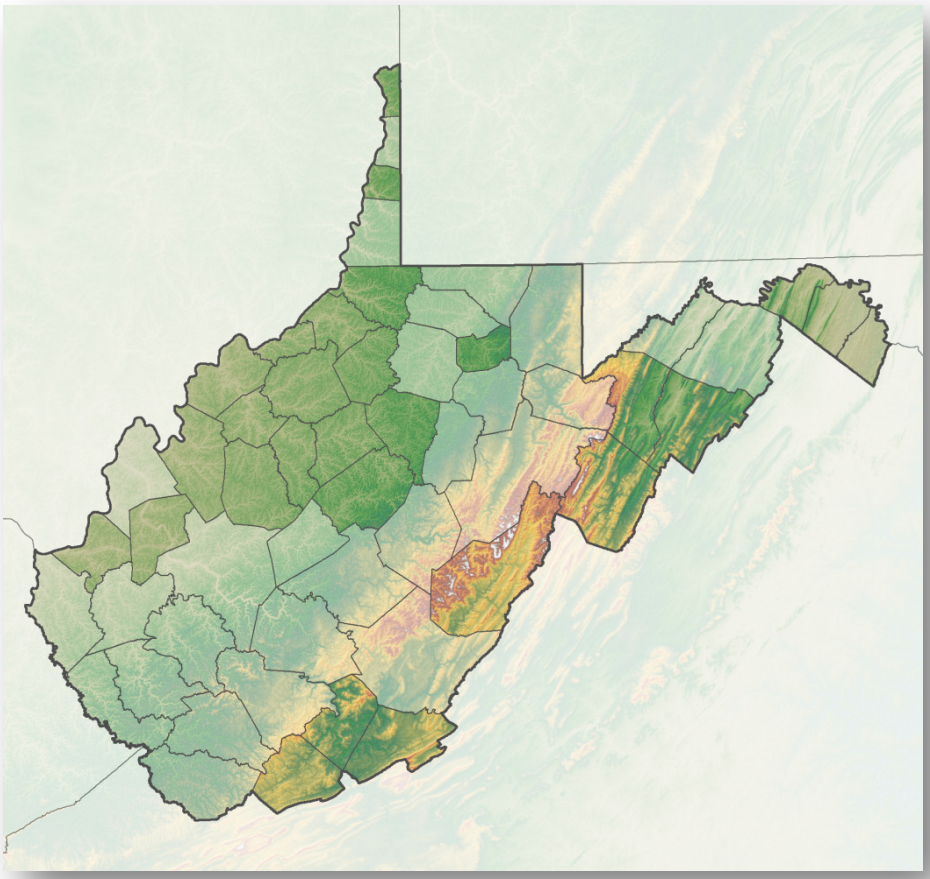
Coal and Renewables in Central Appalachia

The Impact of Coal on the West Virginia State Budget



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June 22, 2010

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One of a series of reports on the impact of coal and renewables in Central Appalachia

The Impact of Coal on the West Virginia State Budget

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ABOUT THE PROJECT

In 2009, the Mountain Association for Community Economic Development produced a report titled *The Impact of Coal on the Kentucky State Budget*. The report analyzed the Kentucky coal industry's net fiscal impact on the state budget by estimating the amount of tax revenues contributed by the industry, as well as the state expenditures associated with supporting the industry and its employees. The study concluded that the coal industry had a net negative impact on the state budget for Fiscal Year 2006, primarily as a result of the annual cost of repairing and replacing the roads impacted by the operation of overweight coal trucks. Other costs attributable to the industry included state agency expenses for supporting or regulating the coal industry, tax expenditures such as exemptions and credits, and general state expenditures supporting those directly and indirectly employed as a result of coal industry activity.

The report showed that, while the coal industry provided significant benefits to the state and local economies in Kentucky, a true accounting of coal's economic impact must also consider the associated costs, and for Kentucky, those costs were significant. The report's conclusions raise questions about Kentucky's policies related to energy and economic development, particularly given the realities of a decline in coal production, pending legislation that could reduce the competitiveness of Kentucky coal, and the growing impact of coal on economic, social, and environmental health.

This West Virginia report is one of three similar reports for other Central Appalachian states; the other two focus on Tennessee and Virginia. These reports are also part of a broader "Coal and Renewables in Central Appalachia" project. The project is comprised of a series of research reports that will look not only at the impact of coal on state budgets, but will also investigate county-level impacts of the coal industry in Central Appalachia. In addition, this broader project will investigate the potential benefits that could result from renewable energy development and energy efficiency improvements within the region. The goal of these reports is to add to the public dialog so that policy makers at the county, state, and federal level can fairly assess the current benefits and costs of the coal industry and the potential for economic diversification.

ACKNOWLEDGEMENTS

We would first like to acknowledge the various organizations whose contributions made this report possible. They include (in alphabetical order): Blue Moon Fund; Mary Reynolds Babcock Foundation; Natural Resources Defense Council; Sierra Club; and University of Colorado, Denver, School of Public Affairs–Central Appalachian Prosperity Project. We would particularly like to acknowledge the ongoing encouragement and support received from Bill Becker of Natural Capitalism Solutions. We greatly appreciate the support of all individuals and groups who have contributed to this effort, and, more broadly, who are committed to sustainable economic development in Central Appalachia.

For their time and willingness to assist and advise our research and development of methodology, we would like to thank Melissa Fry Konty and Jason Bailey of the Mountain Association for Community Economic Development. Their research and reporting on *The Impact of Coal on the Kentucky State Budget* served as the inspiration for this report.

We also appreciate the time, information, and expertise provided by various agencies that make up the West Virginia state government. These include the Public Service Commission—Transportation Division, the Department of Transportation, the Department of Revenue, the Office of Miners' Health Safety and Training, and the Department of Environmental Protection. Without the assistance of these agencies, this report could not have been completed.

COVER PHOTOS

From left to right: Eiler, Lyntha, "Aerial view of Catenary Coal's Samples Mine, a Mountaintop Removal project at the head of Cabin Creek;" Hansen, Evan, "Stream in northern West Virginia impaired by acid mine drainage from an abandoned coal mine;" and Kentuckians for the Commonwealth, "Coal truck."

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ABBREVIATIONS

AEP	American Electric Power
AGI	Adjusted Gross Income
BBER	Bureau of Business and Economic Research
BEA	Bureau of Economic Analysis
BFT	business franchise tax
BLS	Bureau of Labor Statistics
CBER	Center for Business and Economic Research
CCS	carbon capture and sequestration
CIS	community impact statement
CNIT	corporate net income tax
CRTDC	Coal Resource Transportation Designation Committee
CRTRF	Coal Resource Transportation Road Fund
CRTS	Coal Resource Transportation System
DAQ	Division of Air Quality
DMR	Division of Mining and Reclamation
DOH	Division of Highways
DWWM	Division of Water and Waste Management
EIA	Energy Information Administration
EQB	Environmental Quality Board
ESAL	equivalent single-axle loading
FOIA	Freedom of Information Act
FY	fiscal year
GDP	gross domestic product
GIS	geographic information system
GRF	General Revenue Fund
GVW	gross vehicle weight
ITEP	Institute on Taxation and Economic Policy
MACED	Mountain Association for Community Economic Development
MSHA	Mine Safety and Health Administration
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
NRCCE	National Research Center for Coal and Energy
OSMRE	Office of Surface Mining, Reclamation and Enforcement
PIT	personal income tax
RIMS	Regional Input-Output Modeling System
SB	Senate Bill
SRF	State Road Fund
TMDL	total maximum daily load
US	United States
USGS	United States Geological Survey
VMT	vehicle miles traveled
WVCA	West Virginia Coal Association
WVCBP	West Virginia Center on Budget and Policy
WVDEP	West Virginia Department of Environmental Protection
WVDO	West Virginia Development Office

WVDOE	West Virginia Division of Energy
WVDOH	West Virginia Division of Highways
WVDOT	West Virginia Department of Transportation
WVGES	West Virginia Geological and Economic Survey
WVMHST	West Virginia Office of Miners' Health Safety and Training
WVPSC	West Virginia Public Service Commission
WVSBO	West Virginia State Budget Office
WVTD	West Virginia Department of Revenue, State Tax Department
WVU	West Virginia University

SUGGESTED REFERENCE

McIlmoil, Rory, Evan Hansen, Ted Boettner, and Paul Miller (2010) The Impact of Coal on the West Virginia State Budget. Downstream Strategies and West Virginia Center on Budget & Policy. June 22.

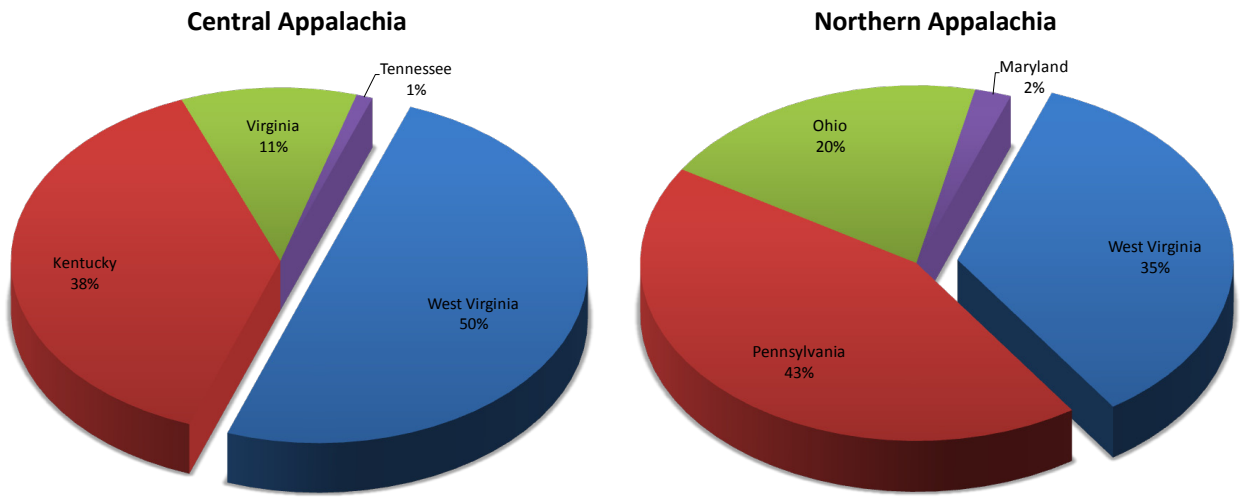
EXECUTIVE SUMMARY

Coal plays a significant role in West Virginia's economy, contributing hundreds of millions of dollars in state and local revenue and providing well-paying jobs to tens of thousands of West Virginians. However, the size of the coal economy, while substantial, is not as considerable as previous accounts suggest. Further, such accounts have only presented coal's benefits; our estimates provide an initial accounting of both benefits and costs. As estimated in this report, the industry itself—including its direct and indirect employees—actually costs West Virginia state taxpayers more than it provides. Such an accounting is important, for projected declines in production, should they prove accurate, will further diminish coal's contribution to state revenues, while the negative impacts resulting from coal industry activity will result in ongoing costs to the state and its citizens.

This report is one of a series of reports on the Central Appalachian states of Kentucky, Tennessee, Virginia, and West Virginia. It follows a similar report for Kentucky released by the Mountain Association for Community Economic Development, which examined the coal industry's impact on the Kentucky state budget. Additional reports will investigate county-level impacts of the coal industry in Central Appalachia and the potential energy and economic benefits that could result from the development of renewable energy and energy efficiency improvements.

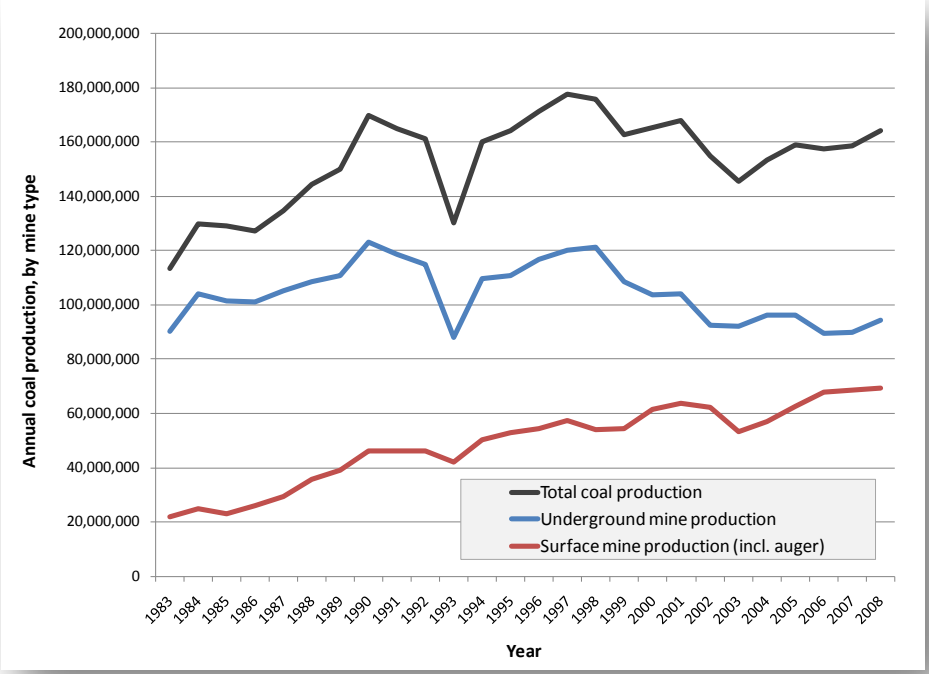
West Virginia's coal reserves are situated in two separate coal basins: Northern and Central Appalachia. Together, these two basins produced approximately one-third of United States coal. Twenty-seven counties produced coal in 2008, producing nearly 164 million tons of coal and employing a reported 22,493 miners, managers, and upper-level staff. Of the coal-producing counties, production in only five of the counties accounted for over 50% of total state production. These included Boone, Logan, Mingo, Kanawha, and Monongalia—the only county out of the five that is part of the Northern Appalachian basin. Overall, West Virginia coal production accounted for 44% of the coal mined in Northern and Central Appalachia.

Figure ES-1: Central and Northern Appalachian coal production by state, 2008



While state production levels have fluctuated since reaching nearly 170 million tons in 1990, annual production last peaked at 177.5 million tons in 1997, and had declined by 11% through 2007 before a strong increase in prices in 2008 provided a small boost to production. However, since the peak in 1997, underground coal production has fallen by 25%, while surface mining—generally the less expensive form of coal mining in West Virginia—has increased by 20%.

Figure ES-2: Annual coal production in West Virginia, by mine type, 1983-2008



Coal's importance for West Virginia is not likely to grow in the future based on the declining competitiveness of West Virginia coal resulting from the depletion of the lowest cost coal reserves. Implementation of the Clean Air Interstate Rule, climate legislation, tighter restrictions on mercury emissions, regulations on coal combustion wastes, and pending restrictions on valley fills from surface mining are all likely to add to the decline in West Virginia coal production. Should this occur, coal's contribution to the state budget and state and local economies will likely diminish. This reality raises questions about West Virginia's priorities as they relate to economic policy and energy development.

In this report, we examine the net impact of the coal industry on the West Virginia state budget by compiling data on and estimating both the tax revenues and the expenditures attributable to the industry for Fiscal Year 2009: July 1, 2008 through June 30, 2009. In calculating these estimates, there is an inherent degree of uncertainty associated with the results. We do not claim that our accounting of revenues and expenditures is precise; in fact, we round our estimates so as not to provide a false impression of precision.

Overall, when taking all revenues and expenditures into account, we estimate that the total net impact of the coal industry on the West Virginia state budget in Fiscal Year 2009 amounted to a net cost to the state of $97.5 million. Examining the impact of the industry and its employees alone, and not accounting for tax expenditures or the impacts of indirect employment, we estimate a net benefit to the state of $193.2 million. However, including tax expenditures and indirect employment is important for examining the true impact.

Finally, it is important to note that the impacts of coal extend beyond traditional accountings of revenues and expenditures. While the focus of this report is on the industry's net impact on the state budget for a single year, legacy costs resulting from past and future coal industry activity must be considered. These are important both for their potential impact on the availability of funds for various and more beneficial priorities, and for their future impact on the local and state economies, on the environment, and on the health of West Virginia residents.

The following is a summary of findings for each of the types of revenues and expenditures examined in this report:

Direct coal industry: Revenues. The coal industry benefits the state budget through the payment of various taxes and fees that contribute to the General Revenue Fund and State Road Fund. In Fiscal Year 2009, the coal industry provided an estimated $307.3 million in revenues from the coal severance tax, corporate net income tax, business franchise tax, and other taxes. Coal industry contributions to the General Revenue Fund accounted for about 8% of total state-generated revenues, while those to the State Road Fund accounted for less than 1% of total state-generated revenues.

Direct coal industry: On-budget expenditures. The West Virginia state budget includes a variety of expenditures that exist only because of the state's coal industry. We focus on coal-related expenditures that are paid for with general revenue and state road funds. These include, for example, units of government within the Department of Commerce and Department of Environmental Protection, as well as expenditures for the repair of the state's coal haul roads. We calculate that estimated on-budget coal-related expenditures amounted to approximately $113.7 million for Fiscal Year 2009. The estimated on-budget expenditures are considerably less than the direct revenues generated by the industry; therefore, we estimate that the coal industry directly provided a net benefit to the state budget of approximately $193.6 million in Fiscal Year 2009.

Direct coal industry: Off-budget expenditures. In addition to on-budget expenditures, we estimate off-budget expenditures in the form of tax expenditures. Tax expenditures are foregone revenues resulting from the provision of tax exemptions, credits, and reduced or preferential tax rates. Tax expenditures have the same fiscal impact as direct on-budget government expenditures. They both result in a loss of tax revenue to state government, thereby reducing the funds available for other government programs and services. We estimate that total tax expenditures provided by the State of West Virginia to the coal industry amounted to approximately $173.8 million in Fiscal Year 2009.

Direct coal employment: Revenues and expenditures. While the coal industry generates business-related tax revenues for the state associated with the mining, processing, and transportation of coal, the state budget also benefits through the collection of taxes paid by those directly and indirectly employed as a result of the West Virginia coal industry. Therefore, a complete accounting of the impact of the coal industry on the state budget requires a calculation of the revenues and expenditures associated with coal-related employment.

Approximately 21,012 West Virginia residents were directly employed in the coal industry in Fiscal Year 2009. We estimate that total tax revenues related to direct employment in the coal industry amounted to approximately $125.5 million. However, state expenditures to support those employees amounted to approximately $125.9 million. Therefore, we estimate that expenditures from the state budget for supporting direct coal industry employees approximately offset the tax benefits resulting from that employment.

Indirect employment supported by coal: Revenues and expenditures. When discussing the total economic impact of any industry, it is necessary to include not only the direct impacts in terms of employment, tax revenues, and expenditures, but also the indirect and induced impacts of the industry. The coal industry, like other industries, relies on other companies and generates economic activity and employment. To calculate the indirect impacts, we used the Regional Input-Output Modeling System economic impact multipliers for the coal industry in West Virginia. For Fiscal Year 2009, we estimate that indirect employment attributable to coal industry activity generated approximately $167.9 million in state revenues. However, state expenditures to support those employees amounted to approximately $284.8 million. We therefore estimate that employment indirectly supported by the West Virginia coal industry resulted in a net cost of approximately $116.9 million for Fiscal Year 2009.

Legacy costs related to coal. While this report focuses on impacts of the coal industry and its employees on the state budget, there are certain legacy costs that will continue to require funding long into the future. For example, in West Virginia, as in other Appalachian states, many coal mine operators have chosen to step away from their mines before full reclamation is complete, leaving a legacy of polluted drainage, drinking water contamination, and health and safety threats. There are 4,391 abandoned mine lands in West Virginia. While $464 million has been spent to complete projects, an additional $1.5 billion of work is required. In addition, more recent bond forfeiture sites are also in need of reclamation. These legacy sites present a liability for the coal industry. Because the main funding mechanism in place to reclaim these sites is insufficient and scheduled to end in 2022, action is needed to ensure that reclamation is completed and that the costs are not shifted to taxpayers. If action is not taken, then the West Virginia state budget could face additional expenditures in the future to finish the job of reclaiming these legacy sites.

A second legacy cost is the lasting impact of coal trucks on state roads and bridges. The total cost of repairing West Virginia's roads and bridges damaged by overweight coal trucks is approximately $4.0 billion. Even if the state were spending $200 million per year to repair and replace the infrastructure as needed, it would take 20 years of repairs and a cessation of coal truck operations to cover the full cost.

A third legacy cost is the workers' compensation debt accumulated prior to 2005, known as the "Old Fund." Some portion of these unfunded liabilities resulted from injuries and deaths related to coal industry activity. Approximately $115.5 million in coal-related revenues—mostly from taxes on coal production—was dedicated toward paying off the Old Fund debt in Fiscal Year 2009. This represents a substantial source of lost revenues that the state could be putting to more beneficial uses.

Conclusions and recommendations. While every job and every dollar of revenue generated by the coal industry provides an economic benefit for the state of West Virginia and the counties where the coal is produced, the net impact of the West Virginia coal industry, when taking all revenues and expenditures into account, amounted to a net cost to the state of $97.5 million in Fiscal Year 2009.

While this number is a reasonable and plausible first approximation, it cannot be represented as a precise calculation. However, the estimates provided in this report are based on the data that are available, and provide a useful first step toward considering not just the industry's revenues, but its costs as well.

Table ES-1: The estimated impact of the coal industry on the West Virginia state budget

Item	General Revenue Fund	State Road Fund	Total
Direct coal industry			
Revenues	$304,510,000	$2,770,000	$307,280,000
On-budget expenditures	($20,710,000)	($93,000,000)	($113,710,000)
Estimated net impact	**$283,800,000**	**($90,230,000)**	**$193,570,000**
Off-budget expenditures	($173,840,000)	not calculated	($173,840,000)
Direct coal employment			
Revenues	$108,300,000	$17,240,000	$125,540,000
Expenditures	($106,410,000)	($19,480,000)	($125,890,000)
Estimated net impact	**$1,890,000**	**($2,240,000)**	**($350,000)**
Indirect employment supported by coal			
Revenues	$128,900,000	$39,000,000	$167,900,000
Expenditures	($240,700,000)	($44,070,000)	($284,770,000)
Estimated net impact	**($111,800,000)**	**($5,070,000)**	**($116,870,000)**
Total			
Revenues	$541,710,000	$59,010,000	$600,720,000
Expenditures	($541,660,000)	($156,550,000)	($698,210,000)
Estimated net impact	**$50,000**	**($97,540,000)**	**($97,490,000)**

The process of thinking through the revenues and expenditures as they pertain to the coal industry, and the provision of these initial estimates, is of benefit for state policy-makers in that it offers a better understanding of the role of the coal industry at the state level. We encourage the generation of additional data, and the calculation of refined estimates, to help move this dialog forward.

The following policy recommendations address the direct and indirect costs attributable to coal industry activity in West Virginia, with the overall goal being to ensure that the costs are covered through revenues collected from the industry rather than being paid for by the public.

- Maintain the revenues currently generated by the workers' compensation coal tax and create a Permanent Economic Diversification Fund.
- Increase the coal severance tax rate and distribute the additional funds to coal-producing counties.
- Reexamine the thin-seam tax credit, and consider reforming the structure of the credit.
- Ensure that funds for reclamation and water treatment are sufficient for meeting all present and future needs.
- Increase the per-ton fee on coal haul trucks.
- Increase fines for exceeding permitted haul weights.

As mining declines in the future, the potential loss of state revenues will make it even more difficult to cover the annual and legacy costs of coal. Therefore, state policy related to energy and economic development—to the extent that it supports the coal industry—should be reconsidered, and new policies should be enacted that reflect recognition of these realities.

1. INTRODUCTION

Coal plays a significant role in West Virginia's economy, contributing hundreds of millions of dollars in state and local revenue and providing well-paying jobs to tens of thousands of West Virginians. However, the size of the coal economy, while substantial, is not as considerable as previous accounts suggest (BBER and CBER, 2010; WVCA, 2009). Further, such accounts have only presented coal's benefits; our estimates provide an initial accounting of both benefits and costs. As estimated in this report, the industry itself—including its direct and indirect employees—actually costs West Virginia state taxpayers more than it provides. Such an accounting is important, for projected declines in production, should they prove accurate, will further diminish coal's contribution to state revenues, while the negative impacts resulting from coal industry activity will result in ongoing costs to the state and its citizens.

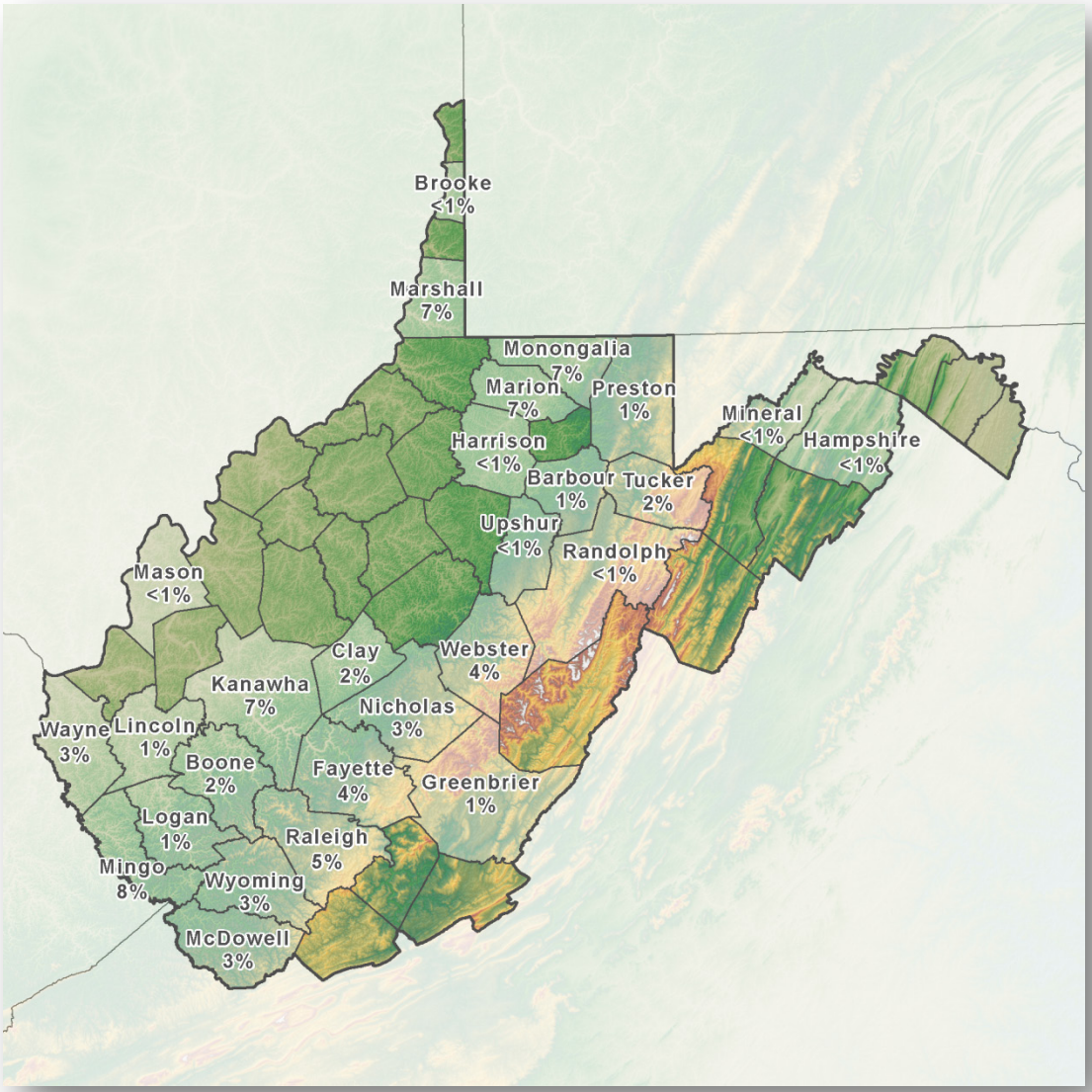
This report is one of a series of reports on the Central Appalachian states of Kentucky, Tennessee, Virginia, and West Virginia. It follows a similar report for Kentucky released by the Mountain Association for Community Economic Development (MACED), which examined the coal industry's impact on the Kentucky state budget (Konty and Bailey, 2009). Additional reports will investigate county-level impacts of the coal industry in Central Appalachia and the potential energy and economic benefits that could result from the development of renewable energy and energy efficiency improvements.

