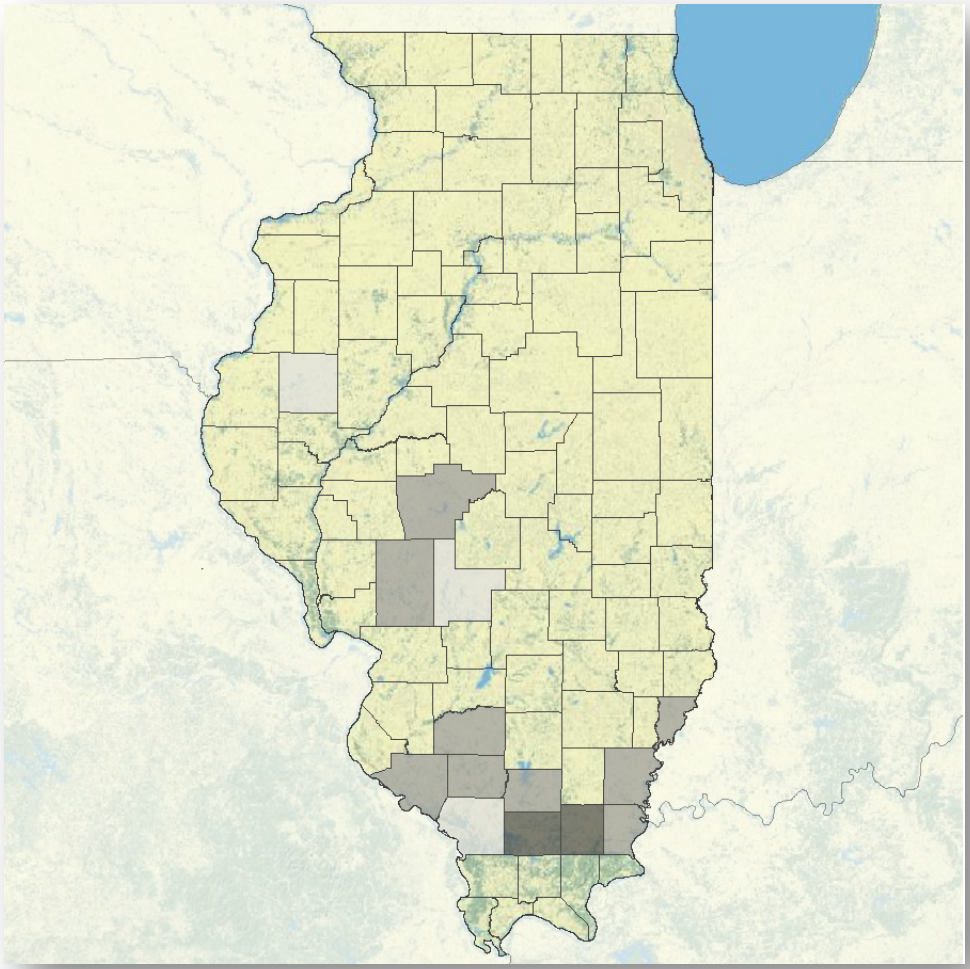
Capturing resource wealth to invest in the future

Possible structures and potential benefits of an Illinois coal severance tax



Evan Hansen
Kendra Hatcher
Meghan Betcher
Rory McIlmoil
Downstream Strategies

295 High Street
Suite 3
Morgantown, WV 26505
www.downstreamstrategies.com

Amanda Kass
Center for Tax and Budget Accountability

70 E. Lake Street
Suite 1700
Chicago, IL 60601
www.ctbaonline.org

Downstream Strategies
building capacity for sustainability

CTBA | Center for Tax and Budget Accountability

October 23, 2015

Capturing resource wealth for investing in the future: Possible structure and potential benefits of an Illinois coal severance tax

ABOUT THE AUTHORS

Evan Hansen, **M.S., President, Downstream Strategies.** Mr. Hansen founded Downstream Strategies, an environmental consulting company in West Virginia, in 1997. He explores resource and environmental problems and solutions in three areas: energy, water, and land. He manages interdisciplinary research teams, performs quantitative and qualitative policy and scientific analyses, provides expert testimony, and facilitates stakeholder meetings.

Kendra Hatcher**, M.S., Project Environmental Scientist, Downstream Strategies.** Ms. Hatcher has wide experience in data collection and analysis. She also uses geographic information system technologies to analyze and manage spatial data related to natural resources and the environment.

Meghan Betcher**, M.S., Project Environmental Scientist, Downstream Strategies.** Ms. Betcher offers expertise in geographic information systems and environmental science and is experienced in project design, data analysis, and presentation of complex scientific findings to academics, students, and community groups.

Rory McIlmoil**, M.A., Former Project Manager, Energy Program, Downstream Strategies.** Mr. McIlmoil has a background in environmental science and policy with a focus on the analysis and presentation of scientific and economic data relevant to environmental policy and energy development.

Amanda Kass**, M.A., Research and Policy Specialist, Pensions and Local Government, Center for Tax and Budget Accountability.** Ms. Kass joined CTBA in 2011 as Research and Policy Specialist, Pensions and Local Government. She also heads CTBA's Illinois Retirement Security Initiative. Before joining CTBA, Ms. Kass completed an M.A. in Geography from the University of Colorado at Boulder.

ACKNOWLEDGEMENTS

This work was commissioned by our client, Prairie Rivers Network (PRN). PRN's mission is to protect the rivers and streams of Illinois and to promote the lasting health and beauty of watershed communities. More information about PRN can be found at www.prairierivers.org. We also extend our appreciation to PRN's partner organizations, each of which lent support for and input into this project. These organizations include the EcoJustice Collaborative, Faith in Place, and the Illinois Chapter of the Sierra Club. Finally, we would like to thank the Educational Foundation of America and RE-AMP for providing the funding for this report and for the parent report, "The Impact of Coal on the Illinois State Budget."

ABBREVIATIONS

CAPP	Central Appalachia
E. INT	Eastern Interior
EIA	Energy Information Administration
FY	Fiscal Year
LGEAF	Local Government Economic Assistance Fund
LGEDF	Local Government Economic Development Fund
NAPP	Northern Appalachia
PRB	Powder River Basin
US	United States

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

Summary of findings and recommendations

This document analyzes the potential uses and benefits of a new coal severance tax in Illinois. Information and lessons taken from other states are used to project the amount of revenue that could be generated for Illinois from a coal severance tax and to model how the resulting revenues might be distributed. We propose a tax model for Illinois that would maximize benefits for both state and local governments while also financing a permanent mineral trust fund. However, to support a meaningful discussion about this concept, this report:

1. **Reviews the definition of a severance tax.** The general definition of a severance tax is "an excise tax on non-renewable natural resources severed from the earth," imposed on either the value or the volume of the resource produced.
2. **Provides an overview of the reasons other state and local governments collect severance taxes.** These include capturing a portion of the resource wealth for the benefit of residents, covering the costs associated with resource extraction, covering annual budgetary expenditures, and/or financing a permanent mineral trust fund to expand the benefits of the tax revenues.
3. **Explains why Illinois should implement a severance tax on coal.** There are numerous reasons why Illinois should implement a coal severance tax. For instance: Illinois is one of only a handful of states that does not collect such a tax; the tax would generate new revenue for state and local governments; the tax would have little impact on electricity prices in Illinois; the new revenues could help cover environmental and other costs associated with coal extraction; and coal production in Illinois is projected to increase substantially over the next few decades, so the revenues from a severance tax would continue to increase.
4. **Describes the various severance tax structures in other coal-producing states.** Of the 25 coal-producing states, more than half have some form of severance tax on coal. In most cases, the tax is collected by the state, while in a few cases the tax is collected by local governments. The form and rate of the tax varies from state to state and may be either a tax on gross or net income generated by the sale of the extracted resource or on the volume of the resource produced. Additionally, the tax rate in some states varies by mining method.
5. **Estimates the amount of annual revenues Illinois could have received if it had implemented a coal severance tax in 2002.** Based on our review of coal severance tax structures and rates in select coal-producing states—Wyoming, West Virginia, Kentucky, Indiana, Ohio, and Tennessee—we estimate that an Illinois coal severance tax could have generated average annual revenues of between $1.2 million under the Indiana model to $66 million under the West Virginia model, from 2002 through 2012.[1]

To project future revenues that could be generated from an Illinois coal severance tax, federal projections for basin-level coal production and average coal prices are combined with recent production data to estimate future coal production and prices for Illinois. Coal production in Illinois is projected to increase from 48.5 million tons in 2012 to 77.2 million tons by 2040, while average coal prices are projected to increase from $53 per ton in 2012 to $67 per ton by 2040.[2] As a result, the gross value of Illinois coal is projected to nearly double—from $2.6 billion to $5.2 billion—over the study period.

Using these projections, the revenue impact for Illinois is estimated using three selected tax rates from other states that have a coal severance tax. The results of the model show that annual severance tax revenues in Illinois could range from $59.9 million to $173.5 million in 2020, and from $77.2 million to $258.2 million by 2040. Total revenues collected through 2040 could amount to $1.8 billion on the low end and as much as $5.4 billion on the high end.

