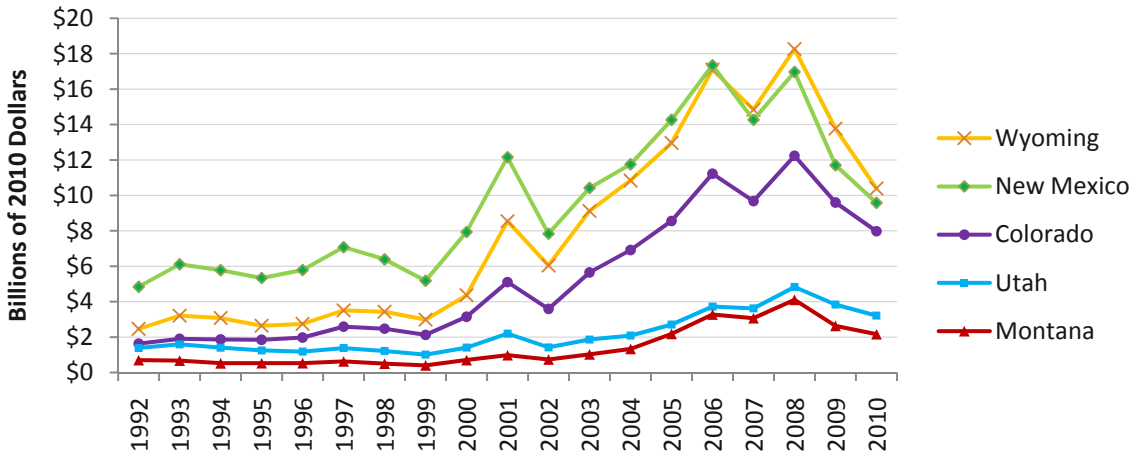
Fossil Fuel Extraction and Western Economies: Executive Summary

This report assesses the performance of the fossil fuel industry in five energy-producing states in the Rocky Mountain West—Colorado, Montana, New Mexico, Utah, and Wyoming—in the context of the energy surge of the mid-2000s and the recent recession. The 2003-2008 natural gas surge and slump is then considered in depth through a case study analysis of local experiences with natural gas development on Colorado's Western Slope and in southwestern Wyoming.

Background

Natural gas development boomed in the Rocky Mountain West over the course of the 2000s. A growing economy, supply shortages in major markets, and technological innovations that expanded the feasibility of tight sands gas production helped create strong prospects for "Rockies Gas" extracted in Colorado, Montana, New Mexico, Utah, and Wyoming. Drilling activity surged from 2003 to a 2008 peak, creating a new episode of growth in the long history of commodity boom-bust cycles in the American West. The value of the oil and natural gas produced in the five states between 2003 and 2008 was more than 300 billion dollars. Headwaters Economics examined the costs and benefits of the boom years in a series, Energy in the West, published in 2008 and 2009.[1]

Figure ES-1. Production Value of Oil and Natural Gas, 1992–2010



Sources: U.S. Energy Information Administration, Natural Gas Withdrawals, Crude Oil Production, Natural Gas Wellhead Prices by Area, Crude Oil Wellhead Acquisition Price by First Purchasers by Area.

[1] Headwaters Economics, 2008-2009. Energy in the West series. http://headwaterseconomics.org/topic/energy/western.

The severity of the 2007–2009 recession was unprecedented in recent history. The downturn resulted in an inevitable slump in energy production in the region, marked by slowdowns in drilling activity in the gas fields, job losses in mining, and massive devaluation of natural gas revenue. With some of the fast-growing regions of the West among the nation's worst hit economies and with energy prices undergoing a new episode of volatility, there is a risk of public dialogue suffering from confusion about the role of fossil fuels in the region's economic well-being.

