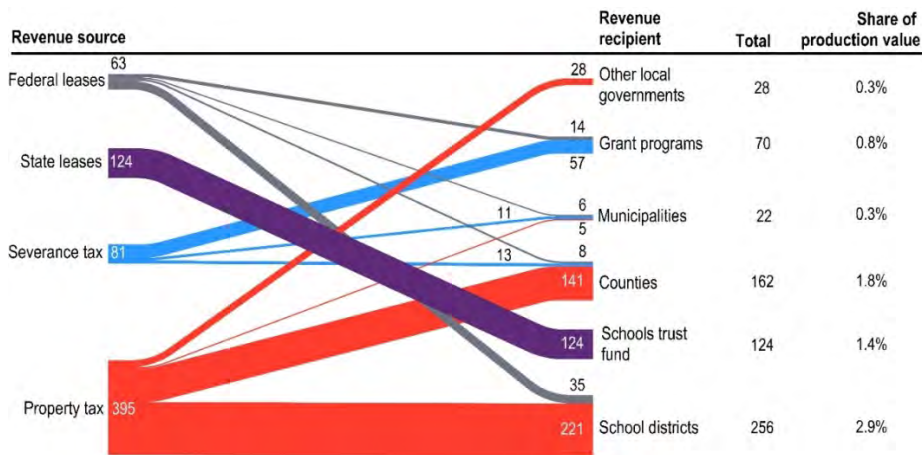


Oil and gas revenue allocation to local governments in eight states



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About this report

This report is the second in a series to be produced by the Duke University Energy Initiative on *Shale Public Finance*, supported by the Alfred P. Sloan Foundation. The Shale Public Finance project is examining the financial implications for local governments associated with increased domestic oil and gas production, largely from shale resources. A previous report focused on net fiscal impacts for local governments associated with recent oil and gas production, and case studies of experiences in particular regions will be forthcoming. For more information, to view interactive maps showing some of our key findings, or to be notified when new publications are released, visit <http://energy.duke.edu/shalepublicfinance>.

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Oil and gas revenue allocation to local governments in eight states

Daniel Raimi* and Richard G. Newell

Abstract

This report examines how oil and gas production generates revenue for local governments in eight states through four key mechanisms: (i) state taxes or fees on oil and gas production; (ii) local property taxes on oil and gas property; (iii) leasing of state-owned land; and (iv) leasing of federally-owned land. To compare across states, we show the percentage of total revenue generated by oil and gas production that flows to local governments from these revenue sources. We also connect these calculations to related research to assess whether state and local policies are providing sufficient revenue for local governments to manage increased costs associated with shale development. We find that in most cases, existing policies appear to provide adequate revenue for local governments to manage increased costs associated with growing oil and gas activity. However, additional revenue may be warranted for some local governments in highly rural regions experiencing rapid, large-scale development, notably the Bakken region of North Dakota and Montana, select counties in Texas, and select local governments in Colorado and Wyoming. Alternatively, collaboration between industry and local governments, especially on road repairs, could mitigate the need for additional revenues.

Key Words: Shale gas, tight oil, severance tax, property tax, resource taxation, local public finance, revenue sharing, hydraulic fracturing

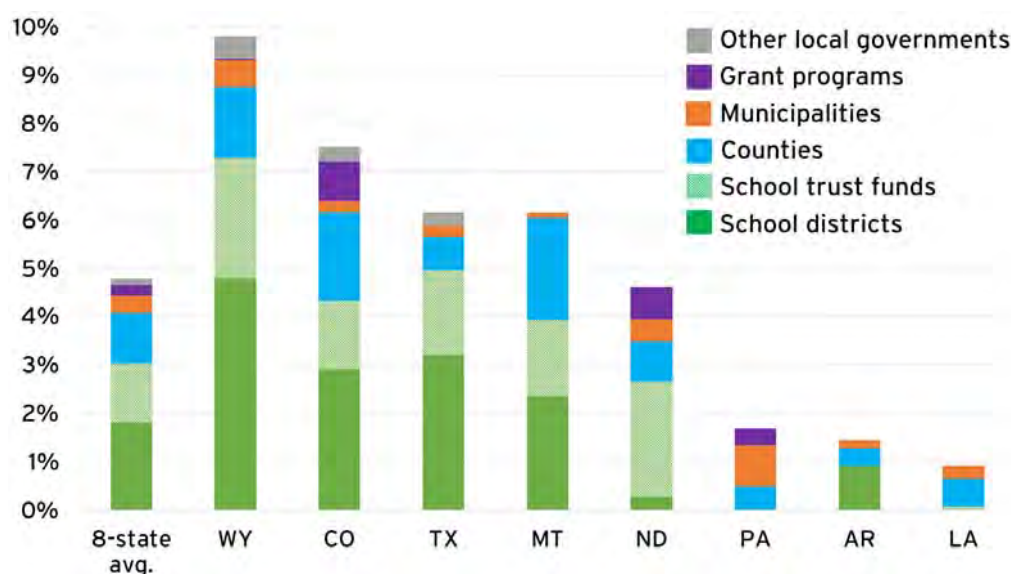
*Corresponding author. Daniel Raimi is an Associate in Research with the Duke University Energy Initiative (daniel.raimi@duke.edu). Richard G. Newell is the Gendell Professor of Energy and Environmental Economics at Duke University's Nicholas School of the Environment and Director of the Duke University Energy Initiative, Box 90467, Durham, NC 27708 (richard.newell@duke.edu); he is also a Research Associate at the National Bureau of Economic Research, Cambridge, MA. This report is the second on shale public finance produced by the Duke University Energy Initiative, supported by the Alfred P. Sloan Foundation. For more information, to view interactive maps showing some of our key findings, or to be notified when new publications are released, visit <http://energy.duke.edu/shalepublicfinance>.

1. Report Summary

Rapidly growing oil and gas production has raised substantial revenues for governments across the United States. This report describes key sources of oil and gas revenues for local governments in Arkansas, Colorado, Louisiana, Montana, North Dakota, Texas, Pennsylvania, and Wyoming, and assesses whether existing policies are providing sufficient revenue to manage increased service demands associated with a growing oil and gas industry. This question holds clear significance for local leaders and state policymakers considering the extent to which local governments can raise revenue from oil and gas production, as well as revenue-sharing between the state and local level.

Figure 1 presents revenue flows to various local government entities from oil and gas production as a percentage of total oil and gas production value in fiscal year (FY) 2012. For example, if the value of all oil and gas produced in a state in FY 2012 was \$100, and local governments received \$2 through the sources covered in this report, Figure 1 would show 2 percent. Local government revenue ranged from roughly 1 percent to nearly 10 percent of total production value, with substantial variation across states. Figure 1 includes revenue flowing to local governments through severance taxes or impact fees, local property taxes on oil and gas, and leases of state and federal land. Due to limited data and methodological issues, it does not include revenue from local government land leases, sales tax associated with increased economic development, or general corporate income taxes from the oil and gas industry (which flow to various state funds).

Figure 1 Local government revenue share of oil and gas production value in FY2012



Notes: This figure shows local government revenues from oil and gas production as a percentage of total production value in FY2012. It includes local property taxes on oil and gas, state allocations of severance taxes, impact fees, and leases of state and federal lands. “School trust funds” refers to flows into permanent funds that fund future operations. “Grant programs” refers to allocations to a range of local governments via grants. “Other local governments” refers to special districts such as sewer and water authorities or airport authorities. The eight-state average is a simple average.

On average, local schools see the largest share of revenue (3 percent), with school districts benefiting largely through local property taxes and school trust funds benefiting primarily from allocations of state or federal oil and gas lease revenues. Schools in Wyoming, Texas, Colorado, and Montana collect the largest share (4 to 7 percent), while schools in Pennsylvania and Louisiana receive relatively little. This does not necessarily imply that Pennsylvania and Louisiana are underfunding schools. Each state funds school operations through a range of sources, and these two states happen to rely on sources other than the oil- and gas-related revenues described in this report.

Among county governments, those in Colorado, Montana, and Wyoming collect the largest share of revenue (1 to 2 percent), while counties in Arkansas, Louisiana¹, North Dakota, Texas, and Pennsylvania collect smaller shares (<1 percent). Counties in states where oil and gas production and/or reserves may be taxed as property (AR, CO, TX, WY) collect most of their revenue through ad-valorem taxes on such properties. In other states (LA, MT, ND, PA), revenue flows to counties primarily through state-levied taxes or impact fees (see figures in Section 1.3).

The wide variation in revenues for schools and counties is largely due to three factors: (i) local governments in different states value oil and gas property differently for property tax purposes, while some do not tax oil and gas property at all; (ii) local governments apply a wide range of assessment and property tax rates to the value of oil and gas property; and (iii) allocations from the state level to school districts and counties vary substantially.

Municipalities and other local governments tend to collect a smaller share of revenue from oil and gas production than counties and school districts (<0.5 percent in most cases). Generally speaking, municipalities rely heavily on sales taxes, which are not included here but can be indirectly affected through population growth or changes in economic activity associated with oil and gas production. Additionally, municipalities tend to be smaller and more densely populated than counties or school districts. As a result, less oil and gas production occurs within their borders, reducing the availability of property tax revenues. Much of the oil and gas revenue flowing to municipalities passes through the state level, often—but not always—allocated according to local production levels. The state with the highest municipal revenue share is Pennsylvania, which directs a substantial portion of its impact fee to municipal authorities known as townships.

Grant programs play a significant role in Colorado, North Dakota, and Pennsylvania, allocating state-collected revenues primarily to municipal and county governments through a competitive grant process. Grant programs offer flexibility and, in principle, allow states to direct revenues to where they are most needed. However, grant programs must balance this discretion with

¹ Louisiana does not have counties. We show revenue allocated to parish governments, which provide many of the same services.

the risk of giving an advantage to local governments that have more resources and skills in grant-writing, along with the potential for other forces that could direct spending away from those communities with the greatest need.

As we described in a previous report², most local governments in these states have experienced net positive fiscal effects from recently increased oil and gas development. However, most counties and municipalities in the Bakken region of North Dakota, municipalities in eastern Montana, and certain counties in Texas are currently facing fiscal challenges managing oil- and gas-related growth. These highly rural regions have experienced large increases in demand for services associated with rapid development in recent years, and while the total revenue flowing to all local governments (including school districts) in these regions are at or above our eight-state average, the share of revenue flowing to North Dakota counties and municipalities, Montana municipalities, and Texas counties is near or below the average. Our previous findings suggest that more revenue may be warranted for these local governments to help manage the fiscal demands associated with rapid development. Alternatively, collaboration between industry and local governments, especially on road repairs, could mitigate the need for additional revenues.

Additionally, some local governments in western Colorado and southwestern Wyoming, which experienced large-scale natural gas development in the mid- to late-2000s, faced fiscal challenges associated with industry-driven growth in population and heavy vehicle traffic (though these challenges have lessened as industry activity has slowed). Broadly speaking, large-scale oil and gas development tends to create the greatest fiscal needs in very rural areas with limited existing infrastructure. In most regions, this has been managed through increased government revenue and/or collaboration with industry. In the regions noted above, policy revisions may be required to ensure adequate county and municipal funding during the most active phases of development.

Although we include revenues for local schools, school trust funds, and other local governments in this report, we have not conducted interviews or performed detailed analysis of service demands and costs for these jurisdictions. As a result, we do not offer judgments as to whether or not they are receiving adequate revenue to manage service demands associated with the oil and gas industry.

1.1 Local government revenues associated with oil and gas production

Oil and gas production generates revenue for local governments through a variety of sources. Seven of the eight states we examine impose a tax on the value or volume of oil and gas

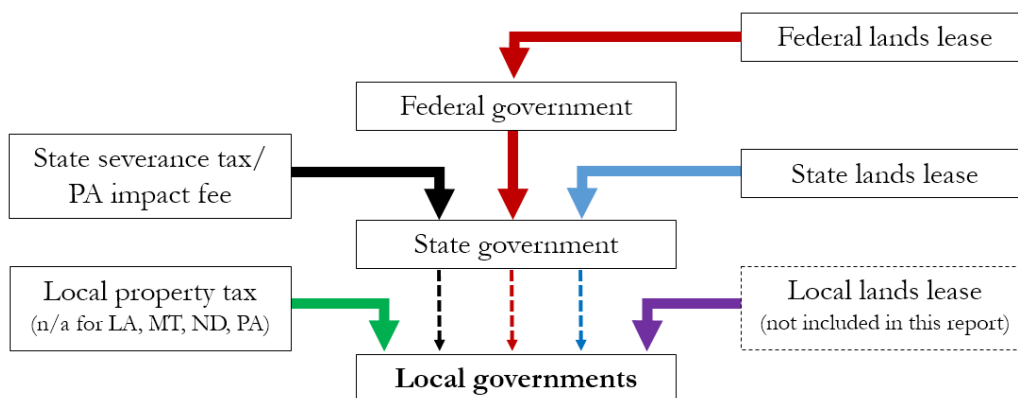
² Raimi and Newell 2014. "Shale Public Finance: Local government revenues and costs associated with oil and gas development." May 2014. Available at: <http://energy.duke.edu/shalepublicfinance>.

produced (often referred to as a severance tax), while one (Pennsylvania) imposes an impact fee on each unconventional natural gas well drilled in the state. Revenue from these mechanisms is shared between state and local governments according to a variety of formulae.

Property taxes are another leading source of revenue for local governments experiencing oil and gas development, especially counties and school districts. Arkansas, Colorado, Texas, and Wyoming allow local governments to levy ad-valorem property taxes on oil and gas property (including the oil and gas produced and/or the value of reserves). Louisiana allows local governments to levy property taxes only on the surface equipment associated with oil and gas production such as rigs and wellheads. North Dakota, Montana, and Pennsylvania do not allow local governments to levy property taxes on oil and gas reserves, production, or equipment.

Along with taxes and fees, governments may generate revenue by leasing public land for oil and gas production. These revenues arrive in the form of leasing bonuses, which companies pay for the right to explore for oil and gas; royalties, which are paid based on the value of oil and gas produced from those lands; and rents, which are paid for siting equipment or other property on the surface. All eight states we examine generate revenue from leases on state lands, and all but Pennsylvania receive substantial revenue from production on federal lands within their state borders (the state share of federal revenues is generally 49 percent, but may be lower due to several factors).

Figure 2 Major oil and gas production-related revenue flows for local governments



1.2 Consideration of other revenues and local factors

This report does not include corporate income taxes, which generally flow to state funds, nor does it include revenues from leasing local government land, as these data are not available on a state-wide basis for any of our eight states. We also do not include local sales tax revenue indirectly induced by economic activity associated with oil and gas development.

The data presented in this report should be considered alongside a suite of other local factors and government revenues. For example, the municipal share of revenue for most states in Figure 1 appears small relative to school districts and counties. This is due to the fact that many counties and school districts generate large revenues from oil and gas property taxes, which are captured by our methodology. Municipalities, on the other hand, often rely more heavily on sales taxes, which are not captured by our methodology but are influenced by economic activity associated with the oil and gas industry.

Indeed, a low percentage figure does not necessarily mean that local governments require more revenue, nor does a high percentage necessarily mean that local governments are receiving adequate revenue to manage new service demands associated with the oil and gas industry. A variety of local factors, including revenue from other sources (e.g., sales taxes or lease revenues from local lands), existing infrastructure capacity (e.g., adequacy of roads and other infrastructure), local labor force conditions (e.g., whether the local government struggles to compete for scarce labor), and the extent of cooperation with industry (e.g., whether operators repair road damage caused by their activities), all play a role in local government's ability to manage service demands associated with oil and gas production.

As another example, local governments in Arkansas and Pennsylvania receive a relatively small share of total production value. However, the prevalence of road maintenance agreements with operators in those states have limited costs, and these governments have generally experienced net fiscal benefits associated with increased natural gas production (Raimi and Newell 2014). Similarly in Louisiana, we observed net positive fiscal effects for local governments largely through increased sales taxes and leases of local government land. Conversely, municipalities in North Dakota receive a relatively large share of production revenue, but a lack of pre-existing infrastructure has created challenges managing rapid population growth associated with surging oil production.

1.3 Summary of revenue allocation and findings

For each state, we assess whether existing revenue mechanisms are providing sufficient revenue to manage costs associated with increased oil and gas production. We also note policy issues or other local factors that have contributed to our assessment. These conclusions are based on the revenues detailed in this report alongside a suite of other factors described briefly in Section 1.2 and detailed extensively in our previous report (Raimi and Newell 2014).

For each state, we provide estimates for cumulative oil and gas production value in FY 2012 (e.g., Table 1). Next, we show revenue that was either collected by or allocated to local governments from oil and gas production (e.g., Figure 3). To allow for comparison between states, we divide the revenue allocated to each level of local government by the total value of production of all oil and gas

within each state for FY 2012. Results are shown in the final row of the figure for each state (e.g., Figure 3), and aggregated in Figure 1. Detailed data and sources are provided in Appendix B.

1.3.1 Arkansas

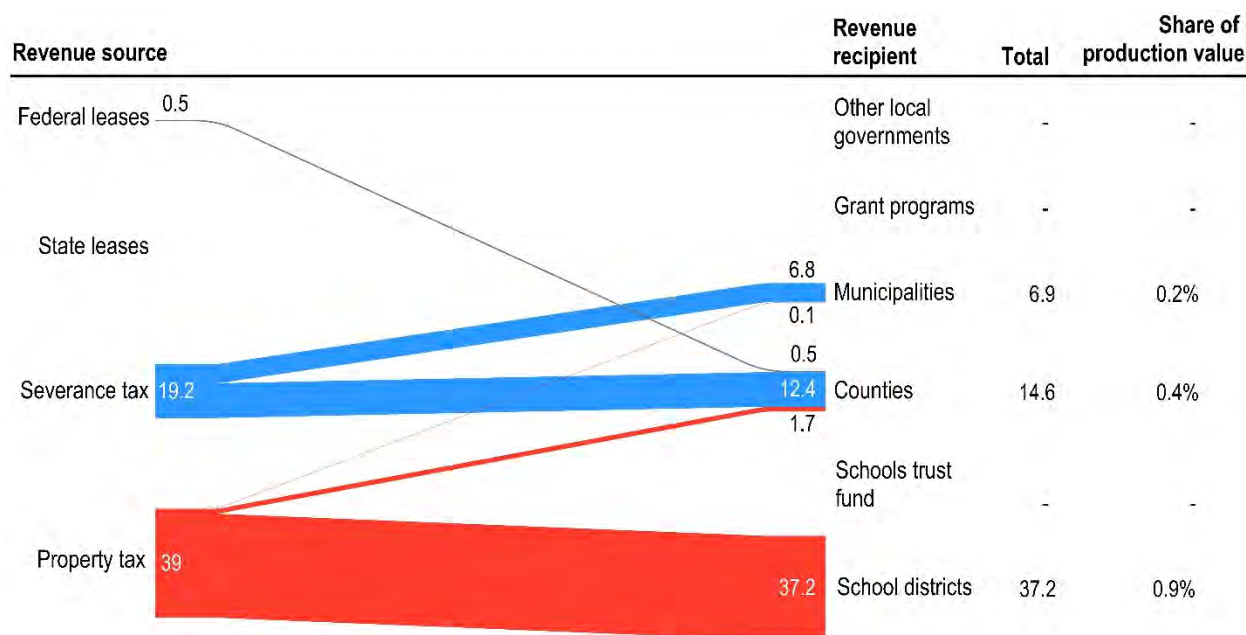
Although Arkansas’ local governments see a smaller share of oil- and gas-related revenue than most other states in this survey, major service demands associated with the oil and gas industry have been limited. Much of this is due to agreements between operators and local government officials to manage road damage. Counties and municipalities in Arkansas appear to be receiving adequate revenue to manage new service demands associated with the industry.