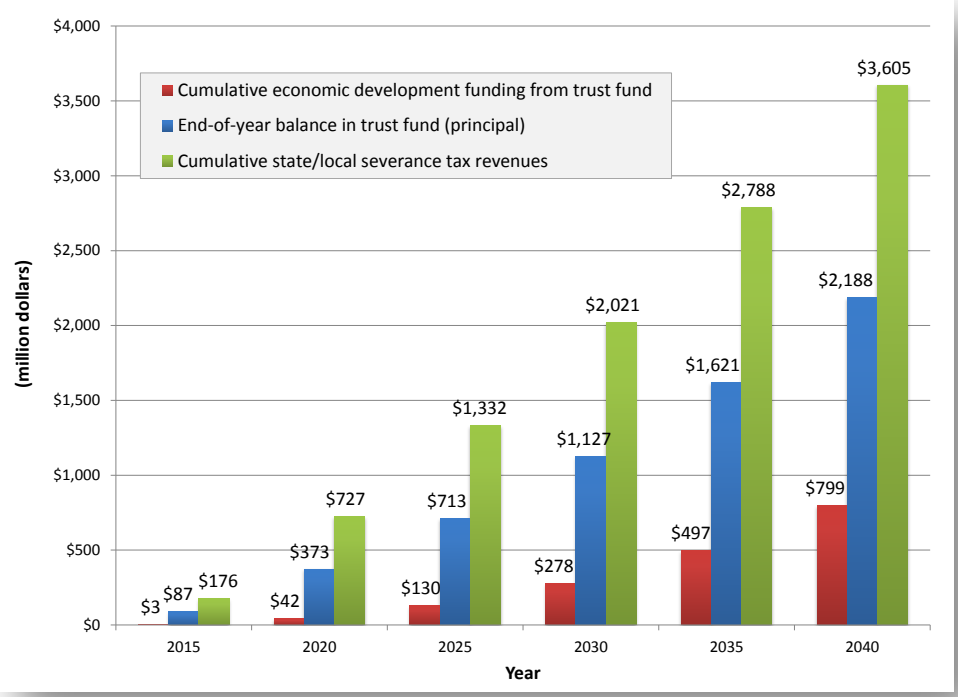
[1] In this report, past prices and all calculations based on past prices are in nominal dollars.
[2] In this report, future prices and all calculations based on future prices are in 2012 dollars.

Based on these results, we recommend that Illinois implement a coal severance tax based on a percent of gross production value. To maximize the revenues generated by this tax, the tax rate should be set at 5% of the gross value of the coal produced. To ensure that the revenues provide a direct benefit to the communities where the coal is mined, we also recommend that a portion of the revenues be distributed to county governments based on relative production levels. Finally, considering the fact that the revenues last only as long as the resources are economical to extract, and that these resources are ultimately exhaustible, we further recommend that Illinois set up a permanent mineral trust fund in order to extend and expand the impact of the severance tax for the benefit of future generations.

For the tax to benefit both state and local governments while also financing a permanent mineral trust fund, the revenues could be allocated as follows: 33% to the state General Revenue Fund, 33% to coal-producing counties based on relative production levels, and 33% to the trust fund. Under this model, new General Revenue Fund revenues would amount to $58 million in 2020, coal-producing counties would share an additional $58 million, and $58 million would be deposited into the trust fund. By 2040, the allocations would increase to $86 million for each category. On top of the new state and local revenues, annual allocations from the trust fund could be used to supplement state and county budgets or to support foundational initiatives for future economic development such as childhood development, workforce training, or health care. However, given the state's poor fiscal condition, Illinois may decide—at least over the short term—that it is appropriate to transfer a greater percentage of the revenue generated from a coal severance tax to the General Revenue Fund to make up for structural deficit shortfalls or to cover increased pension payment obligations.

Based on this model, we project that, through 2040, cumulative interest earned on the trust fund would amount to $1.2 billion, cumulative disbursements from the fund would total $799 million, and cumulative revenues distributed to state and local governments directly from the severance tax (not via the fund) would total nearly $3.6 billion. Overall, a coal severance tax and the development of a permanent mineral trust fund could generate $4.4 billion in new funding through 2040, and an additional $2.2 billion would still remain in the fund earning interest. In fact, even if coal production were to cease beyond 2040, as long as the principal earns interest at a rate exceeding that of annual disbursements from the fund, the fund would continue to grow in perpetuity.

Estimated future revenues from an Illinois coal severance tax and Coalfield Economic Development Trust Fund, 2015-2040



What are severance taxes?

A severance tax is generally defined as an excise tax on non-renewable natural resources severed from the earth (Zelio and Houlihan, 2008). Severance taxes can take many names, such as "severance tax," "production tax," "excise tax," "mining tax," or "conservation tax." In most cases, the tax is imposed either on the income earned from the extraction of a natural resource or on the volume of the resource produced.

For severance taxes based on income, the tax may represent either a percentage of the gross value or the net (market) value of the resource produced, depending on the state imposing the tax.[3] For taxes based on volume extracted, the tax is usually imposed at a flat rate per unit of measure, such as tons of coal or ore, cubic feet of natural gas, or barrels of oil. In some states the tax only kicks in once a minimum volume of production is reached. Severance taxes may also be scaled depending on the sales price of the resource. Additionally, some states only tax certain resource extraction industries and not others, while other states—such as Pennsylvania and Illinois—do not collect a severance tax at all, despite having strong extractive industries (Zelio and Houlihan, 2008). Typically, severance taxes apply to all industries that are active in a state—such as coal, natural gas, oil, metals, and other minerals.

Why are severance taxes collected?

Severance taxes are collected for a variety of reasons. The primary underlying reason is to capture a portion of the wealth generated by the production of non-renewable resources to ensure that residents benefit from and are compensated for the loss. If used productively, the revenues can benefit both current and future generations. However, there are other more specific reasons for collecting the tax, and in many cases the tax revenues are used only for short-term purposes. As such, the benefits of a severance tax vary from year to year depending on the success of the industries being taxed, and they extend only for as long as the natural resources can be economically extracted.

Examples of short-term use in other states of all or a portion of the revenue from a severance tax include covering costs associated with resource extraction such as constructing, maintaining, and/or repairing roads; environmental protection and clean-up; or paying off unpaid workers' compensation claims (Pless, 2012; McIlmoil et al., 2010a). As such, the tax ensures that these costs are paid by the producers rather than taxpayers. Unfortunately, the revenues are not always sufficient for covering these costs (McIlmoil et al., 2010a and b; 2012a and b).

In most states, most or all of the revenues from severance taxes are deposited into the state general fund to cover annual budgetary expenditures, such as those for education, health care, economic development, infrastructure, public protection, or government administration. In a few states, the severance tax is collected locally to support local government, or part of the revenues are distributed to local governments by the state.

Each of these uses of severance tax revenues provides tangible and, arguably, lasting benefits for governments and residents. However, recognizing the need for extending and even expanding the impact of the severance tax for the benefit of future generations, many western states such as Alaska, Montana, New Mexico, and Wyoming have established permanent mineral trust funds (Boettner et al., 2012). This type of trust fund and its potential benefits for Illinois are described later in this document.

[3] Gross value is calculated as the volume of the resource produced multiplied by the sales price either at the point of production or the point of sale. Net value represents the gross value minus any allowed deductions, which may include production costs, losses, other taxes, or royalties.

Why should Illinois collect a coal severance tax?

Illinois is one of only three coal-producing states that does not collect severance taxes (United States Census Bureau, 2015). While this in itself does not justify implementing a severance tax, it does suggest that the majority of coal-producing states believe that the benefits of a severance tax outweigh any potential impacts on production.

A review of numerous studies analyzing the impact of tax rates on extractive industries such as coal mining found that tax rates have little impact on production but result in substantial increases in state revenue (O'Leary, 2011). A primary explanation is that taxes represent only a small part of the overall cost of doing business. The report states that wages and transportation costs can have a greater impact on production than changes in tax rates (O'Leary, 2011). In the case of coal, prices—and therefore, to a large extent, demand and production—are predominantly determined by domestic and foreign markets, not taxes.

There are several reasons why Illinois should implement a coal severance tax—the most obvious being increased revenue. Many state and local governments responded to the recent economic recession and declines in tax revenue by cutting spending on vital programs such as education and human services.[4] As shown in Table 3, an Illinois coal severance tax could have generated nearly $129 million in tax revenues in 2012. While this would provide only a relatively small boost in revenue, it is not insignificant, and it would be one step toward addressing Illinois' long-standing fiscal issues.

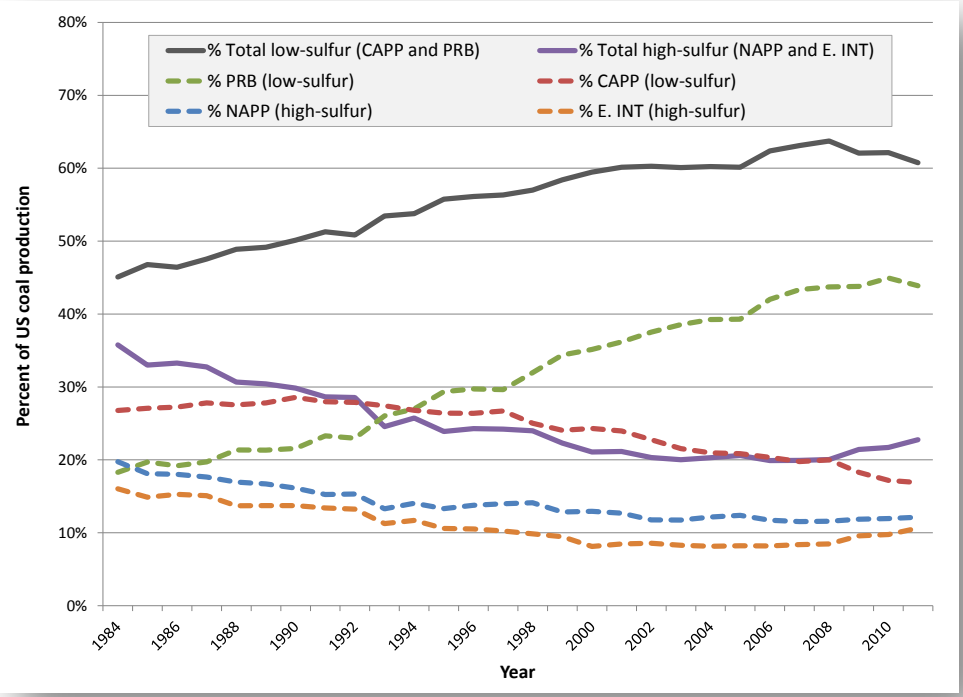
Another reason why Illinois should implement a coal severance tax is because, for the most part, the tax would be exported, meaning that Illinois residents would not pay the tax via higher electricity rates. On the contrary, the tax would be paid mostly by out-of-state consumers because only 22% of all coal produced in Illinois in 2012 was consumed in-state, and only 15% was consumed in-state for electricity generation (EIA, 2012). In fact, while the lack of a severance tax on Illinois coal is benefitting consumers in other states (such as Indiana and Kentucky), Illinois residents are paying for the severance tax collected on coal produced in Wyoming and shipped to Illinois for electricity generation, because most coal consumed in Illinois comes from Wyoming (EIA, 2015).