Fossil fuel development involves the extraction of enormously valuable resources, which are largely publicly owned. Development of fossil fuels also involves significant costs and risks. Private energy companies assume many of these risks, while the public bears others. This purpose of this report is to evaluate whether the approach taken to fossil fuel development in the Rocky Mountain West in the decade of the 2000s worked to maximize benefits and minimize costs to the region's public.

The report contains three chapters, each of which addresses a core component of the performance of the fossil fuel economy.

1. What is the Role of Fossil Fuel Development in the Regional Economy?

Chapter 1 provides a background of key economic trends that places the 2007–2009 recession in perspective in the region's broader economic history, presents trends in the economies of fossil fuel production in the region, and discusses the role of fossil fuel-related employment and income in the five study-area states.

2. What is the Role of Fossil Fuel Revenue in State Budgets?

Chapter 2 describes the fiscal impacts of the 2003–2008 natural gas surge and slump in the five study-area states and discusses the relationship between the recession, state budget trends, and fossil fuel revenues.

3. Do Local Communities Benefit from Fossil Fuel Development?

Chapter 3 focuses on the natural gas surge in the Piceance Basin in Colorado and the Greater Green River Basin in Wyoming and developments since the recession. Case studies of municipal and county trends in Garfield and Mesa counties in Colorado and in Sublette and Sweetwater counties in Wyoming highlight the opportunities and challenges related to integrating volatile fossil fuel industries within a broader program of economic development.

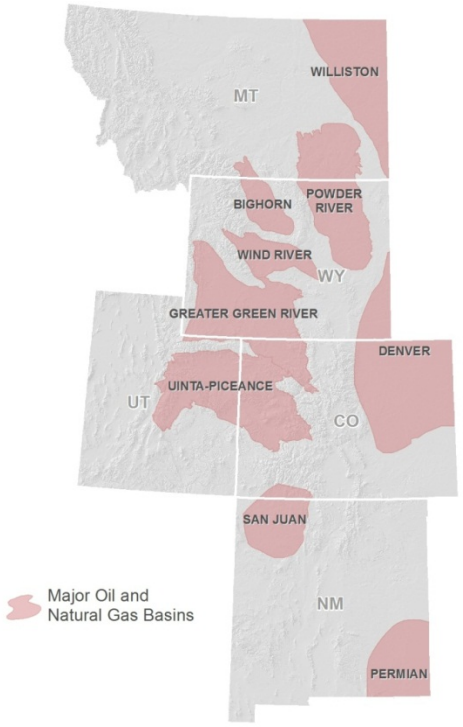
Summary Findings

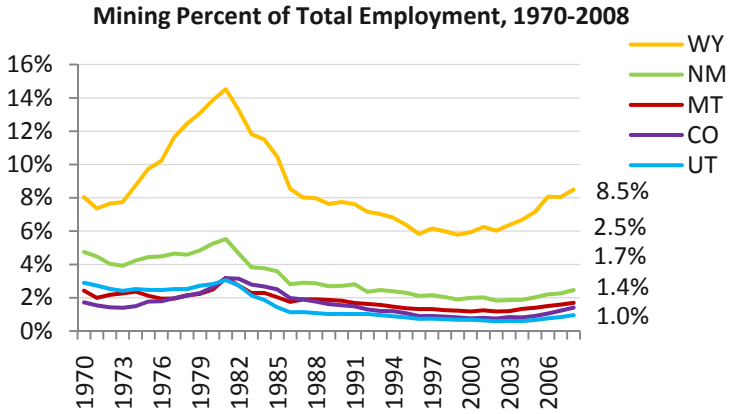
The Role of Fossil Fuel Extraction in the Regional Economy