Table 1 Arkansas FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
6,536,000	89.03	1,152,420,711	3.00	4.0

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on Perryville Hub via Bloomberg.

Figure 3 Arkansas FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.2 Colorado

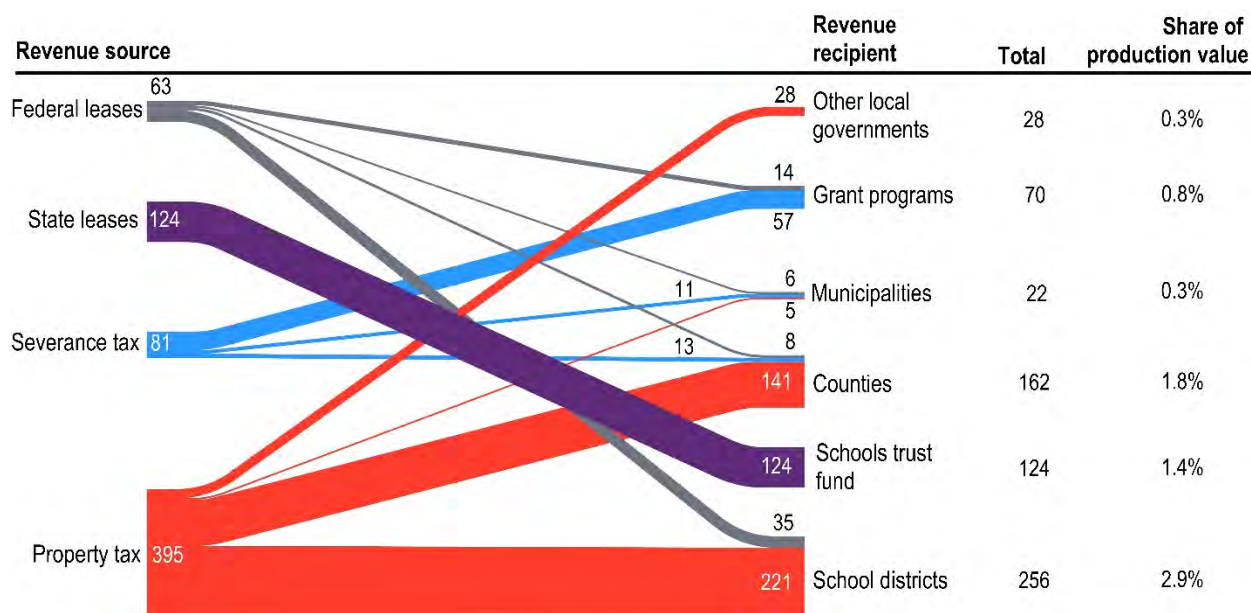
Most local governments we examined in Colorado have experienced net fiscal benefits to date associated with increased oil and gas activity. Colorado allocates more revenue to local governments than most states examined here. However, limited existing infrastructure has created fiscal challenges for select counties and municipalities in rural western Colorado. It appears that these local governments require additional revenue during the most active phases of development. This would not necessarily require the state to raise additional revenue. Policy changes could direct existing streams of state-collected oil and gas revenue more heavily toward rural jurisdictions experiencing large-scale development, either through changes to the state allocation formula or through an existing grant program. Additionally, county governments may be able to limit costs through road maintenance agreements with local operators.

Table 2 Colorado FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
43,406,720	87.38	1,733,366,436	2.89	8.8

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on White River Hub via Bloomberg.

Figure 4 Colorado FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.3 Louisiana

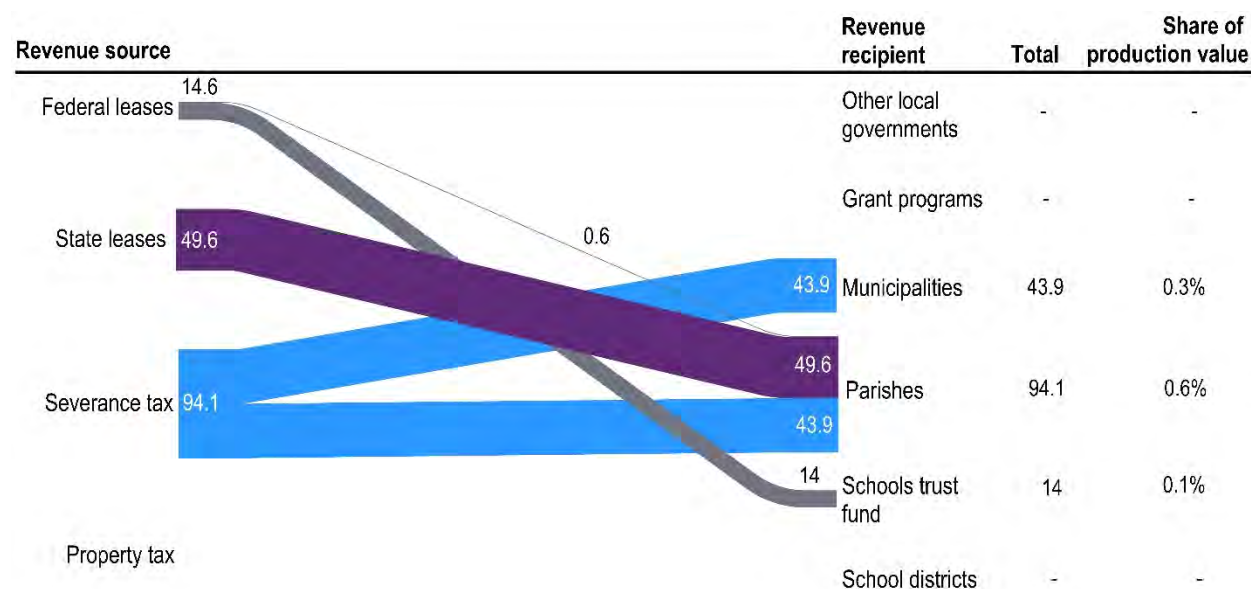
Local governments in Louisiana receive the lowest share of oil and gas revenue of the states surveyed here. However, our methodology does not capture sales taxes, local government land lease revenues, or revenues from property taxes on surface oil and gas equipment, each of which has generated substantial revenue for local governments experiencing increased drilling activity in the Haynesville shale region. In addition, Louisiana’s schools are largely funded by the state’s general fund, which generates a large share of its revenue from the oil and gas sector. It appears that Louisiana’s existing funding mechanisms are sufficient for local governments to manage industry-related costs.

Table 3 Louisiana FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
75,191,894	107.46	2,961,907,619	2.82	16.4

Note: Oil and gas prices from Louisiana Department of Natural Resources

Figure 5 Louisiana FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.4 Montana

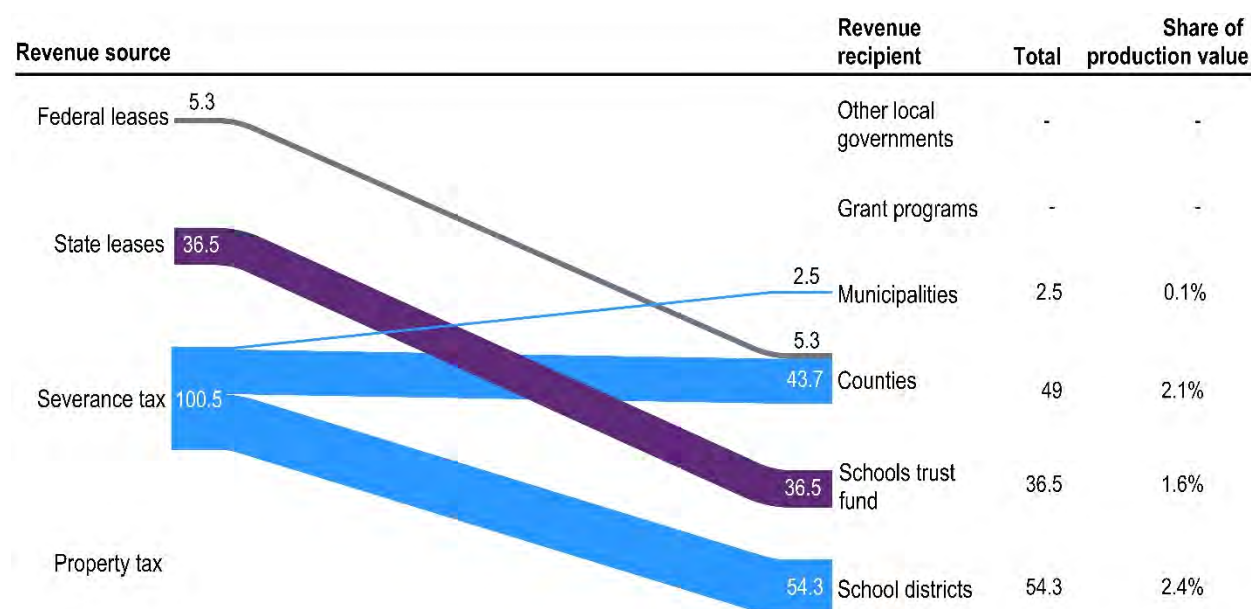
Montana allocates substantial oil- and gas-related revenue to schools and county governments, but relatively little to municipalities. Because municipalities cannot levy sales taxes, cities and towns in Montana’s Bakken region have struggled to manage new costs associated with oil- and gas-driven population growth. Policy changes could redirect a portion of state-collected revenues to these municipalities.

Table 4 Montana FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
24,758,894	85.07	73,956,664	2.89	2.3

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on White River Hub via Bloomberg.

Figure 6 Montana FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.5 North Dakota

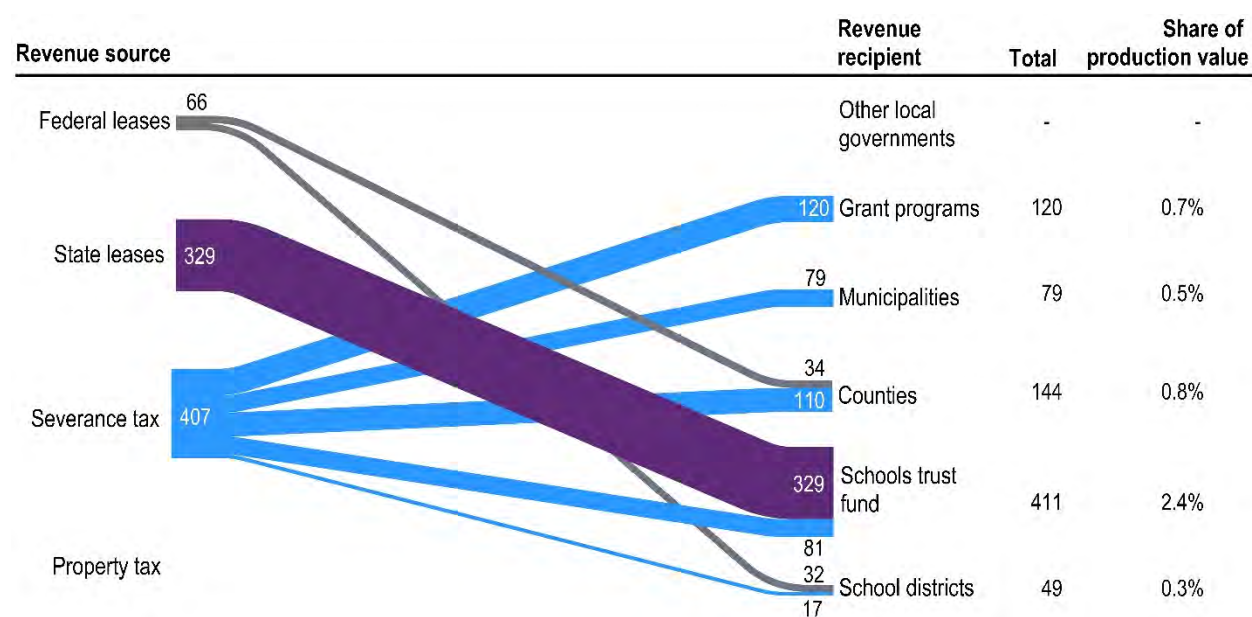
Recent policy changes have increased local government allocations of oil and gas revenue in North Dakota (see ND 2013-2014 House Bill 1358). However, the lack of pre-existing infrastructure for county and municipal governments has meant that these new revenues have been insufficient to manage service demands associated with the rapid growth in population and truck traffic. The state allocates a large share of oil and gas revenue to trust funds—an understandable approach given the unpredictable nature of natural resource-driven economic growth. However, it appears that a larger portion of these revenues could be redirected to local governments to better manage near-term local needs.

Table 5 North Dakota FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
197,485,833	85.76	129,914,921	2.89	17.3

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on White River Hub via Bloomberg.

Figure 7 North Dakota FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.6 Pennsylvania

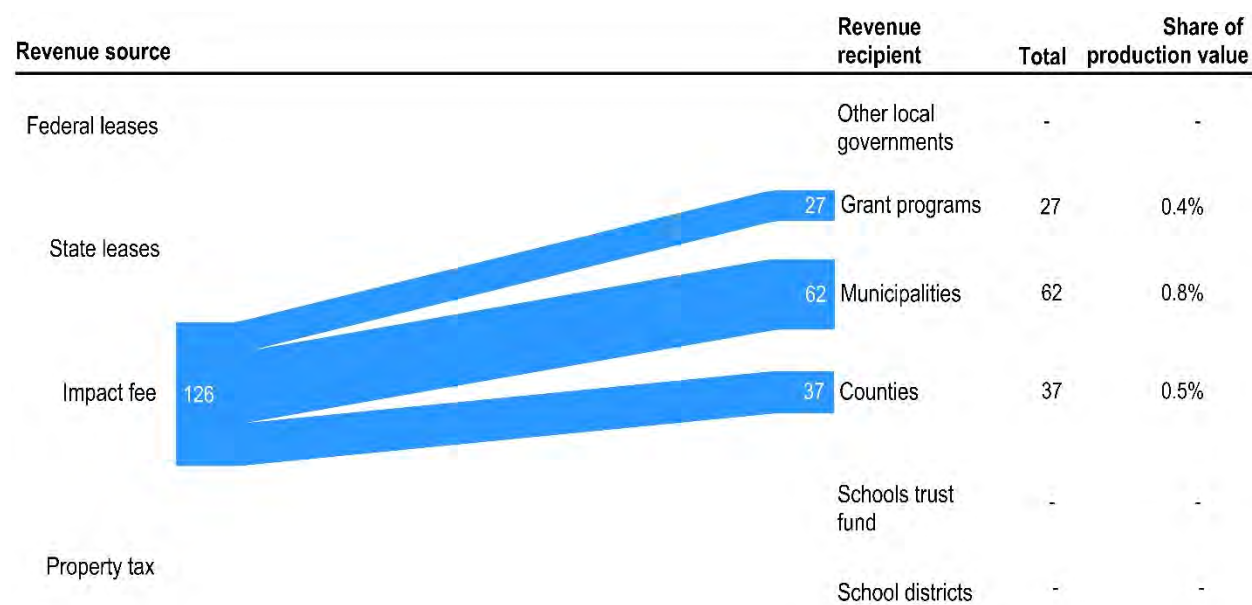
Pennsylvania's impact fee is designed in large part to manage near-term local government costs associated with Marcellus shale development. While the impact fee generates less revenue for counties and municipalities than in most of the other states in our sample, it appears to have been sufficient to manage increased local government costs associated with natural gas development. This is in large part due to collaboration between local governments and operators to manage road damage associated with industry truck traffic.

Table 6 Pennsylvania FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
3,631,000	88.83	2,256,696,000	3.11	7.3

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on Dominion Hub via Bloomberg.

Figure 8 Pennsylvania FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.7 Texas

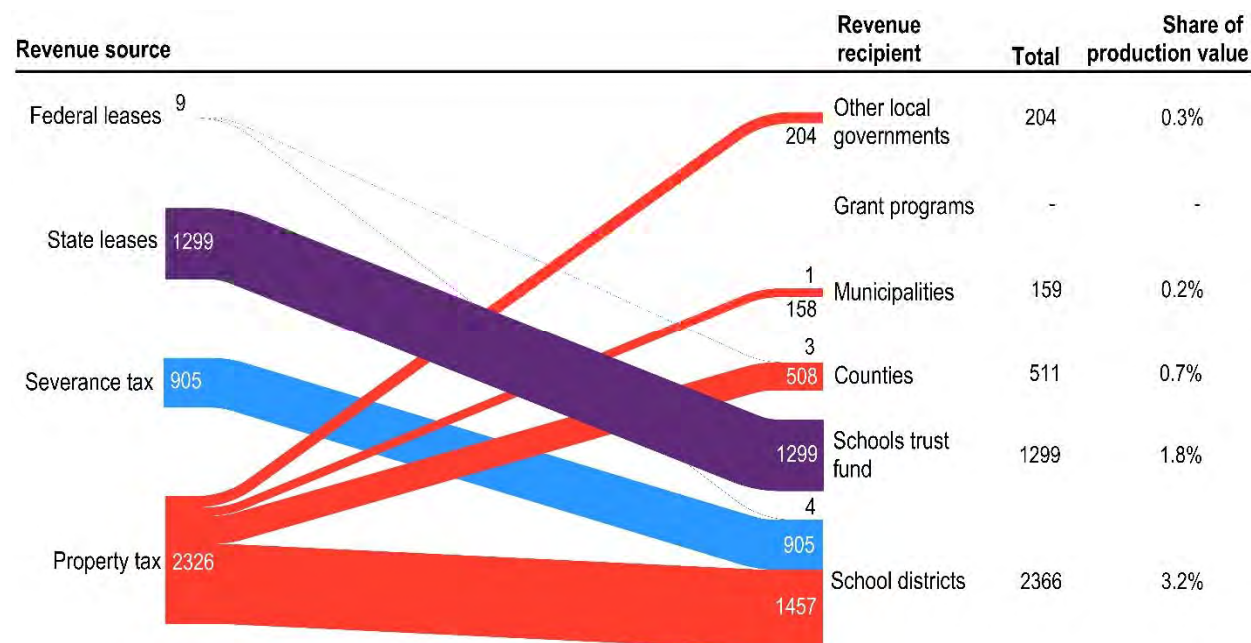
Local fiscal effects of the recent increase in oil and gas production have varied substantially across different regions of Texas. While many local governments have experienced substantial fiscal benefits, some counties in rural regions with limited existing infrastructure have struggled to manage the near-term costs of road repair associated with industry truck traffic. The state responded in 2013 with a limited allocation of revenue from state general funds to heavily affected counties. It appears that this allocation will not be sufficient to manage repair costs, and additional revenue for heavily affected county governments would allow them to better manage oil- and gas-related impacts. A voter referendum in November 2014 will determine whether an additional \$1.7 billion is allocated to manage oil- and gas-related road repair issues, but these funds would go to manage state-owned, rather than locally-owned roads. Alternatively, more extensive collaboration between operators and local governments could limit the need for additional revenues.