Additional reasons for implementing a coal severance tax include those described earlier, namely, capturing a portion of the resource wealth to benefit current and future generations, covering a portion or all of the costs associated with coal extraction, and encouraging conservation of natural resources. Perhaps the strongest overarching reason that Illinois should institute a coal severance tax, as soon as possible, has to do with timing.

As shown in Figure 1, production of United States (US) coal is shifting toward high-sulfur coal from the Eastern Interior (E. INT) and Northern Appalachian (NAPP) coal basins. The shift is not dramatic; however, the benefits of the shift are already being felt by coal producers in Illinois, Indiana, and western Kentucky. Since 2008, production from these three E. INT states has increased by 17.2 million tons, while overall production from the Central Appalachian (CAPP) and Powder River Basin (PRB) regions has fallen by 49.4 and 31.7 million tons, respectively (Mellish, 2012). While production from other coal basins (except CAPP) is expected to rebound, production from E. INT states such as Illinois is projected to increase substantially.

[4] Unlike many other states, Illinois' fiscal problems did not originate with the recent economic recession.

Figure 1: Production of low- and high-sulfur coal from selected coal basins, 1984-2011



The federal Energy Information Administration (EIA) projects that by 2020, annual E. INT coal production will increase by 46 million tons, representing an increase in annual production of 35% over 2012 levels (EIA, 2014a). From 2020 through 2040, annual E. INT production is projected to increase by another 51 million tons (EIA, 2014a). Therefore, overall, the next few decades could see an increase in annual E. INT coal production of 97 million tons. While this may not benefit each of the three E. INT coal states equally, data for 2011 and 2012 does provide a possible indication of how increased demand for E. INT coal might relatively benefit each of the three states in the coming years.

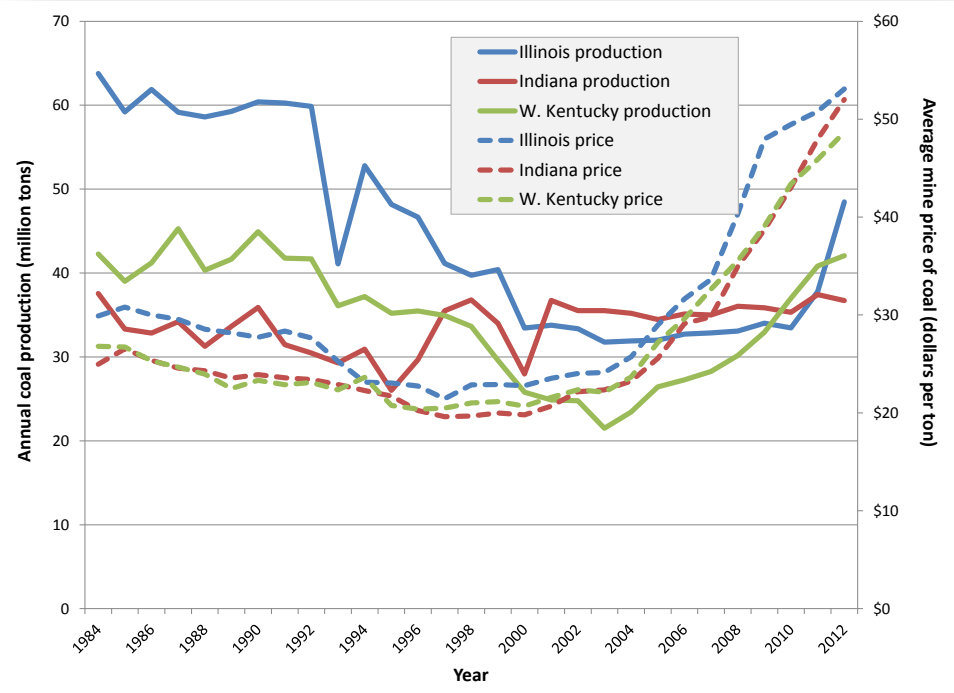
As shown in Table 1 and Figure 2, in 2012, Illinois coal production exceeded western Kentucky by 6.4 million tons and Indiana by 11.8 million tons and reached its highest production volume since 1994 (EIA, 2013a). Between 2011 and 2012, total production in the basin was up 11 million tons. Illinois accounted for most of this increase and, in 2012, the state accounted for the greatest share of total E. INT coal production: 38% (EIA, 2013a).

Table 1: Coal production in Eastern Interior states, 2011-2012 (million tons)

	2012	2011	Change
Illinois	48.5	37.8	10.7
Indiana	36.7	37.4	-0.7
W. Kentucky	42.1	40.8	1.3
Total	**127**	**116**	**11**
Percent Illinois	**38%**	**33%**	

Any increase in Illinois coal production is likely to result in an increase in the revenues that could be generated from a coal severance tax—as long as coal prices do not fall dramatically. However, the amount of revenues generated would be determined by the structure and rate of the tax.

Figure 2: Trends in coal production and prices for Eastern Interior states, 1984-2012



What do coal severance taxes look like for other states?

As discussed, most coal-producing states in the US collect some form of coal severance tax. In most cases, the tax is collected by the state, while in a few cases the tax is collected by local governments. In some states with a state tax, a portion of the revenues are distributed to local governments—sometimes only to locales (counties and municipalities) that produce coal, and in other cases (such as West Virginia) to all local governments as determined by a population- and production-based formula. In some states, the revenues are earmarked for a specific purpose such as reclamation or economic development, while in other states the revenues are used for general purposes. The form and rate of the tax varies from state to state and may exist as either a tax on gross or net income generated by the sale of the extracted resource or on the volume of the resource produced. Additionally, the tax rate in some states varies by mining method, with underground-mined coal typically being taxed at a lower rate than surface-mined coal. Table 2 provides details on coal severance taxes for the top ten coal-producing states for 2011.

Table 2: Coal severance tax rates and structure for the top ten coal producing states in 2011

Production rank	State	Severance tax?	State/local?	Purpose	Tax rate
1	Wyoming	Y	State, local distribution	Mineral trust fund, general revenues, other	3.75% of gross value for underground coal (capped at $0.30 per ton), 7% of gross value for surface coal (capped at $0.60 per ton).
2	West Virginia	Y	State, local distribution	General revenues	5% of gross value of all coal produced. Reduced to 1-2% for thin-seam underground coal. Additional taxes for reclamation, workers' compensation.
3	Kentucky	Y	State, local distribution	General revenues, economic development	4.5% of gross value of coal produced. Reduced to 2.25-3.75% for thin-seam coal.
4	*Pennsylvania*	*N*	*n/a*	*n/a*	*n/a*
5	*Texas*	*N*	*n/a*	*n/a*	*n/a*
6	Montana	Y	State, local distribution	General revenues, coal trust fund, other	10-15% of value for surface coal, 3-4% for underground coal; depends on energy content.
7	*Illinois*	*N*	*n/a*	*n/a*	*n/a*
8	Indiana	Y	State	Reclamation	$0.055 per ton for surface coal, $0.03 per ton for underground coal.
9	North Dakota	Y	State, local distribution	Coal trust fund (30%), local funds (70%)	$0.375 per ton plus $0.02 per ton for lignite research. Rate reduction of 50% for cogeneration facilities. Counties may grant exemptions for 70% of tax.
10	Ohio	Y	State	Reclamation and mapping	$0.10 per ton (base tax), $0.16 per ton additional tax, plus additional $0.012 per ton for surface coal.

Sources: Kent and Eastham (2011); Zelio and Houlihan (2008). Note: States shown in italics do not collect a coal severance tax.

Montana has the highest nominal income-based tax rate: up to 15% of the gross value for surface-mined coal (the predominant method of mining in the state) and 4% of the gross value for underground coal, depending on the energy content of the coal. Colorado (not shown in Table 2) imposes the highest nominal production tax rate: $0.54 per surface-mined ton and $0.27 per ton for underground coal.

Overall, the rate and structure of coal severance taxes are determined by the needs of state and local governments and serve a variety of purposes. Were Illinois to implement a coal severance tax, the type and rate of the tax as well as the distribution of the revenues would all have to be determined according to state and/or local needs. The following section presents estimates of the potential revenues that could be generated for Illinois under three different coal severance tax structures.

How much revenue would an Illinois coal severance tax have generated since 2002?

Because Illinois does not collect a severance tax, the state foregoes a substantial amount of revenue. The amount foregone depends on the tax rate used for comparison. As shown in Table 3, the severance tax rates for six other coal-producing states would, if implemented in Illinois, result in a wide range of tax revenues. Based on these six state models, it is estimated that an Illinois severance tax could have generated between $1.6 million (Indiana model) and $128.8 million (West Virginia model) in 2012 (see Table 3).