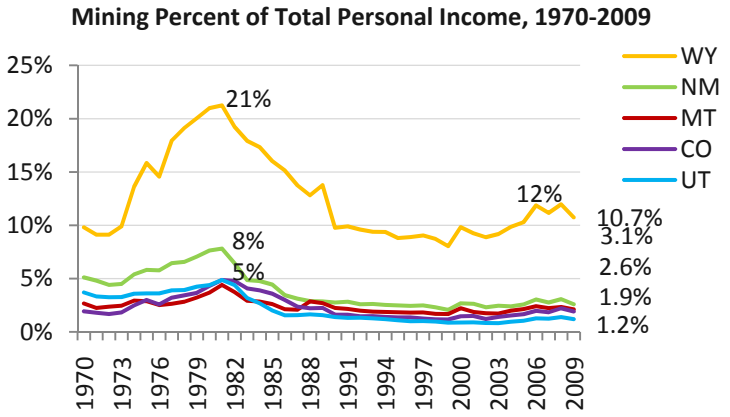
Fossil fuel extraction has a limited influence at the state level on economic indicators such as GDP by State, personal income, and employment. This means that while small groups of employees and certain mining areas within the Rocky Mountain States are heavily exposed to volatility in the oil and natural gas prices, the performance of state economies overall is tied to the broader economy.

