musselshell	48.64%
Petroleum	48.04%
Phillips	54.02%
Pondera	54.26%
Powder River	60.90%
Prairie	40.38%
Richland	47.47%
Roosevelt	45.71%
Rosebud	39.33%
Sheridan	47.99%
Stillwater	53.51%
Sweet Grass	61.24%
Teton	46.10%
Toole	57.61%
Valley	51.43%
Wibaux	49.16%
Yellowstone	46.74%
All other counties	50.15%

A major issue facing eastern Montana is that revenue is directed largely to county governments and school districts, leaving cities and towns who are experiencing rapid population growth with few resources to pay for infrastructure and service demands.<sup>24</sup> Uneven revenue distribution can happen at several scales. Montana is facing spill-over growth from North Dakota oil production without the benefit of revenue that accrues across the state border. In the state, cities are left out of production tax revenue. Some worry that the inability to resolve issues as they occur will impose higher costs down the road, and lead to slower growth than would otherwise be expected.<sup>25</sup>

Permanent Savings: None.



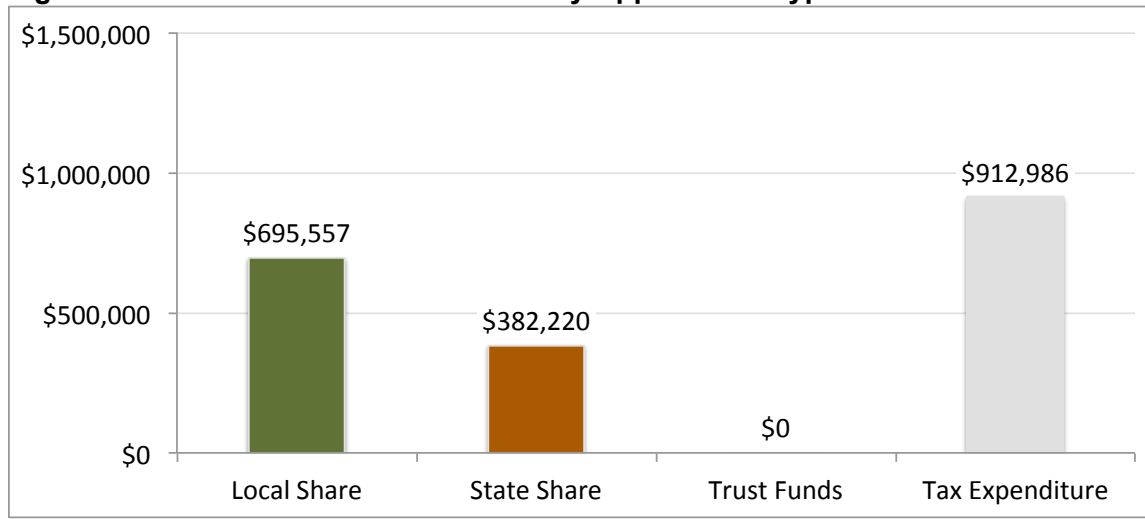
Tax Expenditures: Tax expenditures are measured as the value of direct production tax incentives and/or the amount of production tax revenue that is spent on tax relief (e.g., income or property tax reductions).<sup>26</sup>

Montana offers a tax incentive for horizontally completed wells that lowers the tax rate from 9.5 percent to 0.5 percent on the working interest share of production for a period of 18 months following well completion. The value of the incentive applied to a typical unconventional oil well is \$537,874. The state also applies half of the state’s share directed to the General Fund to property tax relief by lowering local school levies (25.6 percent of total gross production taxes are allocated to tax relief, or \$375,112)<sup>27</sup>.

**Table 4: Montana Tax Distribution Policy Applied to a Typical Unconventional Oil Well**

Distribution	Description	Amount	Share of Total
<b>State Share</b>		<b>\$382,220</b>	<b>19.2%</b>
General Fund	About 40% of the state's share of the Gross Production Tax is directed to the General Fund (20.6 percent of total gross production tax revenue).	\$297,615	14.9%
Infrastructure Spending		\$0	0.0%
Natural Resources Mgmt.	The Board of Oil and Gas Conservation levies a 0.09% privilege and license fee. In addition, 2.16% of the state' share of the Gross Production Tax is distributed to the Natural Resource Projects fund and 2.02% to the Natural Resource Operations fund.	\$43,168	2.2%
Other	2.95% of the state's share of the Gross Production Tax is directed to the Orphan Fund, and 2.65% to the state university system.	\$41,437	2.1%
<b>Local Government</b>		<b>\$695,557</b>	<b>34.9%</b>
Local Production Taxes		\$0	0.0%
Direct Distributions	Counties and schools are each assigned a share of Gross Production Tax revenue generated locally based on historic mill levies. The local share ranges from a low of 39% to a high of 63%. In addition, the Natural Resources Account receives 0.17% of gross production value for local impact grants and distributions to cities.	\$672,454	33.8%
Impact Grants		\$23,103	1.2%
<b>Trust Funds</b>		<b>\$0</b>	<b>0.0%</b>
Natural Resources Trust Fund		\$0	0.0%
Schools Trust Fund		\$0	0.0%
Other Trust Funds		\$0	0.0%
<b>Tax Expenditures (Incentives)</b>		<b>\$912,986</b>	<b>45.9%</b>
Production Tax Incentives	Montana offers a horizontal well incentive that lowers the working interest tax rate from 9.5% to 0.5% for 18 months after well completion.	\$537,874	27.0%
Dedicated Tax Relief	Half of production tax revenue allocated to the state General Fund is applied to tax relief by lowering local school district tax levies.	\$375,112	18.8%
<b>Total Distributions</b>		<b>\$1,990,763</b>	<b>100.0%</b>