1.1 The declining importance of coal for West Virginia

The federal Office of Surface Mining, Reclamation and Enforcement (OSMRE) notes that 41 of the 55 counties in West Virginia have mineable coal seams, and that the state's total recoverable reserves amount to 17.7 billion short tons[1] (to be described merely as "tons" in this report) (OSMRE, Undated). West Virginia's coal reserves are situated in two separate coal basins, characterized primarily by their chemical composition. Northern West Virginia counties fall within the Northern Appalachian basin, while southern West Virginia counties lie within the Central Appalachian basin. Twenty-seven counties produced coal in 2008, producing nearly 164 million tons of coal and employing a reported 22,493 miners, managers, and upper-level staff (MSHA, 2010). Of the coal-producing counties, production in only five of the counties accounted for over 50% of total state production. These included Boone, Logan, Mingo, Kanawha, and Monongalia—the only county out of the five that is part of the Northern Appalachian basin.

[1] By comparison, the Energy Information Administration estimates that West Virginia's estimated recoverable reserves amount to 17.5 billion tons, but that recoverable reserves at producing mines amount to only 1.9 billion tons (EIA, 2009a).

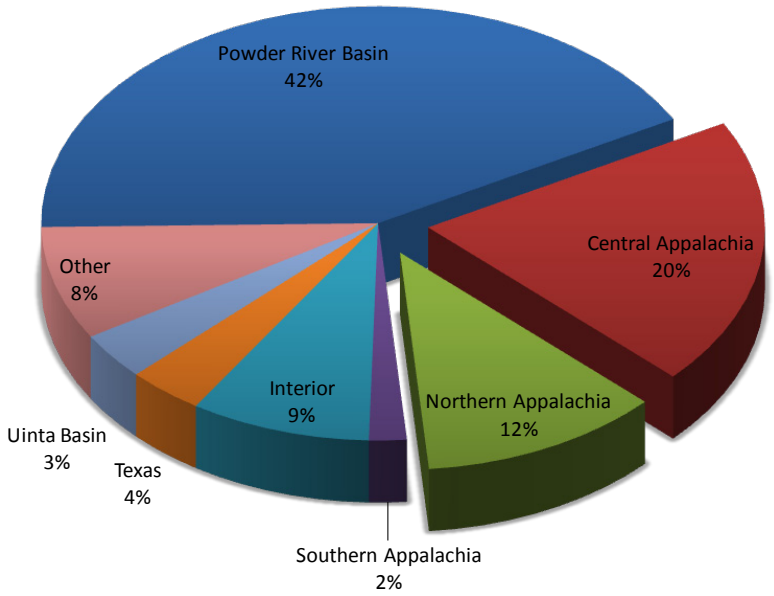
Figure 1: West Virginia coal-producing counties, and percent of total production by county for 2008



Source: MSHA (2010).

To put West Virginia coal production into perspective, in 2008, Northern Appalachia accounted for 12% of total coal production in the United States (US), while Central Appalachia accounted for 20%. Therefore, together, these two basins produced approximately one-third of US coal.

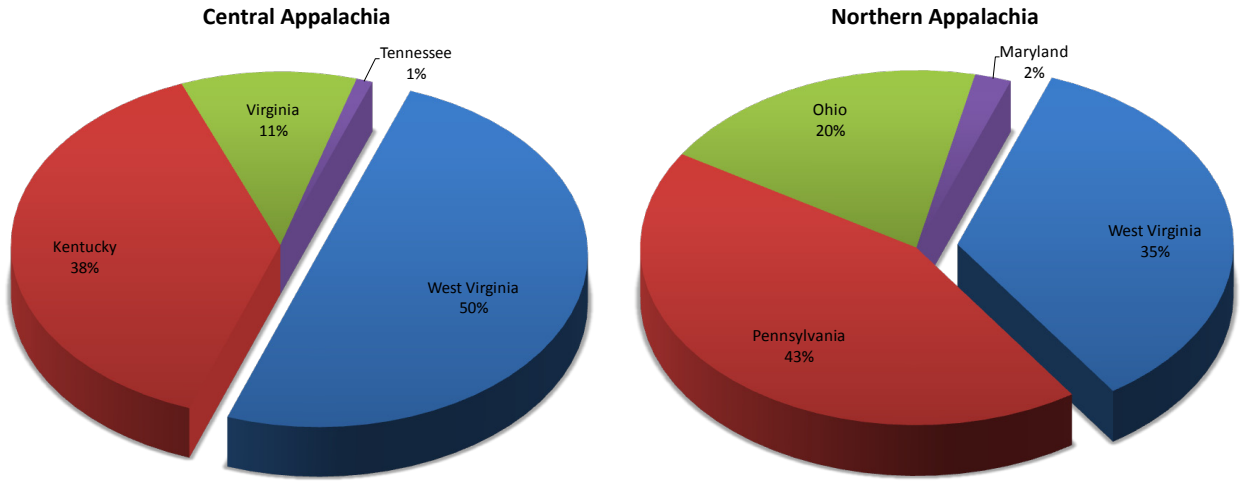
Figure 2: United States coal production by major basin, 2008



Source: MSHA (2010).

Of the 234.6 million tons of Central Appalachian coal production, southern West Virginia contributed 117.1 million tons, or approximately 50% of the total. Of the 134.0 million tons of Northern Appalachian production, northern West Virginia contributed 46.8 million tons, for approximately 35% of the total. Overall then, of the 368.7 million tons of coal produced in the two basins combined, West Virginia coal production accounted for 164.0 million tons, or 44%. Southern West Virginia alone accounted for 32% of the total.

Figure 3: Central and Northern Appalachian coal production by state, 2008



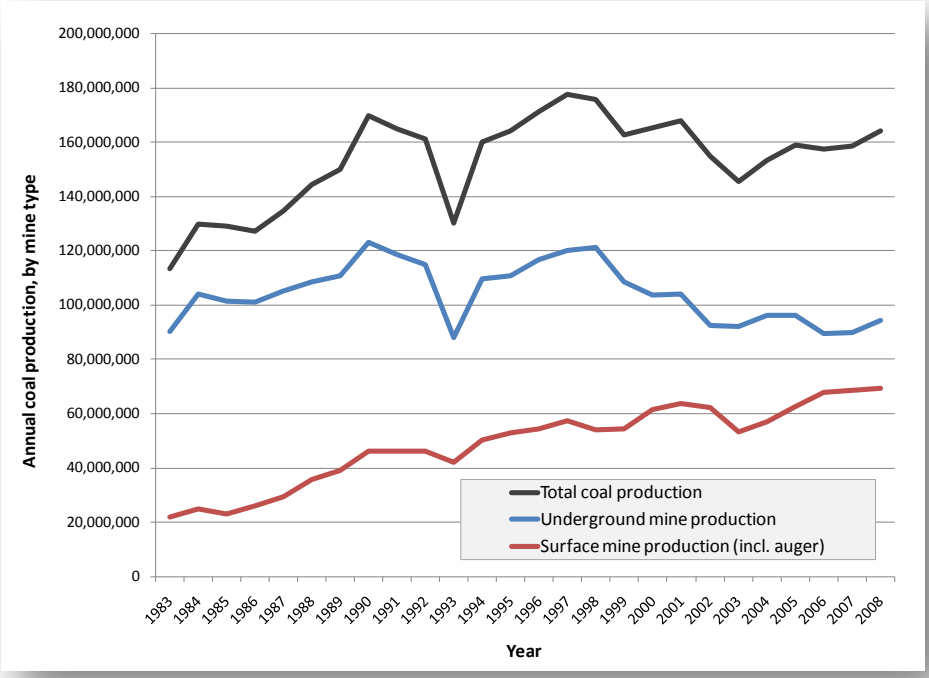
Source: MSHA (2010).

Of the coal produced in West Virginia, the state exported approximately 94 million tons to 26 states in 2008. Exports to only six states—Florida, Kentucky, Maryland, North Carolina, Ohio, and Pennsylvania—accounted for approximately 70% of West Virginia's domestic exports (EIA, 2009b). Foreign exports accounted for another 26.4 million tons (EIA, 2010a).[2] In total, West Virginia exported approximately 120.7 million tons of coal in 2008, accounting for nearly 75% of total production.

Surface mines produced 69.4 million tons of coal in 2008 and directly supported 5,804 jobs, thereby accounting for 42% of total production, but less than 30% of total employment.

Since accounting for 17% of total US coal production in 1990, West Virginia's share of national production has fallen to 14% (MSHA, 2010). While state production levels have fluctuated since reaching nearly 170 million tons in 1990, annual production last peaked at 177.5 million tons in 1997, and had declined by 11% through 2007 before a strong increase in prices in 2008 provided a small boost to production. However, since the peak in 1997, underground coal production has fallen by 25%, while surface mining—generally the less expensive form of coal mining in West Virginia—has increased by 20%. The overall decline in production, then, suggests that even the growing reliance on surface mining in order to remain price competitive with other coal basins has failed to help maintain West Virginia's production levels (Figure 4).

Figure 4: Annual coal production in West Virginia, by mine type, 1983-2008

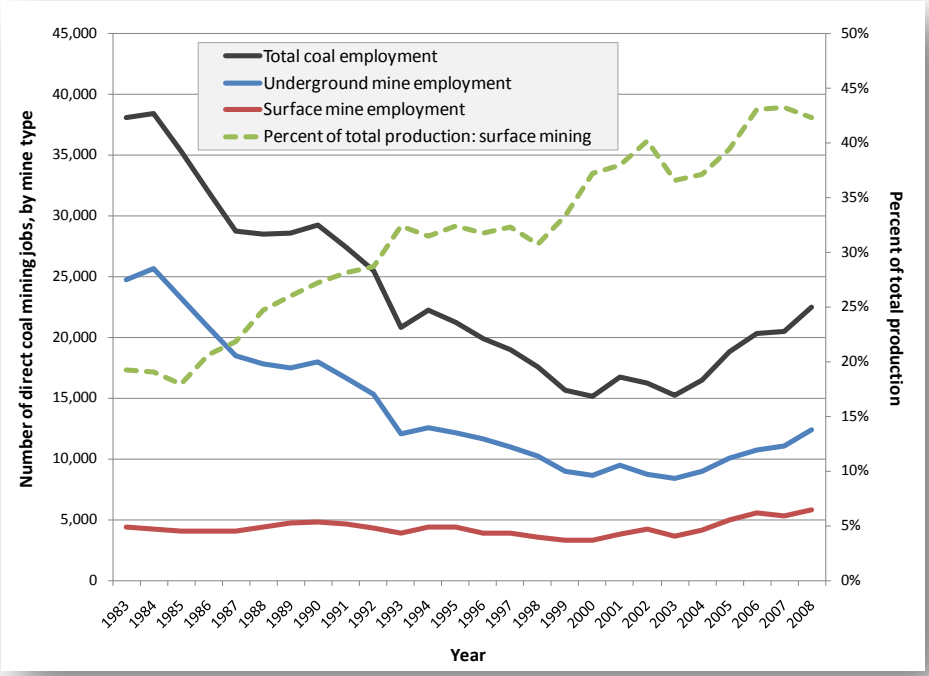


Source: MSHA (2010).

Overall, due in part to a substantial shift of production to surface mining, direct coal employment in West Virginia fell by 60% between 1983 and 2000 to a low of 15,140 employees (Figure 5), with underground mining accounting for the 94% of the decline. Since then, employment has rebounded somewhat, increasing to 22,493 by 2008. Underground mining has experienced the strongest rebound, even as production levels have for the most part remained steady.

[2] The data for domestic coal exports by state in the referenced report (EIA, 2010a) include in-state distributions of West Virginia coal. Domestic distributions of West Virginia coal to states other than West Virginia were taken strictly from EIA (2009b).

Figure 5: Coal mining employment in West Virginia, by mine type, and percent of total production from surface mining, 1983-2008

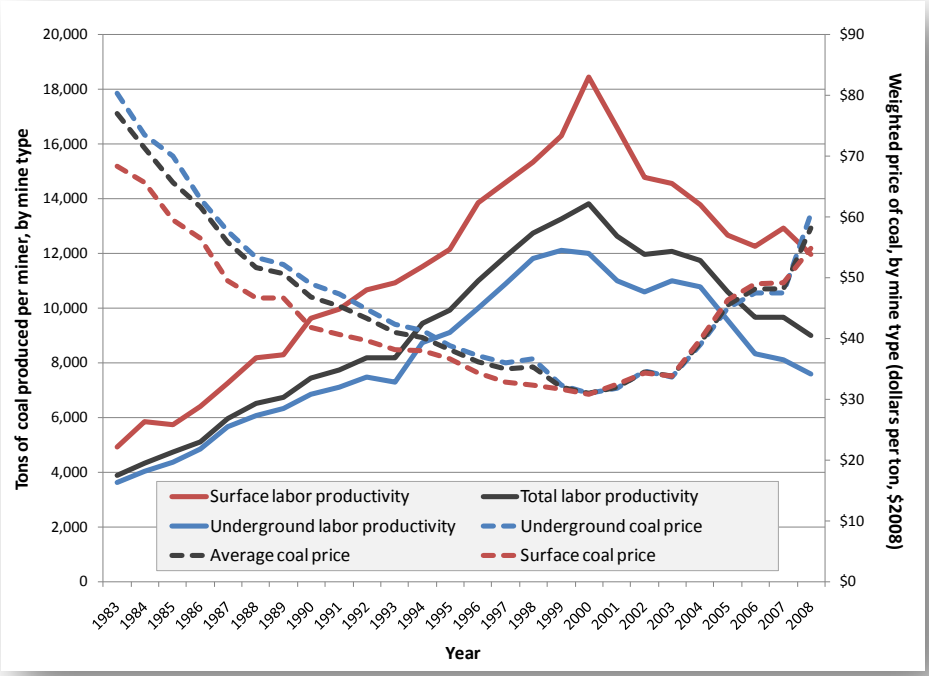


Source: MSHA (2010).

While coal production in West Virginia has risen slightly since reaching a low of 145.4 million tons in 2003, trends in labor productivity—represented here as the tons produced per miner—suggest that the most productive, and therefore lowest cost coal seams, are being depleted. As shown in Figure 6, labor productivity for both surface and underground mining peaked around 2001, and has declined sharply since then. This is significant because trends in labor productivity provide an indication of the accessibility and therefore the economic recoverability of the coal seams (McIlmoil and Hansen, 2010).

Consequently, the decline in the labor productivity for West Virginia coal mines has resulted in a sharp increase in the price of West Virginia coal, for both mining types, with the onset of the price increase corresponding with the beginning of the decline in labor productivity. While average labor productivity has declined by 35% since 2001, the average price of coal has increased by 115%, rising by over $21 per ton over seven years.

Figure 6: Labor productivity and average weighted coal prices for West Virginia, by mine type, 1983-2008



Note: Labor productivity was calculated using data for production and employment from MSHA (2010). Weighted coal prices were generated using data for price and total production by mine type and by region for 1983-2007 from EIA (2009c), and for 2008 from EIA (2009d and e).

While this price increase has yet to significantly impact West Virginia's coal production, competition from other coal basins and fuels will likely result in a significant decline in production in the coming decades.

The Energy Information Administration (EIA) projects that Central Appalachian coal production will decline by 46%, or 106 million tons by 2020. Southern West Virginia accounts for 50% of the region's production (EIA, 2009f). Should southern West Virginia production decline proportionally to projected regional declines, this would amount to a decline of 53 million tons, or approximately 34% of total state production. EIA also projects, however, a 16% increase in Northern Appalachian production by 2020, amounting to a total of 22 million tons. Northern West Virginia accounted for 30% of Northern Appalachian production in 2008; therefore, northern production would increase by about 6.7 million tons. Overall, we estimate that the net loss in coal production in West Virginia by 2020 could amount to approximately 46.3 million tons, for a 29% loss.

Therefore, coal's importance for West Virginia is not likely to grow in the future. Implementation of the Clean Air Interstate Rule, climate legislation, tighter restrictions on mercury emissions, regulations on coal combustion wastes, and pending restrictions on valley fills from surface mining are all likely to add to the decline in West Virginia coal production. Should this occur, coal's contribution to the state budget and state and local economies will likely diminish. This reality raises questions about West Virginia's priorities as they relate to economic policy and energy development.

1.2 Focus and methodology

In this report, we examine the net impact of the coal industry on the West Virginia state budget by compiling data on and estimating both the tax revenues and the expenditures attributable to the industry for fiscal year 2009 (FY2009), which covers the period between July 1, 2008 and June 30, 2009. Whenever possible, we replicate the methodologies used by MACED (Konty and Bailey, 2009) in order to generate a degree of consistency across each of the four state budget reports. However, this is difficult to achieve given the differences in the structure of state budgets among the four states, in the types of revenues and expenditures that exist, and in the availability and accessibility of the data and information necessary to conduct the various analyses. Nevertheless, for each of the revenues and expenditures in this report where MACED's methodology is not appropriate or where the data are limited, we construct the best methodology we can, given available resources, for estimating revenues or expenditures.

In calculating estimates for the items considered in this report, there is an inherent degree of uncertainty associated with the results. We do not claim that our accounting of revenues and expenditures is precise; in fact, we round our estimates that are based on calculations so as not to provide a false impression of precision. In many cases, we test more than one method and choose the method that seems most appropriate. While these estimates certainly can and should be refined, they still provide an important starting place to examine not just the industry's benefits, but also its costs.

Appropriations from state budgets determine which programs, initiatives, and projects will receive state funding. More specifically, the state budget distributes funds based on a politically and economically-determined set of priorities, thereby determining to a large extent how the state will be developed economically, what types of educational opportunities will be available, where roads will be built, and what sources of energy will be supported and developed. As state revenues increase, more funds are available for supporting a wider variety of priorities; conversely, as revenues decline, funding for certain projects and services are in many cases eliminated. The challenge for states is to determine the state's true needs and priorities, and to generate new sources of revenue in order to maintain at least a minimum level of funding for vital social, environmental, and economic programs.

This is an important consideration as well when examining the net impact of a particular industry, and determining whether support for the industry results in a net positive or negative impact on the state budget. In examining the net impact of the coal industry on the West Virginia state budget in this report, we focus primarily on those revenues and expenditures that are part of the General Revenue Fund (GRF) and the State Road Fund (SRF), and we only consider those that are applicable to the coal industry and its employees. We choose to focus on these two funds because they include the revenues and appropriations from general state tax sources, while excluding revenues and appropriations from dedicated taxes and fees, from federal revenues, Lottery Fund revenues, and from all other departmental revenues. This allows us to estimate the net impact of coal more directly by excluding flows of money that (1) do not originate from the collection of general taxes applicable to all industries or citizens operating or living in West Virginia, and (2) are not expended on pre-determined priorities.

1.3 Structure of the report and initial findings

The body of this report is divided into five main chapters, each focused on a separate type of revenue or expenditure. These include:

- direct revenues generated by the coal industry from taxes and fees;
- on-budget expenditures supporting the coal industry, representing expenditures by state agencies that support and/or regulate the coal industry as well as transportation-related expenditures;
- off-budget expenditures supporting coal in the form of tax credits and exemptions;
- revenues and expenditures related to direct coal industry employment; and
- revenues and expenditures related to employment indirectly supported by the coal industry.

In Section 7, we also provide an analysis of the legacy costs related to: past coal mining operations in terms of payment for reclaiming abandoned mine lands, bond forfeiture sites, and the cost of repairing and treating streams impacted by mining; past damages to roads and bridges, resulting from the operation of overweight coal trucks; and, workers' compensation claims from illnesses, injuries, and deaths attributable to coal-related activity.

In general, we find that the relative importance of the coal industry to the state budget and economy is not as substantial as other reports have suggested (BBER and CBER, 2010; WVCA, 2009) , as the industry directly accounted for less than 10% of state-generated revenues and less than 3% of total employment in FY2009. These contributions are likely to decline in the near future should official projections of a decline in Central Appalachian coal production prove accurate (EIA, 2009a). We further find that, in certain accounts, the industry imposed a net cost on the state budget for FY2009.

Finally, it is important to note that the impacts of coal extend beyond traditional accountings of revenues and expenditures. While the focus of this report is on the industry's net impact on the state budget for a single year, legacy costs resulting from past and future coal industry activity must be considered. These are important both for their potential impact on the availability of funds for various and more beneficial priorities, and for their future impact on local and state economies, on the environment, and on the health of West Virginia residents.

In MACED's words, "Decisions, especially concerning public policy and the investment of public dollars to meet energy and economic challenges, should be made based on a clear understanding of the full costs and benefits of the alternatives before us" (Konty and Bailey, 2009, p. 7).

This report aims to help develop that understanding for West Virginia, and to inform future policy related to energy and economic development.

2. DIRECT COAL INDUSTRY: REVENUES

The coal industry generates revenues for the state budget through the payment of various taxes and fees that contribute to the GRF and the SRF. As described in detail in this chapter, these revenues totaled about $307.3 million in FY2009 (Table 1).[3] Contributions to the GRF accounted for about 8% of total revenues, while those to the SRF accounted for less than 1% of total revenues (Figure 7).[4]

Coal industry revenues benefit the state in many ways. General revenues are spent on a variety of important government functions, including education, health, and environmental protection. Road funds are used to build and maintain approximately 34,230 miles of roads, as well as 6,750 bridges, across West Virginia (WVDOH, 2009a; WVDOT, 2009a).

Only those revenues directly applicable to the coal industry and its employees are discussed in this report. Of the taxes that contribute to the GRF, those directly applicable to the industry include the coal severance tax, corporate net income and business franchise taxes, sales and use taxes, and a small portion of property tax. The coal industry only contributes directly to the SRF through coal-specific fees such as a per-ton fee on coal transported by truck, overweight permit fees, and coal company donations. Direct coal industry revenues from transportation-related taxes and fees are calculated as part of Section 5.1.3 when we consider revenues generated by direct coal industry employees.

Of all tax revenues attributable to the coal industry, the coal severance tax is the most significant, accounting for about 92% of the industry's direct revenues at the state level. The next most significant source—the combination of corporate net income and business franchise taxes—accounts for only 6%. Virtually all of the direct revenues from the coal industry are deposited into the GRF; only 1% are placed in the SRF.

Table 1: Direct tax revenues paid by the coal industry

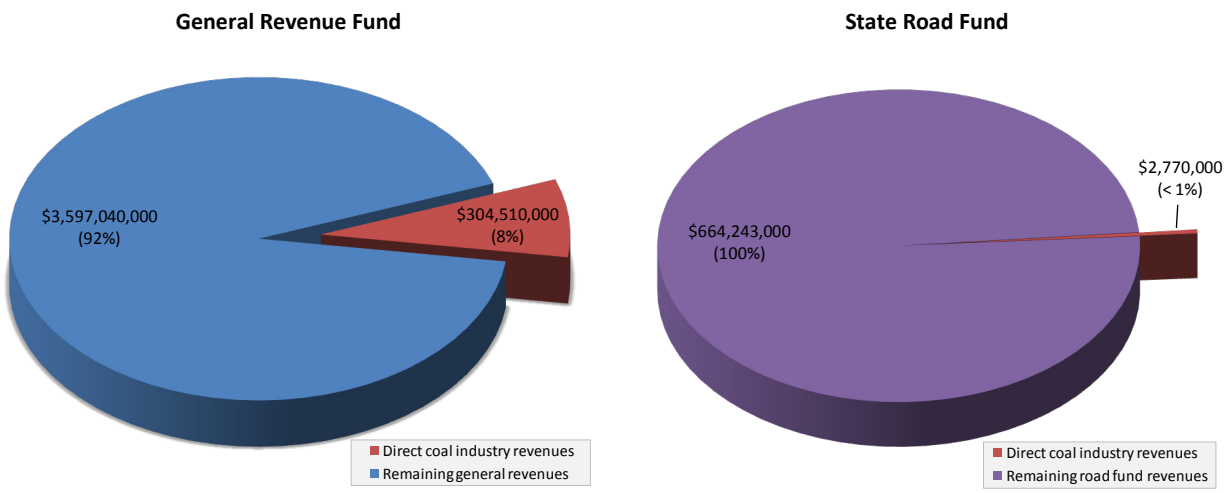
Revenue	Amount	Percent of revenues
To General Revenue Fund		
Coal severance tax	$281,431,417	92%
Corporate net income tax/business franchise tax	$18,990,000	6%
Sales and use taxes on coal company purchases	$3,730,000	1%
State property tax	$360,000	<1%
Subtotal	**$304,510,000**	**99%**
To State Road Fund		
Coal Resource Transportation Road Fund	$1,670,000	1%
Overweight truck permit fees	$800,000	<1%
Coal company donations	$300,000	<1%
Subtotal	**$2,770,000**	**1%**
Total	**$307,280,000**	**100%**

Note: The total amount of coal severance tax is greater than shown in this table, and includes funds sent to funds other than the GRF. See Table 2 for these details. Amounts are rounded to $10,000 when estimated. The total is also rounded because it includes specific amounts that are rounded.