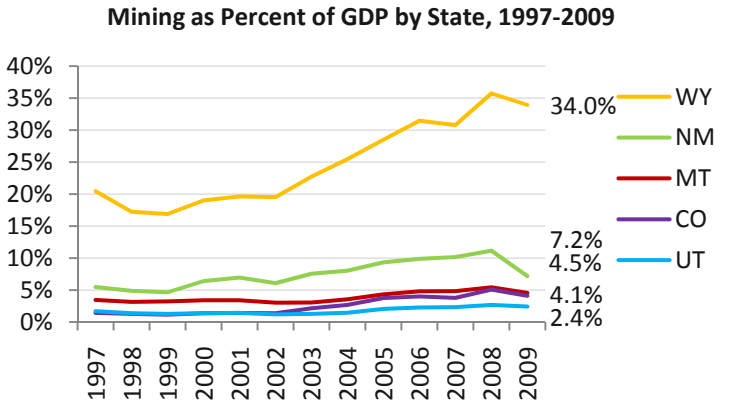
Study Geography

Map ES-1, Figures ES-2, ES-3, & ES-4





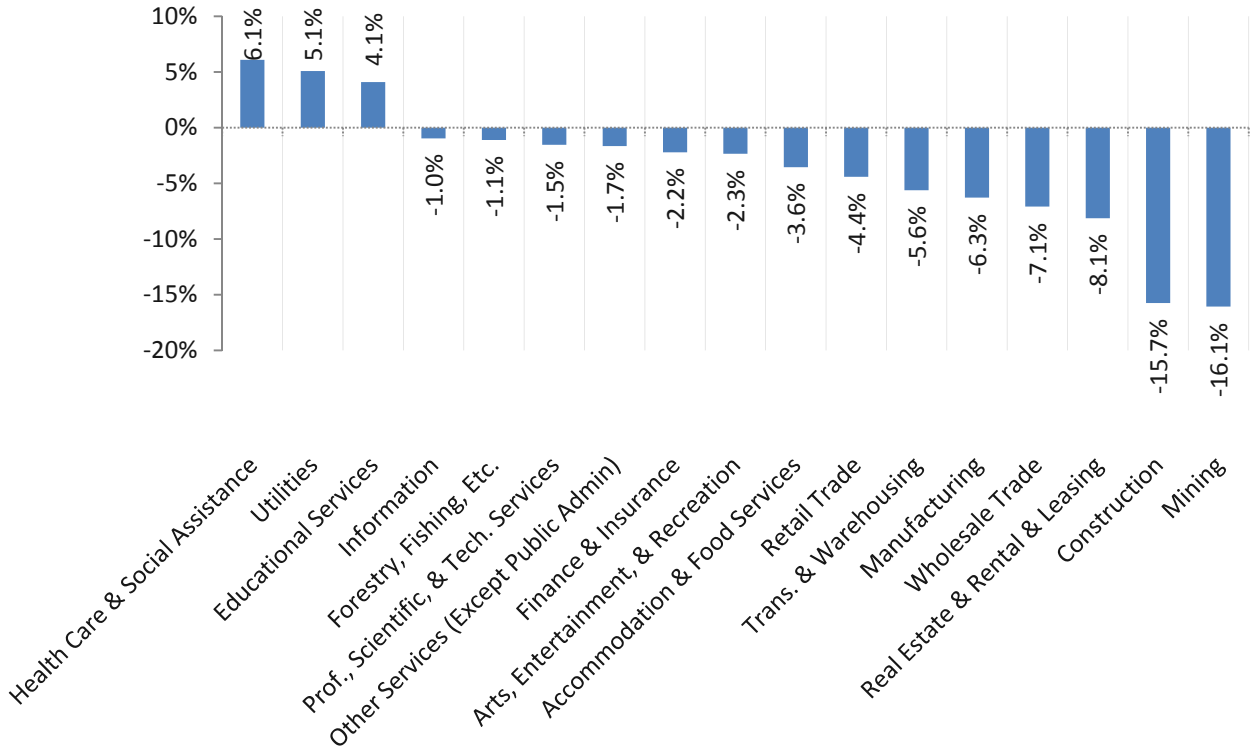




Source: U.S. Department of Commerce. 2010. Bureau of Economic Analysis, Regional Economic Information System, Washington, D.C. Tables CA25 & CA25N. U.S. Department of Commerce. 2010. Bureau of Economic Analysis, Regional Economic Information System, Washington, D.C. Tables SA05 & SA05N. Mining as Percent of GDP calculated in 2009 dollars.

In the recent recession, construction, manufacturing, and real estate represented the bulk of compensation loss in the five states. However, mining, including energy development, compensation shrank by the largest percent (16.1% decline from 2008 to 2009) of any sector, demonstrating the continued volatility of this industry.

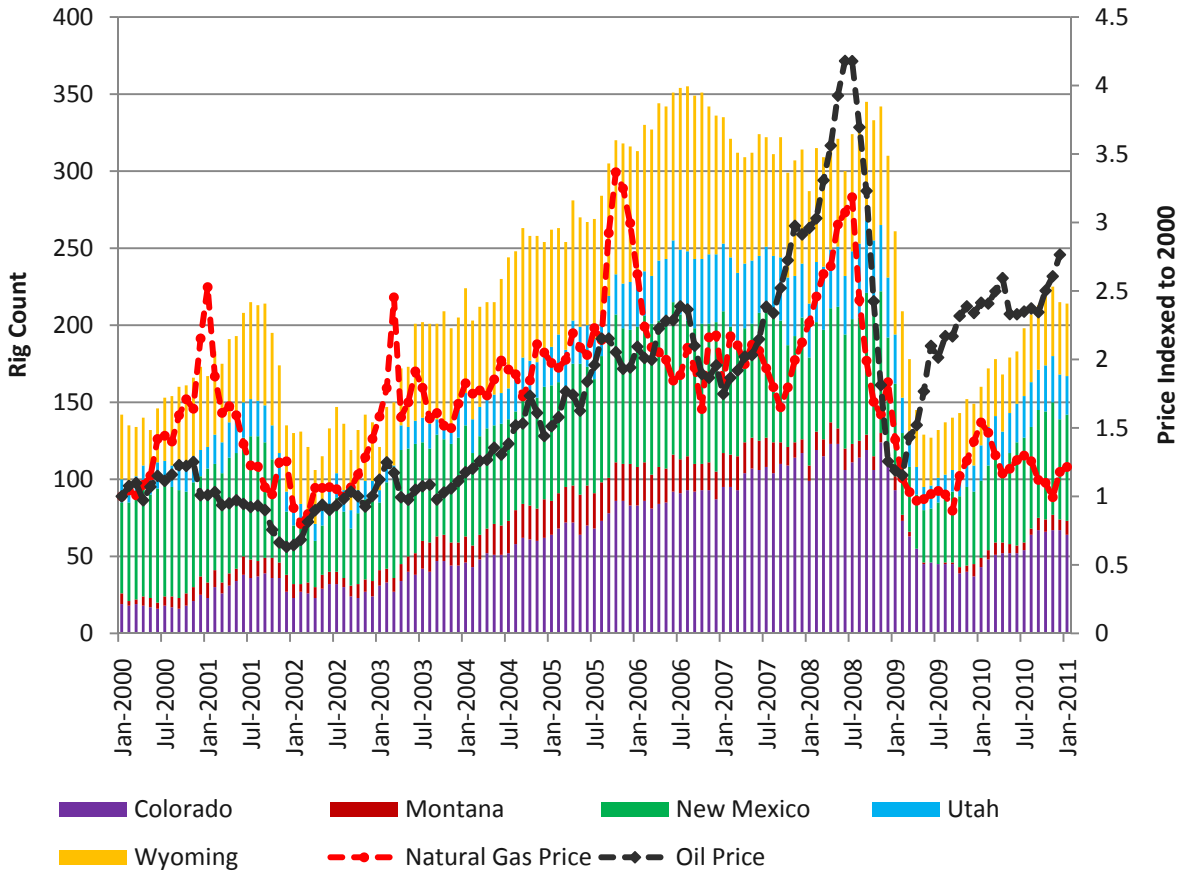
Figure ES-5. Percent Change in Total Compensation by Industry in CO, MT, NM, UT, and WY, 2008–2009



