

Fossil Fuel Subsidy Report for Pennsylvania

Increasing the transparency
of energy subsidies

April 2015



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Executive Summary

A fossil fuel subsidy can be defined as any government action that lowers the cost of fossil fuel energy production, raises the price received by fossil fuel energy producers, or lowers the price paid by fossil fuel energy consumers. A variety of mechanisms may be used including cash transfers; tax breaks; below-market provision of credit, insurance, or government services; or shifting the responsibility for site cleanup and reclamation to the public sector.

Each Pennsylvania taxpayer paid
\$794 in
subsidies to the fossil
fuel industry, in fiscal
year 2012-2013

Pennsylvania provided more than **\$3.2 billion** in fossil fuels subsidies during **fiscal year 2012-2013**. The vast majority of these subsidies came in the form of tax breaks; only about 2 percent was provided by direct spending through grants and market support. Additional subsidies not included in the \$3.2 billion figure exist through a host of legacy funds and economic development programs, the subsidy values for which could not be tracked and assessed. Further research is needed to determine the existence and associated values of these subsidies.

To provide context to the reader, this subsidy value is broken down by contribution by each Pennsylvanian (based on 12.7 million people) and by Pennsylvania taxpayer (based on approximately 4.1 million Pennsylvania tax filers with tax liability).

- **\$256** per Pennsylvanian, in fiscal year 2012-2013
- **\$794** per Pennsylvania taxpayer, in fiscal year 2012-2013

Most federal fossil fuel subsidies are directed toward the “extraction and production” phase of the fuel cycle, essentially improving the economics of fossil fuel extraction. In Pennsylvania, the majority of state-based subsidies are directed toward the “end use” phase of the fuel cycle, making use of fossil fuels more attractive to users in the state.

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Table: Fossil Fuel Subsidy by Fuel Cycle

Extraction and Production	\$618,000,000
Processing	\$235,778,000
Transportation	\$131,448,000
End Use	\$2,271,267,000
Remediation	Unable to calculate

The following recommendations are provided to help guide future work on understanding, identifying and assigning value to Pennsylvania's fossil fuel subsidies.

- **Greater research and transparency around the scope and magnitude of Pennsylvania's energy subsidies is needed** to further policymaker and taxpayer understanding of foregone revenues, market failures and other impacts on energy markets. The conclusion sections of the "Tax Expenditure," "Direct Spending," and "Unconventional Shale" chapters provide recommendations for prioritization of future research needs.
- **Evaluation of the costs of ongoing subsidy** may be important if the state wishes to minimize public liabilities or raise revenues. It may be advantageous to examine discontinuation of certain subsidies based on a consistent and balanced set of criteria.
- **Further research is needed on potential subsidies and long-term liabilities associated with unconventional shale gas development** to ensure a policy framework that avoids the historical remediation and reclamation problems the state has endured with respect to abandoned oil, gas, and coal extraction sites.
- A non-partisan, governmental organization should develop and periodically update a **comprehensive report on Pennsylvania's energy (fossil and non-fossil) subsidies** and assign values to each subsidy. The report should identify and prioritize subsidies that can be eliminated and examine the costs and benefits of elimination. A special near-term focus should be placed on unconventional shale development within Pennsylvania, identifying the full range of known and potential fiscal and regulatory subsidies and quantifying them wherever possible.

The IEA has defined energy subsidies as any government action that concerns primarily the energy sector that lowers the cost of energy production, raises the price received by energy producers or lowers the price paid by energy consumers.

CHAPTER 1

Introduction to Subsidies

Why are Subsidies a Concern?

Subsidies occur whenever the government acts to redistribute wealth or access. Sometimes, this takes the form of cash transfers; in many cases, however, risks or responsibilities normally borne by the private market are shifted onto taxpayers.

Not every subsidy is equally distortionary; it is important to evaluate the cost of the policies versus economic and social objectives as well as alternate pathways to reach those endpoints. For example, funds collected by the government from taxpayers that are redistributed to the poor in order to help them stay warm in winter are clearly subsidies. However, they are generally justified by the public on moral grounds. In contrast, taxpayer funds to subsidize development of established, carbon-intensive fuels may be less socially justifiable. Even with subsidies such as low income energy purchase programs, however, a high degree of transparency is warranted to ensure funds are being well managed and that alternative ways to provide similar services at a lower cost can be considered.

While subsidies are typically established by law, their implementation occurs incrementally, sometimes over many years. Statutes are frequently shaped by political lobbying on behalf of special interests and these narrow interests may diverge from the interests of general taxpayers and voters.