[3] Our total direct coal industry revenue differs significantly from the $676.2 million in "Taxes and Fees Levied on Coal in West Virginia" presented by BBER and CBER (2010). Major differences include: we use FY2009 data when possible, we account for personal income taxes in Section 5.1.1 because it is not a direct coal industry revenue, and we only count revenues deposited into the GRF and SRF.

[4] These percentages are based on the state-generated revenues deposited in the GRF and SRF.

Figure 7: Coal industry revenues compared with General Revenue Fund and non-federal State Road Fund revenues



Source: WVSBO (2010a).

2.1 Coal severance tax

For the privilege of producing coal for sale, profit, or commercial use in West Virginia, coal companies pay a severance tax equal to 5% of the gross value of the coal produced.[5] In FY2009, coal production generated a total of $371.0 million in severance tax revenue (Table 2). The largest share of coal severance tax collections—$281.4 million—was added to the GRF. Smaller portions were distributed to local governments, the Workers' Compensation Debt Reduction Fund, and the Infrastructure Fund; neither of these funds are part of the GRF or SRF. A very small portion was retained by the Department of Revenue for administering the tax.

Because this report focuses on only the GRF and SRF, we calculate a $281.4 million impact on the state budget from coal severance tax revenues. This amounted to about 7% of total general revenues, and 6% of all state revenues from the two primary funds combined for FY2009.

[5] The gross value includes the fair market value of the coal upon its extraction plus any value added through the processing or treatment of the coal. Value added as a result of the transportation of the coal is not subject to the severance tax.

Table 2: Coal severance tax distributions

Distribution	Amount
General Revenue Fund	$281,431,417
Local government	$35,615,344
Workers' Compensation Debt Reduction Fund[6]	$35,535,798
Infrastructure Fund[7]	$18,365,732
Administration fees	$35,000
Total	**$370,983,292**

Source: Compiled from monthly data from Muchow (2010a and b).

Future severance tax collections are uncertain (See sidebar). Using the information on the projected decline in production and 2020 production levels by region in West Virginia, we estimate that the state may lose $128.7 million in annual coal severance taxes by 2020.

Because severance tax revenues are distributed among different government programs, and because of the thin-seam tax credit (discussed below in Section 4.1), the revenues deposited in the GRF are not as great as they could be. Just including the transfer to the Worker's Compensation Debt Reduction Fund and the lost revenues due to the thin-seam tax credit, potential general revenue funds from the severance tax in FY2009 could have exceeded $385.6 million (Table 3).

Table 3: Coal severance tax potential General Revenue Fund revenues

Distribution	Amount
Actual General Revenue Fund	$281,431,417
Worker's Compensation Debt Reduction Fund	$35,535,798
Thin-seam tax credit	$68,655,492
Total	**$385,622,707**

Source: Actual GRF and Workers' Compensation Debt Reduction Fund: monthly data from Muchow (2010a and b).Thin-seam tax credit: Muchow (2010c).

Future of the coal severance tax

Severance tax collections depend both on the level of production in a given year as well as the price of coal. Severance tax receipts grew by more than 100% between FY2004 and FY2009, as the price of coal rose substantially (WVSBO, 2010a).

However, in the future, these revenues are likely to decline. In its forecast through FY2013, the West Virginia State Budget Office (WVSBO) (2010a) predicts a decline in coal demand for industrial electricity, a decline in coal prices, and challenges related to environmental regulation. By FY2013, severance tax collections are predicted to decline by 16% from FY2009 levels. Uncertain energy prices and restrictions on carbon and nitrogen oxide emissions are among the risks in making accurate projections (WVSBO, 2010a).

Should West Virginia coal production decline as discussed in Section 1.1, it is likely that severance tax revenues from coal extraction will decline as well, unless the price of coal increases to $120 per ton (thereby maintaining the gross value of the coal sold, even with the decline in production).

[6] The Workers' Compensation Debt Reduction Fund is used to pay off "Old Fund" debts related to workers' compensation claims. Much of this debt is attributable to claims stemming from injuries and deaths related to coal industry activity. In FY2009, there were two ways in which the coal industry contributed directly to paying off Old Fund debts. These include the transfer from the coal severance tax noted above, and the collection of an additional severance tax on coal of 56 cents per ton, which is discussed in Section 7.3 and is considered a "special revenue" for the purposes of this report, since it is a dedicated revenue. The direct transfer from the coal severance tax, however, is only meant to be a short-term transfer through FY2009; therefore, in the years following, those revenues should once again contribute directly to the GRF.

[7] The transfer to the Infrastructure Fund is for the purpose of paying off outstanding principle on bonds issued under the Infrastructure Improvement Act of 1994. The first $24 million generated each year from severance taxes on all extraction industries is transferred to the Infrastructure Fund. For FY2009, approximately $18.4 million of the $24 million transferred from all severance taxes was contributed by coal (Muchow, 2010a and b).

2.2 Corporate net income tax and business franchise tax

The corporate net income tax (CNIT) is imposed on "Domestic and Foreign corporations doing business in West Virginia or deriving income from property, activity or other sources within the State…" (Tax Commissioner of West Virginia, Undated, p. 13). The CNIT is a tax on the net income, or net profits, earned by corporations in a given year.[8] The tax rate was reduced from 8.75% to 8.5%, effective January 1, 2009.

The state also imposes a business franchise tax, described as "a tax on the net equity component (defined as the value of capital stock, preferred stock, paid-in capital, and retained earnings) of business balance sheets and applies to most corporations, partnerships, and limited liability companies" (WVSBO, 2010a, p. 92). The tax rate of 0.55% of net equity was reduced to 0.48%, effective January 1, 2009.

The CNIT and business franchise tax are reported together, and in FY2009, amounted to a total of $270.2 million. This represented a substantial decline from revenues for FY2008 (See sidebar). West Virginia does not report CNIT or business franchise tax revenues by industry; therefore, we estimate revenues from the coal industry for FY2009 based on the industry's share of total state gross domestic product (GDP).

The BEA does not provide 2008 (or FY2009) GDP data for the coal industry in West Virginia, but does report a total "Mining" GDP of $5.7 billion (BEA, 2010). In order to estimate GDP for the coal industry, we calculate coal's share of 2008 total gross production value for all mining industries in West Virginia, and apply that to total mining GDP as reported by BEA. For 2008, we calculate that coal accounted for 76% of all "Mining" activity in West Virginia (Table 4).

Future of the CNIT and business franchise tax

This is a declining tax base. Total CNIT and business franchise tax revenues from FY2008 to FY2009 fell by $118 million, and are expected to decline even further in the coming years.

As noted by the *State of West Virginia Executive Budget* proposed for FY 2011, the CNIT will decrease from 8.5% in 2009 to 6.5% effective January, 2014 (WVSBO, 2010a). The annual estimated revenue loss due to the rate reduction is $76 million once it has been fully implemented (WVCBP, 2008). The business franchise tax is set to decrease to 0% by January, 2015, down from 0.55% in FY2009.

These are tenuous revenues to begin with, because, "the majority of [CNIT] and business franchise tax receipts are attributable to a small number of taxpayers…" and, "a change in the financial status of just a few taxpayers can have a dramatic impact upon tax collection trends." (WVSBO, 2010a, p. 92)

Table 4: Estimated production value by West Virginia mining industry, 2008

Industry	Production	Unit	Price	Gross value	Percent of total
Coal	157,777,000	short tons	$60.16	$9,491,860,000	76%
Natural gas	245,578,000	1,000 cubic feet	$10.32	$2,534,360,000	20%
Non-fuel minerals	various	various	various	$276,000,000	2%
Oil	1,593,000	barrels	$95.07	$151,450,000	1%
Total				**$12,453,680,000**	**100%**

Source: Production and price for natural gas and oil: EIA (2010b and c; 2009g and h). Production and price for coal: EIA (2009d and e). Total production value for non-fuel minerals: USGS (2009). Note: Amounts are rounded to $10,000 when estimated. The total is also rounded because it includes specific amounts that are rounded. Natural gas prices reflect the "city gate price" for West Virginia reported by EIA, instead of the wellhead price. Well head prices would be more appropriate for our calculations since they more closely reflect the raw price of the natural gas; however, wellhead prices for West Virginia are not available.

[8] The CNIT is imposed only on "C" corporations, not on "S" corporations (which include Limited Liability Companies), nor on unincorporated entities.

Applying this percentage to total GDP for all mining, we estimate that coal industry GDP in West Virginia in 2008 amounted to $4.3 billion. Total state GDP was $61.7 billion. Therefore, coal industry activity accounted for approximately 7% of total state GDP in 2008.

As an industry's share of GDP can be viewed as a rough estimate of its share of total net income and equity for all industries, we apply this percentage to total CNIT and business franchise tax collections for FY2009 in order to estimate the coal industry's contribution.

Based on this methodology, we estimate that CNIT and business franchise tax contributions attributable to the coal industry in FY2009 amounted to approximately $19.0 million.[9]

2.3 Sales and use taxes on coal company purchases

All corporations conducting business in West Virginia, as well as individuals who make purchases within the state, pay sales and use taxes on items they purchase. "The [sales and use] tax is imposed on the sale or lease of tangible personal property and the furnishing of certain services at a rate of 6%" (Tax Commissioner of West Virginia, Undated, p. 40). Some items, such as food and automobiles, are taxed at a lower rate.

However, the coal industry benefits significantly from the direct use tax exemption, which decreases the amount of sales and use taxes paid (See Section 4.2). Despite the available exemptions, coal companies do pay some sales and use taxes on the purchase and use of non-exempt items such as those incidental or convenient to the natural resource production activity.

According to a recent estimate, the coal industry paid $3.6 million in sales and use taxes in 2008 (BBER and CBER, 2010). That estimate was based on the total sales and use taxes collected from self-classified mining firms, multiplied by an approximate percentage of coal-related mining relative to total mining of 73.6%. Using these estimates, we calculate that total sales and use tax revenues from all self-classified mining firms amounted to approximately $4.9 million. As presented in Section 2.2 above, we estimate a slightly higher percentage for coal's share of total mining of 76%.

Applying this percentage to total sales and use taxes paid by all self-classified mining firms—as calculated using previous estimates—we report total sales and use tax contributions by the coal industry of approximately $3.7 million. We will use this revised number in order to maintain consistency in calculation methods across tax revenues applicable to the coal industry.

Total sales and use tax collections amounted to $1.11 billion in FY2009, so the taxes paid by coal companies accounted for about 0.3% of total sales and use tax collections. Workers directly and indirectly employed by the coal mining industry also pay sales and use taxes; these are estimated in Sections 5.1.2 and 6.1.

2.4 Property tax/un-mined minerals tax

West Virginia imposes property taxes on the ownership or possession of real and personal property, and the tax is measured by the market value of the property. Real property includes land, improvements to land, structures, and certain equipment affixed to structures. Personal property includes furnishings, machinery and equipment, fixtures, supplies, and tools (WVTD, 2010a).

Un-mined coal is a significant source of real property taxes; these coal reserves are taxed somewhat differently if the reserves are on producing or non-producing properties (Hansen et al., 2009). Real property taxes are also imposed on coal companies' buildings and land.

[9] We recognize that we apply percentages calculated based on 2008 data to FY2009 tax revenues in order to estimate the coal industry's share of FY2009 CNIT and business franchise tax revenues. The difference in calendar year 2008 and FY2009 is a span of six months, and while many factors can change within that time span, given the lack of available data for FY2009 we consider our method to be the best available given data constraints.

Personal property taxes are collected on machinery and other supplies used in the mining, processing, and transportation of coal, and are based on the assessed value of the property.

According to a recent assessment of coal's impact on the West Virginia economy in 2008, the coal industry paid $90.8 million in property taxes, a conservative figure because only the land and buildings owned by the ten major coal companies were included (BBER and CBER, 2010). We use these data because they represent the most up-to-date data available.

Table 5: Coal property taxes levied in 2008

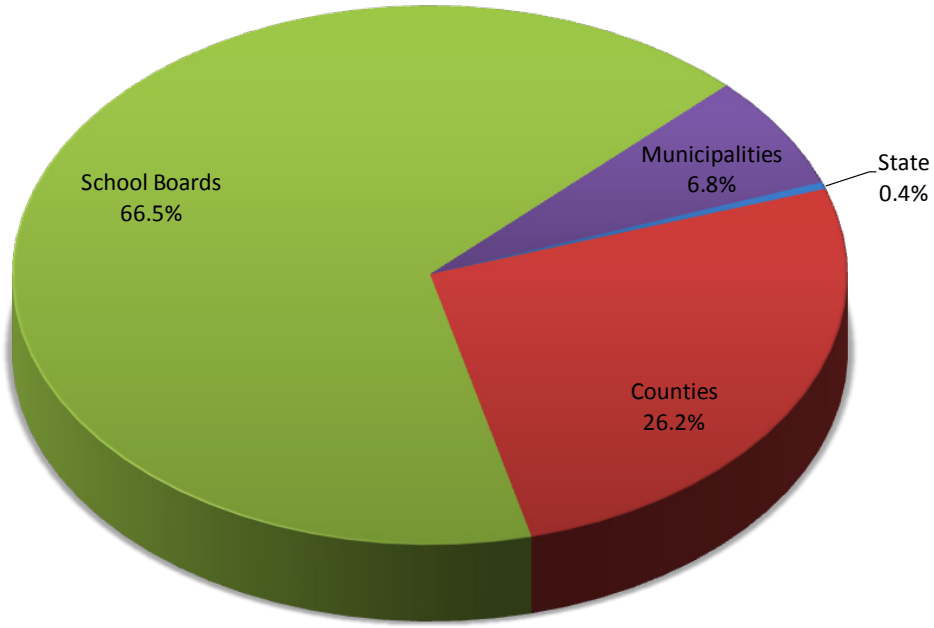
Property tax	Amount
Producing coal property	$19,700,000
Non-producing coal property	$13,300,000
Buildings and land	$3,000,000
Personal property	$54,800,000
Total	**$90,800,000**

Source: BBER and CBER (2010). These property taxes were based on 2008 appraisals and levy rates, and were collected in 2009.

While this is a substantial figure, it is not the appropriate revenue to assign to the coal industry because almost all property tax collections, while appraised at the state level, actually benefit local units of government. For example, in FY2009, the state received only 0.4% of levied property taxes (Figure 8).

We apply this 0.4% figure to the $90.8 million estimate, and calculate that approximately $360,000 of property tax receipts are placed in the GRF, thereby contributing to the state budget.

Figure 8: Disposition of property taxes levied in FY2009



Source: WVSBO (2010b).

2.5 Coal Resource Transportation Road Fund

In 2008 and 2009, the primary mode of transportation for an average of over 30 million tons of West Virginia coal was by truck, accounting for approximately 22% of total production. Of that, nearly 70% was transported over roads lying within the southern coal-producing counties (EIA, 2009b; 2010d).

Prior to 2003, the maximum weight limit for coal haul trucks was 80,000 pounds of gross vehicle weight (GVW). Trucks found operating in excess of the designated weight limit could be fined up to $1,200. However, fine amounts failed to deter operators from exceeding the weight limits, as evidenced by recordings of GVWs in excess of 190,000 pounds (WVDOH, 2002). In fact, a 2002 report concluded that "A review of the West Virginia State Code makes it evident that past and present policies are not seriously designed to deter overloaded coal trucks" (WVDOH, 2002, p. 3).

The 2002 study was primarily a response to the increased occurrence of overweight trucks and the frequency of severe, fatal accidents involving coal haul trucks. However, it was also a response to the increased cost of maintaining public roadways damaged by overloaded trucks. In 2003, as a result of the findings of the study and increased public pressure, the Legislature passed Senate Bill (SB) 583, formally creating the Coal Resource Transportation System (CRTS) and setting up funding and enforcement mechanisms aimed at reducing the negative financial and public safety impacts of overloaded coal trucks.

The legislative findings on coal transportation as outlined in the state code state that "The daily presence of large commercial motor vehicles…causes significant impact to local communities and the local transportation infrastructure. Local residents are exposed on a daily basis to the dangers associated with sharing the road with a large number of these vehicles," and further, that "average vehicle weights have increased and many coal transport vehicles regularly exceed the lawful limit…result(ing) in the rapid deterioration of state roads and bridges, creating significant costs to the state of millions of dollars in lost road and bridge use and life." However, the legislature also recognized the apparent need to allow an increase in weight limits for coal haul trucks in "a limited and discrete geographic area of the state where the limited access to rail and river transportation options," for the purpose of relieving "economic pressures to reduce transportation costs." In effect, the enacted legislation reflected an apparent attempt to balance public safety and infrastructure impacts with "address(ing) the economic needs of the coal industry."[10]

Additional articles in SB 583 transferred weight enforcement responsibility for all commercial motor vehicles from the West Virginia Division of Highways (WVDOH) to the West Virginia Public Service Commission (WVPSC), empowered WVPSC to develop and enforce a system for permitting vehicles upon the CRTS, authorized WVPSC to enforce speeding laws with regard to commercial motor vehicles, and imposed statewide reporting requirements on coal shippers and receivers.[11] The reporting requirement was eliminated in 2004 in SB 673, in effect restricting enforcement of coal truck haul weights to CRTS roads.

The CRTS is "a network of public roads designated by the Commissioner of Highways for hauling coal and coal by-products at heavier weight limits than can be allowed on other public roads" (WVDOH, 2008, p. 1). According to WVDOH, the CRTS was first promoted "to allow for increased load limits…recognizing that higher weight limits are needed on a limited number of roadways to accommodate natural resource extraction" (WVDOH, 2002, p. 15). The CRTS legislation achieved this goal by creating a tiered system of weight limits for roadways designated as CRTS roads, whereas operating companies hauling coal can apply for a special permit allowing certain types of trucks to haul coal at a maximum GVW of 120,000 pounds with a 5% tolerance (therefore, 126,000 pounds). The maximum GVW for all other coal haul roads not on the CRTS—therefore, not requiring a CRTS permit—remains at 80,000 pounds with a 10% tolerance (therefore, 88,000 pounds).

[10] All quotes in this paragraph taken from WV Code 17C-17A-1.
[11] WV Code 17C-17A-6.

The original legislated system was confined to ten southern West Virginia counties: Boone, Fayette, Lincoln, Logan, McDowell, Mercer, Mingo, Raleigh, Wayne, and Wyoming. It consisted of approximately 2,000 miles of public roadway and 697 bridges. As of 2009, the system had grown to 18 counties, 2,142 miles of roadway, and 764 bridges (WVDOH, 2010a).[12] The new counties include the southern counties of Clay, Greenbrier, Kanawha, Nicholas, and Summers, as well as the northern counties of Braxton, Ohio, and Webster.[13]

The legislation also established the Coal Resource Transportation Road Fund (CRTRF). Revenues for the CRTRF include a coal tonnage fee of five cents per ton hauled by truck, fees from the sale of overweight permit fees, and donations from coal companies. Use of these revenues is restricted to the construction, maintenance, and repair of public roadways and bridges on the CRTS. These funds are meant to supplement road funds expended for general repair and maintenance of roads and bridges within the CRTS.

As shown in Table 6, based mostly on data provided by state agencies, we estimate a total FY2009 contribution to the SRF for the repair and replacement of roads and bridges on the CRTS of $2.8 million.[14]

Table 6: Contribution to the State Road Fund for the CRTS

Source	Revenue
Per-ton hauling fee	$1,670,000
Overweight permit fees	$800,000
Company donations	$300,000
Total	**$2,770,000**

Source: Five cent-per-ton fee and permit fees: Covert and Quinlan (2010).
Coal company donations: WVDOH (2009b).

However, as will be discussed later in Section 3.1, the operation of heavier coal haul trucks results in greater damage to public roadways and bridges, thereby requiring more frequent and more expensive repairs to CRTS roads and bridges than would be required if coal trucks were limited to GVWs of less than 80,000 pounds. In effect, revenues generated by the operation of coal trucks on the CRTS fail to make up for the cost of repairing roads and bridges damaged by overweight trucks. This results in a public subsidy for the coal industry, as other road fund revenues must be expended that would otherwise be spent on other projects.

2.5.1 *Per-ton hauling fee*

West Virginia State Code requires WVPSC to collect from coal shippers, for the privilege of transporting coal on CRTS roads, a fee of five cents per ton of coal hauled over the road in excess of 88,000 pounds. This means that not every ton of coal hauled is subject to the fee; only the coal that pushes the GVW beyond the 88,000 pounds is subject to the fee. Revenues from the fee are deposited directly into the CRTRF.

Annual 2008 and 2009 data for total fee collections are available (Covert and Quinlan, 2010); however, monthly data are not. Therefore, to estimate a FY2009 value for the fee, we average the collections for the two years.

As a result, we estimate that total collections from the coal hauling fee amounted to approximately $1.7 million in FY2009. This corresponds to an average of 33.4 million tons that is subject to the fee.

[12] System expansion was codified in 2005 with House Bill 3089, through which new routes were added to the CRTS. The legislation also created the Coal Resource Transportation Designation Committee, which oversees the expansion of the CRTS outside the original ten counties.
[13] WV Code 17C-17A-3.
[14] This is less than the $3.46 million reported by the WVDOH for FY2009 (WVDOH, 2009b). The difference is in the amount of federal funds contributed to the CRTRF for certain projects.

2.5.2 *Overweight permit fees*

As noted, the legislation creating the CRTS regulatory structure set up a tiered permitting system with maximum haul weights based on vehicle type and number of axles (Table 7).

Table 7: Description of coal truck permit classes

Permit class	Vehicle type	Number of axles	Maximum allowable CRTS weight	With 5% tolerance	Permit fee
A	Single unit	1 steering, 2 in tandem	80,000	84,000	$100
B	Single unit	1 steering, 3 in tandem	90,000	94,500	$160
C	Tractor-semitrailer combo	5	110,000	116,500	$300
D	Tractor-semitrailer combo	6+	120,000	126,000	$500

Source: WV Code 17C-17A-4(b) and 17C-17-9a(b).

To estimate a FY2009 amount for revenues from overweight fees, we again take an average of collections for 2008 and 2009. Table 8 details the number of permits sold for each permit class, as well as total fees collected for each year.

Table 8: CRTS permits sold in 2008 and 2009

Class	2008	2009	Change
A	14	1	-13
B	254	220	-34
C	77	60	-17
D	1,472	1,628	156
Total permits	**1,817**	**1,909**	**92**
Fees collected	**$749,264**	**$858,211**	**$108,947**

Source: Covert and Quinlan (2010).

Taking an average of the total permit fees collected for 2008 and 2009, we estimate that the total revenue generated from the sale of overweigh coal haul permits was about $800,000 for FY2009.

It is notable that the total number of overweight hauling permits increased by 92 between 2008 and 2009. This is reflected in a decline of 64 Class A through C permits and an increase of 152 Class D permits, and therefore a net increase in the average weight hauled per truck over CRTS roads. This has substantial implications for both public safety and damage to the public roadways across which the coal is being hauled.

Lost jobs and revenues

Permitting coal trucks with GVWs of up to 120,000 pounds has negative consequences for jobs.

For instance, limiting all overweight coal trucks to 80,000 pounds would provide an additional 860 jobs in the transportation of coal by truck. This is because 80,000-pound trucks require approximately twice as many trips for hauling the same amount of coal as 120,000-pound trucks.

The lost jobs also result in foregone revenues for the state. Using the same methods for calculating taxes paid by direct coal industry employees in Section 5.1, we estimate that foregone revenues due to permitting overweight coal trucks amounted to approximately $4 million in FY2009.

2.5.3 *Donations from coal companies*

Revenues for the CRTRF are also generated through donations from coal companies. Between 2005 and 2009, coal companies donated a total of approximately $1.5 million (WVDOH, 2009b). This corresponds to an average annual donation of $300,000.

Therefore, we estimate that coal company donations to the CRTRF for FY2009 amounted to $300,000.

According to WVDOH, “It was anticipated that coal companies, faced with the need to greatly limit their loads to legally comply with weight restrictions imposed on structurally deficient bridges, would donate financial resources and materials to expedite the necessary repairs or replacement of these structures. While the WVDOH has received commitments from some companies, the level of activity has been less than anticipated” (WVDOH, 2009b, p. 5).

2.6 Summary

In total, we estimate that the coal industry directly contributed $304.5 million to the state GRF and approximately $2.8 million to the SRF in FY2009, for a total impact on the state budget of $307.3 million.

Of all the figures estimated in this report, direct coal industry revenues are likely the most accurate. In some cases such as the severance tax, direct data are available. In other cases such as sales and use taxes on coal company purchases, we used a recently completed study—which itself was based on data from state government agencies (BBER and CBER, 2010)—as a foundation for calculating our own estimates.

However, while the single-year, FY2009 estimated revenues from the coal industry are relatively accurate, they should not be taken as a prediction of the future. In fact, even the official state government budget recognizes the uncertainty with future severance tax collections and future CNIT/business franchise tax collections. These two categories of revenues represented a full 97% of direct coal industry revenues in FY2009.

The future direction of these taxes will be determined largely by coal production and coal prices. Recent projections suggest that coal production will decline significantly in the next decades (McIlmoil and Hansen, 2010). To preserve the revenue streams currently provided by the direct coal industry during these uncertain times, it will be necessary to ensure that funds collected are spent efficiently. For example, the coal severance tax could have generated an additional $104.2 million in general revenues for FY2009 if a portion was not directed to pay off the Worker's Compensation Debt Reduction Fund, and if the thin-seam tax credit had not provided a reduced severance tax rate.

State policy makers will be faced with difficult choices in order to manage the expected uncertainty—and to cushion the expected declines—in these revenue streams as coal production decreases. Therefore, a full accounting of the costs related to the coal industry is also important, not only for gauging the overall net impact of the coal industry on the state budget in a given fiscal year, but also for comparing to future revenue projections in order to determine how state expenditures supporting and regulating the coal industry may react to, or be impacted by, any declines in revenue collected from the industry.

The next section discusses various ways in which state funds are spent as a result of coal industry activity. These represent a first look at the associated quantifiable costs attributable to coal.

3. DIRECT COAL INDUSTRY: ON-BUDGET EXPENDITURES

The West Virginia state budget includes numerous expenditures that exist only because of the state's coal industry. These expenditures include a wide range of activities and include, for example, environmental protection, clean-up, and restoration; oversight of mining activities; and coal haul road maintenance.