Source: U.S. Department of Commerce. 2010. Bureau of Economic Analysis, Regional Economic Accounts, Washington, D.C. Table SA06N.

Employment and income from mining in the five-state region track closely with commodity prices. Oil and natural gas jobs are more volatile than coal jobs because oil and natural gas prices tend to fluctuate more widely than coal prices. The bulk of the growth in mining employment over the past decade has been in the oil and natural gas sector, along with the bulk of lost mining jobs. As the rig activity charted in ES-6 demonstrates, price—not policy—is the primary driver of oil and gas development activity.

Figure ES-6. Monthly Drilling Rig Count, with Monthly Natural Gas and Oil Prices, January 2000 to February 2011



Source: Baker Hughes Rig Counts, Accessed 2-28-2011. U.S. EIA Oil and Natural Gas Price Monthly. Prices shown are in 2010 dollars, then indexed to 2000.

The role of fossil fuel revenue in state budgets

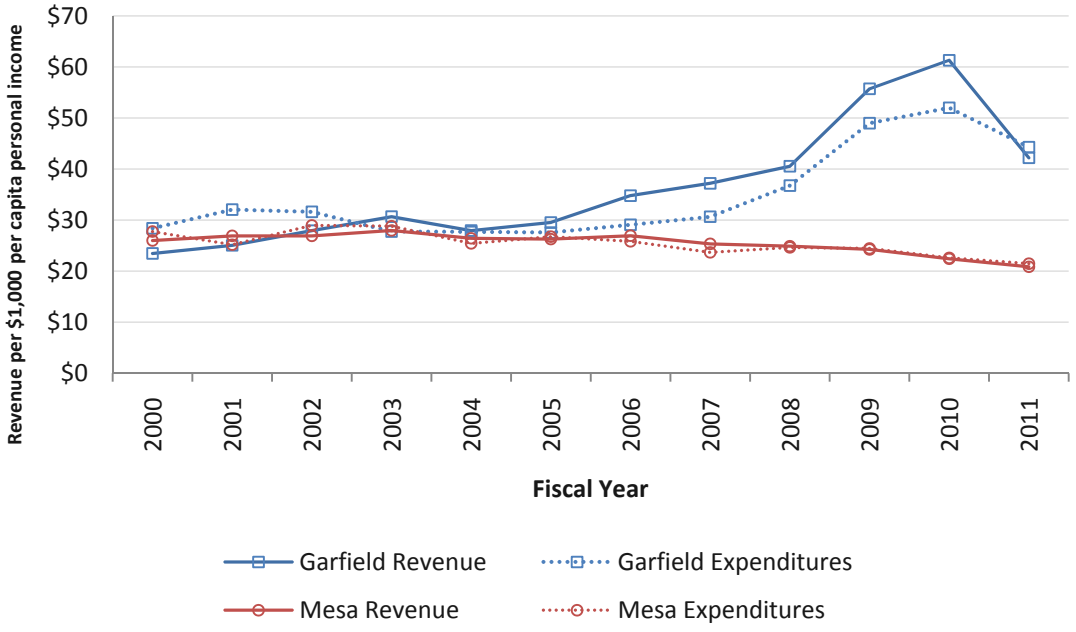
Fossil fuel production has not insulated energy-producing states from fiscal crisis. Energy-producing states outperformed their peers fiscally at the start of the recession, but ultimately the decline of fossil fuel prices and reduced revenue exposed Colorado, Montana, New Mexico, Utah, and Wyoming to the impacts of the recession. As a result, each state has faced budget shortfalls to some extent, and has made significant cuts to state services to make ends meet.