Table 3: Severance tax revenue potential for Illinois, 2012

Model state	Tax rate	Illinois revenue (million $)
West Virginia	5% of gross value of coal	$128.8
Kentucky	4.5% of gross value of coal	$115.8
Wyoming	7% of gross value of surface coal, 3.75% underground	$104.9
Tennessee	$1 per ton	$48.5
Ohio	$0.272 per ton surface; $0.26 underground	$12.7
Indiana	$0.055 per ton surface; $0.03 underground	$1.6

Note: These estimates are based on a select group of states that impose a range of tax rates and/or have similar production amounts, production profiles, or coal characteristics as Illinois. Additionally, the revenue estimates shown represent a maximum possible revenue. Actual revenue may be lower if production incentives such as a thin-seam tax credit were to be made available as it is in West Virginia and Kentucky, for instance. In other words, depending on whether production incentives are provided, the actual effective tax rate—and therefore the resulting revenues—may be somewhat lower.

Table 3 provides only a snapshot of annual severance tax revenues that could have been generated for Illinois. As such, it does not illustrate the potential for revenues to grow over time, nor does it compare the two forms of severance tax—income-based and production-based. As shown in Figure 3, both coal production and the price of Illinois coal have increased since 2002. Revenues from a coal severance tax would have increased over the period, regardless of the form of tax. However, the extent of the increase would have depended on both the form and rate of the tax.

The result of an increase in both price and production is that the gross value of the coal produced in 2012 was higher than the value of coal produced in 2002. Therefore, over time, revenues from a coal severance tax based on a percent of gross value would increase in proportion to the value. Because of this, annual severance tax revenues can actually increase even if production falls, as long as coal prices rise sufficiently to make up for value lost due to the decline in production. Alternatively, revenues from a tax based on production volume would only increase in proportion to production and would therefore be vulnerable to annual fluctuations in production, regardless of price changes.

In other words, severance tax revenues tied to a percent of production value (income) can remain stable or even increase if coal production declines, whereas revenues tied to production volume can only decline over the long term, as coal reserves are mined out. Or, even if gross production value falls—as occurred in Illinois between 2002 and 2003 due to a decline in production and only a slight increase in price—the decline in revenues from an income-based tax would have been lower than the decline in revenues based on a tax on production volume. Alternatively, during periods of growth in both production and price, such as from 2007 to 2009, revenues from an income-based tax would have increased at a greater rate than revenues from a tax on production volume.

What this information shows is that the only situation where a production tax provides more stability than an income-based tax is if prices decline at a greater rate than production. In all other cases, the benefits of an income-based tax—whether during a period of growth or decline—are greater than those from a tax on production volume. A comparison of Figure 3 and Figure 4 illustrates the potential revenue impacts of trends in production and prices under the two forms of severance tax.

Figure 3: Annual coal production and average mine prices for Illinois, 2002-2012

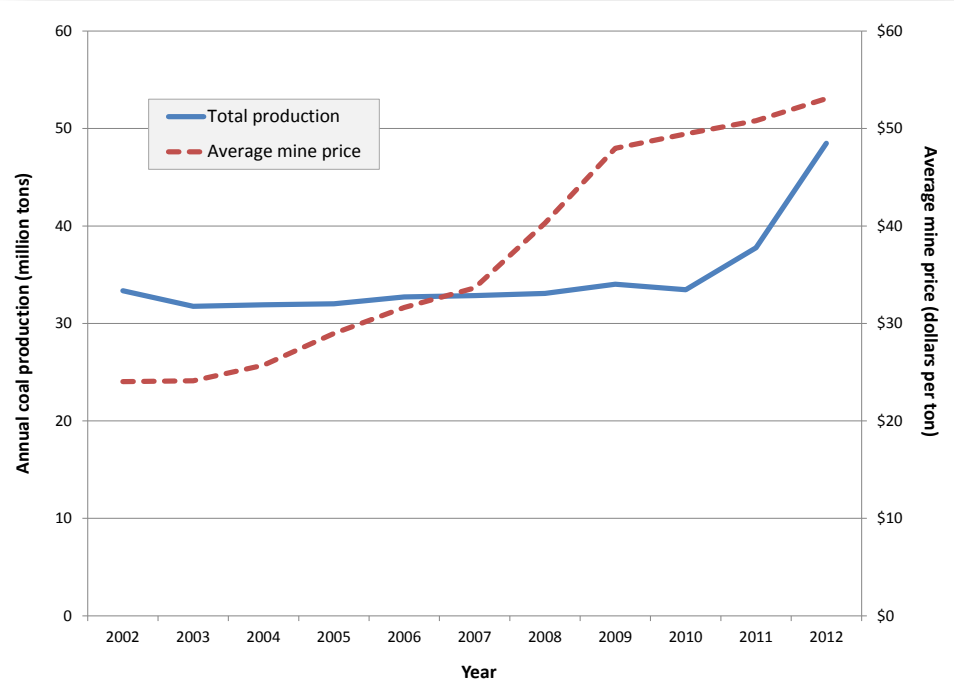
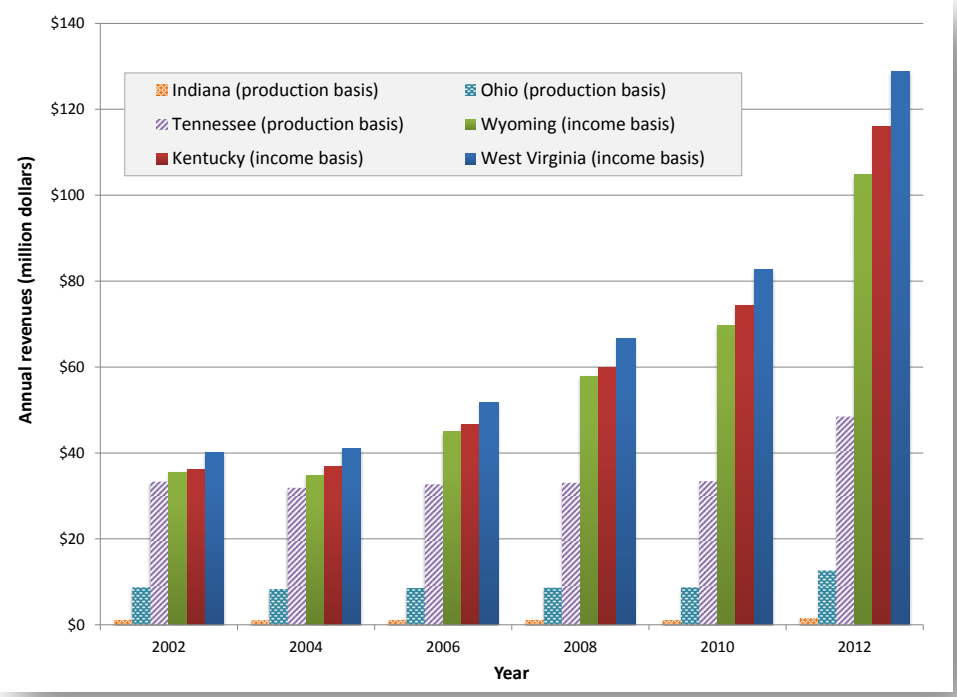


Figure 4: Foregone severance tax revenue for Illinois, based on various tax structures in other states, 2002-2012



Of the six coal severance taxes modeled in Figure 4, a tax on gross production value would have generated the greatest amount of revenue for Illinois from 2002 to 2012 and would have increased at the greatest rate. In fact, because Illinois coal production remained relatively stable through 2010, experiencing only slight fluctuations, the rate of increase in revenues from a production-based tax would have been virtually zero. Additionally, as would be expected, a higher tax rate—such as the 5% tax collected in West Virginia—would have generated more revenues than the lower tax rates of Kentucky and Wyoming.

Overall, revenues from a coal severance tax based on West Virginia's model would have increased from $40.1 million in 2002 to $128.8 million by 2012, representing a significant increase. The same rate of increase would have occurred under the Kentucky model because both states impose a flat tax rate regardless of mining type. Wyoming imposes a higher tax rate on surface mining (7% of gross value) than underground mining (3.75% of gross value); therefore, under the Wyoming model the overall rate of increase in revenues for Illinois would have been smaller because production from underground mining increased relative to total production.[5]

In total, revenues generated from an Illinois coal severance tax based on the West Virginia model would have amounted to approximately $726 million from 2002 to 2012, representing an annual average of $66 million. By comparison, total revenues generated from a tax based on the Indiana model would have amounted to approximately $13 million, representing an annual average of $1.2 million.

[5] Wyoming likely imposes a higher tax rate on coal produced from surface mining because more than 99% of Wyoming's coal is produced from surface mines. It is likely that the lower tax rate for underground-mined coal is an attempt to incentivize or support underground mining.

How much future revenue could a coal severance tax generate?

Projecting into the future, if coal production and average coal prices for Illinois coal increase—as they are projected to do—the revenues gained from a coal severance tax would increase as well. Using severance tax rate structures for West Virginia, Kentucky, and Tennessee, combined with projections for future coal production and prices for the E. INT basin, future severance tax revenues for Illinois are projected through 2040.