Table 7 Texas FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
549,763,539	93.03	8,085,488,083	2.78	73.6

Note: Texas’ fiscal year runs from September 1 through August 31 of each year, two months later than the other states surveyed here. Oil price based on U.S. EIA first purchase price. Natural gas price based on Katy Hub via Bloomberg.

Figure 9 Texas FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

1.3.8 Wyoming

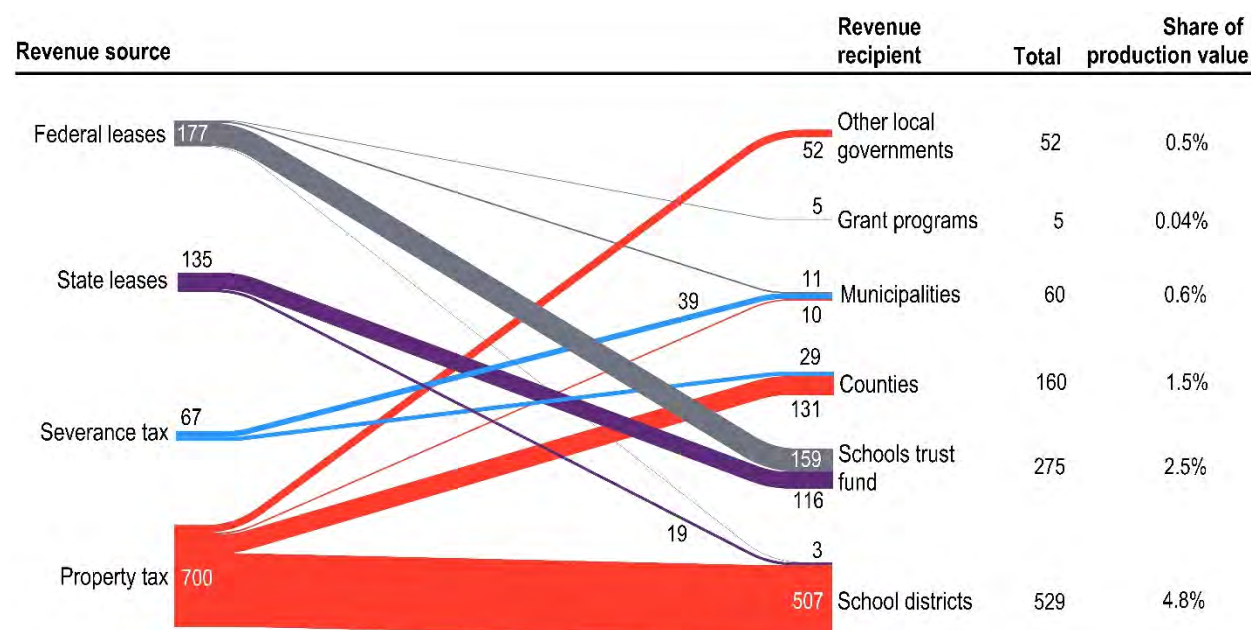
Oil and gas production provides major revenue streams for Wyoming local governments. However, some municipalities in southwestern Wyoming struggled to manage industry-driven population growth during a surge in natural gas production during the mid- to late-2000s. Currently, the state allocates revenue to municipalities based solely on population. Although oil and gas activity has generated rapid rates of population growth in certain regions, a much larger share of total population, and therefore revenue, flows to larger cities in parts of the state without substantial oil and gas development. Partly as a result, revenue for rural cities and towns in oil- and gas-producing regions has been insufficient at times. Policy changes could adjust the state’s allocation formula to direct more revenue to municipalities experiencing increased service demands related to oil and gas activity.

Table 8 Wyoming FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
56,540,000	82.56	2,146,385,000	2.95	11.0

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on Opal Hub via Bloomberg.

Figure 10 Wyoming FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Sums may not total due to rounding.

2. Introduction and Background

Local governments have been affected in a variety of ways by the recent surge in oil and gas production in the United States, with important implications for the public. Local government services such as education, infrastructure, and public safety play a large role in the daily lives of residents. The value of these public goods can be demonstrated through increased residential property values in jurisdictions with higher-quality public services (e.g., Oates 1969; Brasington 2002; Mathur 2008; Nguyen-Hoang and Yinger 2011).

For local governments planning for the provision of these services, one of the central challenges for managing fiscal issues in the context of oil and gas production is how to plan for contingencies where prices, technologies, or other factors lead to substantial increases or decreases in activity (sometimes referred to as “boom and bust” cycles). Local officials face decisions on large public investments with the understanding that future oil and gas activity may change rapidly and unpredictably, with potentially large effects on revenues.

This leads to the question of whether fiscal policies should focus on managing current needs or saving to mitigate any impact of future shortfalls. In all likelihood, the answer involves some combination of these strategies, but will vary from state to state and even city to city. For states and local governments heavily reliant on the oil and gas industry for revenue (such as Wyoming or more recently North Dakota), state trust funds have been a common tool to prepare for future lean years. For regions with a more diversified economic base (such as Arkansas and Pennsylvania), decreased oil and gas activity may lead to relatively minor government revenue declines, and policy tends to lean toward managing the fiscal impacts of today.

In addition, the types of demands for local governments may change over time. For example, new production in parts of Pennsylvania or North Dakota, where relatively little oil and gas activity had occurred in recent decades, has meant that much of the oil and gas workforce in these regions initially came from out of state. These more transient workers would tend not to be accompanied by school-aged children, limiting new school funding needs. However, if activity continues for a period of years and more permanent housing options become available, workers may relocate permanently with their families, increasing the demand on local schools.

However, local governments may have limited influence regarding the fiscal policies that ultimately affect their ability to provide services. State-level policymakers often determine the timing of and extent to which local governments receive revenue from natural resource development. If state policymakers do not fully understand the near-term and potential long-term issues facing local governments, it could lead to policies that fail to meet the fiscal needs of local communities.

This report focuses on whether near-term revenues have adequately met the near-term needs of local governments experiencing substantial new oil and gas development. A related strain of research has addressed, and continues to debate, the longer term economic implications of oil and gas development for communities (e.g., Allcott and Keniston 2014; Haggerty *et al.* 2014; Jacobsen and Parker 2014; Weber 2014). Another line of analysis considers the extent to which economic diversification can cushion the fiscal challenges associated with downturns in oil and gas (or other natural resource) prices (Macke 2012).

The remainder of this section provides background on natural resource taxation issues at the national level, an examination of recent work on state-level policy design, and a description of data sources and methods. Section 3 shows how oil and gas revenue was allocated to local governments in FY 2012, with an overview of the relevant policy mechanisms for each state. Section 4 concludes with an analysis of whether this revenue has been sufficient for county and municipal governments in each of our eight states, and offers considerations for potential changes in policy design.

2.1 Background

A wide body of literature has gone into understanding fiscal policy toward natural resource extraction. Much of this work focuses on fiscal regimes for nations seeking to incentivize natural resource production while also achieving broader economic and development goals. Policy design in this context centers on national-level issues, and typically focuses on scenarios where governments, not private citizens, are the holders of mineral rights (e.g., Khelil 1995; Tordo 2007; International Monetary Fund 2010; Agalliu 2011). Much of this work refers to the “government take,” a metric which is typically represented as the sum of direct revenue for governments as a percentage of cash flow from an oil and gas well, project, or operator. This typically includes lease or concession payments, royalties, corporate income or profits taxes, production sharing agreements, revenues to national oil companies, and other potential sources. Government take estimates generally do not include indirect or induced revenues such as sales or personal income taxes.

Assessing local government revenue from oil and gas production requires a modified approach. Because local governments only receive a portion of total government revenue from oil and gas projects, our analysis does not reflect the total government take. In many cases, tax or leasing revenues pass through one or more levels before eventually flowing to local governments. Local governments often have limited control regarding the mechanisms deployed to raise revenue from oil and gas development. Our analysis therefore does not center on the optimal method(s) of taxation (see e.g., Conrad and Hool 1981) for local governments, but rather the practical effect of existing policies for raising and allocating revenue.

Some work in the late 1970s and 1980s examined local government fiscal issues associated with energy development. That research generally found that state fiscal policies toward energy development can have a substantial effect on local government finances, and highlighted the challenges faced by geographically isolated local governments, especially municipalities (e.g., Gray 1977; Toman *et al.* 1977; Leistritz *et al.* 1981; Hecox 1984).

More recent analyses have assessed fiscal treatment of the oil and gas industry at the state and provincial level in the United States and Canada (e.g., Kunce and Morgan 2005; Kepes *et al.* 2011; Ernst & Young LLP 2012; Headwaters Economics 2012; Brown 2013; Colorado Legislative Council Staff 2014; Pennsylvania Independent Fiscal Office 2014). Much of this work focuses on the state level, and aggregates data on local property taxes and state severance taxes or impact fees.

Our report differs in several ways from these recent analyses. First, we show in detail how revenue flows to different levels of local government, rather than assessing state government revenues. Second, we include revenue from additional sources, notably leasing of state and federal lands. Third, we evaluate revenue generated by production from both oil and gas resources, while other recent analyses have focused exclusively on one or the other. Fourth, our analysis looks at oil and gas production statewide for each state, while other analyses have approached the topic by looking at the tax revenue streams generated by a single hypothetical well.

Finally, while we do not quantify the effect of oil and gas production on local sales taxes or revenue generated from local government leases, our analysis and conclusions take into account these and other local factors based on our prior research and findings (Raimi and Newell 2014). In that report, we found that sales taxes, local government leases, collaboration between industry and local governments, the rurality of a region, and the capacity of local infrastructure can each play important roles in shaping near-term fiscal outcomes. We consider each of these issues when assessing whether the revenue mechanisms described here appear to provide adequate revenue for county and municipal governments to cover the public service and infrastructure demands associated with substantial new oil and gas development.

2.2 State-level policy design issues

Increased oil and gas production in the United States has generated substantial interest in fiscal policy towards natural resource extraction. Major revisions to state oil and gas tax policies have been made in recent years in a number of states with shale resources (Rabe and Hampton 2014), and debate over the issue continues.³ States sometimes compete for oil and gas investment, seeking to

³ See for example 2014 Colorado Senate Bill 198; 2014 Ohio House Bill 375; 2013-2014 Pennsylvania Senate Bills 1359 and 1349, and House Bills 1947, 2051, and 2020.

grow their economies and provide local employment opportunities, although evidence suggests state oil and gas taxation plays a relatively minor role in such investment decisions.⁴ States making revisions to their tax policies often seek to balance attracting investment with the generation of revenue for government services. Since most states share oil and gas revenues with local authorities, changes in state-level fiscal policy will in most cases affect revenues available for local governments.

Relevant analyses of state fiscal policy have primarily focused on severance taxes or impact fees. These taxes are an important part of each state's fiscal policy toward oil and gas, and may also play a substantial role in financing local government needs. However, focusing solely on severance taxes or impact fees presents a limited picture of how oil and gas revenue flows to local governments. Other revenue sources such as government oil and gas leases and local property taxes can play just as great a role for local government finance.

In addition, the nuances of state revenue allocation formulae can play a central role in shaping whether local governments receive adequate revenue to manage oil- and gas-related growth. For example, a substantial share of severance tax revenue in Wyoming is directed toward municipal governments. However, this revenue is apportioned based solely on population, meaning that small cities and towns in regions with heavy drilling activity receive less revenue than larger population centers which may have no oil and gas development.

2.3 Data and methods

This report relies primarily on data from state and federal government agencies, along with a small amount of proprietary natural gas price data, to assess the total value of oil and gas production for eight states in fiscal year (FY) 2012.⁵ We then show what share of that total production value went to local governments through severance taxes or impact fees, property taxes on oil and gas property, and leases of state and federal land.

For each state, monthly oil and gas production data are from the relevant state agency or, if not available from the state, from the U.S. Energy Information Administration (U.S. EIA). To assess the value of production we multiply these production data by an estimated average oil and gas price received by the producer. For Louisiana these oil and gas prices are from the Louisiana Department of Natural Resources. In all other states, for oil we use the monthly crude oil first purchase price

⁴ Existing literature suggests that state oil and gas production taxes tend to play a relatively minor role in investment decisions (Agalliu 2011; Chakravorty *et al.* 2011; Gülen *et al.* 2013). Other factors, such as resource characteristics, commodity prices, drilling costs, and other factors tend to play larger roles.

⁵ All states in our sample with the exception of Texas define their 2012 fiscal year as running from July 1, 2011, through June 30, 2012. Texas' fiscal year runs from September 1, 2011, through August 31, 2012. As a result the data used to calculate oil and natural gas prices for Texas' production are slightly different than in other states.

from the U.S. EIA⁶, and for gas we use regional prices at a variety of natural gas market hubs (see Appendix B). The U.S. EIA does not currently report state-level natural gas wellhead prices.

Next, we calculate revenue allocated to different levels of local government. This requires data describing revenue generated through state-level oil and gas severance taxes or impact fees, local property taxes on oil and gas property, and lease revenue from state and federal lands. As noted above, data for lease revenue from local government lands were not available.

To determine the amount that flows to each level of government, we rely on two primary sources. First, we rely on reports from state and local government agencies that document allocations from each revenue stream in FY 2012. In most states, the allocations of those revenues to local governments are available through various budgetary reports. Where it is not provided, we rely on the relevant state statutes to estimate annual allocations of revenue to local governments.

For local government property taxes, state-level policies and reporting vary. Of the states we examined, four (Arkansas, Colorado, Texas, and Wyoming) allow local governments to apply their local property tax rate to the assessed value of oil and gas produced and/or the assessed value of oil and gas reserves within their borders. For Arkansas, Colorado, and Texas, we gathered tax rates in FY 2012 for each county, school district, municipality, and special district. We then gathered the assessed value of oil and gas production property for each county within the state. To estimate revenue for counties, we applied the local property tax rate to the assessed value of oil and gas production property within each county. For municipalities, school districts, and special districts, we applied the average rate within each county to the assessed value of oil and gas production within each local government jurisdiction. To ensure that our methodology was sound, we crosschecked these estimates against data from several counties in each state. These crosschecks validated the approach. For Wyoming, we gathered summary data on total local government taxes levied on oil and gas property for school districts, counties, municipalities, and other local governments. For a detailed description of sources, see Appendix B.

We collected data on revenue from oil and gas leases on state land for every state through the relevant state agency. In most cases, the allocation of this revenue to local governments was not explicitly described, so we relied primarily on statutes to estimate the revenue allocation. We collected data on revenue from oil and gas production on federal lands, along with the allocation of that revenue to state governments, from the federal Office of Natural Resource Revenues (ONRR), a division of the U.S. Department of Interior. Some states publish the allocation of federal lease revenue to local governments and others do not. Where states do not publish these data, we again

⁶ U.S. Energy Information Administration. Domestic Crude Oil First Purchase Prices by Area. Available at http://www.eia.gov/dnav/pet/pet_pri_dfp1_k_m.htm.

rely on statutes to estimate allocations to local governments. Details on these statutes and citations are provided in Appendix A.

We present revenue allocation figures for counties, municipalities, and school districts, which show the revenue collected by or allocated to each level of local government. We also report figures for oil and gas revenue flowing into school trust funds, which are state-administered endowments. Interest earned from the principal of these endowments is allocated to school districts on an annual basis. The annual outflow from these trust funds does not reflect the amount flowing into the endowment in that year, but rather is determined by past flows into the endowment, as well as investment returns. We show the inflow, rather than the outflow for these endowments.

Our next category, grant programs, refers to funds that are set aside by the state government to support local governments through grant programs. For example, Pennsylvania sets aside a portion of its impact fee revenue to fund local government projects to alleviate housing shortages associated with Marcellus shale-driven population growth. These funds are typically awarded as grants to counties and municipalities. We distinguish grant programs from cities and counties because the grant awards vary substantially from year to year, and do not reflect a consistent allocation to any one type of local government.

Finally, we report data for other local governments, which show revenue that flows to special districts such as sewer and water districts, hospital districts, or airport authorities. These revenues are found most commonly in states where special districts can levy property taxes on oil and gas production and/or reserves within their borders.

2.4 Other taxes and broader policy context

As noted above, this report does not reflect the effective tax rate or the “government take” on the oil and gas industry. Although a number of recent reports use terms such as “effective severance tax rate” for a range of states, we choose not to do so here. Any discussion that focuses only on production taxes inevitably leaves out a range of additional policy factors that are important to understand the broader fiscal context in which oil and gas companies operate. In particular, oil and gas producers in most states pay state corporate income taxes, which can have a major effect on the overall effective tax rate on oil and gas production in a given state.

More broadly, the climate for oil and gas investment depends on a suite of factors including landowner royalty rates, policy stability, characteristics of the hydrocarbon resource, the required rate of return, and proximity to markets and infrastructure (Agalliu 2011). Policymakers may consider each of these issues when developing fiscal policies related to the oil and gas industry.

Because of these complexities, we do not present figures for state-level government revenue generated by oil and gas production. Instead, we focus exclusively on the government revenues generated by oil and gas production that flow to local governments. Corporate income taxes are not included here because these revenues generally flow to state funds.

2.5 Scope of this report

2.5.1 Consideration of other revenues and local factors

The data presented in this report should be considered alongside a suite of other local factors and government revenues. For example, the municipal share of revenue for most states in Figure 1 appears small relative to school districts and counties. This is due to the fact that many counties and school districts generate large revenues from oil and gas property taxes, which are captured by our methodology. Municipalities, on the other hand, often rely more heavily on sales taxes, which are not captured by our methodology but are influenced by economic activity associated with the oil and gas industry.