Some on-budget coal-related expenditures are paid for using GRF and SRF revenues, while others are paid for using federal funds, revenues from the Lottery Fund, or Special Revenue Funds. In this section, we focus on expenditures that are paid for with general funds and road funds. These two sources of funding are the focus of both our revenue and expenditure calculations.[15]

Teasing out the precise amount of state coal-related expenditures from the GRF and SRF would be possible only with a detailed breakdown of the programs funded by each unit of government and the revenue sources for each program. Such a breakdown is not available. Therefore, our only option is to estimate coal-related expenditures using available information. While this method is rough for several agencies, it is a valuable first step toward including not just revenues, but expenditures as well when discussing the impact of the coal industry in West Virginia. Our estimates can—and should—be refined in future analyses.

In some cases, entire units of state government exist only because the coal industry exists; in these cases, on-budget expenditures can be calculated relatively easily. For example, the Division of Mining and Reclamation within the Department of Environmental Protection, except for a small amount of effort devoted to quarries, is entirely focused on the coal industry.

In other cases, however, a unit of government might spend only part of its funds on the coal industry, but agency expenditure data is not organized in such a way as to make it easy to separate out this portion, nor do departmental accounts provide industry-specific expenditures. The most striking example is the Division of Highways' expenditures to maintain coal haul roads, which are not detailed separately in government documents. However, as presented in Section 3.1, annual repair to roads damaged by overweight coal trucks are real and costly expenses to the state.

Our estimates are based on actual FY2009 expenditure data whenever possible, but these data are supplemented with data and information provided in agency annual reports, Web sites, Freedom of Information Act (FOIA) responses, and personal communications. With available data and information, we estimate a percentage of each division's GRF and SRF expenditures that are attributable to coal, and apply that percentage to produce a FY2009 coal-related expenditure.

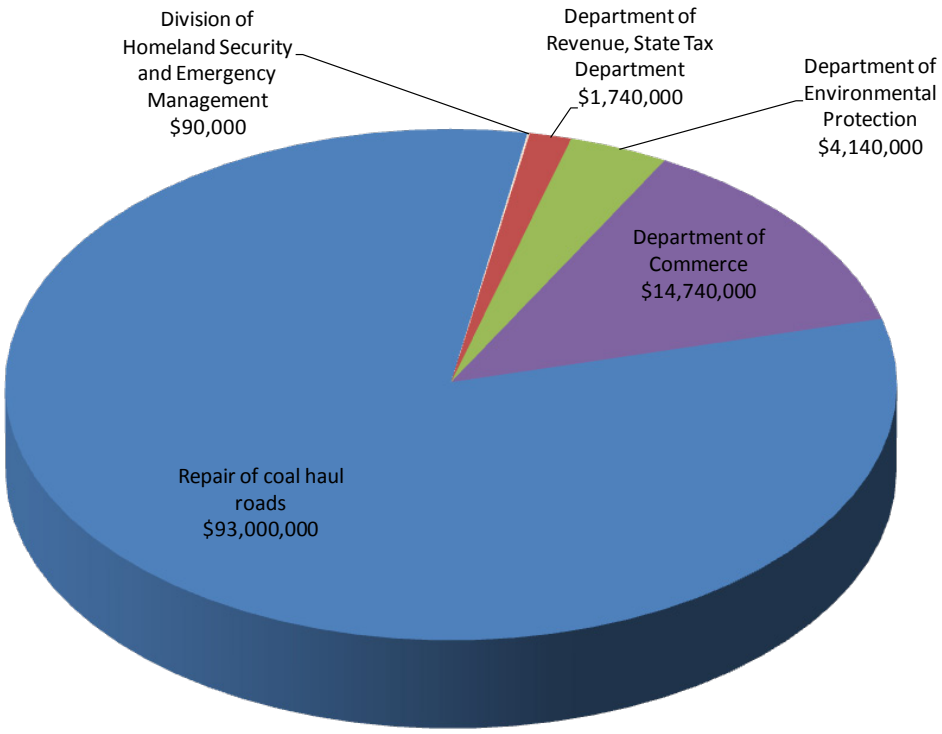
As shown in Figure 9, we estimate on-budget coal expenditures of $20.7 million, not including the cost of coal haul trucks on roads and bridges. The most significant on-budget expenditures, other than haul road expenditures, are within the Departments of Commerce and Environmental Protection.

The state expenditure for replacing, repairing, and maintaining roads and bridges damaged by the operation of overweight coal trucks is estimated using an entirely different method, described in Section 3.1.4. Additional on-budget expenditures related to repairing damages to the entire coal haul road system—including roads both within and outside of the CRTS—amount to $93.0 million, far exceeding total expenditures for other on-budget items.

In total, we estimate that on-budget expenditures attributable to the coal industry amounted to approximately $113.7 million for FY2009.

[15] We discuss some key Special Revenue Funds that are related to coal; however, these figures are not included in our tally of revenues and expenditures.

Figure 9: On-budget direct coal industry expenditures



Source: Estimated in this report.

3.1 Repair of coal haul roads

3.1.1 *Introduction*

WVDOH reports that the total road system in West Virginia is comprised of 35,968 miles of roads identified by route numbers. Of these, interstate roads account for 468 miles, US routes for 1,807 miles, and West Virginia routes for 3,638 miles. As is expected given the rural nature of most of the state, county routes account for the greatest portion: 28,881 miles or approximately 80% of the total. The "Other" category accounts for the remainder of the system at 1,174 miles (WVDOH, 2009a).

Of the total system, the state is solely responsible for approximately 25,908 miles of public roadways, meaning that these roadways are not eligible for federal funding. Federal funds are available for the remaining 10,060 miles, of which about 1,740 are solely funded by the federal government, and 8,320 are funded by an 80%/20% federal/state share.

The construction, replacement, repair, and maintenance of West Virginia roads and bridges, administrative operations, and the servicing of outstanding transportation-related debt are all funded through the SRF. Total road fund expenditures in FY2009 amounted to $1.21 billion, while total revenues amounted to $1.13 billion, resulting in a net loss of approximately $80 million from the annual remaining balance. This extra expenditure was fully funded by the state.

Using data provided in the state budget report (WVSBO, 2010a), we calculate that state-generated revenues for the SRF from transportation-related taxes and fees amounted to $667 million for FY2009, or about 60% of total road fund revenues, while SRF expenditures funded by state-generated revenues amounted to $748 million, for 62% of total expenditures.

As noted in Section 2.5, for supporting the maintenance, repair, and replacement of roads and bridges making up the CRTS, the coal industry contributed an estimated $2.8 million in FY2009. This alone accounted for only 0.4% of total road fund revenues. As is estimated in a later section, however, the industry and those directly employed in the industry contribute an estimated $39 million in transportation-related taxes and fees, bringing the total direct contribution to the SRF from the coal industry to $41.8 million. This accounted for 6% of total road fund revenues in FY2009.

However, the hauling of coal by truck within and outside of the CRTS causes additional damage to the roads and bridges over which the coal is hauled, resulting in the need for more frequent and more expensive expenditures to maintain, repair, and replace the impacted structures. This section estimates the additional cost to the state in FY2009 resulting from the operation of overweight coal trucks on West Virginia's roads and bridges.

3.1.2 *Trends and projections for state road funds*

Road funds are dependent upon the revenues generated from the purchase and use of motor fuel, motor vehicle taxes, a privilege tax on consumer purchases of motor vehicles, and federal funding. WVDOH reports that high motor fuel prices and a faltering economy resulted in a decline in motor fuel consumption and revenues through FY2009 as motorists drove fewer miles and began purchasing more fuel-efficient vehicles. These revenues account for nearly 60% of total road fund revenues. WVDOH projects that motor fuel tax revenues will increase to $460 million once the freeze on the variable rate portion[16] of the tax is removed, but will then trend back downward to $391 million by FY2014. WVDOH further projects other sources of road fund revenues to be more or less unchanged over this time period (WVDOH, 2009a).

Due primarily to rising costs for materials such as asphalt (of which petroleum is a required component) and salt,[17] road expenditures have been increasing, and "unless the State Road Fund is able to substantially increase its revenues, the long-term forecast is for reduced construction and maintenance, accompanied by a decline in the condition of the state's highway infrastructure and a negative impact on the overall economic condition of the state" (WVDOH, 2009a, p. 4). WVDOH concludes that, lacking a change in the structure of transportation-related taxes and fees, any continued decline in fuel consumption and/or rise in cost of construction and maintenance will continue to negatively impact the SRF.

The transportation of coal by truck places an extra burden on the SRF. Overweight coal trucks impose added strain to the state's roads and bridges over which the coal is hauled, and the amount of strain increases proportionately with increases in GVW. This problem is exacerbated by the fact that the CRTS has been expanded at the same time that the number of Class D permits (permitted weight of up to 126,000 pounds with a 5% tolerance) has been increasing. This means that more of the state's roads are being impacted by increasingly heavier weight loads. As a result, depreciation of the road infrastructure is happening at a faster rate than new construction and repair.

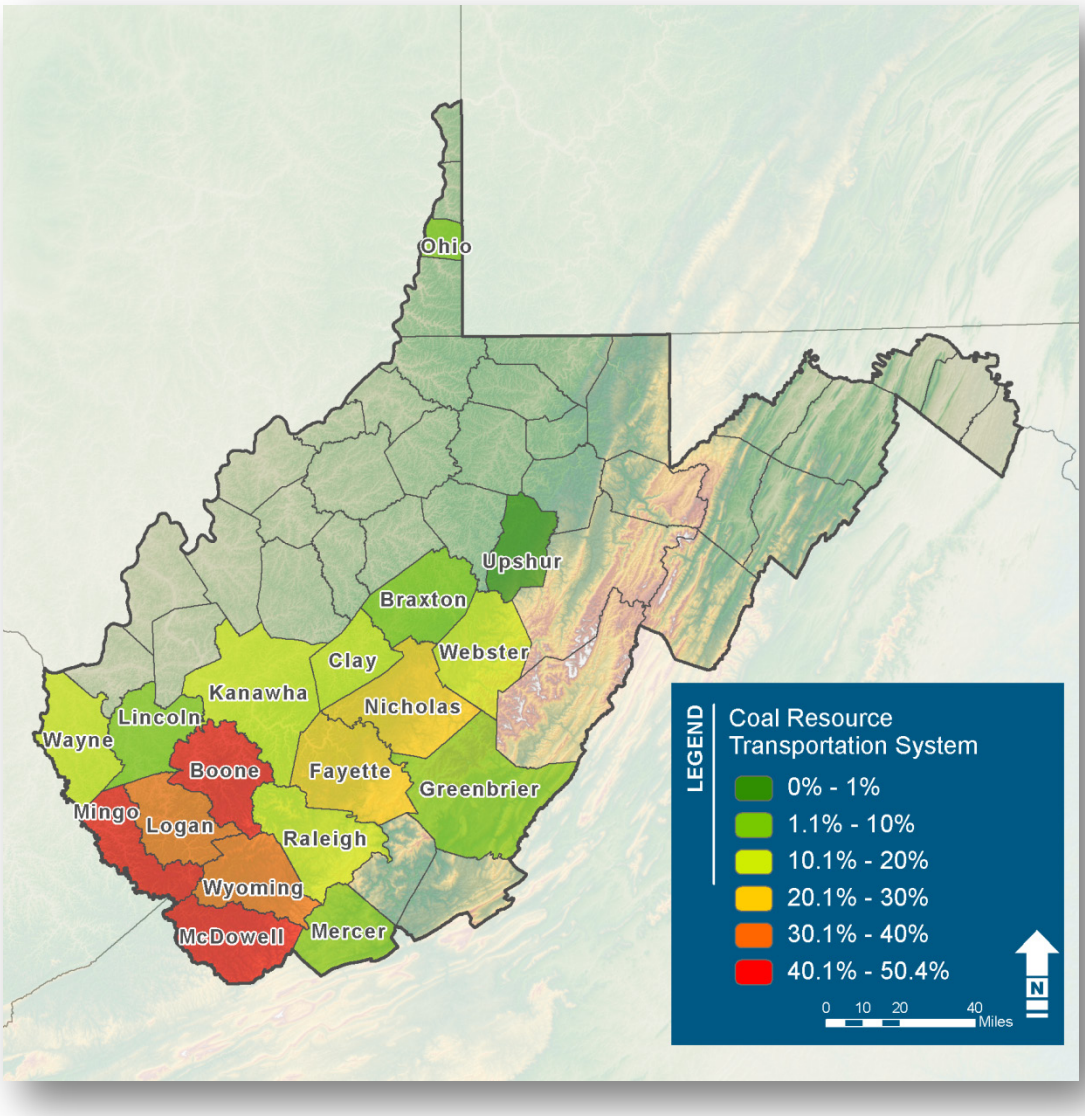
For the CRTS specifically, the additional and increasing cost to roads and bridges resulting from the operation of overweight coal trucks is not being covered by the fees collected from the operators, nor from the general transportation taxes and fees paid by the industry and its employees. This was reiterated by WVDOH in 2009, when the agency stated that "The financial resources needed for highway and bridge maintenance on the CRTS exceeds the amount of funds available for those purposes…" and that "The major concern of the WVDOH continues to be the collection and dedication of sufficient revenues to enable the maintenance and repair of the growing number of CRTS roads and bridges" (WVDOH, 2009b, p. 5).

[16] The motor fuel excise/motor carrier tax is comprised of a fixed rate of 20.5 cents per gallon, and a variable rate of 11.7 cents per gallon in 2009. The variable rate fluctuates according to changes in gas prices. Increases in the average price of gas resulted in the state freezing the variable rate in 2008, in order to control gas prices for West Virginia motorists. This freeze was set to expire in January 2010 (WVDOT, 2009a). [This begs the question of whether the freeze actually expired in January 2010]

[17] Salt is a major road expenditure in West Virginia, used primarily in the winter for melting snow and ice.

Due to the increasing cost of materials and increased damage from the coal trucks, it is expected that the negative impact of the coal industry on the SRF will continue to grow, thereby requiring greater financial resources to make up for the impact over time. In addition, estimates for existing and yet-unfunded needs for repair and replacement on the CRTS highlight the accumulated legacy costs from the historical operation of overweight coal trucks on West Virginia's roads. Taking these into consideration, any further accumulation of unfunded costs for repairing and replacing roads and bridges on the CRTS will negatively impact the SRF into the future, and will, through reduced construction and maintenance and a resulting decline in state and local infrastructure, have a negative overall impact on the economic condition of the state and of the coal-producing counties through which the coal is hauled. Figure 10 provides an indication of the extent to which the roads within each CRTS county are being impacted by overweight coal trucks.

Figure 10: Percent of total county mileage residing within the Coal Resource Transportation System, 2009



Source: Total miles by county: WVDOH (2010c). CRTS miles by county: WVDOH (2010b).

3.1.3 *The impact of coal trucks on state infrastructure*

3.1.3.1 The total coal haul road system

WVDOH reports total CRTS mileage for 2009 amounted to 2,142 miles (WVDOH, 2010b). However, coal hauled by truck across the CRTS accounts for only 60% of all coal hauled by truck across West Virginia, with the remainder being hauled on roads with a maximum GVW of 80,000 pounds.[18] Since the requirement for shippers and receivers not operating on the CRTS to report haul weights was removed, WVPSC does not have data on the roads over which non-CRTS coal is hauled. Therefore, the true current extent of the complete coal haul road system is unknown.

In order to estimate the total coal haul road system, we begin by using WVPSC data for CRTS miles per county and EIA data for tons of coal hauled by truck in southern West Virginia, in order to calculate the tons of coal hauled per mile on the CRTS in southern West Virginia, which results in 9,574 tons per mile (Covert and Quinlan, 2010; EIA, 2009b and 2010d). Because 99.6% of all coal hauled in southern West Virginia is hauled on the CRTS, this basically represents the tons hauled per mile for all coal haul roads in southern counties.

We then divide the total tons of coal hauled by truck in northern West Virginia by the tons-per-mile factor for southern West Virginia,[19] to estimate the total coal haul road mileage for northern West Virginia. This results in an estimated 925 miles of coal haul road mileage, of which 106 miles are on CRTS roads. The remainder, 819 miles, represents our estimate of non-CRTS coal haul roads in northern West Virginia. Since the southern coal haul road system is basically comprised of the CRTS (99.6%), the 819 miles represents our estimate for total non-CRTS coal haul roads for the whole state.

Therefore, adding the 819 miles of estimated non-CRTS coal haul roads to the 2,142 CRTS miles, we estimate a total coal haul road system of 2,961 miles. This amounts to approximately 8% of the total state road system, and 11% of the roads that are maintained solely with state funds.

3.1.3.2 Reasons for excess and increasing damage to roads and bridges

As stated by WVDOH in 2002, "It is known that costly rehabilitation and replacement (of roads and bridges) will be required much earlier than anticipated where heavier loads are imposed on a regular basis" (WVDOH, 2002, p. 2). The strain on roadways can be measured by looking at equivalent single-axle loadings, or ESALs. At a GVW of 80,000 pounds—which is the limit for trucks not operating with a CRTS permit—a truck produces 1.24 ESALs. However, at a GVW of 120,000 pounds (the maximum weight for a Class D permit), it produces 6.87 ESALs (WVDOH, 2002).

In other words, the strain on roads resulting from a truck carrying 120,000 pounds is 454% greater than that from a truck carrying 80,000 pounds.

The impact of consolidating coal into heavier trucks is somewhat offset by the resulting decrease in the number of trips required to haul the same amount of coal. However, the reduced number of trips falls short of offsetting the impact. The reason is that, given an estimated base weight of a truck of 35,000 pounds, the lighter 80,000 pound truck can carry 45,000 pounds per load, while the heavier truck can carry 85,000 pounds per load. This means that the lighter truck requires approximately twice as many trips in order to haul the same amount of coal as the heavier truck, thereby reducing the number of trips by 50%. By comparison, as noted, the strain on the roads from the heavier truck is 4.5 times greater than that of the lighter truck, so there is a net negative impact on the roads from allowing coal trucks to operate at 120,000 pounds.

[18] We calculate this estimate using the data from WVMSHT (2010), "Summary of Production Method and Shipment," on coal hauled by truck and separated by northern and southern West Virginia, which gives us a "percent south" for coal hauled by truck—63%. We then calculate a percentage of CRTS mileage existing in the southern counties—95% (WVDOH, 2010b). Multiplying the two percentages provides an estimate of the percent of total coal hauled by truck in West Virginia that was hauled on the CRTS.

[19] This estimate assumes that the tons-hauled-per-mile is uniform across all roads over which coal is hauled.

As shown in Table 9, the number of CRTS permits issued on an annual basis since the start of the program has increased by nearly 200. Of greater importance in considering impacts to roads and bridges is that that the percent of total permits issued as Class D permits has risen by 14% in only four years, with Class D permits now accounting for 85% of the total. This corresponds to an increase of 410 annual Class D permits over 2005 levels (See Table 7).

Table 9: Annual issuance of CRTS permits for overweight coal trucks, by weight class

Class	2005	2006	2007	2008	2009
A	52	24	14	14	1
B	244	278	255	254	220
C	200	183	109	77	60
D	1,218	1,366	1,452	1,472	1,628
Total	**1,714**	**1,851**	**1,830**	**1,817**	**1,909**
Percent Class D	**71%**	**74%**	**79%**	**81%**	**85%**

Source: Covert and Quinlan (2010).

Therefore, not only is the CRTS system expanding—with more miles being added periodically than removed—but also the number and average maximum weight of the trucks operating on the system have grown substantially over the five years since the program was initiated. This is leading to the rapidly increasing strain on West Virginia's coal haul roads, and, according to the WVDOH, "if a greater amount of ESAL's are applied to a (properly constructed) roadway, the pavement simply deteriorates at an accelerated rate" (WVDOH, 2002, p. 9).

Further, the majority of pavement overlays conducted in 2009 were 1.5 inch overlays (Maner, 2010). This is considered a thin overlay, and thinner pavements are much more vulnerable to traffic loadings than thicker pavements (WVDOT, 2000).

The combination of the use of thinner overlays, a general increase in construction and maintenance costs, and the increased strain from heavier coal trucks provides cause for concern that the frequency at which coal haul roads and bridges will need to be repaired and replaced is going to increase, while the cost of the repairs will rise as well. The net impact is a progressively greater cost to the SRF and therefore the state and local economies.

3.1.4 *Estimating the impact of coal haul trucks on the state budget*

Given the growing, yet unfunded costs to repair and replace roads and bridges on the CRTS (See Section 7.2), it is useful to understand the annual impact on the SRF from the operation of overweight coal trucks. Only by generating such an estimate can the necessary policy changes be made in order to reduce the future impact on the state budget.

Since neither the state budget report nor WVDOT were able to provide a specific estimate of FY2009 expenditures for CRTS roads and other non-CRTS coal haul roads, we estimate those expenditures based on available data and information.

3.1.4.1 Estimate of expenditures on Coal Resource Transportation System roads

To estimate the FY2009 SRF expenditures for maintenance, repair, and replacement of CRTS roadways, we begin with WVDOH data for total state-maintained mileage (meaning mileage covered by state funds, even those receiving a federal match) (WVDOH, 2009a), and WVDOH data for CRTS mileage by county, in order to calculate an expenditure estimate based on the percent of total state miles within the CRTS system. This amounts to approximately 6%.

For calculating the estimated expenditures using a second method—against which to test the first method and calculate an average—we use WVDOH data for annual vehicle miles traveled (VMT) on state-maintained roads by county (which we assume to be roads designated as US Routes, West Virginia Routes, and all secondary routes) (WVDOT, 2010b). We then multiply that figure by the percent of total county mileage falling within the CRTS, in order to estimate a total VMT for CRTS roads. Finally, we generate a sum for total state-maintained VMT and for total CRTS VMT, and divide the CRTS result into the state result. This produces an estimate of 7%, which represents the percentage of total VMT on state-maintained (funded) roads that are driven on CRTS routes.

Finally, we apply each of these percentages to total SRF expenditures funded by state-sourced revenues, which amounted to $747.7 million in FY2009. Table 10 summarizes the results of the two methods and presents an average.

Table 10: Estimate of state expenditures for repairing damages to Coal Resource Transportation System roads

State	Method I		Method II		Estimated FY2009
expenditures	Percent mileage	Expenditure	Percent VMT	Expenditure	expenditure
$747,708,000	6%	$46,810,000	7%	$52,940,000	$49,870,000

Source: State expenditures from WVSBO (2010a). Percent mileage and percent VMT calculated in this report.

Based on this methodology, we estimate that total state expenditures for the maintenance, repair, and replacement of CRTS roads amounted to approximately $49.9 million for FY2009.[20]

3.1.4.2 Estimate of expenditures on Coal Resource Transportation System bridges

The total estimated cost of all work programmed on posted CRTS bridges as of 2009 was approximately $53.4 million for 22 bridges, resulting in an average estimated cost per bridge of $2.32 million. Therefore, the estimated cost of repairing or replacing a single bridge, on average, is just short of a single year's total collection of CRTS revenues. This provides an indication of how little the coal industry contributes to covering the additional damages from overweight coal trucks, because most bridges in West Virginia were not designed to carry the excessive loads experienced on the CRTS (WVDOH, 2002).

According to WVPSC, between five and ten CRTS bridges were repaired or replaced in 2009 (Carr, 2010). Therefore, we estimate that 7.5 bridges received state funds for repair or replacement for FY2009. We then multiply the average estimated cost per bridge of $2.32 million (WVDOH, 2009) by 7.5 bridges.

Based on this methodology, we estimate that total FY2009 SRF expenditures on CRTS bridges amounted to approximately $17.4 million.[21]

[20] This calculation assumes that all expenditures on CRTS roads are required due to damages resulting from the operation of overweight coal trucks. The overwhelming evidence, especially since such evidence is put forth by the WVDOH, suggests that the large majority of repair and replacement needs on CRTS roads are the result of overweight coal trucks. Further, the overwhelming legacy costs as presented in Section 7.2 (totaling over $4 billion) suggest, particularly given that the WVDOH is now having to prioritize projects based on greatest need (identified using factors for weight load) (WVDOH, 2008), that the annual and FY2009 costs for repairing CRTS haul roads are attributable to the operation of overweight coal trucks on CRTS roads.

[21] The same justification for attributing the road cost to overweight coal trucks applies to our estimate for bridges.

3.1.5 *Total estimate and extrapolation to whole coal haul road system*

Adding the estimated expenditures from the SRF for roads and bridges on the CRTS in FY2009, we estimate that total CRTS road fund expenditures amounted to $67.3 million. However, this does not provide a full accounting of state expenditures for all coal haul roads in West Virginia. In order to calculate the total impact to the state budget from the operation of coal haul trucks, we multiply the estimated CRTS expenditures by a ratio of our estimate for total coal haul road system mieage to CRTS mileage (2,961 divided by 2,142).[22]

Using this method, we estimate that the total impact to the West Virginia state budget resulting from coal haul trucks amounted to approximately $93.0 million in FY2009.

This amounts to about 12% of road fund expenditures from state-sourced funds in FY2009. Additionally, given that approximately 33 million tons of coal were transported by truck during FY2009, the average cost per ton amounted to an estimated $2.80. By comparison, total revenues from the collection of permit fees and the five-cents-per-ton hauling fee amounted to an average of eight cents per ton of coal hauled.

Crediting the industry for the $2.8 million in transportation-related taxes and fees it paid in FY2009, we estimate that the net impact of the industry on the SRF amounted to $90.2 million. To put the additional cost into perspective, this means that the cost to the average taxpayer (assuming that only the 757,000 residents employed in FY2009 paid taxes) of repairing coal haul roads amounted to nearly $120 per person in FY2009.

3.2 Department of Commerce

The Department of Commerce includes several units that, in whole or in part, are tied to the coal industry. **As summarized in Table 11, we estimate a total of approximately $14.7 million in coal-related general revenue expenditures in FY2009.** Estimates for each unit of government within the Department of Commerce are described below.

Table 11: Department of Commerce coal-related General Revenue Fund expenditures

Unit within Department of Commerce	Total	Percent coal	Estimated coal-related
Office of Miners' Health, Safety, and Training	$10,720,194	100%	$10,720,194
Geological and Economic Survey	$3,024,665	58%	$1,750,000
Division of Energy	$1,769,661	80%	$1,420,000
West Virginia Development Office	$12,118,910	5%	$610,000
Board of Coal Mine Health and Safety	$160,783	100%	$160,783
Coal Mine Safety and Technical Review Committee	$84,994	100%	$84,994
Total			**$14,740,000**

Source: Totals from WVSBO (2010b). Percent coal estimates from this report. Note: This table does not show GRF expenditures that were entirely unrelated to coal. Amounts are rounded to $10,000 when estimated.