Subsidies have two main deleterious effects: 1) they divert limited resources to favored recipients based on political influence rather than need or economic merit, and 2) they mask the real price of goods and services. For example, subsidizing the cost of coal-based electric power makes the electricity less expensive or the plants more viable. This can make it more difficult for new market entrants to compete or slow the exit of older, polluting facilities from the marketplace.

What is a Subsidy?

The first step in identifying fossil fuel subsidies is coming to a common understanding of what defines a subsidy. The international community -- including the World Trade Organization (WTO), International Monetary Fund (IMF), United Nations Statistics Division (UNSD), European Commission (EC), and International Energy Agency (IEA) -- has developed several definitions of fossil fuels subsidies.

According to the International Institute for Sustainable Development (IISD), these definitions generally take one of two approaches: 1) an “effects test” that determines if a subsidy exists based on a certain effect e.g., changing prices, or 2) the “transfer mechanism” that evaluates a variety of policy types that pass the benefit of a subsidy onto the recipient, though may not result in shifts in market prices.¹

Organizations such as IISD view the WTO’s Agreement on Subsidies and Countervailing Measures (ASCM) as one of the most useful definitions for defining subsidies across various sectors.

The WTO Agreement states that “a subsidy shall be deemed to exist if: there is a financial contribution by a government or any public body within the territory of a Member (referred to in this Agreement as “government”).” For instance, “where a government practice involves a direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees); government revenue that is otherwise due is foregone or not collected (e.g. fiscal incentives such as tax credits); a government provides goods or services other than general infrastructure, or purchases goods; a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated in above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments; or there is any form of income or price support in the sense of Article XVI of GATT 1994; and a benefit is thereby conferred.”

While the WTO ASCM provides a framework for identifying subsidies across sectors, however, the framework focuses on subsidies that distort trade. Therefore, many domestic subsidies to legacy fuels — that serve to benefit the fuel producer but do not alter the market price of energy — may not be accurately captured

¹ “Defining Fossil-Fuel Subsidies for the G-20: Which Approach is Best?,” The Global Subsidies Initiative, March 2010.

through the ASCM. The International Energy Agency's energy subsidy definition provides additional insight on identifying subsidies within the energy sector:

“The IEA has defined energy subsidies as any government action that concerns primarily the energy sector that lowers the cost of energy production, raises the price received by energy producers or lowers the price paid by energy consumers.”²

The IISD has provided a helpful chart presenting a non-exhaustive illustrative list of subsidy types. Too often, people view energy subsidies only as cash transfers from a governmental agency to an energy producer or consumer. This chart conveys how varied subsidies can be; in fact, more complicated and less visible transfer mechanisms can be especially valuable to subsidized groups because they attract less political attention for reform. Many of these policy types were evident in our review of Pennsylvania's fossil fuel subsidies.

² World Trade Organization (WTO), Uruguay Round Agreement on Subsidies and Countervailing Measures, Definition of a Subsidy, 1.1(a)-(b), http://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm#ArticleI.

International Institute for Sustainable Development

Chart of Subsidy Types

Direct transfer or potential direct transfer of funds	Government revenue foregone
<ul style="list-style-type: none"> • Direct payments linked to production volumes or sales • Deficiency payments (the difference between target price and actual price) • Grants for the acquisition of capital or land • Subsidies to intermediate inputs • Wage subsidies to assist individuals in preparing for and maintaining employment (e.g., training) • Government loans: provided at below-market rates, low collateral requirements, lengthy repayment periods or deferred repayments* • Government spending on research and development • Guarantees for loans, security or credit* • Government-provided insurance or indemnification* • Assumption of occupational health and accident liabilities • Assumption of liabilities for closure and post-closure risks (e.g., site cleanup) • Caps on commercial liability • Government use of tax-free bonds to fund private investments • Government expenditure on creating and maintaining stockpiles 	<ul style="list-style-type: none"> • Tax expenditure: reduced tax rates, tax credits, exemptions or deferrals (e.g., on income tax, VAT, excise tax, property tax) • Accelerated depreciation allowances • Reduced royalty payments • Reduced resource rents
Government-provided or government-purchased goods or services	Income or price support, or relief from normal costs or procedures
<ul style="list-style-type: none"> • Underpricing of government-provided goods or services • Government procurement at above-market rates • Government-provided infrastructure specific to the sector (e.g., private roads, storage facilities) • Access to government-owned natural resources or land • Government transfer of intellectual property rights 	<ul style="list-style-type: none"> • Prices set at below-market rates for consumers (including where there is no financial contribution by government) • Above-market rate prices for producers via government regulations or import barriers (e.g., tariffs) • Mandated feed-in tariffs • Consumption mandates • Export taxes or restrictions • Relief from costs enterprises normally bear in the normal course of business (e.g., labour, environmental, health and safety) • Exemption from government procedures normally followed by enterprises

* Government-provided loans, loan guarantees and investment insurance are referred to as "export credits" when granted for exports or foreign investment.