In addition, local (and state) governments rely to varying degrees on oil- and gas-related revenue streams to fund operations. In some states, such as Wyoming, local and state governments rely heavily on revenue directly tied to oil and gas production and less heavily on other revenue sources such as corporate or personal income taxes. These states will tend to show larger shares of revenue collected by (or allocated to) local governments from oil- and gas-related sources. In other states, revenues generated directly by oil and gas production play a smaller role in funding local government operations.

Indeed, a low percentage as shown in Figure 1 does not necessarily mean that local governments require more revenue, nor does a high percentage necessarily mean that local governments are receiving adequate revenue to manage new service demands associated with the oil and gas industry. A variety of local factors, including revenue from other sources (e.g., sales taxes or lease revenues from local lands), existing infrastructure capacity (e.g., adequacy of roads and other infrastructure), local labor force conditions (e.g., whether the local government struggles to compete for scarce labor), and the extent of cooperation with industry (e.g., do operators repair road damage caused by their activities?), all play a role in local government's ability to manage service demands associated with oil and gas production.

As another example, local governments in Arkansas and Pennsylvania receive a relatively small share of total production value. However, the prevalence of road maintenance agreements with operators in those states have limited costs, and these governments have generally experienced net fiscal benefits associated with increased natural gas production (Raimi and Newell 2014). Similarly in Louisiana, we observed net positive fiscal effects for local governments largely through

increased sales taxes and leases of local government land. Conversely, municipalities in North Dakota receive a relatively large share of production revenue, but a lack of pre-existing infrastructure has created challenges managing rapid population growth associated with surging oil production.

2.5.2 Major taxes not included in this report

This report does not describe indirect or induced revenues associated with oil and gas development. The oil and gas industry supports jobs, which generates substantial income tax revenue for state governments and in some cases, local governments. Oil and gas companies and the workers they employ use their earnings to purchase goods and services, which generates further revenues for local and state governments in the form of sales taxes and/or use taxes. This economic activity in turn supports other jobs and purchases. Economists sometimes use “multipliers” to estimate the indirect and induced impacts of a given sector. These multipliers are then used in economic models that simulate a region’s economy, allowing researchers to estimate the total economic contribution of the sector (e.g., National Petroleum Council 2011; IHS 2013).

We do not undertake such an analysis here, although others have conducted such analyses (e.g., Booz Allen Hamilton 2008; Kelsey *et al.* 2012; Oyakawa *et al.* 2012; Univ. of AR Center for Business and Economic Research 2012; Bangsund and Hodur 2013; Lewandowski and Wobbekind 2013; Tunstall and Oyakawa 2013; Tunstall *et al.* 2013).

3. Local government oil and gas revenue in eight states

For each state examined here, state governments collect revenue from oil and gas production through taxes, fees, or lease revenues and allocate at least some of that revenue to local governments. In some states, local governments tax oil and gas production directly through property taxes.

For each state, we provide estimates for cumulative oil and gas production value in FY 2012 (e.g., Table 3.1). Next, we show revenue that was either collected by or allocated to local governments from oil and gas production (e.g., Figure 3.1). To allow for comparison between states, we divide the revenue allocated to each level of local government by the total value of production of all oil and gas within each state for FY 2012. Results are shown in the final row of the figure for each state (e.g., Figure 3.1). Detailed data and sources are provided in Appendix B.

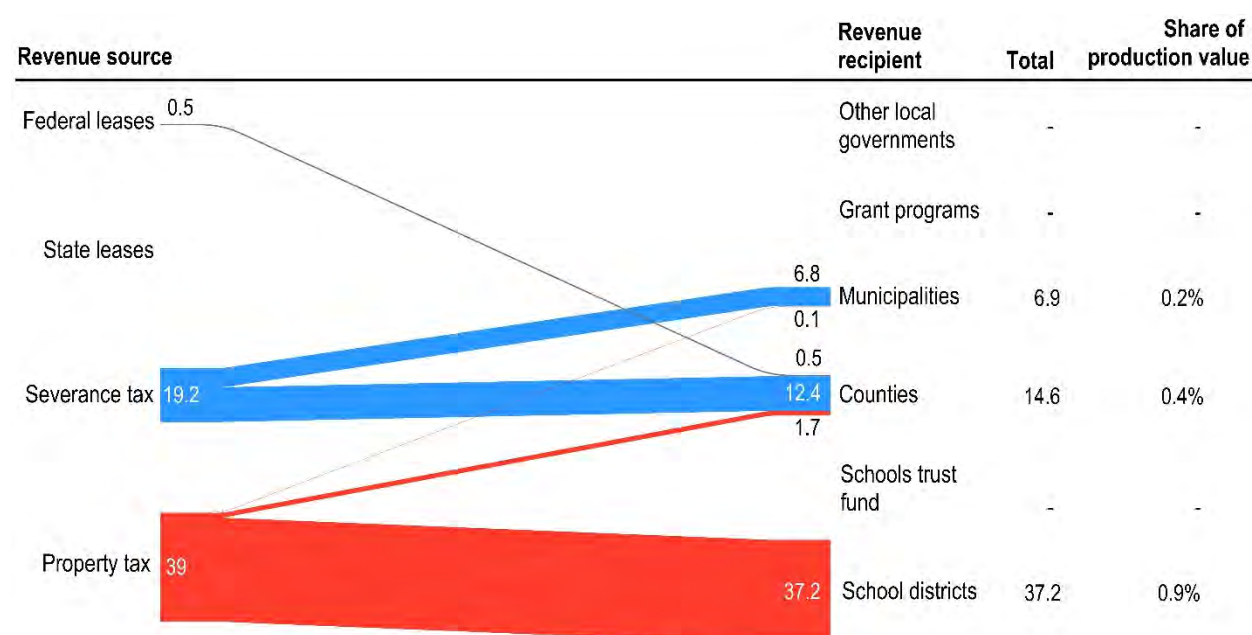
3.1 Arkansas

Table 3.1 Arkansas FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
6,536,000	89.03	1,152,420,711	3.00	4.0

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on Perryville Hub via Bloomberg.

Figure 3.1 Arkansas FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.8 for additional details. Sums may not total due to rounding.

3.1.1 Revenue mechanisms and allocation

The Arkansas state government applies several taxes to oil and natural gas production. Oil production is taxed at a rate of either 4 percent or 5 percent through an excise tax, and through an oil assessment at a rate of 2.5 percent plus \$0.02 per barrel. Natural gas production is taxed at either 1.25 percent, 1.5 percent, or 5 percent through a severance tax, with lower rates applying to production from marginal or high-cost wells. In FY 2012, the oil excise tax and oil assessment generated roughly \$38 million, while the natural gas severance tax generated roughly \$41 million.

Of these three state oil and gas taxes, two provide substantial revenue for local governments. Roughly \$5.6 million from the oil excise tax was allocated to counties in FY 2012, and roughly \$6.8 million each was allocated to counties and municipalities from the natural gas severance tax.

Arkansas local governments also raise revenue from oil and gas production directly through property taxes, generating roughly \$39 million for local governments statewide in FY 2012. Of these revenues, the large majority—roughly \$37 million—was levied by school districts, while most of the remainder went to county governments.

Arkansas also received roughly \$1.9 million from oil and gas leases on federal lands, passing \$465,000 to counties through a county aid fund. Oil and gas leases on state lands generated roughly \$800,000, and these revenues were retained by various state agencies.

In addition to the figures shown here, some Arkansas municipalities collect revenue from oil and gas leases on local government land. However, the aggregate total of these figures is unclear, as no Arkansas agency collects and aggregates this data.

3.1.2 Discussion

Although local governments in Arkansas collect a small share of total production value relative to some other states in this survey, local governments in the Fayetteville shale region, where production has grown most quickly in recent years, report generally positive fiscal outcomes associated with the increase in activity (Raimi and Newell 2014). Municipalities report little in the way of new costs associated with the industry, and as such see new revenues as a net positive. Municipalities raise much of their revenue through sales taxes, which are not captured here, but which have grown in part due to increased economic activity associated with the oil and gas industry. County governments have seen some new costs associated with road maintenance, but these costs have been limited due to road maintenance agreements with operators.

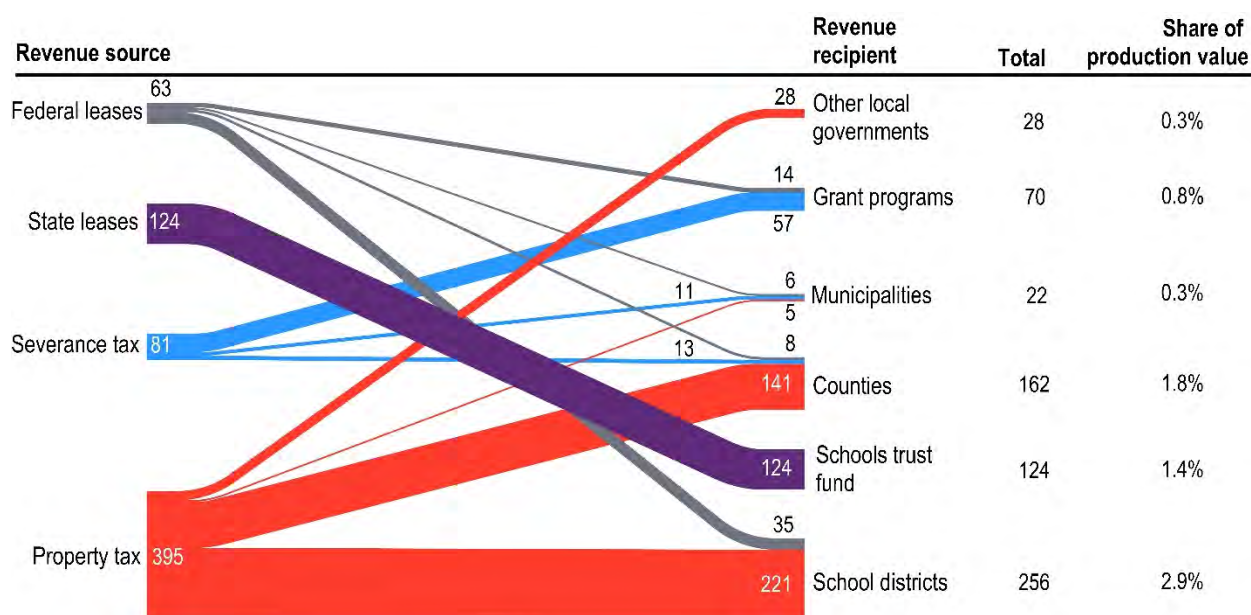
3.2 Colorado

Table 3.2 Colorado FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
43,406,720	87.38	1,733,366,436	2.89	8.8

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on White River Hub via Bloomberg.

Figure 3.2 Colorado FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.9 for additional details. Sums may not total due to rounding.

3.2.1 Revenue mechanisms and allocation

The Colorado state government taxes oil and gas production through a severance tax, which ranges from 2 percent to 5 percent of the value of oil and gas produced in a given year. However, the effective rate of this tax tends to be lower for most operators, as oil and gas producers may deduct 87.5 percent of local property taxes paid on oil and gas production in the previous year from their severance tax liability. Stripper wells pay zero severance tax.

The severance tax raised roughly \$163 million in FY 2012, and roughly half of those revenues were allocated to local governments, either through direct distribution to counties and municipalities, or through a grant program administered by the Colorado Department of Local Affairs. In several recent years, revenues originally designed for this grant program were used for

state general fund purposes, reducing the allocations to local governments in those years. However, this revenue was used for grants to local governments in the most recent fiscal year.

Local property taxes are applied to 87.5 percent of the value of oil and gas produced within each jurisdiction, and raised roughly \$395 million in FY 2012 (the 87.5 percent assessment is unrelated to the 87.5 percent severance tax credit described above). The majority (56 percent) of those revenues flowed to school districts, followed by counties (36 percent), special districts (7 percent) and municipalities (1 percent). These property taxes are based on local property tax rates, which can vary substantially between local governments.

Oil and gas production on state lands generated roughly \$125 million in FY 2012, all of which was allocated to a trust fund that finances primary education across the state.

Finally, substantial oil and gas production takes place on federal and tribal lands in Colorado. The federal government allocated roughly \$70 million from oil and gas leases to the state government in FY 2012, and the majority of this revenue flows to local governments. Roughly 50 percent went to school districts, 11 percent to counties, and 9 percent to municipalities, while 20 percent was allocated through the Department of Local Affairs grant program.

In addition to the figures shown here, a number of Colorado school districts, counties, municipalities, and special districts generate revenue from oil and gas leases on local government land (Raimi and Newell 2014). The aggregate total of these figures is unclear, as no Colorado agency collects and aggregates these data. However, the revenue can be substantial, as indicated by Weld County, which generated \$16 million from 2011 to 2012 from oil and gas leases.

3.2.2 Discussion

Most of the local governments in the two regions of Colorado described in our previous report have seen revenues grow more than new service demands (i.e., costs) associated with increased oil and gas production. However, one county (Rio Blanco) and one municipality (Rifle) we examined in rural western Colorado have struggled at times to manage increased infrastructure demands associated with industry truck traffic and temporary population growth from industry workers.

In Rio Blanco County, property taxes and allocations of revenue from the state have not kept up with the road repair needs associated with the industry. For Rifle, a surge in population during the mid-late 2000's strained municipal services, especially sewer and water systems.

These issues were not observed in more densely populated regions and, for Rifle and Rio Blanco County, geographic isolation appears to have played an important role. Consequently, additional revenue may be warranted for local governments in very rural regions managing industry-

related growth. This would not necessarily mean increasing government revenue statewide, as a reallocation of existing revenues could direct additional funds to highly rural regions.

Colorado’s grant program is designed to help alleviate some of these demands, as its criteria for awarding grants include “relationship to energy impacts” and “demonstration of need.” Indeed, Rio Blanco County in 2014 had the state’s highest “impact score.” However, the redirection of impact grant funds from FY 2010 through FY 2012 meant that no substantial grants went to any impacted communities during those years. Beginning in FY 2013, impact grants began flowing again, with Rio Blanco County receiving grants for \$2 million for road repairs, and Rifle receiving roughly \$1.6 million from 2013 through 2014 (Colorado Department of Local Affairs 2014).

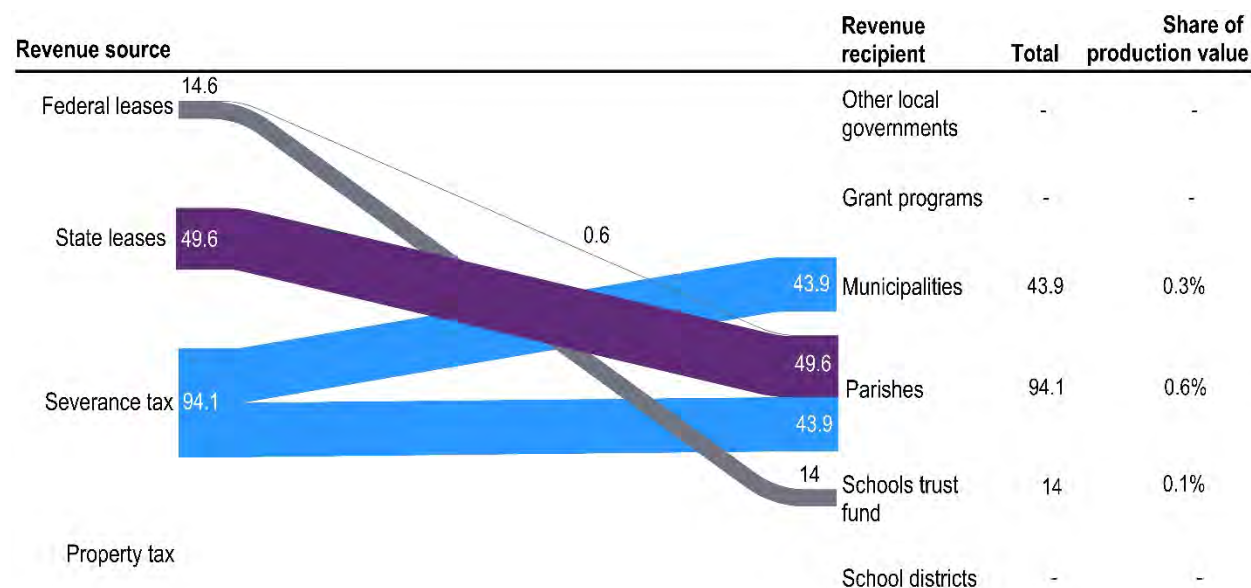
3.3 Louisiana

Table 3.3 Louisiana FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
75,191,894	107.46	2,961,907,619	2.82	16.4

Note: Oil and gas prices from Louisiana Department of Natural Resources (2013).

Figure 3.3 Louisiana FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. Local governments in Louisiana can levy property taxes on oil and gas surface equipment such as rigs and wellheads, but we do not include this source since it does not reflect the annual level of oil and gas production. See Table 7.10 for additional details. Sums may not total due to rounding.

3.3.1 Revenue mechanisms and allocation

Louisiana levies a severance tax that generated roughly \$877 million in FY 2012, along with a smaller restoration fee which is not allocated to local governments. The state allocates 5 percent of severance tax revenues to both municipalities and parish governments, equal to roughly \$44 million each. Note that parishes serve many of the same functions as counties in other states.

Louisiana does not allow local governments to levy property taxes on oil and gas production or reserves. It does allow local governments to levy property taxes on surface equipment including rigs and wellheads, which can generate substantial revenue for some local governments (Raimi and Newell 2014). However, we do not include these revenues in our calculations as they do not reflect the actual level of oil and gas production.

The state generated \$611 million from leases on state lands in FY 2012, roughly 8 percent of which was allocated to parish governments based on their level of oil and gas production. Federal leases generated roughly \$22 million for the state, with \$14 million flowing to two education trust funds and roughly \$600,000 to parishes.

In addition to the figures shown here, a number of Louisiana parishes and municipalities collect revenue from oil and gas leases on local government land (Raimi and Newell 2014). The aggregate total of these figures is unclear, as no Louisiana agency collects and aggregates this data. However, the revenue can be substantial, as indicated by Caddo and DeSoto parishes, which generated over \$30 million each through oil and gas leases from 2007 through 2012.

3.3.2 Discussion

Although a relatively small share of production value flows to local governments in Louisiana, the parishes we examined in our previous report describe positive fiscal outcomes associated with increased oil and gas activity. This is in part due to property taxes levied on surface equipment such as rigs and wellheads that are used in oil and gas production. However, a larger revenue source for these parish governments has come from leases on local government land, as well as large increases in sales tax revenue.

The oil and gas industry has operated for decades throughout Louisiana, and local infrastructure in the Haynesville shale region, coupled with the revenue sources described above, has generally been sufficient to support the industry's increased activity. In addition, parishes have strictly enforced weight restrictions for heavy trucks, preventing major damage and limiting costs for road repair. There have also been some limited instances of road repair collaborations between operators and local governments. While the region's roads have experienced additional "wear and tear," existing revenue mechanisms appear to be sufficient to manage new costs.