**Figure 6: Montana Tax Distribution Policy Applied to a Typical Unconventional Oil Well**



## Additional Resources

“Montana’s Oil and Gas Tax Holiday: Analysis and Recommendation for Change.” A Report of The Policy Institute. Prepared by Bob Decker. February 26, 2009. <http://thepolicyinstitute.org/og.pdf>

Dennison, Mike. “No oil boom in eastern Montana?” *Missoulian*. March 9, 2013. [http://missoulian.com/news/state-and-regional/montana-legislature/mike-dennison-column-no-oil-boom-in-eastern-montana/article\\_2f063dc8-893e-11e2-872d-0019bb2963f4.html](http://missoulian.com/news/state-and-regional/montana-legislature/mike-dennison-column-no-oil-boom-in-eastern-montana/article_2f063dc8-893e-11e2-872d-0019bb2963f4.html).

Scott Rickard, Ph.D. Economic and Fiscal Impacts of Montana’s Petroleum and Natural Gas Industries. Center for Applied Economic Research, Montana State University – Billings. <http://www.montanapetroleum.org/assets/PDF/articlesReports/EconomicandFiscalImpactsofMontanasPetroleumandNaturalGasIndustries.pdf>.

## Endnotes

<sup>1</sup> Headwaters Economics. *Oil and Natural Gas Fiscal Best Practices: Lessons for State and Local Governments*. November 2012. [http://headwaterseconomics.org/wphw/wp-content/uploads/Energy\\_Fiscal\\_Best\\_Practices.pdf](http://headwaterseconomics.org/wphw/wp-content/uploads/Energy_Fiscal_Best_Practices.pdf).

<sup>2</sup> The working interest is the share of production retained by the drilling company while the non-working interest is the value of production paid to the owner of the resource as a royalty. Montana Code Annotated [MCA]. 2013. 15-36-304: Production tax rates imposed on oil and natural gas – exemption. Accessed 8-23-2013. <http://leg.mt.gov/bills/mca/15/36/15-36-304.htm>.

<sup>3</sup> See, for example: Energy Information Administration. 2013a. NEMS Model Documentation 2013: Oil and Gas Supply Module. Appendix 2.C: Decline Curve Analysis. U.S. Department of Energy. Washington, D.C.

<sup>4</sup> This same approach is used by other analysts. See, for example, Ernst & Young LLP. 2012. Analysis of Ohio Severance Tax Provisions of H.B. 487. Prepared by Ernst & Young LLP for the Ohio Business

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Roundtable. <http://jobs-ohio.com/images/Ernst-Young-Severance-Tax-Analysis-Prepared-for-the-Ohio-Business-Roundtable-5-15-12.pdf>. See also Montana Department of Revenue. 2012. Oil and Gas Production Tax Comparison: Montana and North Dakota. Helena, MT. [http://revenue.mt.gov/content/committees/legislative\\_interim\\_committee/oil\\_and\\_gas\\_prod\\_tax\\_comp\\_july\\_rtic.pdf](http://revenue.mt.gov/content/committees/legislative_interim_committee/oil_and_gas_prod_tax_comp_july_rtic.pdf).

<sup>5</sup> Montana Board of Oil and Gas Conservation. Production data for Elm Coulee Horizontally Completed Wells. 2000 to 2013. Department of Natural Resources and Conservation. Analysis by Headwaters Economics.

<sup>6</sup> Montana Legislative Branch. 2013. *Natural Resources Tax Information*. Legislative Fiscal Division. Accessed 8-28-2013. <http://leg.mt.gov/css/fiscal/reports/Oil-Gas.asp>.

<sup>7</sup> See note 2.

<sup>8</sup> Backman, Rod. 2012. *Oil and Gas Taxation Comparison: Analysis of severance, production, and ad valorem taxes in North Dakota and other oil producing states*. Covenant Consulting Group, Bismarck, North Dakota.

<sup>9</sup> Headwaters Economics. 2011. Fossil Fuel Extraction and Western Economies. Bozeman, Montana. Available at [http://headwaterseconomics.org/wphw/wp-content/uploads/Fossilfuel\\_West\\_Report.pdf](http://headwaterseconomics.org/wphw/wp-content/uploads/Fossilfuel_West_Report.pdf).