3.2.1 *Office of Miners' Health, Safety, and Training*

This West Virginia Office of Miners' Health, Safety, and Training (WVMHST) executes and enforces the state's mine safety laws and rules. Of the $12.4 million spent by this office in FY2009, $10.7 million come from the GRF (WVSBO, 2010b). **We account for this entire GRF expenditure of $10.7 million as a coal-related expense.**

[22] This extrapolation assumes that non-CRTS coal trucks operate at GVW's of 80,000 pounds, which is the maximum weight allowance for non-CRTS roads. Additionally, according to the WVDOH (2002), trucks with GVWs of 80,000 pounds impose a strain on roads and bridges that is 24% higher than normal single-axle trucks. Therefore, although coal trucks on non-CRTS roads operate at lower weights than those on the CRTS—and, therefore, impose less strain—they still have a greater impact on the roads than regular trucks, and a far greater impact than passenger vehicles. While our method for estimating the total cost for repairing coal haul roads is imperfect—extrapolating based on relative mileage alone—it is the best method available given that actual mileage and repair data for non-CRTS roads is not recorded.

3.2.2 *West Virginia Geological and Economic Survey*

The West Virginia Geological and Economic Survey (WVGES) undertakes several efforts that are directly tied to the coal industry. For example, it plays an important role in mapping the state's coal reserves. This mapping effort is useful not just for the industry itself, but is also the backbone of the state's reserve coal taxation process. It conducts applied research on coal resources, tracks coal mining activities, and collects and maintains a repository of coal samples and cores.

While coal is not WVGES's sole focus—it also performs tasks related to oil and natural gas, for example—coal is a primary focus. For example, the FY2011 budget request describes WVGES's Applied Coal Resources program as follows: "Researches the quantity, quality, and location of West Virginia's coal resources and mined areas, and generates maps, reports, and electronically available data for utilization by the public, industrial, and government sectors for informed decision-making. Promptly responds to all requests for information and data from the general public, industry, and government regarding West Virginia coal and coal-related issues, and enhances public knowledge and awareness of West Virginia geology through outreach activities" (WVSBO, 2010b, p. 295). This program alone costs $847,359 and supports 10.76 full time equivalent employees. For comparison, the Applied Oil and Gas Resources program costs $620,502 and supports 8.98 employees (WVSBO, 2010b).

We estimate that 58% of WVGES's budget is coal-related. This is the percentage of the FY2011 budget request for applied research that is coal-related, but applied to WVGES as a whole with the assumption that this percentage roughly holds for WVGES's other programs: Management and Administration, General Geoscience, Geographic Information System, and Information Services.

Approximately 90%, or $3.0 million, of WVGES's $3.4 million in expenditures in FY2009 is generated via general funds (WVSBO, 2010b). **Applying the percent coal estimate of 58% to $3.0 million, we therefore estimate $1.75 million in coal-related GRF expenditures for FY2009 for the WVGES.**

3.2.3 *West Virginia Division of Energy*

The West Virginia Division of Energy (WVDOE) is "responsible for the formulation and implementation of fossil, renewable and energy efficiency initiatives designed to advance energy resource development opportunities and to provide energy services to businesses, communities and homeowners in West Virginia" (WVSBO, 2010b, p. 278). Of WVDOE's $2.6 million total expenditures, $1.8 million is provided by the GRF (WVSBO, 2010b).

WVDOE spends considerable funds on coal-related projects; however, its budget is not clearly delineated in terms of coal and non-coal projects. Its activities are separated into three categories: (1) fossil fuels, (2) renewable energy, and (3) energy efficiency (WVDOE, Undated).

The Office of Coalfield Community Development within WVDOE undertook several activities related to coal in 2009. These activities are broadly related to community impact statements (CISs), land use planning related to surface coal mines, and post-mining opportunities on surface mine sites. For example, the office reviewed about 30 permits and approved more than 200 exemptions from requirements to file CISs, worked with the West Virginia Department of Environmental Protection (WVDEP) to allow CISs to be completed online with surface mine applications, and digitized all CISs for dissemination to county development groups (WVDOE, Undated).

Regarding land use planning, the office contacted all surface mine counties to ensure they know about "the new legislation" and the assistance the office can provide to help them comply (WVDOE, Undated).

Regarding post-mining opportunities on surface mine sites, the office worked with other agencies regarding biomass resources and projects on surface mine sites, was awarded an Appalachian Regional Commission grant to help with renewable energy projects on surface mine sites, responded to requests for information regarding the development of wind and solar on surface mine sites, assisted Webster County and coal operators in evaluating development opportunities on new surface mine operations, worked with partners on an agriculture/entrepreneurial project involving honey bees on surface mine sites, and assisted TransGas with a coal-to-liquids project on a surface mine site (WVDOE, Undated).

Presentations at the 2009 Governor's Energy Summit, which WVDOE helped host, also suggest that coal is an important component of WVDOE's work. The summit featured presentations including "Coal is the Cornerstone of Our Energy Future," "West Virginia Coal: Our Natural Advantage," "Carbon Capture and Sequestration: Challenges and Costs for Coal," and "AEP CCS Project Update: Mountaineer Plant, New Haven, WV." Other presentations at the conference focused on hydropower, wind, natural gas, and other issues (WVDOE, Undated).

Finally, WVDOE reports on several coal-related investments: American Electric Power's (AEP's) new carbon capture and storage (CCS) project at the coal-fired Mountaineer Plant in New Haven, TransGas Development Systems' coal-to-liquids plant in Mingo County, a partnership with the National Research Center for Coal and Energy (NRCCE) at West Virginia University (WVU) to identify sites for coal-to-liquid plants and to assess carbon sequestration opportunities, the preparation of an energy use database, and the identification of biomass resources and meetings regarding coal blending opportunities (WVDOE, Undated).

In 2008, 98% of West Virginia's electricity was generated from coal (EIA, 2010e). This percentage, together with the myriad of coal-related activities detailed in WVDOE's Annual Development Plan, suggest that a large proportion of the division's expenditures are coal-related.

Overall, we estimate that 80% of WVDOE's budget is coal-related, and calculate that a total of $1.42 million of the division's GRF expenditures are coal-related expenditures.

3.2.4 *West Virginia Development Office*

The West Virginia Development Office's (WVDO's) mission is "to improve the quality of life for all West Virginians by strengthening our communities and expanding the state's economy to create more and better jobs" (WVSBO, 2010b, p. 298). WVDO is organized into five divisions, three of which—the Business and Industrial Development Division, the Research and Strategic Planning Group, and the International Development Division—are most relevant regarding coal-industry expenses.

The Business and Industrial Development Division works with energy-extractive industries such as the coal industry and promotes growth of the economy through business startups, retention and expansion of existing industry, and the attraction of new industry (WVDO, 2010).

The Research and Strategic Planning Group supports companies considering operations in West Virginia, as well as existing West Virginia companies, by providing research and analytical information (WVDO, 2010).

The International Development Division helps identify and develop international business opportunities that retain or create jobs in West Virginia. Among other things, the division operates trade offices in Japan and Germany and provides export assistance by participating in trade shows and organizing trade missions (WVDO, 2010; WorldTradeWV, 2010a). Of the trade missions and shows listed in a calendar for 2007, one of seven was explicitly coal-related (WorldTradeWV, 2010b).

WVDO spent $12.1 million from the GRF in FY2009 (WVSBO, 2010b). WVDO's efforts include a wide range of industries, including the coal industry. **As a lower bound, we estimate that 5% of its expenditures are coal-related, resulting in an estimated GRF expenditure of $610,000 attributable to coal.**

3.2.5 *Board of Coal Mine Health and Safety*

This board reviews coal mine accidents and fatalities and determines whether additional laws and regulations are necessary to prevent a reoccurrence of that type of accident, thereby protecting the workers of the coal industry. All funds for this board come from the GRF (WVSBO, 2010b), and the entire budget for this board is included as a coal-related expenditure. **For FY2009, this expenditure totaled $160,783.**

3.2.6 *Coal Mine Safety and Technical Review Committee*

This committee assists the Board of Coal Mine Health and Safety in the development of technical data relating to mine safety issues, including related mining technology. The committee is entirely funded from the GRF (WVSBO, 2010b). **Therefore, the entire $84,994 FY2009 expenditure is considered to be coal-related.**

3.3 Department of Environmental Protection

The mission of WVDEP is to "promote a healthy environment by using all available resources to protect and restore West Virginia's environment in concert with the needs of present and future generations" (WVSBO, 2010b, p. 350). The agency is comprised of five divisions and five boards. We consider only those with coal-related responsibilities (Table 12).

Of WVDEP's $151.6 million in FY2009 expenditures, only $7.7 million were from the GRF (WVSBO, 2010b). **An estimated $4.1 million of these general revenue funds were coal-related, as summarized in Table 12 and as described in further detail in the following sections.**

Table 12: Department of Environmental Protection coal-related General Revenue Fund expenditures

Unit within WVDEP	Total	Percent coal	Estimated coal-related
Division of Water and Waste Management	$3,662,725	73%	$2,670,000
Division of Mining and Reclamation	$976,182	98%	$960,000
Environmental Enforcement	$923,700	50%	$460,000
Environmental Quality Board	$131,235	33%	$40,000
Division of Air Quality	$276,854	5%	$10,000
Total			**$4,140,000**

Source: Totals from WVDEP (2010a). Percent coal estimates from this report. Note: This table does not show GRF expenditures that were entirely unrelated to coal. Amounts are rounded to $10,000 when estimated. The Division of Water and Waste Management total is for water-related activities only. The Division of Air Quality total is for non-Title V activities only.

3.3.1 *Division of Water and Waste Management*

The Division of Water and Waste Management (DWWM) engages in a wide variety of activities, which include National Pollutant Discharge Elimination System (NPDES) permit issuance, stream monitoring, total maximum daily load (TMDL) development, state water quality standard development, and nonpoint source program grants.

Many of DWWM's water program activities are coal-related. For example, the coal industry, including abandoned mine lands and bond forfeiture sites, is one of the primary pollution sources in streams that DWWM monitors, and active coal mines are integral parts of numerous TMDLs that DWWM develops. Evolving water quality standards are also often coal-related. For example, changes to the manganese and aluminum standards in recent years were directly related to the coal industry. Changes now under consideration for total dissolved solids and iron are also coal-related. Several nonpoint source program grants go toward funding remediation at abandoned coal mines.

DWWM issued, renewed, or modified a total of 779 NPDES permits in FY2009, of which 568 were associated with coal (Derrick, 2010; Shamblen, 2010). In other words, approximately 73% of these permits were associated with coal. Given that a substantial portion of DWWM's other activities are also coal-related, we apply the percent of NPDES permits related to coal to DWWM's FY2009 GRF expenditures in order to estimate the division's expenditures on the coal industry. **Based on this method, we estimate that of the $3,662,725 in general revenue funds spent by DWWM in FY2009, approximately $2,670,000 was spent on the coal industry.**

3.3.2 *Division of Mining and Reclamation*

The mission of the Division of Mining and Reclamation (DMR) is "…to regulate the mining industry in accordance with federal and state law. Activities include issuing and renewing permits for mineral extraction sites and related facilities, inspecting facilities for compliance, monitoring water quality, tracking ownership and control, and issuing and assessing violations" (WVDEP, 2010b).

DMR primarily prepares two kinds of permits for coal mines: mining permits under the Surface Mining Control and Reclamation Act, and National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act. DMR handles permit applications, modifications, renewals, bonding, and other activities. For the purpose of estimating DMR's coal-related expenditures of general revenues, we focus only on their responsibilities related to mining permits.

In addition to coal mines, DMR also devotes resources toward quarry permits. However, the number of quarries in West Virginia is very small compared with the number of coal mines. In FY2008, the most recent year for which WVDEP has issued an annual report, DMR issued 58 permits for coal mines and one permit for a quarry (WVDEP, Undated). While DMR performs a wide range of other activities in addition to permit issuances, we estimate, based on the proportion of total DMR permits issued for coal mines, that DMR focuses about 98% of their effort on coal mines. **Based on this method, we estimate that of the $976,182 in general revenue funds spent by DMR in FY2009 (WVDEP, 2010a), approximately $960,000 was spent on the coal industry.**

3.3.3 *Environmental Enforcement*

Environmental Enforcement is housed within DWWM, but its GRF expenditures are tracked separately. This office promotes compliance with the Solid Waste Management Act, Water Pollution Control Act, Groundwater Protection Act, Hazardous Waste Management Act, Underground Storage Tank Act, and Dam Safety Act. Several of these acts are, at least in part, coal-related. **We estimate that 50% of Environmental Enforcement's GRF expenditures in FY2009 of $923,700 (WVDEP, 2010a) are coal-related, amounting to an expenditure of approximately $460,000.**

3.3.4 *Environmental Quality Board*

The Environmental Quality Board (EQB) hears appeals regarding permitting and enforcement decisions made by DWWM (EQB, 2010a). These include cases brought by coal companies, as well as cases related to coal companies that are brought by people or organizations as opposed to the permittees.

EQB's recent docket includes 42 cases; of these, 14 cases, for 33% of the total, clearly involve a coal company (EQB, 2010b). The EQB's expenditures from general revenues in FY2009 amounted to $131,235 (WVSBO, 2010b). **We estimate that 33% of the EQB's general revenue expenditures, or about $40,000, are coal-related.**

3.3.5 *Division of Air Quality*

Within the Division of Air Quality (DAQ), only non-Title V programs spent general revenue funds in FY2009. DAQ implements numerous programs, some of which are coal-related. For example, DAQ's air monitoring program helps assess compliance with National Ambient Air Quality Standards, and air pollutants emitted from coal mines and coal transportation are related to compliance with these standards. DAQ's Compliance and Enforcement Section performs inspections and investigates citizen complaints on a variety of air pollution sources. Citizen complaints may involve dust, which can be an issue at coal mines.

We conservatively estimate that 5% of the DAQ's $276,854 in GRF expenditures are related to the coal industry, amounting to approximately $10,000.

3.4 Department of Revenue, State Tax Department

The West Virginia Department of Revenue, State Tax Department (WVTD) administers West Virginia's tax laws and collects tax revenue for the state. The state relies on a wide variety of taxes; major coal-related taxes include coal severance, property, CNIT, and business franchise taxes. Estimates of the revenues generated by these taxes are presented in Section 2.

In FY2009, the WVTD spent $22.3 million in general revenue funds to calculate, collect, and enforce these taxes (WVSBO, 2010b). We estimate the proportion of these expenditures that are coal-related by applying the percentage of total FY2009 state revenues generated by the coal industry: 8% (See Section 2). **Applying this percentage generates an estimate that $1.7 million of WVTD's GRF expenditures are coal-related.**

3.5 Division of Homeland Security and Emergency Management

The Division of Homeland Security and Emergency Management manages a call center that handles the Mine and Industrial Accident Rapid Response program as well as five other programs including, for example, the arson hotline and the WVDEP spill line. The call center's expenditures totaled $558,154 in FY2009, all from general revenues (West Virginia Division of Homeland Security and Emergency Management, 2010). **We estimate the coal-related expenditures as one-sixth of the total, or about $90,000.**

3.6 Summary

Regulation of and support for the coal industry, combined with repairing roads and bridges damaged by overweight coal haul trucks, cost the state an estimated $113.7 million in FY2009. Of this total, $93 million was expended from the SRF and $20.7 million from the GRF.

Of the on-budget expenditures, those from the Department of Commerce are most substantial, amounting to an estimated $14.7 million in FY2009. This is because there are several units within the Department with significant coal-related expenditures. WVDEP also expends significant financial resources for overseeing and regulating the coal industry. These expenditures would be greater with stricter enforcement of the industry, but stricter enforcement costs could help reduce future expenditures for reclamation and water treatment.

The greatest on-budget expenditure is related to making up for damages to state roads and bridges resulting from the operation of overweight coal trucks. As noted by WVDOH, "It is apparent that …the coal industry (does not pay) the full cost for road user benefits they are provided" (WVDOH, 2002). These costs amounted to an estimated $93.0 million in FY2009, while direct revenues associated with the transportation of coal amounted to only $2.8 million. More importantly, however, is the fact that there are billions of dollars of additional repairs and replacements needed on coal haul roads in order to ensure the safety and stability of the infrastructure.

Table 13: Estimated net direct impact of the coal industry on the state budget

Item	General Revenue Fund	State Road Fund	Total
Direct industry revenues	$304,510,000	$2,770,000	$307,280,000
On-budget expenditures	($20,710,000)	($93,000,000)	($113,710,000)
Estimated net impact	**$283,800,000**	**($90,230,000)**	**$193,570,000**

As shown in Table 13, the net impact of the direct coal industry on the state budget amounted to an estimated benefit of $193.6 million for FY2009. This estimate considers only the direct revenues and on-budget expenditures attributable to coal. The estimated net impact is comprised of a net benefit to the GRF of $283.8 million and a net cost to the SRF of $90.2 million.

These numbers are rough estimates; however, in considering the revenues generated by an industry, it is important to also consider the costs, as we have done in this section. These numbers can be refined in the future, and they provide a starting point for comparing revenues versus expenditures.

The on-budget expenditures are not the only expenditures from the state budget that go toward supporting the coal industry, however. The state also loses potential revenue through the provision of certain tax credits and exemptions that are made available to the coal industry; these off-budget expenditures are discussed in the following section

4. DIRECT COAL INDUSTRY: OFF-BUDGET EXPENDITURES

Each year, the state loses over a billion dollars through off-budget spending through preferential provisions in state tax law called "tax expenditures," which includes exemptions, deductions, and credits (WVTD, 2010b).[23]

Tax expenditures have the same fiscal impact as direct on-budget government expenditures. They both result in a loss of tax revenue to the state government, thereby reducing the funds available for other government programs and services. Whether the state appropriates $1 million to fund a program (on-budget expenditure) or authorizes $1 million in tax credits (off-budget expenditure), it must either spend $1 million less or collect $1 million more in taxes to make up the difference. This "spending through the tax system" is also similar to direct spending in that they are both tools lawmakers devise to achieve certain policy objectives, including supporting coal production.

WVTD is required to publish an annual *Tax Expenditure Study* listing the state's expenditures on major taxes. The three most recent reports were released in 2010, 2009, and 2008 (WVTD, 2010b; 2009a; 2008a). These reports include the estimated cost (either per year or for a number of years) of each expenditure, when available. The studies do not provide company- or industry-specific information, nor do they provide a comprehensive one-year snapshot of tax expenditures.[24]

While we can assume that several tax expenditures in the study only apply to the coal industry (e.g., the thin-seam tax credit), most apply more broadly. Another shortcoming of the tax expenditure studies is the lack of consistency in reporting the values of the credits. For many exemptions, the values are noted as "Not Available," while values for other credits are described as "Cannot Be Disclosed." Given these limitations, it is difficult to discover the exact amount of tax expenditures in FY2009 related to the coal industry. However, we were able to obtain values for various exemptions for 2009 from the *Tax Expenditure Study* and from the Department of Revenue. These are summarized in Table 14. The two expenditures for which we were not able to obtain official coal-related estimates are those for the "Purchase for resale" and "Natural resource production" tax exemptions. Each of these is a significant expenditure.

Table 14: Off-budget tax expenditures supporting coal

Tax expenditure	Applicable taxes	Amount	Percent of total
Purchase for resale tax exemption	Sales and use taxes	$85,490,000	49%
Direct use tax exemption (natural resource production and reclamation)	Sales and use taxes	$82,480,000	47%
Residual tax credits	Coal severance tax, CNIT, BFT	$3,350,000	2%
Waste coal tax credit (refuse and gob piles)	Coal severance tax	$1,869,178	1%
Coal loading facilities credit	Coal severance tax, BFT	$600,000	< 1%
Annual credit	Coal severance tax	$50,000	<1%
Economic opportunity tax credit	CNIT, BFT, PIT	Not estimated	Not estimated
Thin-seam coal credit	Coal severance tax	Not included	Not included
Total		**$173,840,000**	**100%**

Note: Amounts are rounded to $10,000 when estimated. The total is also rounded because it includes specific amounts that are rounded. CNIT= corporate net income tax. BFT= business franchise tax. PIT= personal income tax.

[23] WV Code §11-10-5s(c) defines tax expenditures as "exclusions, deductions, tax preferences, credits and deferrals designed to encourage certain kinds of activities or to aid taxpayers in special circumstances."

[24] The studies are released in three rotating parts: (1) Expenditures for Consumers Sales and Service Tax and Use (WVTD, 2010b); (2) Expenditures for Special Business Taxes, Business License Taxes, Excise Taxes and Property Taxes (WVTD, 2009a); and (3) Expenditures for Corporation Net Income Tax, Business Franchise Tax and Personal Income Tax (WVTD, 2008a). As a result, it takes three years for a comprehensive report to be released.

The *Tax Expenditure Report* recognizes that programs funded through tax expenditures are, in effect, receiving priority funding over other programs (WVTD, 2009a). In other words, there are many reasons why tax exemptions, credits, and preferential tax rates are provided. These may include supporting small business, attracting new industry, incentivizing job creation generally, or supporting the public through suppressing costs for vital public services. In other words, the reported expenditure estimates do not take into account the positive economic and revenue benefits of providing tax exemptions and credits.

However, tax expenditures also "tend to reduce economic efficiency through promotion of some economic activities over others" (WVTD, 2009a, p. 14). Additionally, although tax expenditures are used to gain a competitive advantage over other states—for instance, over other coal-producing states—"the value of the expenditures should be minimized because their cost is distributed among other taxpayers" (WVTD, 2009a, p. 15).

Tax expenditures related to the coal industry are taken against the coal severance tax, CNIT and business franchise taxes, and sales and use taxes. Each of these revenue streams is discussed above in Section 2. This section estimates the value of the tax expenditures provided to the coal industry in West Virginia for each of these taxes.

For FY2009, we estimate that total off-budget expenditures supporting the West Virginia coal industry amounted to approximately $173.8 million (Table 14). These expenditures represent foregone revenues for the GRF.

4.1 Purchase for resale tax exemption

Sales of coal to most coal consumers are also not subject to the sales and use taxes (Tax Commissioner of West Virginia, Undated). This "purchase for resale" tax exemption applies to "purchases of tangible personal property or taxable services intended for resale or for use in performing taxable services when such property becomes a component part of the property upon which the services are performed and will be actually transferred to the purchaser" (Tax Commissioner of West Virginia, Undated, p. 48). Because coal is consumed in the process of generating electricity for resale to electricity consumers, this exemption applies to the purchase of coal by electric power generators. It also applies to the sale of coal for manufacturing uses.

To estimate the purchase for resale exemption provided to the coal industry for FY2009, we first calculate the production value of the coal distributed in-state for manufacturing and electricity generation for 2008 and 2009. To do so, we start by using distribution data representing in-state shipments of coal in these two years, separated into northern and southern West Virginia. We then calculate the value of shipments of that coal, by region and year, by multiplying the tons distributed by the respective regional and annual prices. Finally, we average the 2008 and 2009 data for each region to produce a regional production value for FY2009, and then we sum the totals for the two regions to estimate a total production value for all coal mined in West Virginia and shipped in-state.

This method results in a FY2009 in-state shipment and use of coal produced in West Virginia totaling 24.6 million tons, with a gross production value of approximately $1.4 billion (Table 15).

Table 15: Estimated value of coal produced and distributed in West Virginia

	Tons distributed in-state	Average price per ton	Gross production value
2008			
North	10,104,599	$43.95	$444,097,126
South	16,171,774	$65.80	$1,064,102,699
Subtotal	**26,276,373**		**$1,508,199,825**
2009			
North	9,784,273	$46.63	$456,240,650
South	13,208,321	$67.02	$885,221,694
Subtotal	**22,992,594**		**$1,341,462,344**
FY2009	**24,634,483**		**$1,424,831,085**

Source: Distribution data from EIA (2009b; 2010d); 2008 price data from EIA (2009e); 2009 prices are those as projected for Northern and Central Appalachia by EIA (2009f).

Finally, we apply the sales tax rate of 6% to the estimated gross production value of coal produced and distributed to consumers in West Virginia. **Based on this method, we estimate that the purchase for resale tax expenditure supporting the coal industry during FY2009 amounted to approximately $85.5 million.**

This is also considered a conservative estimate because the prices used in the calculation are mine mouth prices, and therefore do not reflect the value added from processing and transporting the coal.

4.2 Natural resource production direct use tax exemption

Direct use tax exemptions allow companies in various industries or involved in certain activities,[25] including those working in the production of coal, to be exempt from paying sales and use taxes on particular goods and services. Because the tax expenditure reports do not separately report these exemptions for the coal industry, we use available data and information to estimate their value. In total, direct use tax exemptions provided to all qualified businesses and industries amounted to $1.2 billion in 2009 (WVTD, 2010b).

In regards to the exemption for natural resource production, items exempt for producers of natural resources include "purchases for exploring, developing, severing, extracting, and loading for shipment any natural resource product for sale, profit, or commercial use. Reclamation, waste disposal or environmental activities are also included in the exemption" (WVTD, 2010b, p. 23). The exemptions are not applicable to "purchases whose use or consumption is only incidental or convenient to the natural resource production activity" (Tax Commissioner of West Virginia, Undated, p. 49), meaning, for example, purchases of office supplies or office equipment, because they are not directly associated with and necessary for the extraction of coal.

In order to estimate the direct use exemption for coal companies involved in coal production and related processes, we apply the percent of total state GDP attributable directly to the coal industry (7%), to the total direct use exemption for all applicable activities ($1.2 billion). **Using this method, we estimate that the total direct use tax exemption for the coal industry related to coal production and associated processes amounted to approximately $82.5 million in FY2009.**

[25] These include sales of services, machinery, supplies, and materials used or consumed in manufacturing, transportation, transmission, communication, production of natural resources, gas storage, generation or production or selling electric power, provision of public utility services, or the operation of a utility business; sales of tangible personal property and services directly used or consumed in the activity of research and development; purchases of services, machinery, supplies, or materials used or consumed in the construction, alteration, repair, or improvement of a new or existing building or structure by a contractor; and, purchases of services, computers, servers, building materials, and tangible personal property—except purchases of gasoline or fuel—to be installed into a building or facility or consumed in the contracted activity (WVTD, 2010b).

As this estimate is based on 2009 data, we report the result as being representative of the expenditure for FY2009. This is also a conservative estimate. By applying coal's percent share of total state GDP, the estimate assumes that all commercial and industrial activity in West Virginia purchases items that are exempt under the direct use exemption from the sales and use taxes. In doing so, it provides a minimum estimated expenditure for the coal industry. Were we to identify the specific industries for which the exemption applied, the number of applicable activities would diminish, and coal's share of applicable expenditures would increase. The result would be a higher estimate than what we have produced here.