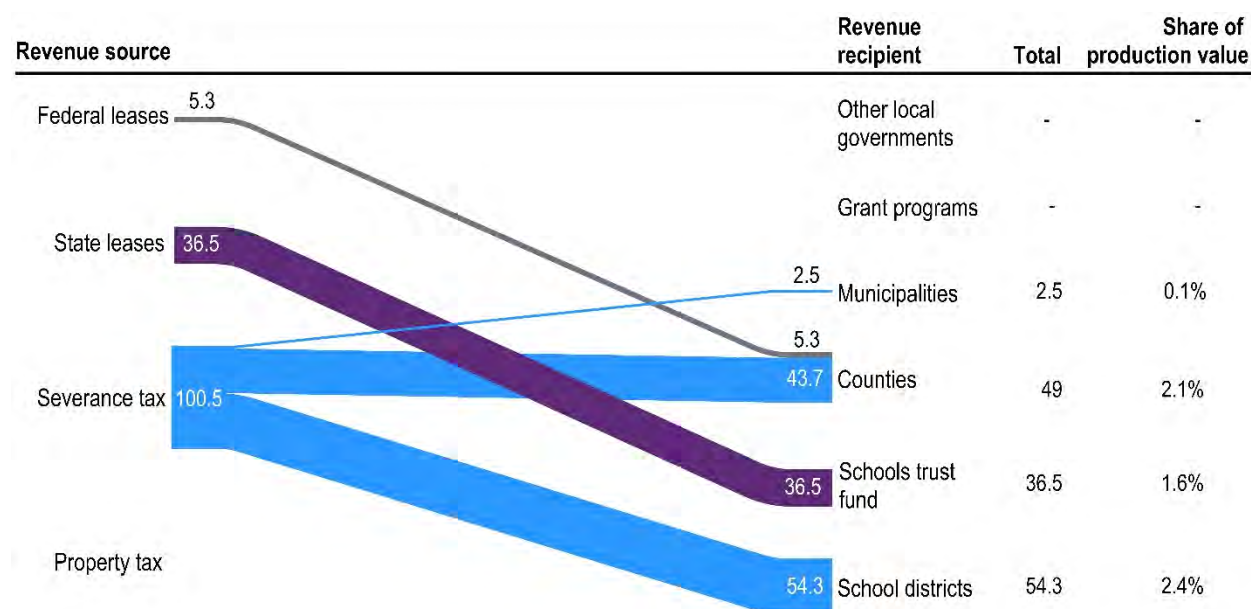
3.4 Montana

Table 3.4 Montana FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
24,758,894	85.07	73,956,664	2.89	2.3

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on White River Hub via Bloomberg.

Figure 3.4 Montana FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.11 for additional details. Sums may not total due to rounding.

3.4.1 Revenue mechanisms and allocation

Montana's state government levies two taxes on oil and gas production: a severance tax, with rates ranging from 0.5 percent to 14.8 percent for different production categories, and a privilege and license tax of 0.27 percent of oil and gas production revenue. These taxes generated roughly \$211 million in FY 2012, with school districts receiving roughly \$54 million and county governments receiving roughly \$44 million. Municipal governments receive a small share of severance tax revenues, with roughly \$2.5 million allocated to municipalities in counties with substantial oil and gas production in FY 2012.

Montana local governments cannot apply their local property taxes to oil and gas property or production.

Oil and gas leases on state lands generated roughly \$38 million in FY 2012, and roughly 96 percent of these revenues were allocated to a trust fund for primary education. Leases on federal lands generated roughly \$21 million in FY 2012, 25 percent of which goes to county governments based on levels of production.

In addition to the figures shown here, some Montana municipalities collect revenue from oil and gas leases on municipal government land (Raimi and Newell 2014). However, the total amount of these lease revenues are unclear, as no Montana agency collects and aggregates this data.

3.4.2 Discussion

The relatively small share of oil and gas-related revenue allocated to municipalities in Montana has interacted with other tax policies to create challenges in the eastern part of the state, where population has risen rapidly due to Bakken development in eastern Montana and across the border in western North Dakota. In our previous report, we described large new infrastructure costs for several small cities and towns in the region and noted that new revenues have not kept pace. News reports have described similar issues (Boyce 2013; Oldham 2013). While some other states allocate small shares of oil and gas revenue to municipalities, eastern Montana's cities and towns are distinguished by the fact that they may not levy sales taxes, a major revenue source for municipalities in states such as Texas and Louisiana that also receive minimal severance tax allocations.

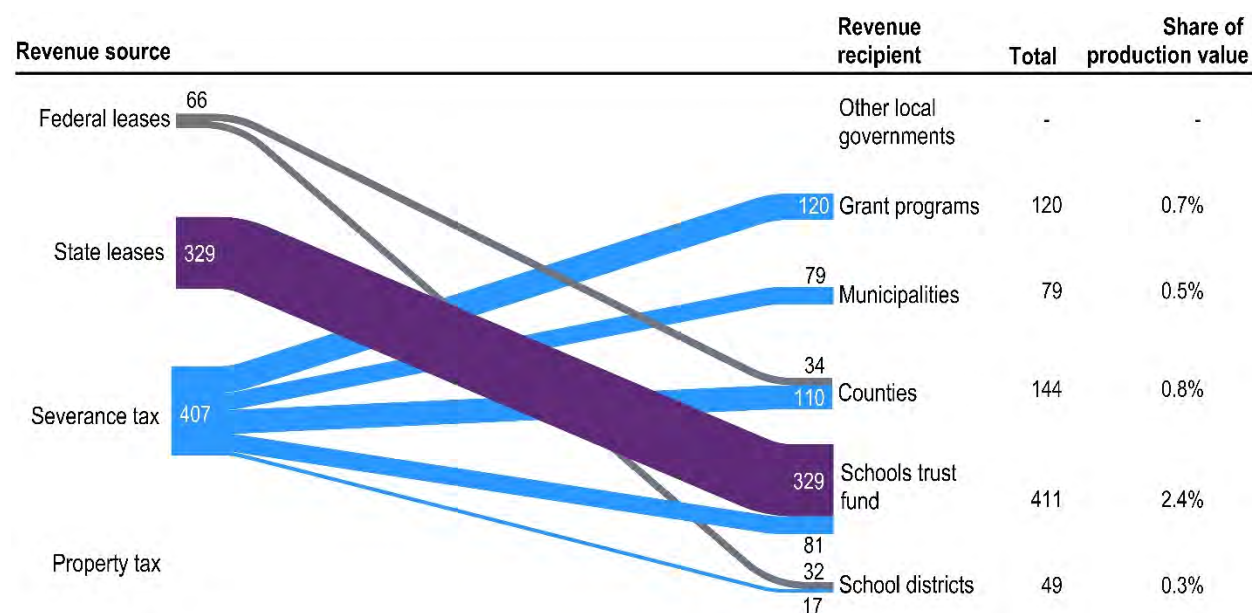
The low percentage of revenue allocated to municipalities, coupled with the findings from our previous research, suggests that additional revenues may be warranted for cities and towns in eastern Montana to manage population growth associated with Bakken development. In April 2014, Montana's governor announced \$45 million in grants, reduced rates for state-issued infrastructure loans, and expert planning assistance to alleviate these infrastructure challenges in eastern Montana (Montana Governor's Office 2014). As of this writing, this package had not been approved by the state legislature.

3.5 North Dakota

Table 3.5 North Dakota FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
197,485,833	85.76	129,914,921	2.89	17.3

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on White River Hub via Bloomberg.

Figure 3.5 North Dakota FY 2012 local government revenue from oil and gas production (\$million)

Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.12 for additional details. Sums may not total due to rounding.

3.5.1 Revenue mechanisms and allocation

North Dakota has made a number of revisions to its oil and gas revenue mechanisms and allocation formulas in recent years as oil production has surged in the western part of the state (see ND 2013-2014 House Bill 1358). The allocations shown here reflect the most recent legislative allocation formulas applied to oil and gas production from FY 2012.

The state government levies two main taxes on oil and gas production: the oil and gas production tax, which raised roughly \$796 million in FY 2012, and the oil extraction tax, which raised roughly \$865 million. The oil and gas production tax is 5 percent of the value of oil production plus \$0.833/mcf of marketed natural gas production, with no major exemptions or deductions in FY 2012. The oil extraction tax rate is 6.5 percent of the value of oil production with deductions for stripper wells and for certain production methods if the oil price falls below an annually adjusted threshold (it has been above the threshold since major production began in the Bakken).

These revenues are shared with local governments based on a complex formula which allocates revenues according to the level of oil and gas production, number of oil- and gas-industry employees, and a variety of other factors. Of the roughly \$1.7 billion raised in FY 2012 from the oil and gas production tax and the oil extraction tax, roughly \$98 million flowed to school districts and trust funds, \$110 million to counties, \$79 million to municipalities (including townships, which

maintain a limited amount of rural road networks), and \$120 million to the Oil and Gas Impact Fund, which awards state-administered grants primarily to cities and counties.

North Dakota local governments cannot apply their local property taxes to oil and gas property or production.

State lands generated \$329 million in oil and gas lease revenues in FY 2012, all of which goes to a trust fund for public education.

Federal leases generated roughly \$64 million in FY 2012, and this revenue was shared evenly between county governments and school districts. Additionally, McKenzie County, which sits near the center of Bakken activity, collects directly from oil and gas producers 6.25 percent of the lease revenues generated from federal land within its boundaries. To our knowledge, this arrangement is unique to McKenzie County. It is an artifact of negotiations over land title between the federal government and McKenzie County dating to the early 1900s.⁷ Revenues generated from this arrangement are included in our “Counties” category above. In FY 2012, McKenzie County received roughly \$2.1 million dollars through this revenue stream.⁸

3.5.2 Discussion

It appears that local governments in North Dakota are not receiving sufficient revenue to manage the infrastructure demands associated with Bakken development. As we described in our previous report, local governments in the region have seen large increases in revenue from the sources described above, along with increased sales tax revenues. However, given the very rural nature of the region and the lack of existing infrastructure, these large new revenue streams do not appear to be sufficient to manage the rapid growth in this highly rural region.

Recent revisions in North Dakota’s allocation formula for its production taxes have increased allocations to local governments. However, the share of production value allocated to counties is below our eight-state average, and the share allocated to municipalities hovers near average. North Dakota has allocated the majority of revenue from oil and gas production towards state savings funds, a strategy that is likely to enhance future government services, but which has left a relatively small share of revenue to manage impacts in the near term. At least one other detailed analysis has reached similar conclusions (Headwaters Economics 2013).

Increasing revenues for local governments does not necessarily mean increasing total tax revenue, as the state could reallocate existing revenue streams to manage near-term challenges at the

⁷ Based on communication with Keith Winter, president of the McKenzie County Grazing Association, May 2014.

⁸ McKenzie County Auditor’s Office. 2014 Budget. Available at http://county.mckenziecounty.net/DepartmentsDisplay/County_Finances .

local level. Alternatively, increased cooperation between local governments and operators, especially for infrastructure needs, could mitigate the need for additional revenue.

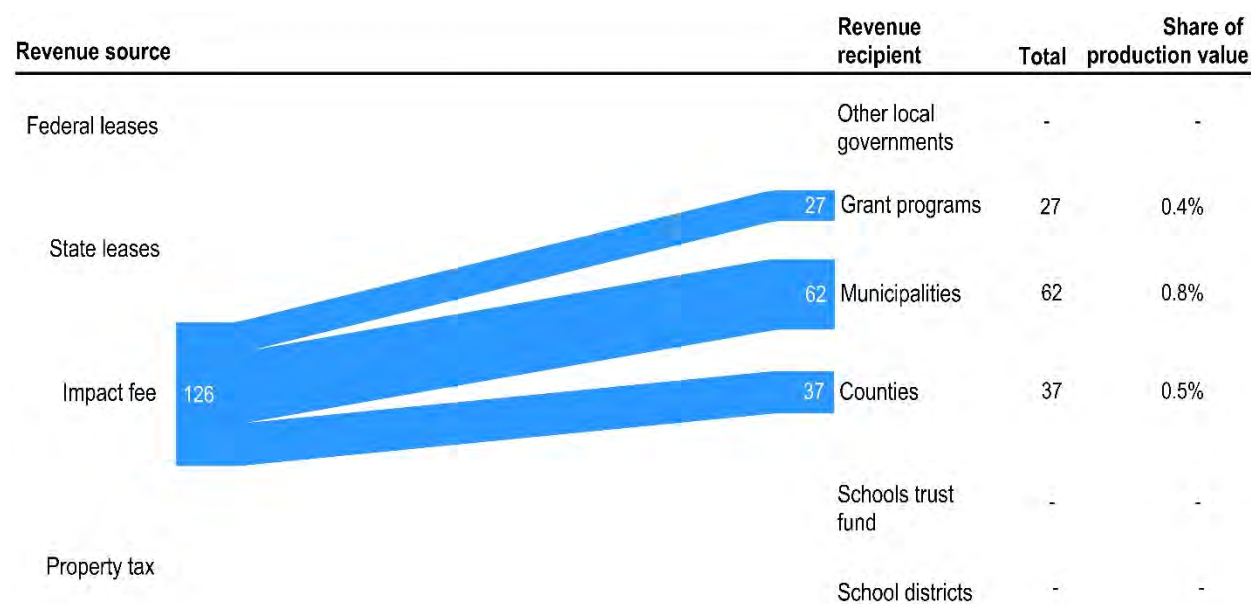
3.6 Pennsylvania

Table 3.6 Pennsylvania FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
3,631,000	88.83	2,256,696,000	3.11	7.3

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on Dominion Hub via Bloomberg.

Figure 3.6 Pennsylvania FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.13 for additional details. Sums may not total due to rounding.

3.6.1 Revenue mechanisms and allocation

Pennsylvania imposes an “impact fee” on each unconventional well drilled in the state. This fee raised roughly \$202 million in FY 2012, and roughly 60 percent of those revenues are allocated to local governments, with counties receiving roughly \$37 million (18 percent), municipalities including townships receiving roughly \$62 million (31 percent), and state grant programs for local governments receiving roughly \$27 million (13 percent).

Oil and gas leases on state lands generated roughly \$77 million in 2012, but local governments do not receive a share of these revenues. Additionally, local governments cannot apply

property taxes to oil and gas production, and revenue from oil and gas leases on federal lands within Pennsylvania is negligible.

Some Pennsylvania counties and municipalities (including townships) collect revenue from oil and gas leases on local government land (Raimi and Newell 2014). However, the total amount is unclear, as no Pennsylvania agency collects and aggregates local government leasing data. However, the revenue can be substantial, as indicated by Bradford and Washington counties, which have each generated millions of dollars in leasing revenues between 2008 and 2012.

3.6.2 Discussion

Although local governments in Pennsylvania receive a small share of production value relative to other states in this survey, our previous research indicates that most have experienced net positive fiscal impacts from Marcellus shale development. Municipalities, however, collect a larger share of revenue in Pennsylvania than in any other state in our survey due to allocations of the impact fee. These allocations have helped municipalities, primarily townships, maintain roadways affected by increased heavy truck traffic (rural roads in every other state in this survey are primarily maintained by counties or parishes). Road repair costs have also been substantially limited in Pennsylvania through widespread agreements between local authorities and operators, who typically repair any damage they cause to township roads (Raimi and Newell 2014).

County governments receive a relatively small share of production value, but have generally experienced positive fiscal outcomes associated with Marcellus development. This is due in large part to the fact that they do not maintain most roadways or infrastructure such as sewer and water lines, limiting county government costs.

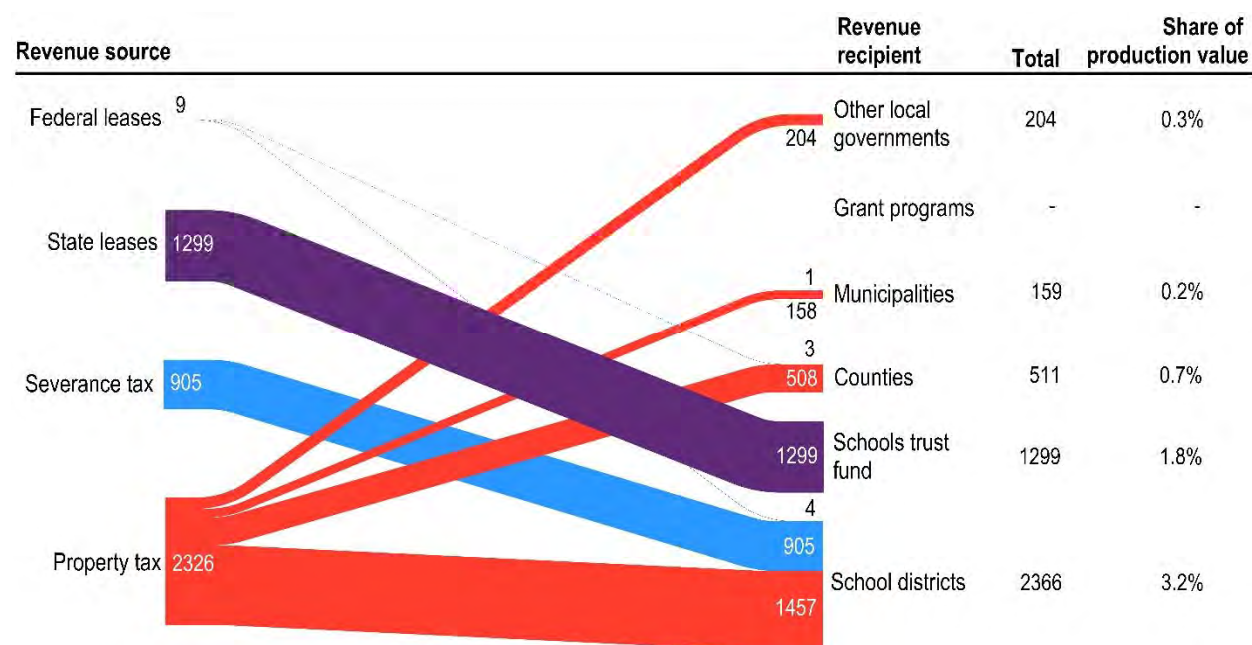
Overall, it appears that local governments in Pennsylvania are receiving adequate revenue to manage increased service demands associated with Marcellus development.

3.7 Texas

Table 3.7 Texas FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
549,763,539	93.03	8,085,488,083	2.78	73.6

Note: Texas' fiscal year runs from September 1 through August 31 of each year, two months later than the other states surveyed here. Oil price based on U.S. EIA first purchase price. Natural gas price based on Katy Hub via Bloomberg.

Figure 3.7 Texas FY 2012 local government revenue from oil and gas production (\$million)

Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.14 for additional details. Sums may not total due to rounding.