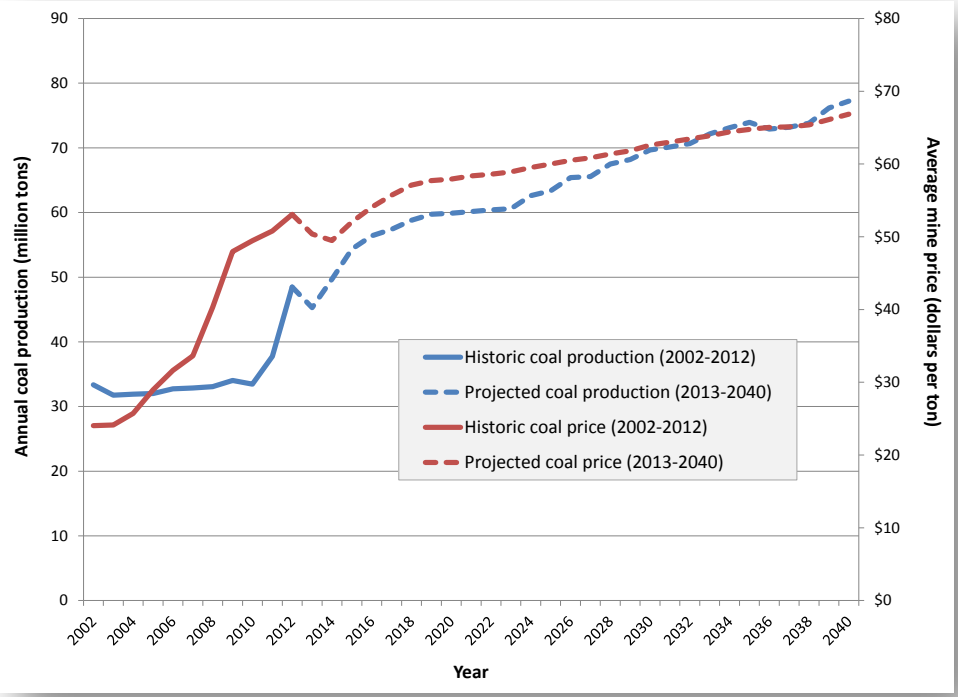
First, to estimate Illinois' future share of projected coal production for the E. INT basin we use the state's average share of total production from the basin for 2008 to 2012 (33.9%) and apply this percentage to EIA's basin-level projections (Mellish, 2012; EIA, 2014a). For coal price, we use the projected price for the basin and assume that prices for Illinois coal equal the basin-level price (EIA, 2014b).

As shown in Table 4 and Figure 5, based on EIA's projections, coal production in Illinois is estimated to increase from approximately 48.5 million tons in 2012 to 77.2 million tons by 2040. Average coal prices are projected to increase from $53 per ton in 2012 to $67 per ton by 2040. As a result, the gross production value from Illinois coal will nearly double from approximately $2.6 billion in 2012 to $5.2 billion by 2040. If Illinois were to implement a coal severance tax based on a percent of gross production value, the revenues from the tax would approximately double over the next three decades.

Table 4: Projected coal production, prices, and gross production value for Illinois coal through 2040

	2012	2020	2030	2040
Production (million tons)	48.5	59.9	69.7	77.2
Price (dollars per ton)	$53	$58	$63	$67
Gross production value (billion dollars)	$2.6	$3.5	$4.4	$5.2

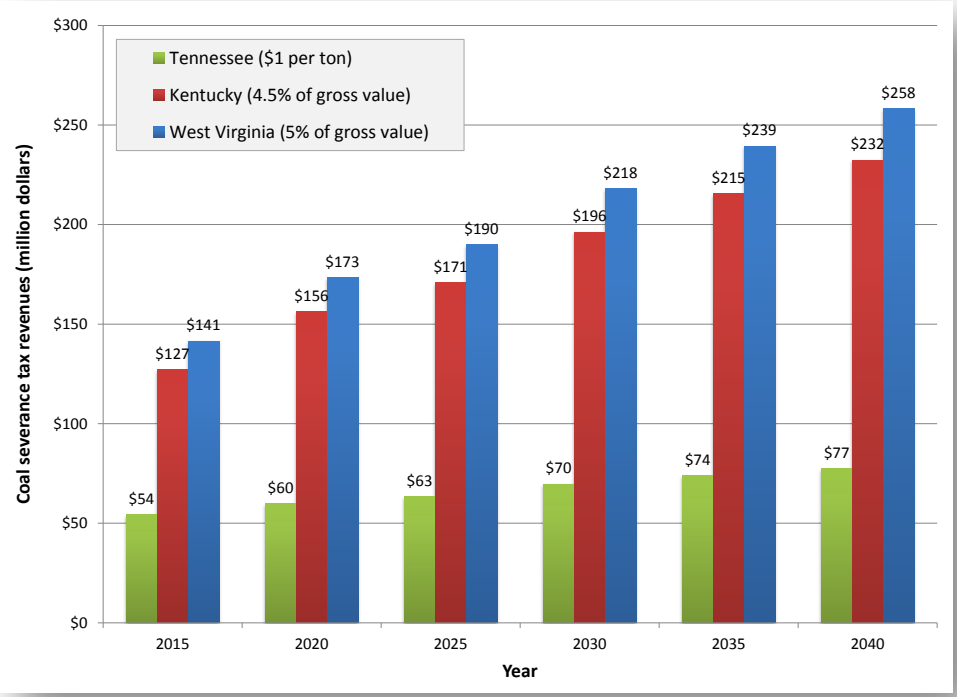
Figure 5: Actual and projected coal production and prices for Illinois, 2002-2040



Using the projections for annual coal production and gross production value, the annual revenues that an Illinois coal severance tax might generate based on the three selected tax models can be estimated. These three models were selected based on the desire to: (1) simplify the projections, which was achieved by selecting tax rates that do not vary depending on the type of mining; (2) present results for the two different forms of severance tax (income- and production-based); (3) show revenue projections that would provide sufficient incentive for implementing a coal severance tax; and (4) demonstrate different models for distributing the revenues. This latter criterion is useful for the analysis presented in the following section.

As illustrated in Figure 6, we estimate that annual severance tax revenues in Illinois could range from $59.9 million (Tennessee model) to $173.5 million (West Virginia model) in 2020, and $77.2 million to $258.2 million by 2040. Total revenues collected over this time period (2014-2040) could amount to $1.8 billion on the low end and as much as $5.4 billion on the high end.

Figure 6: Projected coal severance tax revenues for Illinois, based on selected models, 2015-2040



How might these revenues be distributed?

As noted, the three state severance taxes modeled in Figure 6 were chosen for a variety of reasons, one of which is that they represent three different models for use and distribution of the resulting tax revenues. This section describes the distribution of revenues in each state and illustrates how revenue distribution could look for an Illinois coal severance tax under each model.

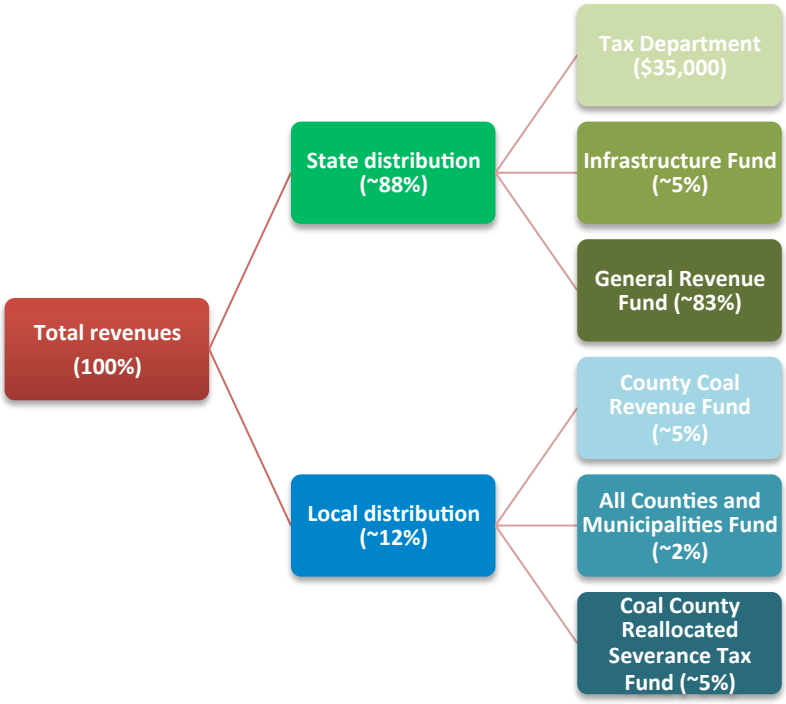
West Virginia model

West Virginia's severance tax was first instituted in 1987. The tax rate is 5% of the gross value of any natural resource extracted, including non-fuel minerals, coal, natural gas, and oil. Reduced rates apply to thin-seam coal produced by underground mining methods as well as the extraction of waste coal. In recent years, coal has generated nearly 90% of total severance tax revenues. In Fiscal Year (FY) 2011, the severance tax on coal generated approximately $450 million in revenues for state and local governments (O'Leary, 2011). Generally, 93% of coal severance tax revenue is deposited into state General Revenue Fund, with a portion of these revenues dedicated to the Infrastructure Fund and a smaller portion ($35,000) sent to the state Tax Department for administering the tax. The remaining 7% is distributed to county and municipal governments.

Of the 7% local share, 75% is deposited into the County Coal Revenue Fund and ultimately distributed to coal-producing counties based on each county's share of total state coal production. In FY2011, the revenues distributed from the County Coal Revenue Fund amounted to $28.3 million. The remaining 25% of the revenues are deposited into the All Counties and Municipalities Fund and distributed quarterly to all county and municipal governments in the state based on population. In FY2011, revenues distributed from the All Counties and Municipalities Fund amounted to $9.4 million (O'Leary, 2011).

Following the 2011 legislative session, a new law was enacted that dedicates an additional 5% of total revenues to coal-producing counties, up to $20 million annually.[6] This additional revenue will be deposited into each county's Coal County Reallocated Severance Tax Fund, but only after revenues dedicated to all the other funds have been distributed. Unlike the revenues deposited into the General Revenue Fund and the two local funds—the use of which is virtually unrestricted—the new reallocated revenues can only be used for economic development and infrastructure projects. If the new law had been in place in FY2011, West Virginia's coal-producing counties would have received the maximum of $20 million in additional funding (O'Leary, 2011). The distribution structure for West Virginia's coal severance tax revenues is illustrated in Figure 7.

Figure 7: The distribution of revenues generated by West Virginia's coal severance tax



Note: The percentage values represent the approximate percent of total revenues. The inclusion of the Coal County Reallocated Severance Tax Fund complicates the diagram because the revenues are taken out of the state's 93% share and re-distributed to local governments. As such, the local distribution percent (12%) was increased from the 7% based on the impact of the new reallocation.