4.3 Residual tax credits

In 2002, the Legislature terminated many tax credit programs. However, taxpayers that gained entitlement to multiple-year credit allocations before 2003 retained those entitlements. For example, the capital company credit can be carried forward for up to 15 years (WVTD, 2010c).Therefore, these residual tax credits continue to be generated. Some of the tax credits terminated in 2002 include the:

- capital company credit,
- venture capital credit,
- alternative-fuel motor vehicles credit,
- industrial expansion and revitalization credit,
- business investment and jobs expansion credit (super credit),
- research and development projects credit,
- value-added wood manufacturing operations credit,
- value-added agricultural products credit,
- value-added steel manufacturing operations credit,
- industrial facilities coal-based synthetic fuels credit,
- coal-based synthetic fuels credit,
- increased generation of electricity from coal tax credit, and
- coal coking facilities credit (WVTD, 2009b).

This is not an exhaustive list of expired and terminated credits. WVTD (2008a) estimates the total value of expired and terminated credits at $11.4 million per year. Because the tax expenditure studies do not separately report these credits by industry, we use available information to generate an estimate of the residual credits taken by the coal industry. Approximately $4 million in credits were applied to the coal severance tax alone (Muchow, 2010c).

Using a list provided by WVTD of the credits included in the $4 million, we subtract the values for coal loading facilities credit and the annual credit from the $4 million in order to estimate the value of the residual tax credits still being taken by coal companies.

This results in an estimated $3.4 million in residual tax credits taken by coal companies in 2008. We use this as an estimate of coal company residual tax credits in FY2009.

4.4 Waste coal tax credit (for coal produced from refuse or gob piles)

The rationale for this credit is to reduce the number of coal refuse and gob piles, which, in addition to being unsightly, can pollute streams. It is a reduced tax rate of 2.5% on the gross value of the coal produced. **The value of this reduction was approximately $1.9 million for FY2009 (Muchow, 2010d).**

4.5 Coal loading facilities credit

"The Coal Loading Facilities Credit exists as an incentive to encourage the construction and maintenance of coal loading facilities in West Virginia" (WVTD, 2009a, p. 55). A coal loading facility is any building or structure used to load coal and/or transfer coal from the facility to any means of rail or barge transportation. The cost of land can also be an eligible investment if it is solely used to transfer coal. The coal loading facilities credit also applies to devices, machinery, and equipment that are directly associated with and solely used for the loading of coal (Tax Commissioner of West Virginia, Undated, p. 49).

The credit is available for a maximum of 10% of the amount of the qualified investment and is to be applied at 1% per year over a ten-year period. The credit cannot reduce the taxpayer's tax liability by more than 50%. It is also subject to the determination of the useful life of the qualified investment. Any investment with a useful life of eight years or more is eligible for 100% of the maximum credit available. Investments with a useful life between six and eight years can be eligible for two-thirds of the maximum credit, and investments of less than six years, but more than four years, are eligible for one-third of the credit. **In 2006, the most recent year for which the WVTD reports this expenditure, the total expenditure for the coal loading facilities credit amounted to $600,000 (WVTD, 2009a).**

4.6 Annual credit

The state provides an annual credit of $41.67 per month for taxpayers subject to the severance tax. The amount of this credit cannot exceed $500 per year and only provides one exemption per company. The 2009 *Tax Expenditure Study* states that the total expenditure for this credit is $2.8 million (WVTD, 2009a). Because the severance tax applies not only to coal, but also to timber, natural gas, and oil, only a portion of this value is attributable to the coal mining industry. **According to data from WVTD, the value of the annual credit applied to the coal industry totaled approximately $50,000 for 2008 (WVTD, 2010b).**[26]

4.7 Economic opportunity tax credit

The economic opportunity tax credit allows new or expanding businesses—those that create 20 new full-time jobs of at least 140 hours per month—to receive a tax credit of up to 20% of their qualified investment over a ten-year period. Because the tax expenditure studies do not separately report this credit for the coal industry, we cannot estimate this credit at this time.

4.8 Thin-seam coal tax credit

The thin-seam coal tax credit provides coal companies with a reduced severance tax rate for thin-seam coal production in underground mines. Normally, severance taxes are based on 5% of the gross value of the coal produced (See Section 2.1). A severance tax rate of 2% is applied to coal extracted from seams between 37 and 45 inches thick. For even thinner seams, the severance tax rate is further reduced to 1%. The tax credit is presumably designed to offset the higher cost of mining thin-seams of coal. Data for 2009 were not yet available at the writing of this report, and there is no way to estimate the expenditure for 2009 without knowing the tons of coal produced that qualified as "thin-seam." In 2008, the total value of the thin-seam tax credit taken by coal companies was approximately $68.7 million (Muchow, 2010c).

However, as this is a credit against the coal severance tax, and since the value for coal severance tax revenues presented in Section 2.1 already reflects the foregone revenues associated with the thin-seam tax credit, for accounting purposes we present a value for the credit of $0. Doing so prevents us from double-counting the credit as a state expenditure supporting the coal industry. However, we reiterate that the thin-seam tax credit resulted in a foregone revenue for the state in the amount of $68.7 million in 2008.

[26] Because of the lack of data for 2009, we again use the 2008 value for this report given it is an official value rather than our own estimate.

Table 16: Total coal production applicable and total value for thin-seam coal tax credit, 2006-2008

	Total underground production	Total tons for which the credit applies	Percent production for which the credit applies	Estimated 2% tons	Estimated 1% tons	Total credit amount
2006	89,667,214	19,608,903	22%	13,564,735	6,044,168	$36,773,980
2007	90,002,628	24,028,284	27%	13,723,352	10,304,932	$36,709,544
2008	94,521,696	29,580,813	31%	22,905,689	6,675,124	$68,655,492

Source: Muchow (2010c).

As shown in Table 16, the percent of underground coal production for which the thin-seam tax credit applies rose by 9% in a span of only two years. In 2008, the thin-seam credit was applied to 31% of underground-mined coal. The increase is even more significant given that total underground coal production rose as well.

Overall, while total production increased by approximately 5 million tons between 2006 and 2008, the tons of coal for which the credit applies increased by approximately 10 million tons. While the strong increase in coal prices in 2008 likely played a factor, comparing data for 2006 and 2007 still shows a strong increase in the tons of coal for which the credit applies, while total production increased only slightly. This suggests, since the credit applies to a greater portion of total underground production, that the coal seams being mined are rapidly getting thinner. Should this trend continue, and if the price of underground coal remains high, severance tax collections on underground-mined coal are likely to decline to an even greater extent.

4.9 Summary

Detailed, recent information and data describing state tax expenditures for the coal industry are not readily available. The annual tax expenditure studies do not report expenditures from all taxes in each report; rather, each report examines only a limited set of taxes and the foregone revenues for each, with each set being re-examined three years later. This prevents a comprehensive and up-to-date review of annual tax expenditures. Further, the expenditure reports do not separate out the expenditures by industry, which makes it difficult to examine the effectiveness of each expenditure in achieving its intended purpose. Finally, and perhaps most importantly, the greatest of the tax expenditures on the coal industry—the natural resource production direct use exemption and the purchase for resale exemption—are not examined in any detail within the tax expenditure reports, but instead are packaged in a broad estimate of the expenditures for their respective categories. This makes estimating coal-related tax expenditures even more problematic.

It is important, however, to include off-budget expenditures in a true accounting of the state revenues and expenditures attributable to the coal industry. Using actual data provided by the Department of Revenue and our own estimates when required, we have estimated the total state tax expenditure in support of the coal industry for FY2009.

While the precise number is not necessarily known, we estimate that total off-budget expenditures from the GRF in support of the coal industry amounted to approximately $173.8 million for FY2009.

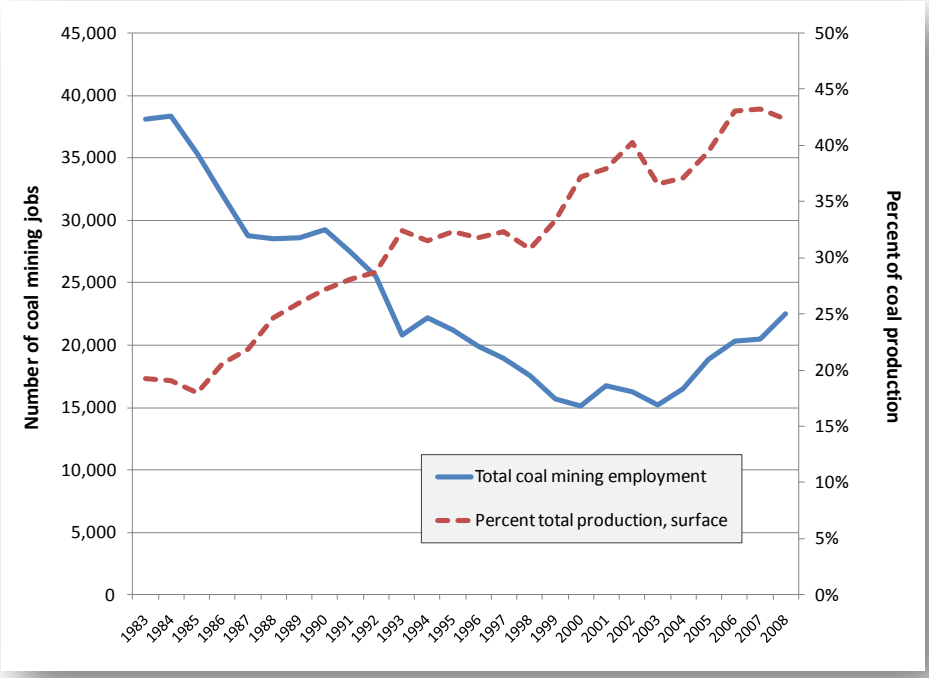
The scale of this estimate exceeds the scale of our estimated on-budget expenditures for the coal industry: $113.7 million. This is significant because the on-budget expenditures for supporting coal could be recouped through the collection of the foregone revenues detailed in this section. These tax expenditures suggest that coal production is a strong priority of the state. However, given the declining value of the industry to state and local economies, state priorities should be re-examined. One way to do so would be for WVTD to generate a more accurate assessment of the revenues lost due to preferential treatment of the coal industry, and to analyze trends for each individual credit in order to project the future impact on the state budget. The thin-seam coal tax credit is one such credit that requires strong consideration for its future impact.

5. DIRECT COAL EMPLOYMENT: REVENUES AND EXPENDITURES

Sections 2 through 4 estimate the direct revenues and expenditures for the coal industry itself. A total accounting of coal's impact also includes the revenues and expenditures related to coal employment. This section focuses on direct employment, and the following section focuses on indirect employment.

As shown in Figure 11, direct employment in the coal industry in West Virginia amounted to 22,493 workers in 2008. While employment generally rose since 2000, the current number of employees is significantly lower than the number employed in 1983. Coal mining employment is related to the total tons produced, and also to the mining method. Figure 11 illustrates how an increasing share of West Virginia's coal production comes from less labor-intensive surface mines.

Figure 11: Direct coal employment and percent of total production from surface mining, 1983-2008



Source: MSHA (2010).

There are numerous estimates available for direct employment in the coal industry in West Virginia. Estimates for 2008 range from 19,274 (WVMHST, 2010) to a high of 22,493 (MSHA, 2010). The only available estimate for 2009 reports an average monthly employment of 18,661 (WVMHST, 2010).

To estimate direct coal employment for the period representing FY2009, we compile monthly employment data reported by WVMHST for July 2008 through June 2009. This results in an average monthly coal employment of 19,795. However, employment numbers reported by WVMHST exclude a portion of direct employment, as they report only employment that occurs directly at mines. To adjust for the discrepancy, we calculate a ratio of coal industry employment reported for 2008 by the Bureau of Labor Statistics (BLS) (BLS, 2010a) to 2008 employment reported by WVHMST, and multiply that ratio by the average monthly employment for FY2009 reported by WVMHST. This results in an estimated FY2009 total direct employment of 21,012.

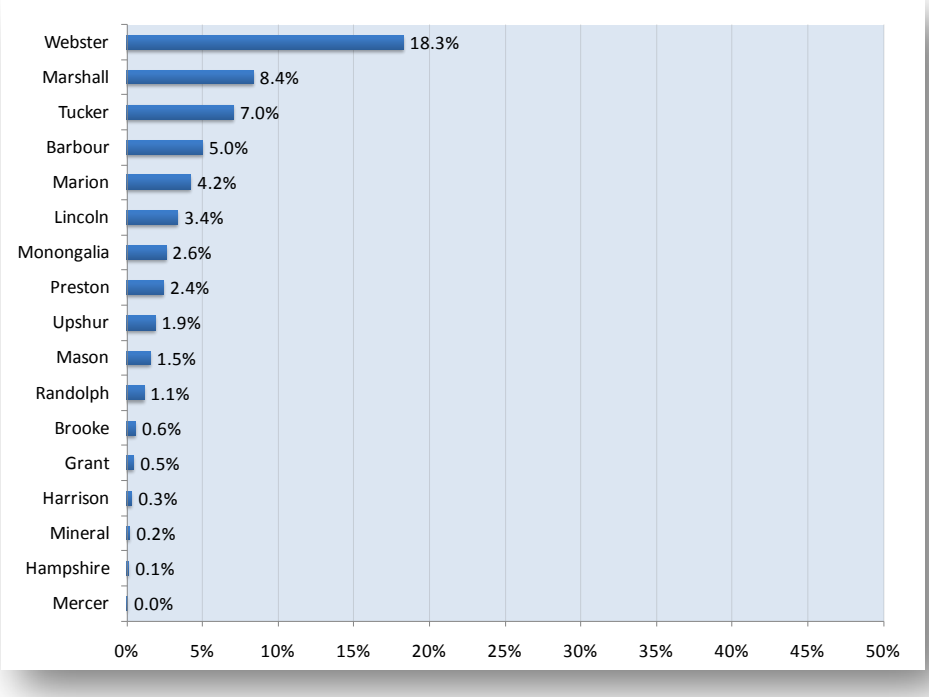
To estimate total employment across all sectors in West Virginia for FY2009, we take an average of 2008 and 2009 total employment data. This results in an estimated total state employment of 756,917 (WorkForce West Virginia, 2010a). Therefore, direct employment in the coal industry accounted for approximately 3% of total employment in West Virginia during FY2009. Results for each step of these calculations are shown in Table 17.

Table 17: Coal employment calculations

2008 employment from BLS	2008 employment from WVMHST	Adjustment ratio	FY2009 employment from WMHST	FY2009 direct coal jobs	Total employment	Percent of total employment
20,459	19,274	1.0615	19,795	21,012	756,917	3%

Jobs in the coal industry account for a greater portion of total employment in coal-producing counties, however. On average, the coal industry directly provides just under 5% of total employment in coal-producing counties across the state. For coal-producing counties in northern West Virginia, the coal industry provides anywhere between less than 0.1% of county employment in Mercer County to as much as 18% in Webster County (Figure 12) (MSHA, 2010; WorkForce West Virginia, 2010a).

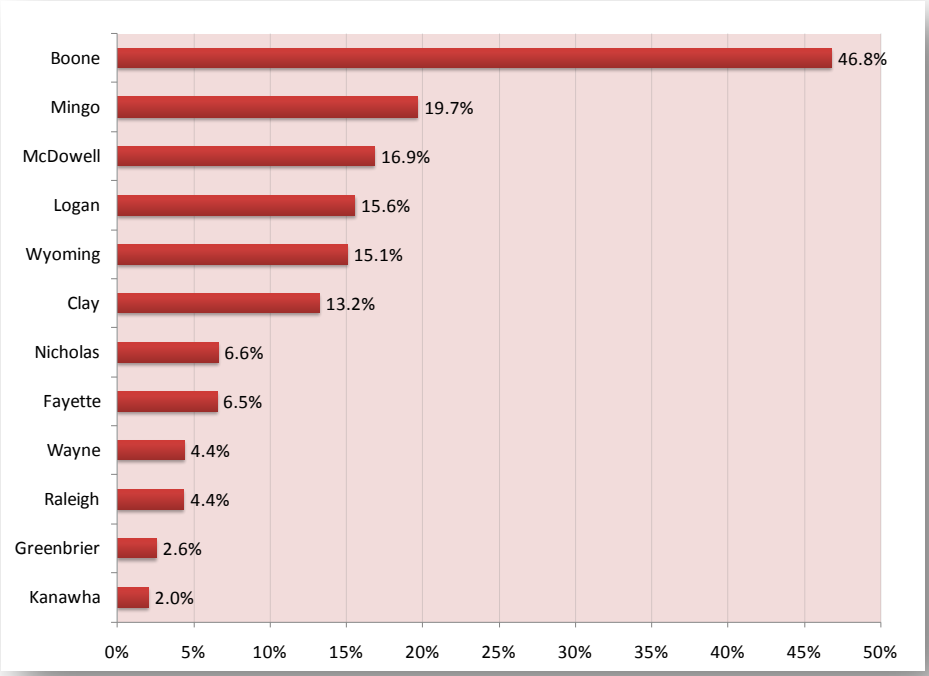
Figure 12: Direct coal employment as a share of total county employment for northern West Virginia coal-producing counties, 2008



Source: MSHA (2010) and WorkForce West Virginia (2010a).

Figure 13 presents similar data for coal-producing counties in southern West Virginia, where average county employment provided directly by the coal industry is somewhat higher than the state average at 7%. Of all counties, employment in Boone County is most dependent on the coal industry, as 47% of total employment is provided by coal. The next highest county, Mingo County, relies on the coal industry for about 20% of its total employment.

Figure 13: Direct coal employment as a share of total county employment for southern West Virginia coal-producing counties, 2008



Source: MSHA (2010) and WorkForce West Virginia (2010a).

In terms of total coal wages earned by direct employees of the coal industry, we use the average wage of $74,110 for employees of the coal industry, identified by North American Industry Classification System (NAICS) code 2121 and reported by BLS for 2008 (BLS, 2010a). Using this average wage, we estimate that the 21,012 direct employees of the West Virginia coal industry earned approximately $1.56 billion in total wages during FY2009.

The average annual wage for all citizens working in West Virginia in 2008 was $35,985 (Workforce West Virginia, 2010b). Therefore, the reported average wage for a coal miner would suggest that the average coal miner earns more than twice the statewide average annual wage. However, the average mining wage—just like the average wage for all West Virginians—is skewed by a small number of wage earners earning well above the average. These employees, represented by managers and high-level executives, are included in the accounting of direct coal industry employment, but it is inappropriate to include them in a calculation of the average coal miner wage. Further, it is important from a budget and economic policy perspective to understand that common representations of average wages of coal miners fail to account for the wage disparities among different categories of employment. Regardless, it remains true that coal mining provides one of the highest-paid employment opportunities for workers in certain counties.

Since data on employment and wages specific to actual coal miners are not available, we use our estimates of 21,012 direct employees and $1.56 billion in total wages to estimate state tax revenues and expenditures associated with direct employment in the West Virginia coal industry.

5.1 Revenues

Employees of the coal industry contribute tax revenues to both the GRF and the SRF. General revenues are generated from the payment of personal income tax, consumer sales and use taxes, indirect taxes and fees, and property tax. Transportation-related tax revenues benefit the SRF, and include the motor fuel excise tax and privilege tax on the purchase of automobiles.

This section estimates the tax revenues generated by those directly employed by the coal industry. Direct employment in the coal industry includes those working directly for the coal company in the mining, processing, and transportation of coal, as well as the office workers, managers, and executive company officers. Each of these jobs generates income for the employee, which then generates tax revenues that benefit the state budget. Precise data showing tax revenues paid by employees of the coal industry are not available, so for each tax, we used available data to generate our own estimates.

We estimate a total of approximately $125.5 million in direct employment-related revenues for coal industry employees in FY2009 (Table 18). Of that, approximately $108.3 million benefited the GRF, while the other $17.2 million was deposited into the SRF.

Table 18: Direct coal employment-related revenues

Revenue	Amount	Percent of revenues
To General Revenue Fund		
Personal income tax	$63,730,000	51%
Consumer sales and use taxes	$37,370,000	30%
Indirect taxes and fees	$6,820,000	5%
State property tax	$380,000	< 1%
Subtotal	**$108,300,000**	**86%**
To State Road Fund		
Motor/transportation taxes	$17,240,000	14%
Subtotal	**$17,240,000**	**14%**
Total	**$125,540,000**	**100%**

Amounts are rounded to $10,000 when estimated. The total is also rounded because it includes specific amounts that are rounded.

5.1.1 *Personal income tax*

Those earning an income in West Virginia pay taxes on that income, which are then deposited into the GRF. West Virginia has a "graduated, marginal income tax rate" (WVCBP, 2008) that begins at 3% for lower income levels and gradually increases to 6.5% as income levels rise. As discussed above, the average wage of $74,110 includes high-level management, and most direct coal industry employees actually make well below the average. Therefore, instead of using the effective tax rate of 4.63% for the $50,000 to $80,000 income range for calculating personal income taxes paid by direct coal employees, we use the average effective personal income tax rate for all West Virginia taxpayers of 4.26% (Muchow, 2010e). According to the Department of Revenue, the average AGI in West Virginia amounted to 96% of gross income in 2009 (Muchow, 2010e). Applying the 96% to total coal wages for FY2009, we find that the total AGI for direct coal employees was $1.49 billion.

Applying the effective tax rate of 4.26% to the estimated AGI for direct employees of the coal industry, we estimate total personal income tax revenues of $63.7 million for FY2009 (Table 19).

Table 19: Estimate of personal income tax revenues from direct coal employment

Total direct income (wages)	Percent adjusted gross income	Adjusted gross income	Effective tax rate	Estimated revenues
$1,557,200,000	96%	$1,494,910,000	4.26%	$63,730,000

Amounts are rounded to $10,000 when estimated.

Total personal income tax collections in West Virginia for FY2009 amounted to $1.56 billion, so contributions from direct coal employment amounted to approximately 4% of the total.

5.1.2 *Consumer sales and use taxes*

West Virginia coal miners generate sales and use taxes when they spend their income. In West Virginia, vendors must collect a tax from consumers at the rate of 6% of the price of the good or service. The tax base includes most retail sales except for automobiles, gasoline, prescription drugs, and purchases made with food stamps. Sales of food for home consumption are taxed at 3%.

The effective sales tax rate is not equal to 6% because employees do not spend all of their income on consumption. Therefore, to estimate total sales and use taxes paid by direct coal employees in FY2009, we use the effective tax rate for "general sales-individuals"[27] for the $43,000 to $69,000 income range as reported by the Institute on Taxation and Economic Policy (ITEP). We choose this range based on the assumption that the annual wage for the majority of direct coal employees is likely to fall within the range. The combined effective rate for this range, which reflects a range of average AGI, is 2.5% (ITEP, 2009).

Applying this effective rate to the total AGI estimated in the previous section, we estimate that consumer sales and use tax revenues attributable to direct coal industry employees amounted to approximately $37.4 million in FY2009. Total sales and use tax collections for FY2009 were $1.1 billion, so contributions from direct coal employment amounted to over 3% of the total.

5.1.3 *Transportation-related taxes*

Just as for personal income and sales and use taxes, those employed by the coal industry pay taxes and fees related to transportation. The mining and transportation of coal generates transportation revenues as well, beyond those generated for the CRTS and from permit fees for overweight coal trucks. In this section we estimate both components of transportation taxes and fees together. Transportation-related revenues are deposited into the SRF.

To calculate the coal industry and employment share of general vehicle and transportation taxes and fees, we follow the methodology used in MACED's report, *The Impact of Coal on the Kentucky State Budget* (Konty and Bailey, 2009). This methodology assumes that coal's total direct share of transportation revenues, both from industry activity and from taxes and fees paid by direct coal employees, is directly proportional to its share of total state employment.

The main state-generated revenues for the SRF are the motor fuels excise and motor carriers taxes, the automobile privilege tax, and motor vehicle registrations and licenses. These three revenues generated $621.1 million in state revenues for FY2009, and accounted for 55% of total road fund revenues (with federal funds accounting for 40%). Other state-generated revenues and transfers made up the remaining 5%.

Applying the percent of total employment directly employed by the coal industry (3%) to total transportation-related revenues from FY2009, we estimate that direct transportation revenues attributable to coal amounted to $17.2 million.

[27] We only use the "general sales-individuals" tax rate so as to avoid double-counting taxes paid by coal employees on beer, cigarettes, and gasoline, which are classified by ITEP under the "other sales and excise-individuals." We estimate these revenues in Sections 5.1.4 and 5.1.3.

5.1.4 *Indirect taxes and fees*

There are various other general revenues that residents pay or support indirectly. These include the liquor profit transfer, racing fees, beer tax and license fees, tobacco products tax, insurance tax, telecommunications tax, and video lottery transfers. Most of these taxes apply to businesses rather than individuals. We include them in our analysis because businesses are able to operate only as a result of the spending of income by residents, and they only choose to operate and pay various taxes and fees to the state based on the expectation of having a consumer base for their product sufficient to generate a profit. Therefore, we estimate the indirect contribution to these revenues that could be attributable to direct employees of the coal industry.

Because effective tax rates are not available for the taxes considered here, we apply the percent of total employment provided directly by the coal industry and apply that to the total state revenues from the various taxes for FY2009. We choose this method based on the assumption that all income earners spend, on average, the same amount on the goods being considered.[28] Additionally, our method assumes that the total taxes paid are equally attributable to purchases made by individuals from all income groups, and therefore that all West Virginia workers, on average, spend equal amounts on luxury goods such as beer and tobacco.

The total revenues generated for the state by the tax revenues considered here amounted to $245.8 million in FY2009 (WVSBO, 2010a), while direct coal industry employment accounted for 3% of total employment in West Virginia (Table 17). **Multiplying these together, we estimate that total indirect tax revenues attributable to direct coal industry employment amounted to approximately $6.8 million in FY2009.**

5.1.5 *Property tax*

In West Virginia, taxes are imposed on real and personal property, as well as on the transfer of property. Property taxes that apply directly to the coal industry are discussed in Section 2.4. Direct coal employees also pay property taxes on their homes, land, and vehicles. While most property taxes on real and personal property are received by county governments, the state does receive a small share. In FY2009, property taxes on real and personal property and on the transfer of property generated a total of $14.2 million for the state.

To estimate direct coal employment's share of those property taxes, we first subtract the direct industry state property tax revenues from the state total. The remaining revenues amount to approximately $13.8 million. We then use the same method as was used for estimating direct coal-related transportation taxes, and apply the proportional employment rate of 3% to the remaining total state property tax collection. **Based on this method, we estimate that the state share of property tax revenues from direct coal industry employees in FY2009 amounted to approximately $380,000.**

As noted by MACED, this estimate assumes that property ownership is distributed proportionately without attention to earnings: "jobs directly attributable to coal range from temporary work providing inconsistent wages to high-end technology and professional services and reflect wide income variation found throughout the economy" (Konty and Bailey, 2009, p. 18). However, since data on property taxes specific to coal employment are not available, we agree with MACED's determination that this methodology provides a reasonable estimate.