3.7.1 Revenue mechanisms and allocation

Texas levies a severance tax along with a regulatory tax and fee assessment. The severance tax ranges from 0 percent to 4.6 percent of the value of oil production and from 0 percent to 7.5 percent of the value of natural gas production, with lower rates available for stripper wells and unconventional technologies such as enhanced oil recovery and high cost gas wells. In FY 2012, the severance tax raised roughly \$3.6 billion. Of this revenue, roughly \$905 million (25 percent) went to fund Texas' primary schools, with no other revenues allocated to local governments.

The regulatory tax and fee assessment, which levies a fraction of a cent for each barrel of oil and thousand cubic feet of natural gas produced, raised roughly \$9 million. These revenues are used to fund Texas' oil and gas regulatory programs.

Local governments in Texas generate oil and gas production revenue primarily from property taxes, which raised roughly \$2.3 billion in FY 2012. Roughly \$1.5 billion was collected by school districts, \$508 million by counties, \$158 million by municipalities, and \$204 million by other local governments.

Leases of state lands in Texas provided roughly \$1.3 billion in oil and gas revenue in FY 2012. As in a number of other states, these revenues endow a trust fund for public education.

Oil and gas leases on federal land in Texas represented a relatively small sum of \$8.6 million in FY 2012, all of which was allocated to local governments: 50 percent to school districts, 35 percent to counties, and 15 percent to municipalities.

In addition to the figures shown here, some Texas municipalities collect revenue from oil and gas leases on local government land (Raimi and Newell 2014). However, the total of these figures is unclear, as no Texas agency collects this data. However, the revenue can be substantial, as indicated by the city of Fort Worth, which has generated more than \$20 million in leasing revenues from 2005 through 2012.

3.7.2 Discussion

School districts and trust funds in Texas receive a larger share of production value than in most other states, while counties and municipalities receive slightly less than our eight-state average. Although Texas allocates none of its severance tax revenues to counties or municipalities, it appears that in most cases revenues for these local governments have been sufficient to manage new costs associated with the industry.

Limited previous research has shown that school districts in Texas with higher shares of assessed oil and gas value tend to be wealthier than school districts with smaller shares of oil and gas property, though this work does not take into account redistribution of locally-collected property taxes or other state-led school funding adjustments (Lee and Plummer 2011).

Unlike most other states we examined, a number of Texas municipalities raise substantial oil- and gas-related revenue through property taxes due to drilling within city limits. These revenues, along with sales taxes and leases on city-owned property (two metrics not captured here), have helped municipalities manage infrastructure demands associated with the industry.

Counties, which are funded primarily by property taxes, have in some cases struggled to keep up with road repairs associated with the industry (TX Dept. of Transportation 2012; Porter 2013; Raimi and Newell 2014). Consequently, the Texas state legislature allocated some \$225 million for roadway repair in oil- and gas-producing counties in 2013.⁹ Divided between the dozens of counties with substantial oil production, this figure is unlikely to meet all the infrastructure needs in booming areas such as the Eagle Ford region and the Permian basin. A November 2014 voter referendum will allow the transfer of \$1.7 billion from severance tax revenue to a state highway fund, which goes to fund state, rather than county roads.

⁹ Texas 2013 Senate Bill 1747. Signed 6/14/2013.

The research cited above indicates that some, though not all, counties in these regions have experienced or are experiencing strains on their infrastructure. Consequently, it appears that additional revenue for select Texas counties may be warranted to manage infrastructure needs.

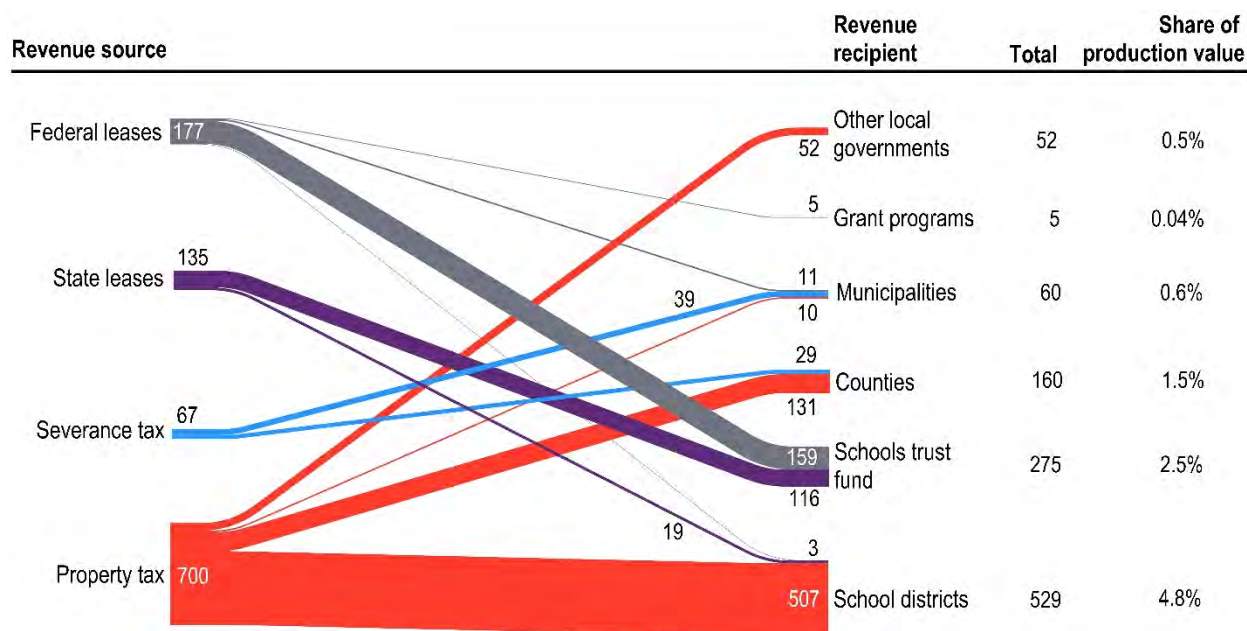
3.8 Wyoming

Table 3.8 Wyoming FY 2012 oil and gas production and production value

Oil production (bbl)	Oil price (\$/bbl)	Natural gas production (mcf)	Natural gas price (\$/mcf)	Total production value (\$billion)
56,540,000	82.56	2,146,385,000	2.95	11.0

Note: Oil price based on U.S. EIA first purchase price. Natural gas price based on Opal Hub via Bloomberg.

Figure 3.8 Wyoming FY 2012 local government revenue from oil and gas production (\$million)



Note: Figures at left show local government revenue from four major sources. Figures at right show allocation of those revenues to local governments. See Table 7.15 for additional details. Sums may not total due to rounding.

3.8.1 Revenue mechanisms and allocation

The Wyoming state government taxes oil and gas production at rates ranging from 4.3 percent to 6 percent, with reduced rates for stripper wells and enhanced recovery techniques. In FY 2012, these taxes generated roughly \$522 million. From these revenues, roughly \$29 million (5 percent) was allocated to county governments and roughly \$39 million (7 percent) to municipalities. The remainder went to a range of state programs and savings funds.

The largest source of oil- and gas-related revenue for local governments in Wyoming comes from local property taxes, which generated roughly \$700 million in FY 2012. Of that total, 72 percent was collected by school districts, 19 percent by counties, 7 percent by special districts, and 1 percent by municipalities.

Oil and gas leases on federal lands generated \$435 million, with school districts and trust funds receiving roughly \$162 million, municipalities roughly \$11 million, and a local government capital construction fund roughly \$5 million, allocated through a state-administered grant program. Oil and gas leases on state lands generated \$147 million, and \$135 million of those revenues went to fund school districts and trust funds.

3.8.2 Discussion

Wyoming local governments receive a larger share of production value than any other state in our survey. The largest allocations go to schools, primarily through local property taxes for school operations and state and federal leases for school trust funds. Property taxes are also the primary source of oil- and gas-related revenue for county governments. Municipalities raise relatively little through property taxes, but are allocated a substantial share of revenue through the state severance tax, as well as funds from federal leases.

Despite the relatively large allocation to municipalities (nearly twice our eight-state average), some cities and towns in southwestern Wyoming faced fiscal challenges during a natural gas boom in the mid-late 2000s. Part of the challenge is that the state's severance tax allocation formula directs revenues to cities based only on population rather than any measure of impact associated with the industry. As a result, population centers receive far larger allocations than more rural municipalities such as Rock Springs, Green River, and Pinedale, all of which faced substantial new costs associated with natural gas-driven population growth during the mid-to-late 2000s (Raimi and Newell 2014). Other states that allocate severance taxes to local governments typically use impact criteria such as local production levels or estimates of oil and gas employees.

It appears that very rural municipalities in Wyoming may require additional revenue during heavy periods of oil and gas development to manage infrastructure demands associated with population growth. This does not necessarily mean raising additional revenue, but instead reallocating existing revenue streams toward more heavily impacted communities.

4. Conclusions

Local governments collect and receive revenue from oil and gas production in a variety of ways. This report captures the major revenue sources generated directly by oil and gas production and compares them across eight states. Local governments in Arkansas, Colorado, Texas, and Wyoming generate revenue from property taxes on oil and gas production and property. Local governments in Louisiana, Montana, North Dakota, and Pennsylvania see direct revenues from oil and gas production primarily from state-collected taxes or fees, which are allocated to local governments based on a variety of formulae. Many local governments also see revenues shared by the state from oil and gas leases on state or federal land, with much of these revenues flowing to school districts and school endowments.

Two important revenue streams related to oil and gas development are not captured by our calculations, but are included in our assessment of whether existing policies provide sufficient revenue for local governments to cover increased costs. Those sources are sales taxes, which tend to increase or decrease as the level of oil and gas activity rises or falls in a region; and revenues from oil and gas leases on local government land, which can generate millions of dollars even for small governments.

In most states, local governments have received and are receiving sufficient revenue to manage increased service and infrastructure demands associated with oil and gas industry activity. However, highly rural areas with limited infrastructure that have experienced or are experiencing large increases in production likely warrant additional revenue during the most active phases of development. This includes counties and municipalities in North Dakota's Bakken region, municipalities in Montana's Bakken region, municipalities in southwestern Wyoming, select counties and municipalities in western Colorado, and select counties in Texas' Eagle Ford and Permian basin regions. In most cases, it appears that sufficient revenue is generated by existing oil and gas taxes that could be reallocated to these jurisdictions, limiting the need to increase statewide tax collections on oil and gas production. Alternatively, cooperation between local governments and operators on issues such as road repair can mitigate the need for revenues by shifting costs from the public to the private sector.

4.1 *State-specific conclusions*

4.1.1 *Arkansas*

Although Arkansas' local governments see a smaller share of oil- and gas-related revenue than most other states in this survey, major service demands associated with the oil and gas industry have been limited. Much of this is due to agreements between operators and local government

officials to manage road damage. County and municipal governments in Arkansas appear to be receiving adequate revenue to manage new service demands associated with the industry.

4.1.2 Colorado

Most local governments we examined in Colorado have experienced net fiscal benefits to date associated with increased oil and gas activity. Colorado allocates more revenue to local governments than most states examined here. However, limited existing infrastructure has created fiscal challenges for select counties and municipalities in rural western Colorado. It appears that these local governments require additional revenue during the most active phases of development. This would not necessarily require the state to raise additional revenue. Policy changes could direct existing streams of state-collected oil and gas revenue more heavily toward rural jurisdictions experiencing large-scale development, either through changes to the state allocation formula or through an existing grant program. Additionally, county governments may be able to limit costs through road maintenance agreements with local operators.

4.1.3 Louisiana

Local governments in Louisiana receive the lowest share of oil and gas revenue of the states surveyed here. However, our methodology does not capture sales taxes, local government land lease revenues, or revenues from property taxes on surface oil and gas equipment, each of which has generated substantial revenue for local governments experiencing increased drilling activity in the Haynesville shale region. In addition, Louisiana's schools are largely funded by the state's general fund, which generates a large share of its revenue from the oil and gas sector. It appears that Louisiana's existing funding mechanisms are sufficient for local governments to manage industry-related costs.

4.1.4 Montana

Montana allocates substantial oil- and gas-related revenue to schools and county governments, but relatively little to municipalities. Because municipalities cannot levy sales taxes, cities and towns in Montana's Bakken region have struggled to manage new costs associated with oil- and gas-driven population growth. Policy changes could redirect a portion of state-collected revenues to these municipalities.

4.1.5 North Dakota

Recent policy changes have increased local government allocations of oil and gas revenue in North Dakota (see ND 2013-2014 House Bill 1358). However, the lack of pre-existing infrastructure for county and municipal governments has meant that these new revenues have been insufficient to manage service demands associated with the rapid growth in population and truck traffic. The state

allocates a large share of oil and gas revenue to trust funds—an understandable approach given the unpredictable nature of natural resource-driven economic growth. However, it appears that a larger portion of these revenues could be redirected to local governments to better manage near-term local needs.

4.1.6 Pennsylvania

Pennsylvania's impact fee is designed in large part to manage near-term local government costs associated with Marcellus shale development. While the impact fee generates less revenue for counties and municipalities than in most of the other states in our sample, it appears to have been sufficient to manage increased local government costs associated with natural gas development. This is in large part due to collaboration between local governments and operators to manage road damage associated with industry truck traffic.

4.1.7 Texas

Local fiscal effects of the recent increase in oil and gas production have varied substantially across different regions of Texas. While many local governments have experienced substantial fiscal benefits, some counties in rural regions with limited existing infrastructure have struggled to manage the near-term costs of road repair associated with industry truck traffic. The state responded in 2013 with a limited allocation of revenue from state general funds to heavily affected counties. It appears that this allocation will not be sufficient to manage repair costs, and additional revenue for heavily affected county governments would allow them to better manage oil- and gas-related impacts. Alternatively, more extensive collaboration between operators and local governments could limit the need for additional revenues.

4.1.8 Wyoming

Oil and gas production provides major revenue streams for Wyoming local governments. However, some municipalities in southwestern Wyoming struggled to manage industry-driven population growth during a surge in natural gas production during the mid- to late-2000s. Currently, the state allocates revenue to municipalities based solely on population. Although oil and gas activity has generated rapid rates of population growth in certain regions, a much larger share of total population, and therefore revenue, flows to much larger cities in parts of the state without substantial oil and gas development. As a result, revenue for rural cities and towns in oil- and gas-producing regions has been insufficient at times. Policy changes could adjust the state's allocation formula to direct more revenue to municipalities experiencing increased service demands related to oil and gas activity.

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6. Appendix A State revenue and allocation policies

6.1 Arkansas

State production taxes and fees

Arkansas levies three major state taxes based on oil and gas production. The first is called an “oil excise tax,” with a tax rate of 5 percent of the market value of the oil produced. That rate is reduced to 4 percent for wells employing secondary recovery techniques or producing 10 bbl/day or less of oil. AR Code Annotated §26-58-111.

The second tax applies a 5 percent rate to the market value of natural gas and is called the “natural gas severance tax.” That rate is reduced to 1.5 percent for the first 24 months of production for “new discovery gas,” the first 36-48 months of production for “high cost gas wells” (which generally includes shale gas wells), and 1.25 percent for marginal gas wells (producing less than 250 mcf/day). AR Code Annotated §26-58-111.

The third tax is called the “oil and gas assessment.” This tax levies 25 mills (2.5 percent), plus \$0.02 per barrel of oil produced in the state. AR Code Annotated §26-58-301 through §26-58-303.

Allocation of those revenues. The oil excise tax is allocated as follows: Three percent of the initial total is allocated to the general revenue fund account. Of the remainder, 75 percent is allocated to the state treasury fund account and the remaining 25 percent goes to the county aid fund. AR Code Annotated §26-58-124

The natural gas severance tax is allocated as follows: Five percent of the initial total is allocated to the state general fund. Three percent of the remaining balance is allocated to the Constitutional Officers Fund and the State Central Services Fund. Up to \$2.5 million is then allocated to the Gasoline Tax Refund Fund, based on a determination made by the director of the Arkansas Division of Financial Administration. The remaining balance is allocated as follows: 15 percent to the County Aid Fund, 15 percent to the Municipal Aid Fund, and 70 percent to the State Highway and Transportation Department Fund. AR Code Annotated §26-58-124.

The oil and gas assessment tax is allocated to provide funds for the Arkansas Museum of Natural Resources and for the payment of interest and principal on bonds issued by the Arkansas Oil and Gas Commission and the Arkansas Pollution Control and Ecology Commission.

Local production taxes and fees

Local governments in Arkansas apply their property tax millage to the value of oil and gas produced from mineral estates. The estimated value of non-producing mineral properties is set at

zero. AR Code Annotated §26-26-1110. The average millage rates in Arkansas in 2012 were 36.61 (3.661 percent) for school districts, 2.13 (0.213 percent) for counties, and 7.55 (0.755 percent) for municipalities.

Allocation of those revenues. The local government that levies the relevant property tax retains the revenues from that tax.

Revenue from state lands

The Arkansas Commissioner of State Lands administers leasing and royalties on state-owned lands. In FY 2012, total revenues were \$799,903.¹⁰

Allocation of those revenues. The state deposits 100 percent of the revenue generated from these leases into the state treasury, and all of those revenues are then allocated to the state agency that owns the leased land.¹¹

Revenue from federal lands

Revenue from oil and gas leases on federal lands in Arkansas totaled \$2,038,205 in FY 2012.¹²

Allocation of those revenues. Revenues from oil and gas production on federal lands is allocated based on the same formula as the state's oil excise tax. Three percent of the initial total is allocated to the general revenue fund account. Of the remainder, 75 percent is allocated to the state treasury fund account and the remaining 25 percent goes to the county aid fund.

6.2 Colorado

State production taxes and fees

Colorado levies two statewide taxes on oil and gas production. The first, called the "oil and gas severance tax," varies from 2 percent to 5 percent based on the total amount of revenue generated for the taxpayer by oil and gas production in that year. If a producer's annual revenue is less than \$25,000, its tax rate is 2 percent. If its annual revenue is between \$25,000 and \$100,000, the rate is 3 percent plus \$500. If its annual revenue is between \$100,000 and \$300,000, the rate is 4 percent plus \$2,750. If its annual revenue is above \$300,000, the rate is 5 percent plus \$10,750. Wells producing less than 15 bbl/day of oil or less than 90 mcf/day of gas are exempt from the severance tax. Colorado Revised Statutes §39-29-105.

¹⁰ Provided via email by the office of the Arkansas Commissioner of State Lands.

¹¹ Ibid.

¹² Reported by the federal Office of Natural Resource Revenues.

Importantly, the severance tax liability is reduced for most oil and gas producers based on the amount of ad-valorem property taxes a producer has paid to local governments. Specifically, producers can credit 87.5 percent of what they paid to local governments in property taxes on oil and gas production in the previous year against their current-year severance tax liability. For example, if a producer owes \$1,000 to the state and has paid \$1,000 in oil and gas property taxes to local governments in the previous year, it may credit \$875 against its state liability and only pay taxes on \$125 of its revenue from oil and gas production. Colorado Revised Statutes §39-29-105.