Several other factors, including structural and policy issues, exposed energy-producing states to deeper impacts than might be expected based on the wealth generated through fossil fuel extraction. To varying degrees, each state, in its way, made decisions that left them exposed to one or more impacts of the recession.

Mixed Local Community Benefits from Fossil Fuel Development

The local costs and benefits of energy development are experienced unevenly: "fossil fuel prosperity" is more likely to occur in places that are the exception rather than the rule in the U.S. West. Predominantly rural areas with high levels of drilling and limited economic diversity may be the most overwhelmed by the buildup phase of an energy boom, but also are the places that ultimately may see the greatest long-term fiscal gain from energy development.

Figure ES-7. County Government Revenue and Expenditures in Garfield County and Mesa County, Colorado per $1,000 of Per Capita Personal Income



Source: Garfield and Mesa counties, Audited Financial Statements.

The ability of communities and their leaders to use increased revenue to diversify and stabilize their economic future varies based on state revenue distribution systems, and on local politics and decision-making. As Figure ES-7 shows, Mesa and Garfield counties received vastly different levels of revenue during the natural gas surge in western Colorado, despite both playing important roles as bases for employees and workers.

Community economic success in energy development also depends on an ability to understand and address cumulative impacts of development on those amenities essential to long-term economic prosperity such as scenery, water, and air quality. Experiences with air quality and groundwater impacts in the study areas raise concerns about cumulative impacts that, unmitigated, threaten to foreclose opportunities for economic diversification. Local, regional, and state governments vary in their capacity and success with anticipating, monitoring, and responding to such impacts.

Conclusions & Policy Recommendations

The volatility of fossil fuel markets poses obstacles to the stability and long-term security of economic growth in energy-producing regions. Fossil fuel extraction, especially when prices are high, creates an enormous amount of wealth, most of which currently leaves the region. Employment in fossil fuel extraction also is driven by price, which changes rapidly. In the recent recession, mining, including energy development, fell hard and fast: compensation for mining employment shrank by the largest percent (16.1% decline from 2008 to 2009 in the five-state region) of any economic sector.

Ultimately, the tax revenue from fossil fuel extraction is the longest-lasting economic legacy of fossil fuel development. While revenue varies because of price volatility, it continues to accrue long after most jobs have left a region. Severance taxes are designed to ensure the public receives a lasting benefit from the depletion of non-renewable resources. By maximizing collection of fossil fuel revenue and ensuring it is adequately distributed, states increase the benefits of energy development. One lesson from the natural gas surge is that there is significant room for improvement in this arena in the Rocky Mountain West.