[28] This estimate assumes that coal employees consume particular luxury goods such as tobacco and beer at a rate equal to other income earners in the state. We only make this assumption in order to treat each coal employee as an equal consumer in relation to all other income earners and consumers. We make no particular assumptions about the habits and consumption patterns of employees of the coal industry.

5.1.6 *Total revenues*

Direct employment in the coal industry generated an estimated $125.5 million in tax revenues for the West Virginia state budget in FY2009. This consisted of $108.3 million in revenues for the GRF and $17.2 million in revenues for the SRF.

Considering the lack of available data as well as some of the findings outlined in the sections above, this may either overestimate or underestimate these employees' true contribution to the state budget. For instance, if BBER and CBER (2010) are correct in their calculation that personal income taxes paid by direct coal employees amounts to $46 million, then we have overestimated income tax revenues by approximately $18 million.

We also recognize that our methodology for estimating tax revenue contributions for property taxes, transportation-related taxes, and indirect taxes and fees does not produce precise estimates, but, given data constraints, we use the best methods available. By estimating tax revenues based on the ratio of coal employment to total employment, it is likely that we overestimate those revenues as well. An alternative method of estimating these revenues based on a ratio of coal employment to total working-age population—which would assume that transfer payments received by the unemployed also generate tax revenues—would have resulted in a smaller estimate for payments of these taxes by direct coal industry employees. Overall, it is likely that we have overestimated, rather than underestimated, the true contribution to the state budget from direct coal employment.

In any case, direct employment in the coal industry generates tax revenues for both the GRF and the SRF from various taxes and fees. These revenues are then spent on education, infrastructure, health care, and other services required to support industries and the residents operating and living within the state. Those employed in the coal industry receive their share of these expenditures, along with the provision of other goods and services. Therefore, the impact of coal on the state budget requires an accounting of the share of state expenditures attributable to supporting the coal industry's employees.

5.2 Expenditures

Estimating state expenditures for supporting direct coal industry employment first requires an estimate of the total expenditures from the GRF and SRF. We estimate total expenditures from these funds enabled by state revenues and fees at $4.65 billion for FY2009.[29] These funds were spent mostly on government administration, environmental protection, health, public safety, transportation and infrastructure, and education, with road funds being dedicated solely to transportation and infrastructure.

Public funds are spent to support residents and businesses of a state through providing a range of public services and through the development and maintenance of general infrastructure. For the purpose of roughly estimating the portion of state expenditures related to those directly employed by the coal industry, we adopt the methodology used by MACED.

MACED's method for estimating state expenditures supporting those directly employed by the industry assumed that those expenditures were proportional to the direct coal employment share of total state employment, which we calculate as 3% for West Virginia. Following MACED's methodology, we estimate direct coal-related employment expenditures by subtracting on-budget coal industry expenditures[30] from total GRF and SRF expenditures (of state-generated revenues) and multiply the remainder by 3%.

This results in a total estimated state expenditure supporting direct coal industry employment of $125.9 million for FY2009.

Table 20: Calculation of state expenditures supporting direct coal employment, FY2009

Item	Amount
Total expenditures of state revenues	$4,648,580,000
Minus on-budget expenditures supporting coal	$113,710,000
Net expenditures of state revenues	$4,534,870,000
Percent total employment, direct coal employees	3%
Estimated expenditures, direct coal employees	**$125,890,000**

Applying the relative proportions of FY2009 state expenditures from the GRF (85%) and SRF (15%), we estimate that expenditures from the GRF related to direct coal employment amounted to $106.4 million, while those from the SRF amounted to $19.5 million (Table 21).

[29] Total state-generated revenues deposited into the GRF in FY2009 amounted to $3.90 billion, while state revenues deposited into the SRF amounted to $667 million. Therefore, taxes and fees collected by the state and deposited into these two funds amounted to $4.57 billion in FY2009 (WVSBO, 2010a). Total expenditures from the GRF in FY2009 were only slightly less than revenues, equaling $3.90 billion, while total expenditures from the SRF amounted to $1.21 billion. However, since only 62% of total road funds were generated by state taxes and fees, we estimate that expenditures from the SRF attributable to state revenue sources amounted to $747.7 million.

[30] The on-budget industry expenditures include those spent supporting the coal industry through administrative government activities as well as for repairing damage to the environment and coal haul roads. The coal haul road portion was adjusted based on relative shares of state and federal funding spent on the state-maintained roads in West Virginia across which coal was hauled by truck.

5.3 Summary

Over 21,000 West Virginia residents were directly employed in the coal industry during FY2009. These are generally well-paying jobs that support families and local economies in nearly thirty counties across the state. As shown above in Figure 11, employment in the coal industry declined sharply through 2003, but has since recovered somewhat, while at the same time, the average wage of direct coal employees rose as well, thereby increasing the revenues generated by that employment. However, absent a proportional increase in average mining wages, any future declines in employment will result in smaller employment-related revenues from coal. Conversely, coal industry employees require support and services from the state that are paid for directly from the state budget, so any change in employment could effect a change in the cost to the state of supporting the coal industry and its employees.

However, for FY2009, those directly employed in the coal industry supported the state budget through the payment of various tax revenues, most notably personal income taxes and consumer sales and use taxes. At the same time, those employees require state support in various forms. For FY2009, we estimate that the tax revenues generated by direct coal industry employees amounted to about $125.5 million, while state expenditures to support those employees amounted to approximately $125.9 million.

In other words, the estimated impact on the state budget of direct employment in the coal industry amounted to a net cost of approximately $350,000. This means that the expenditures from the state budget for supporting direct coal industry employees approximately offset the tax benefits resulting from that employment. As Table 21 shows, this was the case for both the GRF and SRF.

Table 21: Estimated net impact of direct coal employment on the state budget

Item	General Revenue Fund	State Road Fund	Total
Revenues from direct coal employment	$108,300,000	$17,240,000	$125,540,000
Expenditures supporting direct coal employees	($106,410,000)	($19,480,000)	($125,890,000)
Net impact of direct coal employment	**$1,890,000**	**($2,240,000)**	**($350,000)**

Coal industry activity also supports employment indirectly by requiring, for example, machinery and services to support the mining, processing, and transportation of coal. The next chapter estimates the revenues and expenditures attributable to indirect employment.

6. INDIRECT EMPLOYMENT SUPPORTED BY COAL: REVENUES AND EXPENDITURES

When discussing the total economic impact of any industry, it is necessary to include not only the direct impacts in terms of employment, tax revenues, and expenditures, but also the indirect and induced impacts of the industry. The coal industry, like other industries, relies on other companies and generates economic activity and employment. This is the "indirect" impact of the coal industry. An example would be that, in order to mine coal, companies must purchase machinery and supplies. These supply industries and their employees, which manufacture and distribute the machines and supplies, therefore support the coal industry, and are included in estimates of indirect employment impact.

"Induced" impacts are those generated and supported by spending in the economy. In the case of coal, coal employees earn income from their labor, and they spend that income on goods and services. Their spending creates and/or supports other industries and businesses. For example, coal miners earn income from mining coal, and they buy food and other items from a local grocery store. In this case, employment at the grocery store is supported by coal, to the extent that coal employees (and/or family members supported by their income) accounts for a certain percentage of the total spent by all consumers at the store.

For the purpose of simplifying the language used in this report, we will take MACED's lead and combine indirect and induced impacts under the category of "indirect" impact. The indirect employment impacts of the coal industry result in the generation of employment-related tax revenues, just as outlined for direct employment in the previous chapter. However, just as for direct employment, the jobs that are indirectly supported by coal require general government support and services from the state.

To calculate the indirect impacts, we again followed MACED's lead and used the Regional Input-Output Modeling System (RIMS-II) economic impact multipliers for the coal industry in West Virginia (Konty and Bailey, 2009). Despite some potential pitfalls, multipliers such as RIMS-II are often used by the coal industry and by researchers to estimate the industry's indirect impacts. We perform the calculations in this section with a recognition that, while imperfect, these multipliers allow us to clarify key issues and to perform initial, if imprecise, calculations. A more detailed explanation of RIMS-II and the use of economic multipliers is provided in the Appendix.

6.1 Revenues

As discussed, coal industry activity in West Virginia creates and supports economic activity and employment in supply and related industries. These may include construction, manufacturing, and distribution sectors that provide goods and services used for the production, processing, and transportation of coal. Each of these indirect industries and their employees then pay taxes on their income, on their property, and on their purchase of goods, services, and gasoline. These revenues benefit the state budget by contributing to the GRF and SRF.

As shown in Table 22, using the RIMS-II multipliers, we estimate that the West Virginia coal industry indirectly supported 47,531 employees in FY2009, representing approximately 6% of total state employment. This includes both full- and part-time employment. Total indirect wages amounted to $1.59 billion, for an average wage for indirect employees of $33,515. By comparison, the average reported wage for direct employees of the coal industry is $74,110, more than twice the average wage earned by those in support industries and local businesses.

Table 22: RIMS-II multipliers applied to employment and wages

	Direct impact	RIMS-II impact multiplier	Total impact	Indirect impact
Employment	21,012	3.2621	68,543	47,531
Wages	$1,557,200,000	2.0230	$3,150,210,000	$1,593,010,000

Indirect employment supported by coal generates tax revenues for each of the same taxes considered for direct employment in the previous chapter. To calculate transportation-related taxes and fees and property taxes paid by indirect employees, we use the same methodology as for direct employment.

For personal income taxes generated by indirect employment, we again use the effective tax rate on AGI of 4.26%. AGI is again estimated at 96% of total income (Table 23).

Based on this method, we estimate that personal income tax revenues generated by indirect coal-related employment amounted to approximately $65.2 million in FY2009.

Table 23: Estimate of personal income tax revenues from indirect employment supported by coal

Number of employees	Total income (wages)	AGI	Effective tax rate	Total personal income tax
47,531	$1,593,010,000	$1,529,290,000	4.26%	$65,190,000

For the consumer sales and use tax contribution from indirect employment, we apply ITEP's effective "general sales-individuals" tax rate of 3.1% for the $27,000 to $43,000 AGI range to the total AGI of indirect coal-related employees, as shown in Table 23 (ITEP, 2009). This results in an estimated consumer sales and use tax revenue attributable to indirect coal-related employment of approximately $47.4 million.

Using the same methodology as for direct employment, we further estimate an indirect employment contribution of about $39.0 million for transportation-related taxes and fees, about $15.4 million in indirect taxes and fees, and about $870,000 for the state share of property-related tax revenues.

Therefore, as summarized in Table 24, we estimate that indirect employment attributable to coal industry activity generated a total of approximately $167.9 million in tax revenues for FY2009. This consisted of contributions of $128.9 million to the GRF and $39.0 million to the SRF (Table 24).

Table 24: Indirect employment-related revenues

Revenue	Amount	Percent of revenues
To General Revenue Fund		
Personal income tax	$65,190,000	39%
Consumer sales and use tax	$47,410,000	28%
Indirect taxes and fees	$15,430,000	9%
Property taxes	$870,000	1%
Subtotal	**$128,900,000**	**77%**
To State Road Fund		
Motor/transportation taxes	$39,000,000	23%
Subtotal	**$39,000,000**	**23%**
Total	**$167,900,000**	**100%**

6.2 Expenditures

Indirect coal industry employment generates a significant amount of revenues that benefit the state budget; however, just as the state budget supports direct employees through the provision of funding for health, education, public safety, transportation and infrastructure, and other services, it also supports indirect employees.

To estimate the total state expenditures supporting indirect employment attributable to the coal industry, we apply the same method that we use to estimate expenditures for direct industry employees. Indirect employment attributable to coal accounts for 6% of total state employment. After subtracting state expenditures for supporting the coal industry directly (on-budget items and repairs to coal haul roads), we apply this percentage to the remaining state expenditures from the GRF and SRF that were paid for by state-generated revenues.

Based on this methodology, we estimate that the state expenditure on employees indirectly supported by the coal industry in FY2009 amounted to approximately $284.8 million.

Table 25: Calculation of state expenditures supporting indirect coal employment, FY2009

Item	Amount
Total expenditures of state revenues	$4,648,580,000
Minus on-budget expenditures supporting coal	$113,710,000
Net expenditures of state revenues	$4,534,870,000
Percent total employment, indirect coal employees	6%
Estimated expenditures, indirect coal employees	**$284,770,000**

Applying the relative proportions of FY2009 state expenditures from the GRF (85%) and SRF (15%), we estimate that expenditures from the GRF related to indirect coal-related employment amounted to $240.7 million, while those from the SRF amounted to $44.1 million (Table 26).

6.3 Summary

As summarized in Table 26, we estimate that employment indirectly supported by the West Virginia coal industry resulted in a net cost to the state of approximately $116.9 million for FY2009.

This is due to the fact that those indirectly employed as a result of coal industry activity make substantially lower wages than direct coal employees, thereby paying fewer taxes and contributing less, per person, to state revenues. However, each of these employees benefits from the same proportional share of state expenditures as direct employees, regardless of their wages. Consequently, the revenues generated from indirect coal-related employment through the payment of taxes and fees fail to make up for state expenditures in support of those employees.

Table 26: Net impact of indirect coal-related employment on the state budget

Item	General Revenue Fund	State Road Fund	Total
Revenues from indirect coal-related employment	$128,900,000	$39,000,000	$167,900,000
Expenditures supporting indirect coal employees	($240,700,000)	($44,070,000)	($284,770,000)
Net impact of indirect coal-related employment	**($111,800,000)**	**($5,070,000)**	**($116,870,000)**

MACED pointed out, in their analysis of the total impact of direct and indirect coal-related employment on the Kentucky state budget, that the benefits of that employment were outweighed by the cost to the state for supporting those employees (Konty and Bailey, 2009). For West Virginia, we estimate that the total direct and indirect coal-related employment impact amounted to a net cost of approximately $117.2 million in FY2009. In other words, when examining employment alone, coal-related employment costs the state more than it contributes in revenues from taxes and fees.

The significance of the employment analysis is not in the calculation of the net impact; in fact, even though our estimates are the best estimates that we could make based on available data and information, they are merely estimates, and should only be regarded as such. The significance, rather, is the finding that, while direct and indirect employees benefit the state through the payment of various taxes, those employees in turn rely upon state expenditures for services and support. Therefore, it is important to consider whether or not employment—at least, direct employment—related to coal or any other industry results in a net benefit or a net cost to the state.

As noted by MACED for Kentucky—and applicable for West Virginia or any other coal-producing state—these findings overlook other costs of the coal industry to the state and citizens of West Virginia. One such cost in need of sincere consideration due to its lasting impacts on the environment, on human health, and on local and state economies, is the severe and lasting damage to the land and streams in the areas where the coal is mined. Further, the transportation of coal by overweight coal trucks results in excessive damage to roads and bridges and increases the likelihood of fatal accidents. Finally, past injuries and deaths resulting from coal-related accidents have resulted in a heavy worker's compensation debt for the state that West Virginia taxpayers continue to pay, not to mention significant hardship for the families and friends of those who have lost their lives. Each of these factors leaves behind legacy costs that will impact the state and society for years to come. These legacy costs are considered in the following chapter.

7. LEGACY COSTS RELATED TO COAL

Coal industry activity has resulted in the accumulation of legacy costs for West Virginia that are not considered in our analysis of coal's impact on the state budget. This is because they represent costs that have built up over time, but either have yet to be paid for, or do not currently impact the budget directly. They include costs related to water contamination on abandoned mine lands and bond forfeiture sites, damages to coal haul roads and bridges, and workers' compensation claims. The character of each of the costs and the manner in which they impact state finances differs. This section described how each of these costs represents a cost to the state either now or in the future.

7.1 Environmental impacts of mining coal

Within WVDEP, the Office of Special Reclamation handles the reclamation of coal mines that have been abandoned since 1977. These mines are commonly referred to as "bond forfeiture sites." WVDEP's Office of Abandoned Mine Lands and Reclamation reclaims coal mines abandoned before 1977, known commonly as "abandoned mine lands." Neither of these programs currently spend general revenue funds; therefore, they are not included in our accounting of coal-related revenues or expenditures directly impacting the state budget. However, both programs have the potential to impact future GRF expenditures.

Bond forfeiture sites are reclaimed using the bonds forfeited by mine operators, together with a per-ton tax on mined coal designated as the special reclamation tax. For FY2009, the rate of the special reclamation tax was 14.4 cents per ton of "clean coal" extracted.

The revenues from the special reclamation tax are deposited into the Special Reclamation Fund and the Special Reclamation Water Trust Fund. The tax is set to be reviewed in 2011 and every two years thereafter, but state code clarifies that the rate cannot be reduced until the two funds "have sufficient monies to meet the reclamation responsibilities of the state" established by state code.[31] In FY2009, distributions of the special reclamation tax into the associated funds amounted to a total of $23.1 million, according to data provided by the Department of Revenue (Muchow, 2010f).[32]

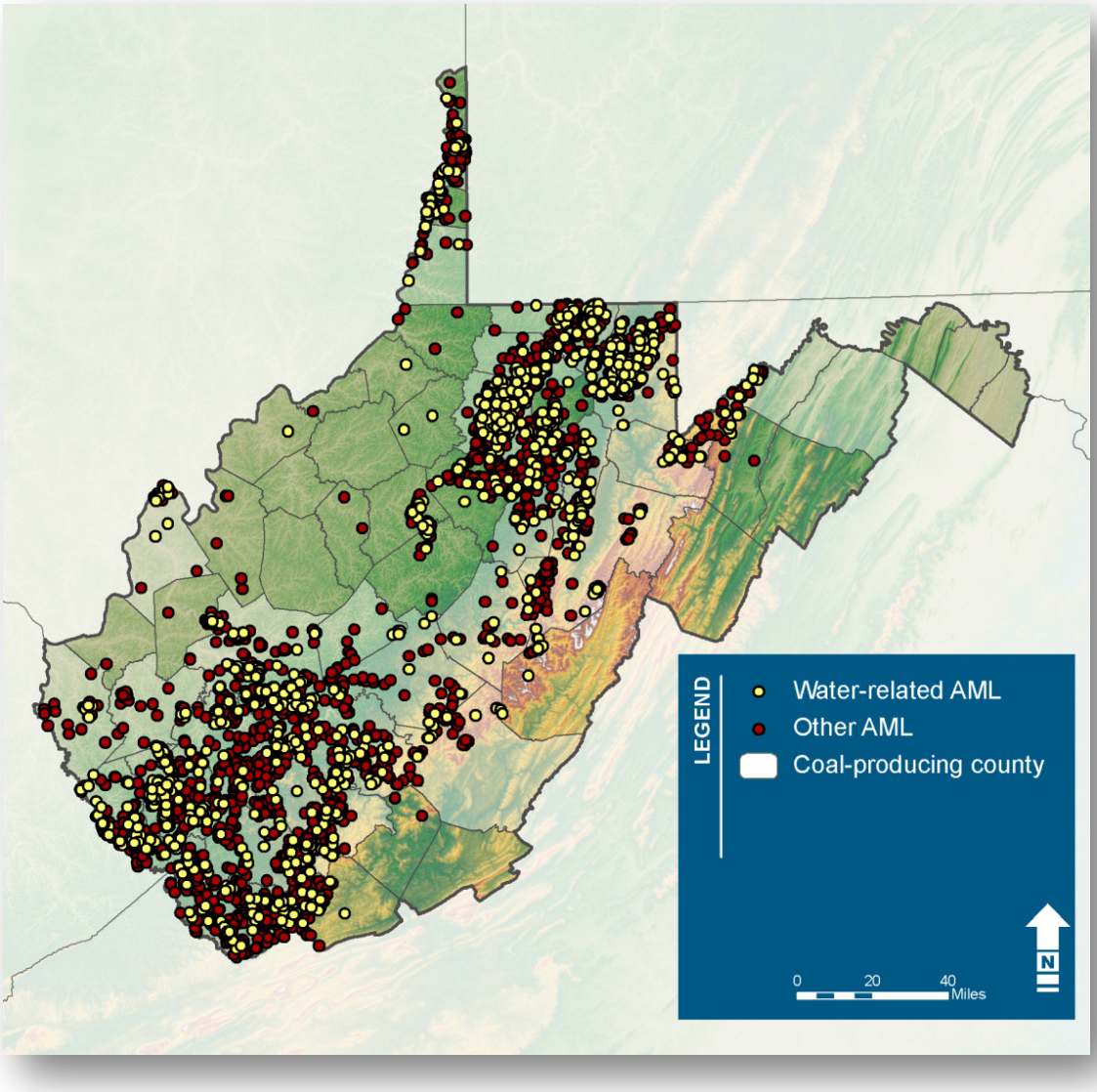
Of the 326 bond forfeiture sites documented in West Virginia, ten new ones were added in FY2009. Also during FY2009, West Virginia completed land reclamation on 15 bond forfeiture sites and installed water treatment systems on eight sites, with nine more under construction. Still, 49 bond forfeiture sites have water quality-related off-site impacts (OSMRE, Undated). Despite the fact that the special reclamation tax is not supposed to be reduced until sufficient funds are in hand to pay for future reclamation work, there is still debate about whether these funds will be sufficient, especially if greater numbers of operators forfeit their bonds in the future.

As shown in Figure 14, WVDEP has identified 4,391 abandoned mine lands within the state; of these, 1,180 have water-related problems (OSMRE, 2010). The primary source of funding for reclamation of these sites is the Abandoned Mine Reclamation Fund, financed by a different per-ton tax on coal mined today. While $464 million has been spent on reclamation projects so far, WVDEP estimates that an additional $1.5 billion will be required to finish the job (OSMRE, 2010). This is almost certainly an underestimate, because it does not include the cost of remediating water pollution discharges such that nearby streams meet state standards. In addition, the inventory of abandoned mine lands may omit sites that only have water-related problems.

[31] WV Code 22-3-11.

[32] This total is inconsistent with the revenues that should have been generated based on the tons of coal mined by surface mining during the months covering FY2009. BBER and CBER (2010) provide an estimated total revenue of $13.6 million based on monthly coal production for 2008. The inconsistency may be due to the fact that an additional two-cents-per-ton special tax on coal is reported on the same tax form as the special reclamation tax, and because of the addition to the fund of any interest or penalties related to the tax or to failures to pay the tax in a timely manner.

Figure 14: Abandoned mine lands in West Virginia



Total Abandoned Mine Reclamation Fund distributions through 2022, when the program is slated to end, cannot be calculated with precision yet. However, according to one estimate, West Virginia would receive only $875 million (WVDEP, 2009b), less than 60% of the estimated required funds for reclaiming the remaining sites.

In summary, while the GRF is not currently used for reclamation on bond forfeiture sites or abandoned mine lands, there is a significant likelihood that current funding streams will not be sufficient to finish the job. If and when shortfalls occur, there will be a need to find alternative sources of funding, and one potential source is the GRF.

7.2 Transportation of coal by overweight coal trucks

The following two sections address the legacy costs of damages to West Virginia's roads and bridges, respectively, as estimated by state and federal agencies. These are not presented as estimates for the impact of coal haul trucks on the state budget. Instead, they account for past damages to provide a measure of future costs and lasting liabilities for which road fund revenues will be expended. They provide an indication of how future revenues, rather than being expended on the state highway system to improve access to rural communities, will likely be expended to make up for the cost of increased damages to roads and bridges making up over 10% of the state-maintained system. In its 2002 report on coal haul roads, WVDOH concluded that the coal haul road system was being subsidized by other road users in the state, and at an increasing rate (WVDOH, 2002). This has not changed since the publication of that report.

7.2.1 *Legacy impact on roads*

A study conducted by WVDOH in 2002, citing and improving upon estimates from a 1980 federal coal haul road study for West Virginia, estimated that the 2001 cost to improve coal haul roads in West Virginia to meet minimum federal standards was $2.8 billion (WVDOH, 2002). That estimate was based on a system comprised of 2,684 miles, 1,589 of which were bearing the load of coal trucks in excess of 50,000 pounds. By upgrading the $2.8 billion to an estimated cost for 2,961 miles—our 2009 estimated extent of the total coal haul road system—and then converting to 2009 dollars, we estimate the 2009 legacy cost for repairing the current coal haul road system—merely to meet minimum federal standards—to be $3.7 billion.

We reconstruct a calculation conducted in the 2002 WVDOH report, assuming an annual coal production of 150 million tons, and further assuming that at least as much damage has been done to haul roads since 2002 as has been repaired. For the coal industry to be held responsible for paying just the legacy costs (much less future costs) of maintaining, repairing, and replacing coal haul roads in West Virginia to meet minimum federal standards, it would have to pay a tax of $1.25 per ton of coal produced over 20 years. If such a tax were imposed only on the tons of coal hauled by truck in the state, the rate would be $6.24 per ton.

By comparison, total fees collected in FY2009 from coal companies hauling coal by truck on CRTS roads was $2.5 million (this does not include coal company contributions since they are an uncertain source of revenue). State coal production was approximately 157 million tons. Therefore, the average per-ton fee collected was 1.6 cents per ton, based on total production. The average fee based on just the coal hauled by truck was eight cents per ton. Each of these fall short of what would be required for the hauling of coal across West Virginia's roads to have a net positive impact on the SRF as the state worked to bring coal haul roads up to meet minimum federal standards. This only covers the legacy costs; future costs of hauling coal by truck must be considered as well.

7.2.2 *Legacy impact on bridges*

Regarding bridges, WVDOH estimated that, as of June 2006, the total construction cost for repair or replacement for posted CRTS bridges was approximately $183 million (WVDOH, 2008). Posted bridges are those assigned the highest priority for repair or replacement. The West Virginia Department of Transportation (WVDOT), within which the WVDOH is situated, provided a more updated estimate in September 2009 of $300 million (WVDOT, 2009b)—an increase of nearly $120 million in only three years.

The total estimated cost of all work actually programmed on posted CRTS bridges as of 2009 was approximately $53.4 million for 22 bridges, resulting in an average estimated cost per bridge of $2.32 million. Therefore, the estimated cost of repairing or replacing a single bridge, on average, is just short of a single year's total collection of CRTS fees. This provides an indication of how little the coal industry contributes to covering the additional damages from overweight coal trucks, because most bridges in West Virginia were not designed to carry the excessive loads they are now experiencing (WVDOH, 2002).

As the number of total and Class D overweight coal truck permits increases (Table 9), the larger axle loads and greater truck traffic will continue to reduce the design life of bridges on the CRTS (WVDOH, 2002), and "Once a certain level of loading is reached, not only is the life of the bridge reduced, but also the risk of premature deterioration and unacceptable risk of sudden failure possible" (WVDOH, 2002, p. 10).