Colorado also levies an “oil and gas conservation tax,” which applies 1.7 mills (0.17 percent) to the market value of oil and gas produced in the state. Colorado Revised Statutes §34-60-122.

Allocation of those revenues. The severance tax is allocated as follows: The first \$1.5 million in annual revenues is deposited into the Innovative Energy Fund. Fifty percent of the remainder is allocated to the Severance Tax Trust Fund. The remaining 50 percent goes to the local government severance tax fund. The local government severance tax fund is allocated as follows: Seventy percent is allocated to the Department of Local Affairs to administer the Local Government Impact Grant program. The remaining 30 percent is allocated as follows: 55 percent direct distribution to counties and 45 percent direct distribution to municipalities. Colorado Revised Statutes §39-29-108.

The oil and gas conservation tax is allocated to the state’s Oil and Gas Conservation and Environmental Response Fund, which is responsible for monitoring oil and gas activities for compliance with applicable environmental laws. The balance of this fund is capped at \$4 million. Colorado Revised Statutes §34-60-124.

Local production taxes and fees

Local governments in Colorado apply their property tax millage rate to 87.5 percent of the value of oil and gas produced from mineral estates. If secondary or tertiary recovery techniques were used in that production, the local governments apply their millage rate to 75 percent of the value of oil and gas produced. The average millage rates in Colorado in 2012 were 29.13 (2.913 percent) for school districts, 21.22 (2.122 percent) for counties, 13.13 (1.313 percent) for municipalities, and 2.68 (0.268 percent) for special districts. Colorado Revised Statutes §39-7-102.

Allocation of those revenues. The local government that levies the relevant property tax retains the revenues from that tax. As noted above, producers can claim 87.5 percent of the amount of local property taxes paid on oil and gas production in the previous year against their current year state severance tax liability.

Revenue from state lands

The Colorado State Land Board administers leasing and royalties on state-owned lands. In FY 2012, total revenues were \$125,483,480.¹³

Allocation of those revenues. All revenue from mineral production on state lands is allocated to a trust fund that finances public primary education capital projects. Colorado Revised Statutes §36-1-116.

Revenue from federal lands

In FY 2012, \$225,819,551 in government revenue was generated on federal lands in Colorado from oil and gas production. Of that total, \$69,561,289 went to the state government, with the remainder going to the federal government, tribal governments, and individual tribe members.¹⁴

Allocation of those revenues. Any federal lands revenue generated from the production of oil shale (kerogen) goes to the state's oil shale trust fund. In FY 2012, this total was \$1,556. The remaining balance is allocated as follows: 48.3 percent to the state Public School Fund (capped at \$73.1 million per year), 10 percent to the Colorado Water Conservation Board (capped at \$17 million per year), and 1.7 percent directly distributed to school districts (capped at \$4 million per year). If there is any spillover from these funds (i.e., if 60 percent of total revenues were greater than the sum of the capped levels), that revenue is allocated to the Higher Education Mineral Lease Revolving Fund and the Higher Education Maintenance and Reserve Fund. In FY 2012, there was no spillover.

The remaining revenue (40 percent of the initial balance after allocation of oil shale revenues) is allocated as follows: Fifty percent is distributed directly to local governments based on the amount of production in their region, and 50 percent is allocated by the Colorado Department of Local Affairs through its Local Government Impact Grant program. Colorado Revised Statutes §34-63-102.

6.3 Louisiana

State production taxes and fees

Louisiana levies several taxes on oil and gas production and provides a variety of incentives and deductions for certain production techniques. The state levies a severance tax of 12.5 percent on oil production, assessed on the posted field price minus transportation costs. This rate is reduced to

¹³ Colorado State Land Board Annual Income and Inventory Report, FY 2011-2012. Available at <http://trustlands.state.co.us/Documents/FY%202012-13%20Income%20and%20Inventory%20Report%20FINAL.pdf>

¹⁴ Reported by the federal Office of Natural Resource Revenues.

6.25 percent if the well produces less than 25 bbl/day, and 3.125 percent if the well produces less than 10 bbl/day. The severance tax for natural gas is based on volume and is adjusted annually. In FY 2012, the rate was \$0.118/mcf. This rate is reduced to \$0.013/mcf if the well produces less than 250 mcf/day. For associated gas produced from an oil well, the severance tax rate is \$0.03/mcf.

The state's severance tax has a variety of incentives. Some major incentives are a 0 percent severance tax rate for the first 24 months of production or until project costs are paid back from horizontal or deep (>15,000 feet) wells; a 0 percent rate for the first 5 years of production or until project costs are paid back from a previously inactive well; a 0 percent rate for wells producing oil through tertiary recovery techniques, which remains in effect until all project costs associated with tertiary production have been paid off; and a 3.125 percent rate for oil production produced from a stripper well field (<10 bbl/day) using gravity drainage and horizontal drilling. Louisiana Revised Statutes §47:633.

The state also levies an "oilfield restoration fee" of \$0.015/bbl produced and \$0.003/mcf of natural gas produced.

Allocation of those revenues. Five percent of severance tax collections are allocated to parishes where production occurred, with an annual cap of roughly \$1 million per parish. An additional 5 percent of severance tax collections are allocated to municipalities in the regions where production occurred. The remainder of severance tax revenue is allocated to the state general fund.¹⁵ Louisiana Revised Statutes §47:645

The oilfield restoration fee is allocated to the Oilfield Site Restoration Program, which plugs abandoned wells and works to restore sites to pre-well conditions.¹⁶

Local production taxes and fees

Louisiana local governments cannot apply ad-valorem property taxes on oil and gas production or mineral values. As we describe in the paper, they do levy property taxes on surface equipment associated with oil and gas production, but these revenues are not included in our methodology due to limited data availability in other states.

¹⁵ The Louisiana State Constitution describes a different allocation formula in Article VII Part I Section 4. However, our analysis of parish and municipal government budgets indicate that this allocation formula has been superseded by subsequent legislation or rulemaking. Additionally, we conducted email interviews with the Louisiana Department of Treasury, which provided the allocation formula we show here.

¹⁶ Louisiana Department of Natural Resources. For more details, see <http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=155#Background>.

Revenue from state lands

In FY 2012, Louisiana generated \$611,105,947 in revenue from bonuses, rents, and royalties on state-owned land.¹⁷

Allocation of those revenues. All bonus, override royalty, and rental revenues were deposited into the general fund (~ \$40 million in FY 2012). For royalties generated by oil and gas production on state wildlife management areas, those royalties are allocated to the State Fisheries and Wildlife Conservation Fund. This revenue totaled roughly \$55 million in FY 2012. For all other royalties, 90 percent is deposited to the general fund (~ \$447 million in FY 2012) and 10 percent to local governments based on the level of production (~ \$50 million in FY 2012). Roughly \$20 million in revenues from the state portion of the Outer Continental Shelf was deposited in the general fund.¹⁸ Louisiana Revised Statutes §47:645.

Revenue from federal lands

Oil and gas disbursements to Louisiana in FY 2012 for leasing, rents, royalties, and other revenues were \$22,178,319.¹⁹ Roughly \$8 million of this revenue came from onshore leases and \$14 million from offshore leases.

Allocation of those revenues. Federal onshore revenues are allocated according to the same formula as revenue from state lands. Federal offshore revenues are allocated to the Louisiana Education Quality Trust Fund and the Louisiana Quality Education Support Fund. Roughly half of annual expenditures of interest earned are spent on higher education, and the other half goes to local schools. Louisiana Revised Statutes §17:3801

6.4 Montana

State production taxes and fees

Montana's oil and gas production taxes are levied at different rates for the working interest (typically an oil or gas company) and the non-working interest (typically a private royalty owner). The working interest pays 9 percent of the value of oil or gas produced from wells drilled since 1999. For wells drilled before 1999, the working interest pays 12.5 percent of the oil value and 14.8 percent of the natural gas value. The non-working interest pays 14.8 percent of the oil and natural gas value regardless of when the well was drilled.

¹⁷ Louisiana Department of Natural Resources, Technology Assessment Division, 2013. "Energy Facts Annual 2012."

¹⁸ Details on production revenue from Louisiana wildlife management areas provided via email by the Louisiana Department of Natural Resources.

¹⁹ Reported by the federal Office of Natural Resource Revenues.

The working interest rate is subject to a variety of incentives. The following apply to the working interest rate only: 0.5 percent rate for the first 18 months of oil production from a new horizontal well; 0.5 percent for the first 12 months of oil production from a new vertical well; 0.5 percent for the first 12 months of gas production from a vertical or horizontal well; 8.5 percent for any incremental oil production using secondary recovery techniques if the price of West Texas Intermediate (WTI) crude oil is below \$30; and 5.8 percent for any incremental oil production using tertiary recovery techniques if the price of WTI is below \$30.

The working interest (but not the non-working interest) also pays reduced rates for low-producing wells. For oil wells that produce between three and 15 bbls/day, the rate is 5.5 percent if the WTI oil price is below \$38. If production is less than three bbls/day and the WTI price is below \$38, the rate is reduced to 0.5 percent. For natural gas production on wells drilled before 1999, wells that produce less than 60 mcf/day pay an 11 percent rate. Montana Code Annotated §15-36-304.

Montana also levies a “Privilege and License Tax” of 0.27 percent of the value of oil and gas. Montana Code Annotated §90-6-1001, §15-36-304(7)b

Allocation of those revenues. Montana counties and school districts receive revenue from oil and gas production taxes based on the amount of revenue generated within the county multiplied by a percentage rate that varies from county to county based on local property tax rates. This revenue is shared roughly equally between county governments and school districts. For example, Richland County receives 47.47 percent of oil and gas production tax revenue generated within the county, while neighboring Roosevelt County receives 45.71 percent. Additional revenue is deposited into a local government Guarantee Fund (roughly 6 percent of the total), County Impact Fund (~0.32 percent), and State School impact fund (~0.06 percent).

After these allocations, 2.16 percent goes to the Natural Resources Projects state special revenue account, 2.02 percent goes to the Natural Resources Operations state special revenue account, 2.95 percent goes to the Orphan share account (which is designed to remediate environmental problems with orphaned oil and gas wells), 2.65 percent goes to the Montana University system, and the remainder goes to the state general fund. Montana Code Annotated §15-36-332.

The state’s Privilege and License Tax is distributed to counties based on oil and gas production, and those counties allocate 2/3 of the revenue received to municipalities and the remainder to the county government. Montana Code Annotated §15-36-304(7)b, §15-36-332(7)

Local production taxes and fees

Montana local governments cannot apply ad-valorem property taxes on oil and gas production or property.

Revenue from state lands

In FY 2012, Montana generated \$37,514,849 in revenue from bonuses, rents, and royalties on state-owned land.²⁰

Allocation of those revenues. Most oil and gas revenue from state lands (~97 percent) goes to the Common Schools Trust Fund, a state endowment for the funding of primary education. Additional revenue goes to the University of Montana system, the state schools for the deaf and blind, the state reform school, a state public buildings account, veteran's home, and public land trust account.²¹

Revenue from federal lands

We estimate that oil and gas disbursements to Montana in FY 2012 for leasing, rents, royalties, and other revenues was \$21,179,708. The Office of Natural Resource Revenues reports that in FY 2012, roughly \$29 million was disbursed to the state of Montana. This total includes the above-mentioned amounts for oil and gas, but also includes bonuses and rents paid for coal production on federal land (the office does not separate state disbursements of oil and gas bonuses and rents from coal and other natural resources, though it does distinguish between royalties from coal and royalties from oil and gas sales).²²

Total federal and state revenues generated in Montana from oil and gas leasing, rents, royalties, and other revenues was \$43,223,892 in FY 2012. Given that the state generally receives a 49 percent share of total oil- and gas-related federal revenue, \$29 million (roughly 67 percent of the total) is not a realistic disbursement. Instead, we use 49 percent of the federal total of \$43,223,892, which produces a total state disbursement of \$21,179,708.

Allocation of those revenues. Twenty-five percent of oil and gas revenue from federal lands is allocated to the counties where the mineral production took place via the state's Mineral Impact Account. The remainder is deposited into the General Fund. Montana Code Annotated §17-3-240 and §17-3-241.

²⁰ Montana Department of Natural Resources and Conservation. Trust Land Management Division, Minerals Management Bureau, FY 2012 Annual Report.

²¹ Ibid.

²² Reported by the federal Office of Natural Resource Revenues.

6.5 North Dakota

State production taxes and fees

North Dakota levies two major oil and gas production taxes, the Oil and Gas Gross Production Tax and the Oil Extraction Tax.

The Oil and Gas Gross Production Tax (North Dakota Century Code §57-51-02) is 5 percent of the gross value of oil production at the wellhead, plus \$0.833/mcf in FY 2012 (adjusted annually based on the price of gas) of the taxable production of natural gas. This does not include flared or vented gas. There are generally no exemptions or deductions for this tax. Some exemptions exist for capturing and selling natural gas that would otherwise have been vented or flared (NDCC §57-51-02.5 and §57-51-02.6).

The Oil Extraction Tax (NDCC §57-51.1) is 6.5 percent of the gross value of oil production at the wellhead. Natural gas is not taxed under this provision. Stripper wells (producing less than 35 bbls/day) are exempt, as is incremental production using secondary or tertiary recovery techniques.

A range of additional exemptions and deductions exist if the West Texas Intermediate price of oil falls below a “trigger” price established each year. In FY 2013, the “trigger” price was \$52.20. Those exemptions and deductions include:

-Two percent Oil Extraction Tax for new horizontal wells drilled and completed at least 10 miles outside the Bakken or Three Forks formations. This rate applies to the first 75,000 barrels of oil or the first \$4.5 million in oil value at the wellhead.

-New vertical wells are exempt for the first 15 months of production.

-Workover wells that had been producing less than 50 bbls/day that are recompleted are exempt from the Oil Extraction Tax for the first 12 months if the developer spends more than \$65,000 on the project or increases producing by at least 50 percent for two months.

-Inactive wells which had been inactive for at least two years and are brought back into production are exempt from the Oil Extraction Tax for 10 years.

Allocation of those revenues. North Dakota’s two main production taxes are allocated according to different formulas, both of which are complex. For readers interested in the details of the allocation, please see the North Dakota Legislative Council’s description of projected allocations for the 2013-2015 biennium:

<http://www.legis.nd.gov/files/resource//15.9055.01000.pdf?20140421092214>. Alternatively, see ND Century Code §57-51 for the Oil and Gas Gross Production Tax and NDCC §57-51.1 for the Oil Extraction Tax. A simplified explanation of revenue allocation from the Oil and Gas Gross Production Tax follows:

Thirty percent goes to the state legacy fund, 25.9 percent to political subdivisions including counties, cities, and school districts, up to \$120 million per year to the state impact fund (which provides grants to local governments impacted by oil and gas development), 4 percent to tribes, 0.8 percent to the Outdoor Heritage Fund, 0.4 percent to the Abandoned Well Plugging/Site Reclamation Fund, and 0.2 percent to the oil and gas research fund. The remainder goes into a separate “state share” allocation formula that provides revenue for the state general fund, state capital projects, disaster preparedness, and statewide property tax reductions.

A simplified explanation of revenue allocation from the Oil Extraction Tax follows:

Thirty percent goes to the state legacy fund, 20 percent to the Resources Trust Fund, 10 percent to the Common Schools Trust Fund, 10 percent to the Foundation Aid Stabilization Fund, up to \$5 million per year to the Oil and Gas Research Fund, up to \$1.5 million per year to the Renewable Energy Development Fund, and up to \$600,000 per year to the Energy Conservation Grant Fund. The remainder goes into a separate “state share” allocation formula that provides revenue for the state general fund, state capital projects, disaster preparedness, and statewide property tax reductions.

Local production taxes and fees

North Dakota local governments cannot apply ad-valorem property taxes on oil and gas production or property.

Revenue from state lands

In FY 2012, North Dakota generated \$329,257,925 in revenue from oil and gas bonuses, rents, and royalties on state-owned land.²³

Allocation of those revenues. All revenue from state land leases goes to the Common Schools Trust Fund, a permanent trust fund that endows primary education.

Revenue from federal lands

Oil and gas disbursements to North Dakota in FY 2012 for leasing, rents, royalties, and other revenues were \$63,718,292.²⁴ McKenzie County, ND, receives direct distributions from oil and

²³ North Dakota State Lands Department. 2013 Audited Financial Report. Available at <http://www.land.nd.gov/Docs/FinancialServices/AnnualStatements/June%2030%202013.pdf>

²⁴ Reported by the federal Office of Natural Resource Revenues.

gas revenues from production on federal land. In FY 2012, it received \$10,163,063.68 from oil and gas rents and royalties.²⁵

Allocation of those revenues. Counties receive 50 percent of federally-disbursed oil and gas revenue based on production levels per county. The other 50 percent goes to the Common Schools Trust Fund NDCC §15.1-27-25.

6.6 Pennsylvania

State production taxes and fees

Pennsylvania imposes an “Impact Fee” on each unconventional oil and gas well drilled in the state. “Conventional” wells, such as shallow vertical wells, are not required to pay this fee. The Impact Fee is paid over a 15-year period for each well, and the annual level of payment varies according to the price of natural gas. Horizontally-drilled unconventional wells pay the full fee as shown below, while vertically-drilled unconventional wells pay 20 percent of the amount listed below. Wells producing less than 90 mcf/day of natural gas pay zero impact fee. The fee schedule is reproduced below:

Table 6.1 Pennsylvania Impact Fee schedule for unconventional horizontal wells

Year	Price of natural gas (\$/mcf)				
	<2.25	2.26-2.99	3.00-4.99	5.00-5.99	>6
1	\$ 40,000	\$ 45,000	\$ 50,000	\$ 55,000	\$ 60,000
2	\$ 30,000	\$ 35,000	\$ 40,000	\$ 45,000	\$ 55,000
3	\$ 25,000	\$ 30,000	\$ 30,000	\$ 40,000	\$ 50,000
4	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
5	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
6	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
7	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
8	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
9	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
10	\$ 10,000	\$ 15,000	\$ 20,000	\$ 20,000	\$ 20,000
11	\$ 5,000	\$ 5,000	\$ 10,000	\$ 10,000	\$ 10,000
12	\$ 5,000	\$ 5,000	\$ 10,000	\$ 10,000	\$ 10,000
13	\$ 5,000	\$ 5,000	\$ 10,000	\$ 10,000	\$ 10,000
14	\$ 5,000	\$ 5,000	\$ 10,000	\$ 10,000	\$ 10,000
15	\$ 5,000	\$ 5,000	\$ 10,000	\$ 10,000	\$ 10,000

Source: Pennsylvania Public Utility Commission

²⁵ As reported in the FY2014 McKenzie County Budget.