None of the states in this report has a perfect energy tax structure. Each state does a few things well, and could improve in other areas. Wyoming, for example, has saved a significant amount in a permanent fund that could support the state General Fund for more than six years, but the state currently shares little with communities where development is taking place. Colorado has done a good job directing revenue back to energy-producing communities, but it taxes at a low rate and has not saved for the future. (Colorado's permanent fund would finance the state's General Fund for only two weeks.)

As this report goes to press, oil prices are encouraging interest in unconventional oil, and natural gas is enjoying renewed attention as an ideal fuel in the wake of the Pacific Tsunami. At the outset of potential boom episodes in fossil fuel extraction, the West and the nation would benefit from policies designed to insure that fossil fuel extraction proceeds in a way that maximizes benefits and minimizes costs to energy-producing regions. Policy updates fall into three general areas: (1) increasing revenue collection, (2) improving energy revenue management and distribution, and (3) mitigating or avoiding costly negative impacts of energy production.

Increasing Revenue Collection

- Raise base tax rates and remove production incentives. Examples include a Colorado tax incentive that allows producers to write off local property tax against state severance tax liability and Montana's oil and gas tax holiday that reduces rates for the first 12 to 18 months on vertical and horizontal drilling respectively. Oil and gas development are exempt from Wyoming's Industrial Siting Act, limiting opportunity to collect revenue specifically intended to mitigate harmful impacts of industrial development at the local level.
- Shift incentives from production to exploration and research and development (R&D). Studies have shown that production incentives perform weakly compared to efforts to facilitate exploration and R&D when it comes to actual production levels.
- Avoid a race to the bottom regionally-similar tax rates. For example, effective tax rates on fossil fuel production range from about 6 to about 16 percent across the five states.

Improving Revenue Management and Distribution

- Reform tax policies that exacerbate the lag between the timing of impacts and actual revenue availability. Revenue may not accrue until up to one to two years after production begins, at which point many local impacts have already occurred. Montana eliminated local property taxes on production and replaced them with an oil and gas production tax, reducing the lag. However, Montana also introduced a tax holiday on oil and gas production that delays revenue to local governments by 12 to 18 months.
- Avoid the use of severance taxes to fund basic government services.
- Establish permanent funds to dampen the negative effects of revenue volatility. For this reason, permanent funds are a better source of funds for basic government services and can provide principal for grants and loans to address impacts of energy development. Wyoming and New Mexico have established the largest permanent funds in the region, while Montana does not invest any oil and gas revenue into a permanent fund.
- Reform distribution of revenue to ensure state support where needed. Colorado revamped its energy assistance program in 2007, improving local government access to energy revenue for both impact mitigation and long-term economic development efforts. Revenue distribution in Wyoming, in contrast, remains problematic.
- Eliminate state-imposed revenue and spending limitations that force communities to forgo revenue from oil and natural gas production. Colorado's Taxpayer Bill of Rights (TABOR) has been especially detrimental in Mesa County, Colorado.
- Ensure that local and regional governments have access to energy revenue to support long-term economic diversification and development. For example, the state of Colorado made energy revenue funding available for regional clean energy initiatives. In Garfield County, the funding helped launch an effort that has grown businesses and jobs and has funded clean energy infrastructure.

Avoiding Costly Impacts

- Protect air and water quality through a precautionary approach to leasing and development plans.
- Direct oil and gas development to appropriate areas, and permanently protect vulnerable areas, through proactive planning that engages private landowners, local, regional, and state representatives as well as federal agencies.
- Establish threshold measures of cumulative impacts that include biological as well as socioeconomic metrics. Enforce moratoriums or other checks on the pace and scale of development linked to such triggers.
- Set money aside for impact mitigation at multiple scales of government. Impacts such as loss of water quality and air pollution may be likely to exceed local resources. Successful mitigation typically requires coordination and funding across agencies.