<sup>10</sup> Montana Code Annotated. 15-36-304. Production tax rates imposed on oil and natural gas -- exemption. <http://leg.mt.gov/bills/mca/15/36/15-36-304.htm>. The table is taken from the Montana Department of Revenue Biennial Report July 1, 2010—June 30, 2012. Natural Resource Taxes: Oil and Gas Production Tax Rates, Page 104. [http://revenue.mt.gov/content/publications/biennial\\_reports/2010-2012/Biennial-Report-2010-2012.pdf](http://revenue.mt.gov/content/publications/biennial_reports/2010-2012/Biennial-Report-2010-2012.pdf).

<sup>11</sup> Montana Code Annotated. 15-36-305. Determination of gross value of product. <http://leg.mt.gov/bills/mca/15/36/15-36-305.htm>.

<sup>12</sup> Montana Department of Natural Resources and Conservation [MT DNRC]. 2005. *Royalty Rate Review, State of Montana Oil and Gas Leases*. Trust Land Management Division. Helena, MT. Accessed 3-10-2013. <https://dnrc.mt.gov/Trust/MMB/RoyaltyRateReview/PDFs/RoyaltyReport.pdf>.

<sup>13</sup> The Montana Department of Revenue provides statistics on the taxable value of working interest and non-working interest production for the period FY 2008 to FY 2012. These data show that the working interest represents about 86.5 percent of total taxable value. This value is lower than our estimate, but includes total production, including from wells drilled before the unconventional boom during which lease negotiations have risen, giving the non-working interest a larger share of the total taxable value of production. Montana Department of Revenue, Biennial Report FY 2010 to FY 2012, pg. 105.

<sup>14</sup> Montana Code Annotated. 15-36-303. Definitions. <http://leg.mt.gov/bills/mca/15/36/15-36-303.htm>.

<sup>15</sup> Montana Department of Revenue. Oil and Gas Production Tax Comparison: Montana and North Dakota. July 19, 2012. [http://revenue.mt.gov/content/committees/legislative\\_interim\\_committee/oil\\_and\\_gas\\_prod\\_tax\\_comp\\_july\\_rtic.pdf](http://revenue.mt.gov/content/committees/legislative_interim_committee/oil_and_gas_prod_tax_comp_july_rtic.pdf).

<sup>16</sup> Backman, Rod. 2012. *Oil and Gas Taxation Comparison: Analysis of severance, production, and ad valorem taxes in North Dakota and other oil producing states*. Covenant Consulting Group, Bismarck, North Dakota.

<sup>17</sup> Headwaters Economics. 2012. *Benefiting from Unconventional Oil: State Fiscal Policy is Unprepared for the Heightened Community Impacts of Unconventional Oil Plays*. Montana Well Completions and Effective Tax Rate, FY 2002-2010. Page 12. <http://headwaterseconomics.org/energy/western/unconventional-oil-and-north-dakota-communities>.

<sup>18</sup> Jones, Lang, LaSalle. 2013. Regional impact analysis: A study of energy related impacts on the 16 county region represented by the Eastern Montana Impact Coalition.

<sup>19</sup> Montana Code Annotated. 82-11-131. Privilege and license tax. <http://leg.mt.gov/bills/mca/82/11/82-11-131.htm>;

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<sup>20</sup> Montana Code Annotated. 90-6-1001. Oil, gas, and coal natural resource accounts.

<http://leg.mt.gov/bills/mca/90/6/90-6-1001.htm>.

<sup>21</sup> Montana Legislative Fiscal Division. Montana's Oil & Gas Production Tax. October 2012. Available at <http://leg.mt.gov/content/Publications/fiscal/Oil-Gas/Oil-Gas-Combined.pdf>.

<sup>22</sup> Senate Bill 175 in the 2013 Legislature allocated half of the state's share that is directed to the General Fund of production tax revenue to tax relief. See: Reasons to Support SB 175, Senator Llewelyn E. Jones (R), 2013 Legislative Session. Summary Prepared by MASBO, MEA-MFT, MREA, MTSBA, MQEC and SAM, February 14, 2013. <http://mea-mft.org/Uploads/files/News%20Issues%20Actions/State%20Issues/2013Legislature/Reasons%20to%20Support%20SB%20175.pdf>.

<sup>23</sup> Montana Code Annotated 2013. 15-36-331. Distribution of taxes.

<sup>24</sup> See for example, Oldham, Jennifer. *Montana Towns Struggle with Oil Boom Cost as Dollars Flee*. Bloomberg News. October, 9. 2013. <http://www.bloomberg.com/news/2013-10-10/montana-towns-struggle-with-oil-boom-cost-as-dollars-flee.html>.

<sup>25</sup> Jones, Lang, LaSalle. *Regional impact analysis*. See also the Headwaters Economics summary paper associated with this research project: *How States Return Oil Revenue to Local Governments: Windfall or Missed Opportunity?* for a broader discussion of the role fiscal policy plays in economic development related to oil and natural gas booms. The report is available at <http://headwaterseconomics.org/energy/state-energy-policies>.

<sup>26</sup> Tax Expenditures. Wikipedia. [http://en.wikipedia.org/wiki/Tax\\_expenditure](http://en.wikipedia.org/wiki/Tax_expenditure).

<sup>27</sup> Ibid.