Allocation of those revenues. For a detailed description, see the Pennsylvania Public Utility Commission website.²⁶ The following is a general description.

Certain funds are allocated specific amounts “off the top” of the Impact Fee revenue, led by the Marcellus Legacy Fund, Pennsylvania Department of Environmental Protection, and County Conservation Districts and Conservation Commission. After these initial allocations, the remainder is allocated as follows:

Sixty percent of the revenue is allocated directly to local governments based on the level of drilling activity in the area. Counties with producing wells receive roughly 36 percent of the 60 percent, municipalities (including townships) with producing wells receive roughly the same share, and municipalities that are contiguous to or within five miles of municipalities with producing wells receive 27 percent of the 60 percent share. Other revenue goes to a state grant fund to support local government affordable housing projects. The remaining 40 percent is allocated to the Marcellus Legacy Fund, which provides funding for a variety of state and local government infrastructure projects, such as highway bridges, water and sewer projects, and the rehabilitation of greenways, recreational trails, open spaces, and nature areas.

Local production taxes and fees

Pennsylvania local governments cannot apply ad-valorem property taxes on oil and gas production or property.

Revenue from state lands

In FY 2012, Pennsylvania generated \$77,433,845 in revenue from oil and gas bonuses, rents, and royalties on state-owned land.²⁷

Allocation of those revenues. Revenue from production on state lands is statutorily allocated for conservation, recreation, dams, or flood control (based on legislation establishing the Oil and Gas Lease Fund, Act 256 of 1955).²⁸

Revenue from federal lands

Pennsylvania has minimal oil and gas production on federal lands.

²⁶ See: http://www.puc.pa.gov/filing_resources/issues_laws_regulations/act_13_impact_fee.aspx.

²⁷ Data provided via personal communication. Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry.

²⁸ Available at: <http://www.legis.state.pa.us/WU01/LI/LI/US/PDF/1955/0/0256.PDF>

6.7 Texas

State production taxes and fees

Texas levies a “Gross Production Tax” on oil and gas, along with an “Oilfield Cleanup Regulatory Fee,” which is only levied when the fund that the fee supports drops below a certain level.

The Gross Production Tax is 4.6 percent of the market value of oil or condensate produced or \$0.046/barrel, whichever is greater (see TX Tax Code Chapter 202). Gas is taxed at 7.5 percent of the market value (see TX Tax Code Chapter 201).

There are a variety of exemptions and deductions from these taxes. They include:

-Stripper wells (§202.058 for oil, §201.059 for natural gas): If producing less than 15 barrels/day, if oil production is less than 5 percent of water production, or if producing less than 90 mcf/day, producers receive a 25 percent credit against their tax liability if price is \$25-30/bbl or \$3-3.50/mcf. Producers receive a 50 percent credit if prices are \$22-25/bbl or \$2.50-3.00/mcf. Producers receive a 100 percent credit (i.e., pay zero tax) if prices are less than \$22/bbl or <\$2.50/mcf. Based on 2005 dollars. Does not apply to casinghead gas production.

-Enhanced Oil Recovery wells (§202.054): Producers pay 2.3 percent of the market value of incremental production for the first 10 years after EOR is applied.

-High-cost gas wells (§201.057): If spudded after 9/1/1996, the natural gas rate is reduced for up to 10 years, or until 50 percent of project costs are recovered. The amount of the rate reduction is determined based on the cost of drilling and completion.

-Vented/flared gas (§201.058): For gas that had previously been vented or flared and is then sold, that gas is not subject to any severance tax.

-Two-Year Inactive Well Incentive (§202.056): Expired 2/28/2010. Had allowed a 100 percent tax exemption for new production from wells that had been inactive for more than two years.

-Orphaned well reduction program (§202.060): Operators that take over an orphaned well pay no severance tax on production from that well. They also receive a payment from the Texas Railroad Commission (RRC) so that the RRC does not have to pay to plug the well.

The Oilfield Cleanup Regulatory Fee (TX Administrative Code Title 34, Part 1, Chapter 3, Subchapter DD §3.731 and §3.732) is only collected if the Oilfield Cleanup Fund has dropped below \$10 million. The fee is \$0.00625 per barrel of oil produced and \$0.000667 per mcf of gas produced. The fee is not collected from oil and gas produced on government-owned property.

Allocation of those revenues. The first 0.5 percent of oil and gas production tax revenues goes to administer the state's oil and gas regulatory program. After that, 75 percent goes to the general fund and 25 percent goes to the Foundation Schools Fund. The Foundation Schools Fund allocates revenue for school operations on an annual basis, and is not classified as a trust fund by our methodology.

All of the Oilfield Cleanup Regulatory Fee is allocated to the Oilfield Cleanup Fund (TX Administrative Code Title 34, Part 1, Chapter 3, Subchapter DD §3.731 and §3.732).

Local production taxes and fees

Texas local governments levy their ad-valorem property tax rates on the full value of oil and gas property. The value of property is determined for each county, school district, municipality, and other local government entity by an independent appraisal district, which varies across the state.

Allocation of those revenues. The local government that levies the relevant property tax retains the revenue from that tax.

Revenue from state lands

In FY 2012, Texas generated \$1,299,158,629 in revenue from oil and gas bonuses, rents, and royalties on state-owned land.²⁹

Allocation of those revenues. All revenue from production on state-owned land goes to the Permanent Schools Fund. Interest from this fund is used to fund K-12 and higher education in Texas in perpetuity (TX Natural Resources Code Title 2, Subtitle A, Chapter 11, §11.001).

Revenue from federal lands

Oil and gas disbursements to Texas in FY 2012 for leasing, rents, royalties, and other revenues were \$8,615,046.³⁰

Allocation of those revenues. All funds are allocated to counties where production took place, with levels varying based on production. The county is obligated to distribute those funds as follows: 50 percent to school districts within the county, 35 percent to counties, and 15 percent to municipalities within the county. (TX Government Code, Title 4, Subtitle A, §403.104).

²⁹ Texas Annual Cash Report. Fiscal Year 2012. Available at: http://www.texas Transparency.org/State_Finance/Budget_Finance/Reports/Cash_Report/

³⁰ Reported by the federal Office of Natural Resource Revenues.

6.8 Wyoming

State production taxes and fees

Wyoming levies a 6 percent tax on the fair market value (as determined by the state) of oil, gas, and lease condensate production. The tax rate is reduced to 4 percent for wells that produce less than 10 or 15 bbls/day, and for wells using tertiary recovery techniques. The rate is reduced to 2 percent for workovers or recompletions for 24 months after the workover or recompletion. (Wyoming Statutes §39-14-203).

Allocation of those revenues (Wyoming Statutes §39-14-801). One-third of production tax revenues are allocated to the state's Mineral Trust Fund. One-sixth of production tax revenues are allocated to the state's Leaking Underground Storage Tank Fund. The remainder is allocated as follows:

62 percent to the general fund, 15 percent to the Water Development Fund, 9 percent to cities and towns based solely on population, 6 percent to counties based primarily on population, 4 percent to the Highway Fund, and 2 percent to the Capital Construction Account.

Local production taxes and fees

Wyoming local governments levy their ad-valorem property tax rates on the full value of oil and gas production and property. The value of property is determined for each county, school district, municipality, and other local government entity by county assessors.

Allocation of those revenues. The local government that levies the relevant property tax retains the revenue from that tax.

Revenue from state lands

In FY 2012, Wyoming generated \$146,577,435 in revenue from oil and gas bonuses, rents, and royalties on state-owned land.³¹

Allocation of those revenues. Roughly 85 percent of revenues from state lands went to a variety of state government permanent funds for education, with roughly 11 percent going to state general funds and other income funds. Roughly 4 percent went to school capital construction projects.³²

³¹ Wyoming State Trust Land Board, Summary of State Trust Land Revenue. Available at <http://slf-web.state.wy.us/osli/BoardMatters/2013/0813/B-1.pdf>

³² Id.

Revenue from federal lands

We estimate that oil and gas disbursements to Wyoming in FY 2012 for leasing, rents, royalties, and other revenues was \$435,667,173. The Office of Natural Resource Revenues reports that in FY 2012, roughly \$561 million was disbursed to the state of Montana. This total includes the above-mentioned amounts for oil and gas, but also includes bonuses and rents paid for coal production on federal land (the office does not separate state disbursements of oil and gas bonuses and rents from coal and other natural resources, but does separate oil and gas royalties from coal royalties).³³

Total federal and state revenue generated in Montana from oil and gas leasing, rents, royalties, and other revenues was \$889,116,679 in FY 2012. Given that states generally receive a maximum of 49 percent of oil- and gas-related federal lease revenue, \$561 million (roughly 63 percent of the total) is not a realistic disbursement. Instead, we use 49 percent of the federal total of \$889,116,679, which produces a total state disbursement of \$435,667,173.

Allocation of those revenues. Roughly 48 percent of state share of federal lease revenues are allocated to the state's Budget Reserve Account, roughly 36 percent goes to the School Foundation Fund (which endows local school operations), roughly 8 percent went to the state highway fund, roughly 2.6 percent went to cities and towns, roughly 1.9 percent to the University of Wyoming system, roughly 1 percent to capital construction projects for local governments, and various allocations (all less than 1 percent) went to other purposes.³⁴

³³ Reported by the federal Office of Natural Resource Revenues.

³⁴ Wyoming Treasurer's Annual Report, FY 2012, at: <http://treasurer.state.wy.us/pdf/annualweb2012.pdf>.

7. Appendix B Data and sources

Table 7.1 Oil and natural gas prices for FY 2012

	AR	CO	LA	MT	ND	PA	TX	WY
Oil (\$/bbl)	89.03	87.38	107.46	85.07	85.76	88.83	93.03	82.56
Gas (\$/mcf)	3.00	2.89	2.82	2.89	2.89	3.11	2.78	2.95

Sources: Louisiana oil and natural gas prices are from the Louisiana Department of Natural Resources (2013). All other state oil prices are from the U.S. EIA, crude oil first purchaser price by area. All other natural gas prices are from various natural gas hubs via Bloomberg. Arkansas prices are from the Perryville Hub; Colorado, Montana, and North Dakota are from the White River Hub; Pennsylvania is from the Dominion Hub; Texas is from the Katy Hub; and Wyoming is from the Opal Hub. Prices were averaged over each month for each state's fiscal year. All state 2012 fiscal years ran from July 1, 2011, through June 30, 2012, with the exception of Texas, where the 2012 fiscal year ran from September 1, 2011, through August 31, 2012.

Table 7.2 Oil and natural gas production in FY 2012

	AR	CO	LA	MT	ND	PA	TX	WY
Oil & condensate (MMb bl)	6.5	43.4	75.2	24.8	197.5	3.6	549.8	56.5
Gas (bcf)	1,152	1,733	2,962	74	130	2,257	8,085	2,146

Sources: Arkansas gas: Arkansas Division of Financial Administration; Arkansas oil: U.S. EIA; Colorado oil and gas: Colorado Oil and Gas Conservation Commission; Louisiana oil and gas: Louisiana Department of Natural Resources; Montana oil and gas: Montana Board of Oil and Gas Conservation; North Dakota oil and gas: North Dakota Division of Mineral Resources; Pennsylvania oil and gas: U.S. EIA; Texas oil and gas: Texas Railroad Commission; Wyoming oil and gas: U.S. EIA.

Table 7.3 Revenue from oil and natural gas leases on state-owned lands in FY 2012

State	AR	CO	LA	MT	ND	PA	TX	WY
Revenue (\$million)	0.8	125.5	591.3	37.5	329.3	77.4	1,299.2	146.6

Sources: Arkansas: Office of Commissioner of State Lands; Colorado: State Land Board; Louisiana: Department of Natural Resources; Montana: Trust Lands Management Division, Minerals Management Bureau; North Dakota: State Lands Department; Pennsylvania: Department of Conservation and Natural Resources, Bureau of Forestry; Texas: Comptroller of Public Accounts; Wyoming: State Trust Lands Office

Table 7.4 Revenue from oil and natural gas leases on federally-owned lands in FY 2012

	AR	CO	LA	MT	ND	TX	WY	
All oil and gas royalties, rents, bonuses, and other payments (\$million)		3.9	225.8	163.2	43.2	475.2	35.9	889.1

Source: Office of Natural Resource Revenue

Table 7.5 Disbursements of federal oil and gas lease revenue to state governments in FY 2012

	AR	CO	LA	MT	ND	TX	WY
Disbursement to state (\$million)	1.9	69.6	22.2	21.2	63.7	8.6	435.7

Source: Office of Natural Resource Revenue, author adjustments described below.

Notes on Tables 7.4 and 7.5: Revenue disbursements to states are sometimes described simply as 49 percent of the total amount of government revenue collected on federal lands. However, the actual amount may be lower due to four major factors.

First, for revenue produced in state waters where the federal government has jurisdiction (such as in parts of Texas and Louisiana), the applicable rate is 27 percent.

Second, ONRR data on rents and bonus payments do not distinguish between revenue from oil and gas minerals and other minerals, such as coal (they do make this distinction for royalty payments). If a large amount of revenue from rents and bonus payments for coal leases occurs in a given state such as Wyoming, this will make the disbursement to the state appear larger than it otherwise would be. Our calculations assume that the maximum disbursement of federal revenue from rents and bonus payments is 49 percent.

Third, 100 percent of the revenue generated on tribal land is allocated from the federal government to tribal governments or individual tribe members where oil and gas is produced. Where this is the case, such as in North Dakota and Colorado, the shares allocated to the state government will be below 49 percent.

Finally, ONRR is continually refining its data collection, conducting audits, and adjusting its records. Some of these data are subject to change as ONRR conducts audits at three-year cycles, meaning that the data reported here has not been audited and is subject to revision.

Table 7.6 Total value of oil and gas production in FY 2012

	AR	CO	LA	MT	ND	PA	TX	WY
Value of production (\$billion)	4.0	8.8	16.4	2.3	17.3	7.3	73.6	11.0

Sources: Listed above in Tables 7.1 and 7.2

Table 7.7a Local government property taxes on oil and gas production for AR, CO, and TX in FY 2012

	Avg. county-wide assessed oil and gas value (\$million)	Avg. school district mill rate	Avg. county mill rate	Average municipal mill rate	Avg. special district mill rate
Arkansas	13.8	36.61	2.13	7.55	n/a
Colorado	152.3	29.13	21.22	13.13	2.68
Texas	500.3	5.2	5.19	5.24	3.94

Sources: Arkansas: Assessment Coordination Division; Colorado: Mineral Values from Department of Revenue; Property tax rates from Department of Local Affairs; Texas: Comptroller of Public Accounts.

Table 7.7b Wyoming local government property taxes on oil and gas production in FY 2012

	Total property taxes on oil and natural gas production (\$million)	School district share	County share	Municipality share	Special district share
Wyoming	719.6	73.15%	18.22%	1.42%	7.21%

Source: Wyoming: Department of Revenue

Table 7.8 Arkansas FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	-	-	10.9	5.3	-	-	16.2
Property	37.2	-	1.7	0.1	-	-	39
State lands	-	-	-	-	-	-	-
Federal lands	-	-	0.5	-	-	-	0.5
Total	37.2	-	13.1	5.4	-	-	55.7
Share of production value	0.9%	-	0.3%	0.1%	-	-	1.4%

Note: Sums may not total due to rounding.

Table 7.9 Colorado FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	-	-	13.3	10.9	56.5	-	80.7
Property	221.3	-	141.1	5.4	-	27.5	395.3
State lands	-	123.9	-	-	-	-	123.9
Federal lands	34.8	-	7.9	6.1	13.9	-	62.7
Total	256.1	123.9	162.3	22.4	70.4	27.5	662.6
Share of production value	2.9%	1.4%	1.8%	0.3%	0.8%	0.3%	7.5%

Note: Sums may not total due to rounding.

Table 7.10 Louisiana FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Parishes	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	-	-	43.9	43.9	-	-	87.8
Property*	-	-	-	-	-	-	-
State lands	-	-	49.6	-	-	-	49.6
Federal lands	-	14	0.6	-	-	-	14.6
Total	-	14	94.1	43.9	-	-	138
Share of production value	-	0.1%	0.6%	0.3%	-	-	0.9%

Notes: Sums may not total due to rounding. Local governments in Louisiana collect property taxes on oil and gas surface equipment, which we do not include as part of our calculation.

Table 7.11 Montana FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	54.3	-	43.7	2.5	-	-	100.5
Property	-	-	-	-	-	-	-
State lands	-	36.5	-	-	-	-	36.5
Federal lands	-	-	5.3	-	-	-	5.3
Total	54.3	36.5	49	2.5	-	-	139.8
Share of production value	2.4%	1.6%	2.1%	0.1%	-	-	6.1%

Note: Sums may not total due to rounding.

Table 7.12 North Dakota FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	17.1	81.3	109.5	79.3	120	-	407.2
Property	-	-	-	-	-	-	-
State lands	-	329.3	-	-	-	-	329.3
Federal lands	31.9	-	34	-	-	-	65.9
Total	49	410.6	143.5	79.3	120	-	802.4
Share of production value	0.3%	2.4%	0.8%	0.5%	0.7%	-	4.6%

Note: Sums may not total due to rounding.

Table 7.13 Pennsylvania FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	-	-	37	62	26.7	-	125.7
Property	-	-	-	-	-	-	-
State lands	-	-	-	-	-	-	-
Federal lands	-	-	-	-	-	-	-
Total	-	-	37	62	26.7	-	125.7
Share of production value	-	-	0.5%	0.8%	0.4%	-	1.7%

Note: Sums may not total due to rounding.

Table 7.14 Texas FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	904.9	-	-	-	-	-	904.9
Property	1,457	-	507.5	157.7	-	203.6	-
State lands	-	1,299	-	-	-	-	1,299
Federal lands	4.3	-	3	1.3	-	-	8.6
Total	2,366	1,299	510.5	159	-	203.6	4,539
Share of production value	3.2%	1.8%	0.7%	0.2%	-	0.3%	6.2%

Note: Sums may not total due to rounding.

Table 7.15 Wyoming FY 2012 local government revenue from oil and gas production (\$million)

Revenue source	School districts	School trust funds	Counties	Municipalities	Grant program	Other local governments	Total local government
Severance or similar	-	-	28.5	38.9	-	-	67.4
Property	506.8	-	131.1	10.2	-	51.9	700
State lands	18.5	116.4	-	-	-	-	134.9
Federal lands	3.2	159	-	11.2	4.5	-	177.9
Total	528.5	275.4	159.6	60.3	4.5	51.9	1,080
Share of production value	4.8%	2.5%	1.5%	0.6%	0.04%	0.5%	9.8%

Note: Sums may not total due to rounding.