Were Illinois to follow West Virginia's model for distributing coal severance tax revenues, new revenues for the state government could amount to approximately $151 million in 2020, $190 million in 2030, and $225 million in 2040. New revenues for local governments could amount to approximately $23 million in 2020, $28 million in 2030 and $34 million in 2040, with the majority of the revenues being distributed to Illinois' coal-producing counties (see Table 5). However, given the state's poor fiscal condition, Illinois may instead decide to transfer a greater percentage of the revenue generated from a coal severance tax to the General Revenue Fund to make up for structural deficit shortfalls or to cover increased pension payment obligations.

[6] WV Code 11-13A-6a.

Table 5: Distribution of potential coal severance tax revenues in Illinois using the West Virginia model (million dollars)

	2015	2020	2025	2030	2035	2040
State distributions						
General revenues	$116.0	$142.2	$155.8	$178.8	$196.3	$211.7
Infrastructure	$7.1	$8.7	$9.5	$10.9	$12.0	$12.9
Tax administration	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
State government sub-total	**$123.1**	**$151.0**	**$165.3**	**$189.8**	**$208.3**	**$224.7**
Local distributions						
Coal-producing counties (total)	$15.6	$19.1	$20.9	$24.0	$26.3	$28.4
All counties and municipalities	$2.8	$3.5	$3.8	$4.4	$4.8	$5.2
Local government sub-total	**$18.4**	**$22.6**	**$24.7**	**$28.3**	**$31.1**	**$33.6**
Total revenues	**$141.5**	**$173.5**	**$190.0**	**$218.1**	**$239.4**	**$258.2**

Table 6 shows estimated revenues each of Illinois' coal-producing counties would receive in select years as a result of a coal severance tax under the West Virginia distribution model. The revenues represent only the share of revenues distributed to coal-producing counties and do not include additional distributions from the "All counties and municipalities" category. The distribution of revenues is based on each county's share of total production in 2012 (EIA, 2013b). While the percentages would most likely change in the future—thereby either increasing or decreasing each county's share of revenues—future changes cannot be predicted at the county level. As shown, Saline County would benefit the most from a coal severance tax under this model, followed by Williamson, Franklin, Perry, and Randolph counties.

Table 6: Future severance tax revenues for Illinois' coal-producing counties using the West Virginia model (million dollars)

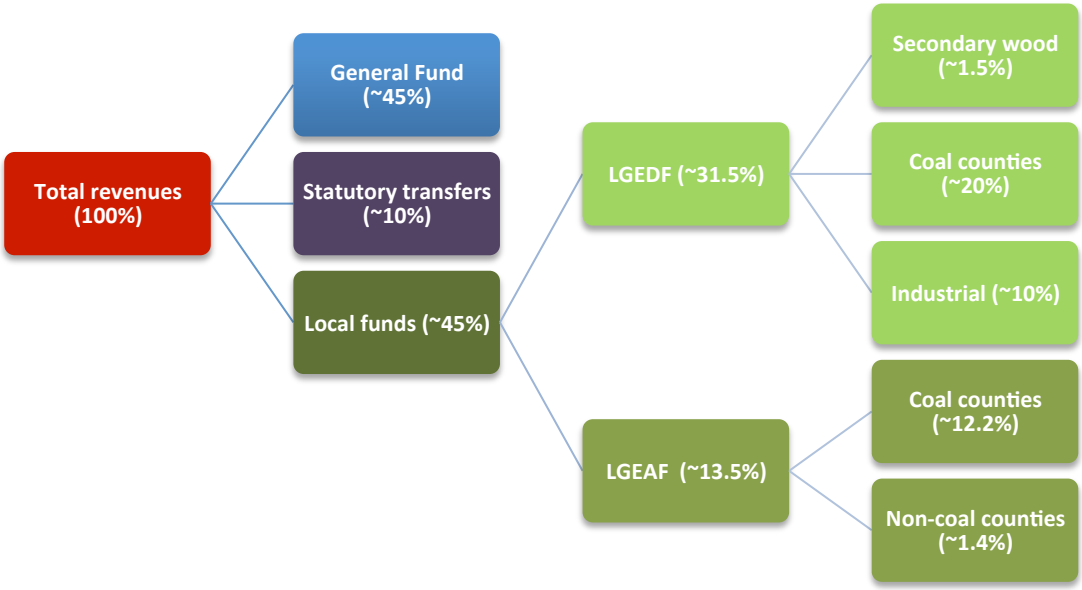
Coal-producing county	Percent of total production (2012)	2015	2020	2025	2030	2035	2040
Franklin	10%	$1.5	$1.8	$2.0	$2.3	$2.5	$2.7
Gallatin	4%	$0.6	$0.8	$0.9	$1.0	$1.1	$1.2
Jackson	0%	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1
Macoupin	5%	$0.8	$1.0	$1.1	$1.2	$1.4	$1.5
McDonough	0%	< $0.1	< $0.1	< $0.1	< $0.1	< $0.1	< $0.1
Montgomery	5%	$0.8	$0.9	$1.0	$1.2	$1.3	$1.4
Perry	7%	$1.1	$1.4	$1.5	$1.8	$1.9	$2.1
Randolph	7%	$1.1	$1.3	$1.4	$1.7	$1.8	$2.0
Saline	28%	$4.3	$5.3	$5.8	$6.7	$7.3	$7.9
Sangamon	4%	$0.7	$0.8	$0.9	$1.0	$1.1	$1.2
Wabash	3%	$0.5	$0.6	$0.6	$0.7	$0.8	$0.8
Washington	6%	$0.9	$1.1	$1.2	$1.4	$1.5	$1.7
White	5%	$0.8	$0.9	$1.0	$1.2	$1.3	$1.4
Williamson	16%	$2.4	$3.0	$3.2	$3.7	$4.1	$4.4

Kentucky model

Kentucky instituted its coal severance tax in 1972. At that time, most of the revenues were used for general state expenses. The tax rate is 4.5% of the gross value of the coal extracted, although reduced rates of between 2.25% and 3.75% apply for thin-seam coal mined by underground mining methods, with the rate depending on seam thickness and the location of the seam relative to the surface drainage level. Total coal severance tax revenue amounted to $295.8 million in FY2011 (Kentucky Department of Revenue, 2011).

In 1992, Kentucky enacted legislation that required half of the revenues to be allocated to the coal-producing counties of eastern and western Kentucky.[7] This 50% local allocation is comprised of distributions of 35% to the Local Government Economic Development Fund (LGEDF)—a fund for financing the development of industrial parks and sites—and 15% of total revenues to the Local Government Economic Assistance Fund (LGEAF), a revenue-sharing program for local governments to provide basic services. The remaining funds are deposited into the Kentucky General Fund.

Figure 8: The distribution of revenues generated by Kentucky's coal severance tax



Note: For the West Virginia graphic in Figure 7, each column adds up to 100%; however, in Figure 8 for Kentucky, each column adds up to the percentage in the level above it. The two diagrams use the format that is most appropriate for representing the distribution structure in each state.

In the 1990s, the Legislature began using LGEDF revenues for educational and social programs in coal mining areas, debt service on coal county capital projects, development of local facilities such as libraries and community centers, coal- and energy-related expenses, and educational expenses (Bailey and Konty, 2012). LGEDF funds are allocated as follows. First, 5% of the funds are transferred into the Secondary Wood Products Development Fund. Of the remaining revenues following this transfer: 33% is allocated to each coal-producing county based on each county's relative share of total coal production; 33% is allocated to each coal-producing county based on relative employment, earnings, and surplus labor rate; and 33% is reserved for use in funding industrial development projects that benefit two or more coal-producing counties (Virginia Economic Bridge and West Virginia Center on Budget and Policy, 2012).

[7] The local distributions represent 50% of the net revenues following the transfer of $19 million to the Kentucky Workers' Compensation Funding Commission and reimbursements to companies that qualified for severance tax incentives.

LGEAF funds are allocated as follows: 60% is allocated to coal-producing counties based on each county's relative share of total coal production; 30% is allocated to coal-producing counties based on weighted factors, including per-capita income (the county with the lowest receives a greater share of revenue), ton-miles of coal resource roads, and population; and 10% is allocated based on another weighted formula to non–coal-producing counties that are impacted by the transport of coal (Virginia Economic Bridge and West Virginia Center on Budget and Policy, 2012).

Were Illinois to follow Kentucky's model for distributing coal severance tax revenues, new revenues for state government could amount to approximately $86 million in 2020, $108 million in 2030, and $128 million in 2040. New revenues for local governments could amount to approximately $70 million in 2020, $88 million in 2030, and $105 million in 2040, with the majority of the local government revenues being distributed to Illinois' coal-producing counties (see Table 7).

Table 7: Distribution of potential coal severance tax revenues in Illinois using the Kentucky model (million dollars)

	2015	2020	2025	2030	2035	2040
State distributions						
General Fund	$57.3	$70.3	$76.9	$88.3	$97.0	$104.6
Statutory transfers	$12.7	$15.6	$17.1	$19.6	$21.5	$23.2
State government sub-total	**$70.0**	**$85.9**	**$94.0**	**$107.9**	**$118.5**	**$127.8**
Local distributions						
Coal-producing counties	$53.6	$65.7	$71.9	$82.6	$90.7	$97.8
Secondary Wood Products	$2.0	$2.5	$2.7	$3.1	$3.4	$3.7
Non-coal counties	$1.7	$2.1	$2.3	$2.6	$2.9	$3.1
Local government sub-total	**$57.3**	**$70.3**	**$76.9**	**$88.3**	**$97.0**	**$104.6**
Total revenues	**$127.3**	**$156.1**	**$171.0**	**$196.3**	**$215.5**	**$232.4**

Note: The coal-producing counties total includes the allocation for funding industrial parks.