Finally, WVDOH also notes that limited CRTRF revenues and less-than-anticipated coal company donations will reduce the rate at which structurally deficient bridges on the CRTS are repaired or replaced, and that "the net result will likely be an increase in the number of posted bridges on the CRTS over time rather than a decrease" (WVDOH, 2009b, p. 5).

7.2.3 *Total unfunded costs, and insufficient revenues from coal*

Based on state projections, the total cost of repairing West Virginia's roads and bridges damaged by overweight coal trucks is approximately $4.0 billion (in 2009 dollars). Even if the state were spending $200 million per year to repair and replace the infrastructure as needed, it would take 20 years of repairs and a cessation of coal truck operations to cover the full cost. However, as we estimate in this report, the state spent only $93.0 million in FY2009. This cost was largely subsidized by state taxpayers.

At best, if we sum all of the transportation-related revenues estimated for this report—including direct industry revenues, direct and indirect employment-related revenues, and fines collected from coal truck operators for exceeding permitted weight limits (Table 27)—we find that a maximum of $59.5 million in revenues could be attributed to the coal industry in FY2009. The greatest portion of those revenues—the $39.0 million attributed to employment indirectly supported by coal—is the most difficult to justify as a credit to the coal industry. Additionally, taxes and fees collected from the industry specifically for the purpose of supplementing state revenues for repairing coal haul roads amounted to only $2.5 million in FY2009.

Table 27: Coal truck violations and fines for exceeding permitted haul weight and reporting errors

	Total violations	Overweight violations	Percent overweight	Reporting violations	Total fines levied	Fines dismissed	Net levied	Paid
2008	2,662	1,886	71%	776	$689,633	$2,624	$687,009	$383,197
2009	1,623	1,385	85%	238	$408,015	$17,997	$390,019	$586,080
FY2009	**2,143**	**1,636**	**76%**	**507**	**$548,824**	**$10,310**	**$538,514**	**$484,638**

Source: Covert and Quinlan (2010).

However, even $59.5 million falls short of the estimated expenditure for FY2009 of $93.0 million, and represents less than one-third of what would be needed on an annual basis to make all necessary repairs from past damage over the next 20 years.

Additionally, the fact that repair estimates just for the bridges on the CRTS increased by $120 million in three years suggests that annual state expenditures are not keeping up with the increase in costs, whether those costs are related to increasing costs of materials, or are imposed by the increase in the number and weight of the coal trucks operating on the CRTS, or both. Therefore, changes to policy, and/or to the rate and structure of taxes and fees on the transportation of coal, and on the coal industry in general, may be necessary in order to ensure future funds are available to cover the cost of repairing all roads and bridges in need of attention.

Lacking any future legislation reforming the coal truck permitting process, the operation of overweight coal trucks is likely to continue in the future, and as the price of coal rises, it is likely that an increasingly greater portion of the overweight truck permits will be Class D permits. This will result in even greater damages to West Virginia's roads and bridges; and, just as for FY2009, the state taxpayers, rather than the coal companies, will end up paying the costs of repair.

7.3 Workers' compensation debts associated with coal mining

When the state assumed liability for the workers' compensation debt accumulated prior to 2005, known as the "Old Fund," the debt was estimated at approximately $1.5 billion (West Virginia Offices of the Insurance Commissioner, 2007). At the end of FY2009, the remaining debt stood at $1.29 billion. Several revenue sources are used to pay off the Old Fund debt, including new severance taxes for extraction industries, an excess coal transfer,[33] a transfer of personal income taxes ($95.4 million total in FY2009), excess lottery revenues, an assessment to self-insured employers, and a premium surcharge on workers' compensation policies. In total, these revenues have amounted to approximately $250 million annually (WVSBO, 2010a).

Some portion of the unfunded liabilities resulted from injuries and deaths related to coal industry activity, including claims for black lung disease. The portion of the total debt attributable to coal is unknown. However, the portion of revenues being used to pay off the Old Fund debt that are generated from taxes on coal production provides an indication.

Of the revenues collected and dedicated toward paying off the Old Fund debt, those attributable to the coal industry are generated from a 56 cent-per-ton workers' compensation coal tax, an excess coal transfer, and a portion of personal income taxes. For FY2009, total revenues from the workers' compensation coal tax amounted to $77.3 million (Muchow, 2010d), while the excess coal transfer from the coal severance tax amounted to $35.5 million (Muchow, 2010a and b).

Transfers of the personal income tax attributable to coal can be estimated in the same manner as we estimate transportation-related taxes for direct employment—by using the percent of total population constituted by direct employees of the coal industry, or 3%. Applying this percentage to the $95.6 million in total personal income tax transfers results in an estimate of $2.7 million in transfers attributable to coal.

Overall, then, approximately $115.5 million in coal-related revenues—mostly from taxes on coal production—was dedicated toward paying off the state's Old Fund workers' compensation debt in FY2009. This amounts to approximately 46% of the estimated payments as reported in the state budget. While this may not reflect the actual portion of the workers' compensation debt attributable to pre-2005 coal-related claims, it does suggest that a significant portion of those claims are the result of illnesses, injuries, and deaths from coal-related activities.

Regardless, the $115.5 million represents a substantial source of lost revenues that the state could be putting to more beneficial uses, such as reclaiming bond forfeiture sites or repairing roads and bridges damaged by overweight coal trucks. Or, it could be provided to counties for improving education and investing in economic development. Either way, these revenues are instead currently being used to pay legacy costs resulting from coal industry activity.

[33] Between 2007 and 2009, coal severance tax revenues in excess of 2006 levels have been used to assist in paying off Old Fund debt.

8. CONCLUSIONS AND RECOMMENDATIONS

The West Virginia coal industry provides jobs and generates revenues that benefit citizens and the state budget. These benefits are generated directly through coal industry activity, such as the mining, processing, and transportation of coal. The industry also indirectly benefits the state by supporting supply sectors and other businesses, which generate additional jobs and state revenues. The revenues in turn benefit the public through the funding of various services such as education, infrastructure improvements, health support, environmental protection, and government administration.

However, as detailed in this report, the revenues generated directly by the coal industry did not constitute a substantial portion of state tax revenues for either the GRF or the SRF in FY2009, and coal industry employment accounts for only a small portion of total state employment. There are various costs associated with the coal industry as well, and traditional accountings of the economic impact of the industry have not accounted for these costs. In fact, some accountings have represented certain taxes and fees, imposed specifically for making up for legacy costs, as a benefit to the state budget rather than a source of foregone revenues that could have been used for more beneficial purposes.

In this report, we provide a more thorough and detailed accounting of the net impact of the coal industry on the state budget by considering both the benefits and the associated costs of the industry, direct employment, and indirect employment.

8.1 Jobs

The industry directly provided about 21,012 jobs and supported another 47,531 jobs indirectly in FY2009. While direct employment amounted to only 3% of total state employment, direct and indirect employment, in total, represented approximately 9% of total employment. This is a substantial portion of the state workforce. For some coal-producing counties, the impact was even more significant: direct coal industry employees comprised 47% of total county employment in Boone County, and between 10% and 20% of employment in six other counties. Overall, however, direct employment in the coal industry accounted for an average of only 5% of total employment for the counties producing coal in FY2009.

Total wages for direct coal industry employees amounted to an estimated $1.56 billion in FY2009, with an average wage of $74,110. Those actually involved in the mining of coal earn a lower wage, but still earned more than the average West Virginia worker. Because of this, coal miners generally contribute a greater amount of tax revenues for the state budget than those employed in other industries. Those indirectly employed as a result of coal industry activity earned a total of $1.59 billion in FY2009, with an average wage of $33,515.

8.2 State revenues and expenditures

In terms of the impact of coal on the state budget, the coal industry and its employees benefit the state budget through the payment of taxes and fees which are deposited into the GRF and SRF.

Despite our efforts to obtain official data and estimates for each revenue and expenditure, the lack of data and information for various items requires that we generate estimates. Therefore, our results for revenues, expenditures, and net impact should be regarded as estimates, and not precise numbers. Despite these uncertainties, however, these are still plausible estimates calculated with the best available data and methods, and they are instructive to understand the scale of coal's impact and to provide a foundation for future refinements.

With these caveats in mind, we report the revenues, expenditures, and net impact figures estimated in this report. The industry alone contributed $304.5 million to the GRF and approximately $2.8 million to the SRF, for a total benefit to the state budget of $307.3 million (Table 28). The contributions to the GRF accounted for approximately 8% of GRF revenues in FY2009, while the contributions to the SRF accounted for approximately 1% of total non-federal SRF revenues. The largest source of revenue was the coal severance tax, which accounted for 92% of all revenues generated from coal industry activity. Overall, the coal industry directly accounted for approximately 7% of total state revenues in FY2009.[34]

In terms of the associated costs to the state attributable to the coal industry, we estimate that the on-budget expenditures supporting the industry amounted to a total of approximately $113.7 million in FY2009. This consisted of $20.7 million in expenditures from the GRF for agency expenditures, and $93.0 million from the SRF for repairs to coal haul roads and bridges. The greatest agency expenditure from the GRF was for the Office of Miners' Health, Safety, and Training in the Department of Commerce.

Table 28: Summary of revenues, expenditures, and net impact

Item	General Revenue Fund	State Road Fund	Total
Direct coal industry			
Revenues	$304,510,000	$2,770,000	$307,280,000
On-budget expenditures	($20,710,000)	($93,000,000)	($113,710,000)
Estimated net impact	**$283,800,000**	**($90,230,000)**	**$193,570,000**
Off-budget expenditures	($173,840,000)	not calculated	($173,840,000)
Direct coal employment			
Revenues	$108,300,000	$17,240,000	$125,540,000
Expenditures	($106,410,000)	($19,480,000)	($125,890,000)
Estimated net impact	**$1,890,000**	**($2,240,000)**	**($350,000)**
Indirect employment supported by coal			
Revenues	$128,900,000	$39,000,000	$167,900,000
Expenditures	($240,700,000)	($44,070,000)	($284,770,000)
Estimated net impact	**($111,800,000)**	**($5,070,000)**	**($116,870,000)**
Total			
Revenues	$541,710,000	$59,010,000	$600,720,000
Expenditures	($541,660,000)	($156,550,000)	($698,210,000)
Estimated net impact	**$50,000**	**($97,540,000)**	**($97,490,000)**

Off-budget tax expenditures in the form of tax exemptions, credits, and preferential tax rates amounted to approximately $173.8 million in FY2009, according to our estimates. The two most significant tax expenditures on the coal industry were the direct use tax exemption for machinery and materials necessary for coal production, mine reclamation, and pollution control, and the purchase for resale tax exemption on the purchase of coal for electricity generation and manufacturing. Together, these two expenditures amounted to approximately $168.0 million in FY2009. Overall, the total tax expenditures provided to the coal industry represents a significant source of lost revenue that, if collected, could benefit the state budget.

[34] As described in detail in the body of the report, we exclude special revenue funds from our accounting of state revenues.

Direct employment in the coal industry also benefited the state budget through contributions of $108.3 million to the GRF and $17.2 million to the SRF, for a total estimated benefit to the state budget of approximately $125.5 million for FY2009. These revenues were from the payment of personal income taxes—which accounted for 51% of revenues—as well as consumer sales and use taxes (30%), transportation-related taxes and fees (14%), indirect taxes and fees (5%), and property taxes (less than 1%). State expenditures for supporting those employees through the provision of various services amounted to approximately $125.9 million, resulting in an estimated net cost to the state of $350,000. In other words, the revenues generated by direct coal industry employees approximately equaled the costs to the state of supporting them.

Employment indirectly supported by the coal industry generated an estimated $128.9 million for the GRF and $39.0 million for the SRF in FY2009. Again, personal income taxes accounted for the greatest share at 39%. Estimated state expenditures supporting indirect coal-related employment amounted to approximately $284.8 million. Therefore, indirect coal-related employment resulted in a net cost to the state of approximately $116.9 million in FY2009. This result differs from that for direct coal employees because the average wage of indirect employees was significantly lower than the average wage for direct employees.

Overall, when taking all revenues and expenditures into account, we estimate that the total net impact of the coal industry on the West Virginia state budget in FY2009 amounted to a net cost to the state of $97.5 million, resulting from a net benefit to the GRF of $50,000 and a net cost to the SRF of $97.5 million. Examining the impact of the industry and its employees alone, and not accounting for tax expenditures or the impacts of indirect employment, we estimate a net benefit to the state of $193.2 million. However, including tax expenditures and indirect employment is important for examining the overall impact of the coal industry on the state budget.

8.3 Legacy costs

Additionally, our net impact analysis does not account for the legacy costs resulting from past coal industry activities. These include unfunded reclamation of abandoned mine lands and bond forfeiture sites, unfunded yet needed repairs to roads and bridges damaged by the operation of coal haul trucks, and lost potential revenues currently being used to fund the remaining debt from workers' compensation claims stemming from injuries, illnesses, and deaths attributable to coal.

For abandoned mine lands, we estimate that $1.5 billion will be required to complete reclamation and water treatment of pre-1977 mine sites. This is an underestimate because it does not include the cost of remediating water pollution discharges such that nearby streams meet state standards. Federal funding for abandoned mine land reclamation efforts is set to expire in 2022, and it is expected that total state funding by then will amount to only $875 million, meaning that unless federal funding is continued, the remainder of the debt will have to be paid by the state, or the remaining sites left to pollute forever.

Reclamation bonds and a per-ton tax on coal should be sufficient for reclaiming bond forfeiture sites and treating the runoff for contamination. However, this tax represents a foregone source of revenue for the state, rather than a benefit to the state budget, and it is unclear whether it is sufficient for covering existing and future reclamation needs.

Regarding the impact of coal trucks on the state's roads and bridges, official state estimates of the cost for needed replacements and repairs amount to a total of $4.0 billion. If more trucks receive permits to haul at the highest weight limit, and if the CRTS continues to expand, the damage to roads and bridges will continue to increase. This will result in even greater costs to the state, and these costs will be subsidized by all of the state's taxpayers unless new taxes and fees are imposed on the coal industry that are sufficient to cover the costs.

Finally, the unfunded liabilities for past workers' compensation claims, presumably attributable to coal, cost the state $115.5 million in FY2009, of which $112.8 million was collected directly from the coal industry through the workers' compensation coal tax and an excess coal transfer from the coal severance tax. The transfer from the coal severance tax represents lost revenue from the state budget from a tax the coal industry pays regardless of the existence of the workers' compensation debt, and so is a loss of certain revenue that should be benefiting the state budget rather than being used to pay off a legacy cost attributable to coal.

The fact that the coal industry has remained viable even with paying the workers' compensation coal tax since it was first collected in 2006 suggests that the industry would likely be viable while paying the tax in the future, even after the workers' compensation debt has been paid off. In this sense, the tax, which amounted to $77.3 million in FY2009, represents a source of foregone revenue from the state budget.

Overall, the legacy costs associated with past and future coal industry activity must be considered in examining the total impact on the state. External costs resulting from coal industry activity, including the costs to human health, for repairing damage to personal property, and in the value of lost economic opportunities resulting from the loss of clean water and timber resources, for instance, were not considered in this report. However, they all represent real costs to society, and should be considered in any full accounting of the benefits and costs of the coal industry.

8.4 Future trends

Should coal production in West Virginia decline as projected, the economic benefits currently provided by the coal industry in terms of jobs and tax revenues will decline as well (McIlmoil and Hansen, 2010). EIA estimates that Central Appalachian coal production will decline by 46% by 2020, while Northern Appalachian production will increase by 16%. We estimate that the net loss in coal production in West Virginia by 2020 could amount to approximately 46.3 million tons, for a 29% loss by 2020. It can be expected that such a decline would negatively impact revenues associated with the coal industry and its employees, and to some extent, with indirect coal employment. For instance, a decline in coal severance tax revenues alone of nearly $130 million can be expected. Without changes in policy, all other revenues generated by the coal industry would likely decline as well.

EIA projections for the decline in production were made without analyzing the additional potential impacts from restrictions on surface mining or regulations related to emissions from coal combustion, such as carbon dioxide and sulfur dioxide. Any new regulations are expected to negatively impact coal production in West Virginia as well, and therefore jobs and revenues, although to what extent is unknown. Therefore, understanding the net impact of coal on West Virginia state budget is important in considering how to react to those regulations—whether to continue to place significant governmental support behind coal, or to shift budgetary and political priorities in order to support emerging industries and economic diversification.

8.5 Recommendations

Based on our findings and conclusions, we provide several recommendations aimed at minimizing future costs to the state attributable to the coal industry. We offer these recommendations individually, and leave it up to the Legislature to determine which policies are appropriate and feasible given identified priorities. Given that, our recommendations are as follows:

Maintain the revenues currently generated by the workers' compensation coal tax and create a Permanent Economic Diversification Fund. The workers' compensation coal tax generated $77.4 million in FY2009. To help prepare for the projected decline in state coal production, the state could keep this tax intact and create a Permanent Economic Diversification Fund that would support short-term and long-term economic development goals and insure against potential declines in revenues. Several western states, including Alaska, Wyoming, and New Mexico, have created permanent funds with dedicated severance tax dollars. New Mexico, for example, uses the interest (4.7%) from its $3.5 billion Severance Tax Permanent Fund to pay for general revenue spending, and uses the principle to ensure that it has resources saved to invest in the future when its natural resources are eventually depleted (Dahlheimer, 2008).

Increase the coal severance tax rate and distribute the additional funds to coal-producing counties. In 2010, the Legislature passed House Bill 4177, which would have dedicated an additional 5% of the existing coal severance tax to coal-producing counties, increasing the total county and municipal share of the tax to 12%. This would have generated an additional $15-20 million for coal-producing counties, which received approximately $22 million in coal severance taxes in 2008. These funds would have been dedicated for economic development, road repair, job creation, and infrastructure. The bill failed after passage due to technical errors. Regardless, rather than increasing the rate of distribution, and taking revenues away from the GRF, we recommend increasing the severance tax rate itself to 6%, and distributing the additional 1% to counties and municipalities, with 80% of the new revenues distributed among coal-producing counties. This would have generated an additional $60 million for coal-producing counties in 2008, and approximately $15 million for other counties and municipalities. The new revenues should help fund education, economic development, and job creation.

Reexamine the thin-seam tax credit, and consider reforming the structure of the credit. The state offers a reduced coal severance tax rate on underground-mined coal of 2% and 1% for thin seams. In 2008, the total amount of the credit was $68.7 million. This was a significant increase over 2007 when the credit amounted to $37.7 million. Further, as shown in Table 16, the percent of underground production for which this credit applied increased from 22% of total underground mine production in 2006 to 31% in 2008. A 2006 report by Governor Joe Manchin's Tax Modernization Project workgroup recommended that the state review the "actual average production cost differential between a conventional coal mine taxed at 5% and thin-seam mines taxed at 2% or 1% under the Regular Severance Tax, to determine whether the tax preference accurately accounts for such differences" (West Virginia Department of Revenue, 2006, p. 151). Unless it can be determined that this credit makes it viable to extract coal from thin seams, we recommend that it be eliminated or sharply scaled back. As a possible model for scaling back the credit, Kentucky's thin-seam tax credit is on a sliding scale of 2.25% to 3.75% of the gross value of the coal, with the percent determined based on seam thickness, the ratio of overburden removed to coal severed, and/or the sulfur content of the coal (Konty and Bailey, 2009). At these rates, the West Virginia state budget would benefit from millions of dollars in additional revenue.

Ensure that funds for reclamation and water treatment are sufficient for meeting all present and future needs. While general revenues are not currently used for reclamation on bond forfeiture sites or abandoned mine lands, there is a significant likelihood that current funding streams will not be sufficient to meet all present and future needs. If and when shortfalls occur, there will be a need to find alternative sources of funding, and one potential source is the GRF. To prevent this from happening, we recommend that when the special reclamation tax comes up for review, the Legislature should ensure that the tax rate is adjusted so as to provide sufficient revenues for ensuring all bond forfeiture sites are reclaimed to their intended post-mine land use, at a minimum, and that water runoff is treated so that discharges consistently meet their original NPDES permits and do not contribute to water quality standard violations. Additionally, we recommend that the Legislature explore mechanisms for generating new sources of revenue sufficient for making up for funding shortfalls expected to exist if abandoned mine land funding expires in 2022.

Increase the per-ton fee on coal haul trucks. In FY2009, the coal industry directly paid a total of approximately $2.8 million in taxes and permit fees for the repair and replacement of roads and bridges damaged by the operation of overweight coal trucks on the CRTS. This only amounted to approximately 3% of the total estimated cost to the state for repairing the damaged infrastructure. On average, the total revenues from the industry amounted to an average of eight cents per ton of coal hauled, while the total expenditures amounted to an estimated $2.78 per ton. Therefore, public funds subsidized repairs for damages caused by coal trucks at a rate of $2.70 per ton, for a total cost to the public of approximately $90.2 million. According to official estimates, conducting all needed replacements and repairs over a 20-year period would require an expenditure of $200 million per year. Therefore, even current annual expenditures fall short of covering needed expenses. To ensure that the coal industry, rather than the public, bears its share of the financial burden for damages to roads and bridges from coal haul trucks, we recommend increasing the per-ton fee on coal hauled by truck on the CRTS to a minimum of $2.80 per ton.

Increase fines for exceeding permitted haul weights. The number of CRTS permits has increased since the implementation of the permitting system in 2005, as has the percentage of those permits classified as Class D permits, which allow a haul weight of up to 126,000 pounds with the 5% tolerance level. Further, coal operators were cited for exceeding their permitted weight an average of 1,636 times between 2008 and 2009, and for reporting violations another 507 times, and paid an average total of $480,000 in fines. Clearly, the existing fines are not deterring operators from exceeding their permitted weights. While West Virginia currently imposes a fine of seven cents per ton, neighboring Virginia's fine as of 2002 was set at 60 cents per ton (WVDOH, 2002). As WVDOH concluded, "it is safe to assume…that since resource extraction still takes place in…Virginia, and is, therefore, financially viable, similar limitations could be imposed in West Virginia without dire consequences" (WVDOH, 2002, p. 14). We therefore recommend raising the rate of fines for violating permitted weight limits to a level similar to Virginia's, in order to deter coal truck operators from exceeding their permitted weight limits.

In this report, we provide initial estimates of both the benefits and costs of West Virginia's coal industry. We invite refinements of this analysis, and recognize that revised agency accounting practices that generate data on the impact of each industry would help facilitate these calculations for the coal industry, and indeed, any industry operating in West Virginia. We conclude that West Virginia's coal industry presents a net cost to the state budget, and we offer several recommendations that would help the industry pay for its current state-level expenditures and cover its long-term legacy costs. As mining declines in the future, the potential loss of state revenues will make it even more difficult to cover the annual and legacy costs of coal. Therefore, state policy related to energy and economic development—to the extent that it supports the coal industry—should be reconsidered, and new policies should be enacted that reflect recognition of these realities.

APPENDIX: RIMS-II AND THE USE OF ECONOMIC MULTIPLIERS

RIMS-II, created and provided by the BEA, was developed primarily for estimating the economic impact of a change in economic activity for a particular industry, such as the coal industry in West Virginia, or the regional impact of new projects such as an airport.[35]

However, economic impact multipliers are also used, by state and local governments, for instance, to calculate a snapshot estimate of the state or regional impacts of government policies or projects, or of single industries or firms located within the state or region. It is in this manner that we use RIMS-II for this study—in order to estimate the indirect impacts of the coal industry in West Virginia for FY2009.

A different tool, IMPLAN, is sometimes used for similar studies (Minnesota IMPLAN Group, 2004). We use RIMS-II economic multipliers for consistency with the similar Kentucky analysis (Konty and Bailey, 2009), and because of its wide use by other universities and organizations in the Central Appalachian region.[36]

Both IMPLAN and RIMS-II provide impact multipliers for output and for earnings, or wages. We use RIMS-II to calculate the indirect impact of the West Virginia coal industry for employment and wages.[37] Using selected multipliers, detailed in Table 22, we then estimate the revenues and expenditures associated with indirect employment supported by the coal industry, and therefore the net impact of such employment on the state budget.

However, as a final note, it is worth repeating a note of caution expressed by MACED:

> "The RIMS II, and all economic impact multipliers, is surrounded by criticism of the models based on the assumptions built into the models and the resulting limits of their applicability and accuracy. The model assumes that all direct, indirect and induced effects would not otherwise occur without the project. The absence of the counterfactual—meaning we really have no way of knowing or modeling what activities would occur without the project—is problematic. The base assumption of the RIMS II (and all multiplier models), that it places all other economic activity on hold is significant and presents obvious problems under the best circumstances. In addition to these concerns, the application of this method to an industry that has been in the region for more than 100 years and is tied to a place-specific natural resource violates basic principles of a model designed to assess the impact of economic shocks such as development projects or firm closures." (Konty and Bailey, 2010, p. 20)

Despite these potential pitfalls, multipliers are often used by the industry itself and by researchers to estimate an industry's indirect impacts. We perform these calculations with a recognition that, while imperfect, these multipliers allow us to clarify key issues and to perform initial, if imprecise, calculations.

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[35] To do so, it accounts for inter-industry relationships within regions, measuring the impact on output (i.e., coal production) effected by a change in inputs purchased (i.e., mining machinery), and vice versa. In this way, it provides a tool for measuring how one industry, such as the coal industry, impacts other industries within a regional, state, or local economy. RIMS-II uses direct employment data, detailed information on inputs and outputs related to and generated by an industry operating in a particular geographic region, as well as consumer behavior in the region, to determine the indirect economic impacts, or "spill-over effects," of a specific industry, firm, or development project. For instance, any change in coal production will have an impact on industries that supply coal companies with tools and machines used in the coal mining process. If coal production in West Virginia increases by a substantial amount, or a new mine opens, then supply industries benefit by supplying the coal company, and employment in the supply industries will increase, thereby having an additional positive impact on wages and tax revenues. Conversely, if production declines, the industries that supply the coal industry will be negatively impacted, and employment in and revenues from those supply industries will decline.

[36] For instance, according to MACED, RIMS-II multipliers are used by the Kentucky Coal Association and the University of Kentucky Center for Business and Economic Research (Konty and Bailey, 2009).

[37] The multipliers selected were the direct effect, Type II, benchmark series multipliers for the West Virginia coal industry (NAICS code 2121) Type II series provide total impact multipliers that include both indirect and induced impacts, whereas Type I series provides only direct impact. Benchmark series multipliers are available for detailed industries, such as NAICS 2121 for the coal industry. The alternative was to choose the Annual series multipliers, which are only available for aggregated industries, such as "Mining," which includes all forms of mining.

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