Given that the formulas for allocating LGEDF and LGEAF funds to coal-producing counties are weighted and based on a variety of factors, estimating the relative share of local severance tax distributions for each of Illinois' coal-producing counties based on the Kentucky model is beyond the scope of this report. However, a key finding from the analysis in Table 7 is that, compared to the West Virginia model, the Kentucky model results in greater distribution of coal severance tax revenues to local governments, which receive almost half of total severance tax revenues.

Tennessee model

Compared to the West Virginia and Kentucky models, the Tennessee model provides a much simpler structure for the distribution of severance tax revenues that benefits only local governments. Tennessee also first instituted its coal severance tax in 1972. Prior to July 1, 2009, the rate of tax was $0.20 per ton of coal produced. The rate was then increased to $0.50 per ton for FY2010 and FY2011, and again to $0.75 per ton for FY2012 and FY2013. From FY2014 and beyond (or until the next rate increase), the tax rate will be $1 per ton (Virginia Economic Bridge and West Virginia Center on Budget and Policy, 2012).

Interestingly, coal is the only energy resource that is taxed based on production volume, as both natural gas and oil are taxed based on a percent of gross value. The tax is collected and administered by the Tennessee Department of Revenue, but other than an administrative fee of 1.125% on collections by the Department, all of the revenues are returned to the counties that produced the coal. Total coal severance tax revenues amounted to $823,000 in FY2011 (Tennessee Department of Revenue, 2012).

Because virtually all of the revenues are returned to the counties where the coal was produced, and because the tax (as of FY2014) is $1 per ton, the distribution of severance tax revenues using the Tennessee model is simple. For each ton of coal produced in a county, that county receives $1 in severance tax revenue (minus a 1.125% tax administration fee). Therefore, were Illinois to follow Tennessee's model for distributing coal severance tax revenues, no new state government revenues would be generated, but new revenues for local governments could amount to approximately $60 million in 2020, $70 million in 2030, and $77 million in 2040.

Table 8 shows estimated revenues each of Illinois' coal-producing counties would receive in select years as a result of a coal severance tax under the Tennessee distribution model. As such, the sum of the individual county revenues for each year represents the total projected severance tax revenues for Illinois. The distribution of revenues is based on each county's share of total production in 2012 (EIA, 2013b). While the percentages would most likely change in the future—thereby either increasing or decreasing each county's share of revenues—future changes cannot be predicted on the county level. Once again, Saline County would benefit the most from a coal severance tax under this model, followed by Williamson, Franklin, Perry, and Randolph counties.

Table 8: Future severance tax revenues for Illinois' coal-producing counties using the Tennessee model (million dollars)

Coal-producing county	Percent of total production (2012)	2015	2020	2025	2030	2035	2040
Franklin	10%	$5.3	$5.8	$6.1	$6.7	$7.2	$7.5
Gallatin	4%	$2.2	$2.5	$2.6	$2.9	$3.0	$3.2
Jackson	0%	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Macoupin	5%	$2.8	$3.1	$3.3	$3.6	$3.8	$4.0
McDonough	0%	$0.2	$0.2	$0.2	$0.3	$0.3	$0.3
Montgomery	5%	$2.7	$2.9	$3.1	$3.4	$3.6	$3.8
Perry	7%	$4.0	$4.4	$4.6	$5.1	$5.4	$5.7
Randolph	7%	$3.8	$4.2	$4.4	$4.8	$5.1	$5.4
Saline	28%	$15.1	$16.6	$17.6	$19.3	$20.5	$21.4
Sangamon	4%	$2.4	$2.6	$2.8	$3.0	$3.2	$3.4
Wabash	3%	$1.6	$1.8	$1.9	$2.1	$2.2	$2.3
Washington	6%	$3.2	$3.5	$3.7	$4.1	$4.3	$4.5
White	5%	$2.7	$2.9	$3.1	$3.4	$3.6	$3.8
Williamson	16%	$8.4	$9.3	$9.8	$10.8	$11.5	$12.0

For what purposes are coal severance tax revenues used?

As described earlier, the use of revenues from severance taxes varies from state to state. Most states dedicate all or at least a portion of the revenues to cover annual budgetary expenditures, including expenditures on education, health care, economic development, and government administration. Other uses for the revenues include covering costs associated with resource extraction such as constructing, maintaining, and/or repairing roads; environmental protection and clean-up; or even paying off unpaid workers' compensation claims. As such, the tax ensures that these costs are paid by the producers rather than taxpayers. Each of these uses for severance tax revenues provides tangible and, arguably, lasting benefits for governments and residents. However, it is useful to examine how the three states modeled in the previous section use their severance tax revenues in order to provide a more detailed set of options for Illinois.

How West Virginia uses coal severance tax revenues

In West Virginia, there are few restrictions on the use of severance tax revenues by either state or local governments. For instance, besides the statutory transfer to the Infrastructure Fund and the tax administration fee, the state's share of severance revenues is deposited into the General Revenue Fund and used to cover government expenditures in the same proportion as all other sources of general revenue. These expenditures include education (60%), health and human services (20%), military and public safety (10%), and other government administration (10%) (O'Leary, 2011).

Most of the local share of severance tax revenues is used for general government expenses, public safety, health and sanitation, culture and recreation, social services, and capital projects. The amount spent on each category is determined by local governments based on annual needs. The new reallocated severance tax revenues, however, can only be used for economic development and infrastructure projects. Such projects can include but are not limited to commercial, industrial, community improvement and preservation, post-mining land use, water and wastewater, stormwater, utility, infrastructure, drainage and flood control, and building projects that promote job creation or retention (O'Leary, 2011).

How Kentucky uses coal severance tax revenues

Unlike West Virginia, in Kentucky there is a distinct difference in how state and local severance tax revenues may be used. Aside from the statutory transfers, the revenues deposited into that state's General Fund may be used for whatever government expenditures the Legislature deems necessary from year to year. However, revenues distributed to local funds can only be used for specific purposes. For instance, revenues deposited into the LGEDF must be spent on funding and servicing debt on industrial development projects, as well as on job development incentive grants. Of the revenues deposited into the LGEAF, 30% must be spent on the coal haul road system, while the remaining 70% may be used for public safety, environmental protection and sanitation, public transportation, health, recreation, educational facilities, social services, industrial and economic development, workforce training, and secondary wood industry development. These revenues may not be used for general government administration. Funds in the Secondary Wood Products Development Fund may only be used for a wood utilization center and secondary woods products firms and networks (Virginia Economic Bridge and West Virginia Center on Budget and Policy, 2012).

How Tennessee uses coal severance tax revenues

In Tennessee, while all of the revenues from the coal severance tax are distributed to local governments (less a tax administration fee), there are general restrictions on the use of the revenues. For instance, 50% of the revenues must be used for "educational systems or systems of the county," while the other 50% must be used for highway construction and cleaning streams.[8]

Summary

While the three states examined in this section provide only a sample of how states use severance tax revenues, in most cases state and local governments dedicate the revenues to one or a combination of the uses detailed above. Each state, county, or municipality must prioritize the allocation of severance tax funds based on its own specific needs. However, most coal-producing states—particularly eastern states—fail to consider the fact that the revenues last only as long as the resources are economically feasible to extract, and that these resources are non-renewable and ultimately exhaustible. Therefore, it is recommended that Illinois policymakers take this into consideration if and when they implement a coal severance tax, and that they further consider setting up a permanent mineral trust fund in order to extend and expand the impact of the severance tax for the benefit of future generations.

[8] Tennessee Code 67-7-110(b).

Recommendation: Institute an Illinois coal severance tax and develop an Illinois Coalfield Economic Development Trust Fund

Based on the findings in this report, it is recommended that Illinois institute a coal severance tax and use a portion of the resulting revenues to establish a permanent mineral trust fund, which may be called the Illinois Coalfield Economic Development Trust Fund. Such trust funds help ensure a permanent source of wealth from the extraction of finite resources such as coal, natural gas, and oil—wealth that will last and continue to grow even during "bust" periods. Even more, after the resource has been exhausted, they also support economic development and diversification for state and local economies (O'Leary, 2011).

As of 2011, six western states with strong natural resource extraction industries had created permanent mineral trust funds, each of which is funded by a severance tax and/or mineral lease payments (see Table 9). The states direct a portion of the revenues into the fund, and the principal is invested in any number of ventures promising a return on the investment. A percentage of the investment income is then made available for funding public needs (Boettner et al., 2012). The manner and amount of revenue collected and deposited into each fund varies among states, ranging from a severance tax of 2.5% on the value of all minerals produced in Wyoming, to 30% of total oil and gas tax collections in North Dakota. Additionally, while some states transfer the investment earnings into their state's General Fund, others use it to fund infrastructure, economic development, and education (Boettner et al., 2012).

Table 9: Existing permanent mineral trust funds in other resource-producing states

State	Trust fund name	Year created	Revenue source	Revenue in 2010/2011	Principal in 2010/2011
Alaska	Alaska Permanent Fund	1976	25% of oil income	$887 million	$38.2 billion
Montana	Coal Severance Tax Trust Fund	1976	50% of coal severance tax	$22 million	$836 million
New Mexico	Severance Tax Permanent Fund	1973	12.5% of total severance tax	$3.5 million	$3.6 billion
North Dakota	Legacy Fund	2010	30% of coal and oil severance tax	$613 million	$613 million
Utah	State Endowment Fund	2008	Severance tax revenues in excess of set amounts	$0	$23 million
Wyoming	Permanent Mineral Trust Fund	1974	2.5% severance tax on gas/oil	$290 million	$5.4 billion

For Illinois, such a trust fund could be financed using revenues from a coal severance tax. To maximize revenues, the tax rate could be set at 5% of the gross value of the coal produced. In order for the tax to benefit both state and local governments while also financing a permanent mineral trust fund, the revenues could be allocated as follows: 33% to the General Revenue Fund, 33% to coal-producing counties based on relative production levels, and 33% to the trust fund. Under this model, new General Revenue Fund revenues would amount to $58 million in 2020, coal-producing counties would share an additional $58 million, and $58 million would be deposited into the trust fund. By 2040, the allocations would increase to $86 million for each category. However, given the state's poor fiscal condition, Illinois may decide—at least over the short term—that it is appropriate to transfer a greater percentage of the revenue generated from a coal severance tax to the General Revenue Fund to make up for structural deficit shortfalls or cover increased pension payment obligations.

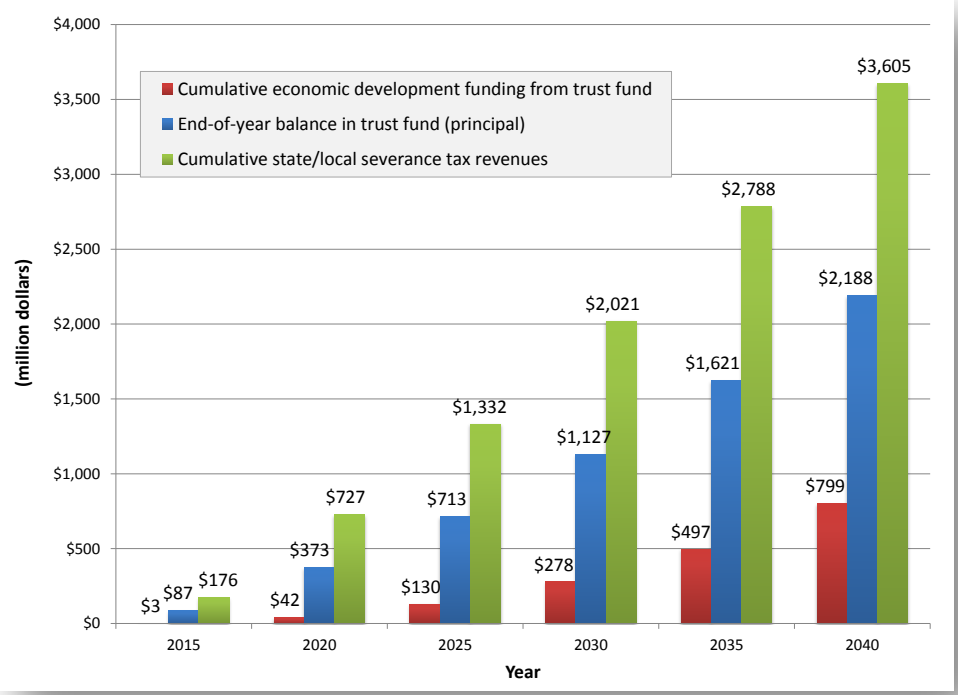
The benefit of the trust fund is that, in theory, the revenues deposited into the fund each year would earn interest, thereby expanding the impact of the coal severance tax. The fund's principal would grow from year to year. To model the financial impact of the fund, we assume that the principal would earn an average annual interest of 5%, which we consider to be a conservative long-term rate of return on investment.

Annual allocations from the trust fund could be used to supplement state and county budgets or to support foundational initiatives for future economic development such as childhood development, workforce training, or health care. The allocations could equal 3% of the principal remaining at the end of each year. Since the principal would continue to receive new infusions of revenue from the severance tax each year and are projected to grow at an annual rate of 5%, the 3% allocation would not draw down the trust fund; on the contrary, the fund would continue to grow.

Based on the model described above and the projected revenues from a 5% coal severance tax, an Illinois Coalfield Economic Development Trust Fund would earn nearly $1.2 billion in interest from 2015 to 2040. Over this time period, the average annual 3% disbursement would amount to approximately $31 million, with total funds disbursed amounting to $799 million. In addition, the other two-thirds of coal severance tax revenues distributed to state and local governments (and not deposited into the trust fund) would total nearly $3.6 billion through 2040, bringing the total amount of new funding as a result of the severance tax and trust fund to $4.4 billion, with $2.2 billion still remaining in the trust fund in 2040 (see Figure 9).

Notably, by 2035 and for every year thereafter, the annual disbursements would exceed the annual infusions from severance tax revenues into the trust fund, meaning that after two decades, the state would be getting more money out of the fund than it is putting in.

Figure 9: Estimated future revenues generated by an Illinois coal severance tax and Coalfield Economic Development Trust Fund, 2015-2040



Even if coal production were to cease beyond 2040, as long as the principal continued to earn interest at a rate exceeding that of the annual disbursements from the fund, the trust fund would continue to grow in perpetuity. In this manner, an Illinois Coalfield Economic Development Trust Fund would ensure that Illinois residents continued to benefit from the extraction of the state's natural wealth even after the coal resources had been exhausted.

References

Bailey, Jason and Melissa Fry Konty. 2012. Promoting long-term investment in Appalachian Kentucky: A Permanent Coal Severance Tax Fund. Mountain Association for Community Economic Development. Mar. http://www.maced.org/files/MACED_Coal_Severance_Tax_Brief.pdf

Boettner, Ted, Jill Kriesky, Rory McIlmoil and Elizabeth Paulhus. 2012. Creating an Economic Diversification Trust Fund. West Virginia Center on Budget and Policy and Downstream Strategies. Jan. http://downstreamstrategies.com/documents/reports_publication/ds_economic_diversification_trust_fund.pdf

Energy Information Administration. 2012. Table OS-6. Domestic Coal Distribution, by Origin State, 2012. Annual Coal Distribution Report 2012. Nov 7. http://www.eia.gov/coal/distribution/annual/archive/2012/o_12state.pdf

_____. 2013a. Table 1. Coal production and number of mines by State and mine type, 2012 and 2011. Annual Coal Report 2012. December. http://www.eia.gov/coal/annual/pdf/table1.pdf

_____. 2013b. Table 2. Coal production and number of mines by State and mine type, 2012 and 2011. Annual Coal Report 2012. December. http://www.eia.gov/coal/annual/pdf/table2.pdf

_____. 2014a. Coal production by region and type, Reference case. Annual Energy Outlook 2014 early release. Table Browser, subject filter: Coal supply and prices. http://www.eia.gov/oiaf/aeo/tablebrowser

_____. 2014b. Coal minemouth prices by region and type, Reference case. Annual Energy Outlook 2014 early release. Table Browser, subject filter: Coal supply and prices. http://www.eia.gov/oiaf/aeo/tablebrowser/

_____. 2015. Annual Coal Distribution Report. April 16. http://www.eia.gov/coal/distribution/annual/pdf/acdr_fullreport2013.pdf

Kent, Cal and Elizabeth Eastham. 2011. Taxation of coal: A comparative analysis. Marshall University Center for Business and Economic Research. Feb 1. http://www.marshall.edu/cber/docs/2011_02_01_Coal_State_Compare.pdf

Kentucky Department of Revenue. 2011. Annual report of the Department of Revenue for Fiscal Year 2011. Dec 1. http://revenue.ky.gov/NR/rdonlyres/ABBCD457-90B3-4B5B-B7C6-94C6A85C0D42/0/201011AnnualReport.pdf

McIlmoil, Rory, Ted Boettner, Evan Hansen and Paul Miller. 2010a. The Impact of Coal on the West Virginia State Budget. Downstream Strategies and West Virginia Center on Budget and Policy. Jun. http://downstreamstrategies.com/documents/reports_publication/DownstreamStrategies-coalWV.pdf

McIlmoil, Rory, Evan Hansen, and Ted Boettner. 2010b. The Impact of Coal on the Tennessee State Budget. Downstream Strategies and West Virginia Center on Budget & Policy. Jun 22. http://downstreamstrategies.com/Documents/reports_publication/DownstreamStrategies-coalTN.pdf

McIlmoil, Rory, Evan Hansen, Meghan Betcher, Anne Hereford, and Jason Clingerman. 2012a. The Impact of Coal on the Pennsylvania State Budget. Downstream Strategies. Oct 3. http://downstreamstrategies.com/documents/reports_publication/ds_penncoal_budget_final.pdf

McIlmoil, Rory, Laura Hartz, Anne Hereford, and Evan Hansen. 2012b. The Impact of Coal on the Virginia State Budget. Downstream Strategies. Dec 12. http://downstreamstrategies.com/documents/reports_publication/ds_impact_of_coal_on_virginia_state_budget_final_12-10-12.pdf

Mellish, Michael. 2012. Long-term analysis and forecasting expert: coal supply and prices. Energy Information Administration. Excel spreadsheets provided via email to author McIlmoil. Jun 26.

O'Leary, Sean. 2011. Investing in the future: Making the severance tax stronger for West Virginia. West Virginia Center on Budget and Policy. Dec. http://www.wvpolicy.org/downloads/SeveranceTax022812.pdf

Pless, Jaquelyn. 2012. Oil and Gas Severance Taxes: States Work to Alleviate Fiscal Pressures Amid the Natural Gas Boom. National Conference of State Legislatures. Feb. http://www.ncsl.org/issues-research/energyhome/oil-and-gas-severance-taxes.aspx

Virginia Economic Bridge and West Virginia Center on Budget and Policy. 2012. Central Appalachia Severance Tax Policy Scan: Kentucky, Maryland, Ohio, Tennessee, Virginia and West Virginia. Produced for the Central Appalachia Regional Network. http://carnnet.org/docs/CARN_SeveranceTaxReport.pdf

Tennessee Department of Revenue. 2012. Comparative Statement of Collected Revenues, Fiscal Year 2011.

United States Census Bureau. 2015. American Fact Finder. 2014 Annual Survey of State Government Tax Collections Detailed Table. http://www.census.gov/govs/statetax/

Zelio, Judy and Lisa Houlihan. 2008. State Energy Revenues Update. National Conference of State Legislatures. Jun. http://www.ncsl.org/issues-research/budget/state-energy-revenues-update.aspx