From "Defining Fossil-Fuel Subsidies for the G-20: Which Approach is Best?," The Global Subsidies Initiative, March 2010.

CHAPTER 2

Tax Expenditures

Government expenditures refer to cash transfers from the state to private individuals or firms. Tax breaks are also referred to as “expenditures” because the state is forgoing revenues from its standard tax rules and allowing specific private parties to keep the funds instead. This structure makes tax subsidies similar to standard expenditures.

Often, tax expenditures are measured in terms of revenues forgone, though there are two differences worth noting. First, when a tax break disappears, markets may adjust either by reducing the level of the formerly-subsidized activity or shifting to a less valuable (though still better than nothing) alternative tax break. Both of these factors would tend to reduce actual realized savings relative to tax expenditure estimates. Second, though tax breaks may have the effect of increased income to firms, this incremental gain is not always taxed.¹ Adjusting for this would tend to increase the size of reported tax expenditures.

Within Pennsylvania, “tax expenditures” are identified as a reduction in revenue that would otherwise be collected by the Commonwealth as the result of an exemption, reduction, deduction, limitation, exclusion, tax deferral, discount, refund, commission, credit, special rate, or special treatment.² The Commonwealth’s tax structure contains many tax expenditures that are characterized by the fact that they confer special treatment to specific taxpayers, specific activities, or specific goods or services.³ Provisions are grouped by type of tax, following the reporting format in the Pennsylvania tax expenditure document located in Governor’s Budget Book. To support future research, entries relevant to fossil fuels have been included even if our analysis identified the financial value of a particular provision was very small or zero.

1 Federal tax expenditure budgets used to capture this effect in their “outlay equivalent” metric, reported in tandem to the “revenue loss” metric most states report. However, they stopped reporting the outlay equivalent more than a decade ago.

2 2014-2015 Governor’s Proposed Budget, p. D4

3 2014-2015 Governor’s Proposed Budget, p. D4

Notes on Assumptions and Resources

- **Source of Dollar Values:** Unless otherwise noted, all dollar values of tax exemptions are taken from official government documents and cover fiscal year (FY) July 1, 2012 through June 31, 2013.
- **Electricity Use:** Since Pennsylvania's electricity mix was approximately 63 percent fossil fuel-based in 2012, any tax benefits pertaining to electricity use primarily support the fossil fuel industry. At the end of 2012, less than 3 percent of Pennsylvania's electricity mix was supplied by renewables (including wind, solar, biomass, hydroelectric) and about 34 percent from nuclear energy. Approximately 63 percent of the value of any electricity subsidy will be reported as fossil fuel subsidies where possible.
- **Direct versus Indirect Subsidies:** Some subsidies directly and clearly provide benefit to fossil fuels (e.g. tax exemption for use of a fossil fuel) whereas other exemptions provide an indirect benefit to the fossil fuel industry. Examples could include manufacturing exemptions from sales and use tax that apply to fuel purchases but also apply to equipment purchases that are not related to fossil fuels; or a realty tax exemption that applies to fossil fuel (e.g. electric and gas utilities) and non-fossil fuel (e.g. water or sewer) utilities alike. Research and data limitations precluded analyzing each of these policies in detail. Instead, a sensitivity analysis was conducted, apportioning a low (10 percent), mid (25 percent) or high (60 percent) proportion of the total indirect subsidy amount to fossil fuels. While admittedly inexact, the approach does help identify which indirect subsidies are potentially large and, therefore, should be prioritized for future research.
- **Tax Types:** The remainder of this chapter will discuss a variety of subsidies based on special tax treatment. The table below provides a very general overview of the main tax types discussed, who is taxed, the type of tax in question, and the standard use of tax revenues.

SAMPLE PA TAX TYPES & USES OF REVENUE

Name of Tax	Who is Taxed	Type of Tax	Use of Revenues
Capital Stock Tax	Pa. corporate entities	Property Tax	Pa. General Fund
Foreign Franchise Tax	Corporations doing business in Pa.	Privilege Tax	Pa. General Fund
Gross Receipts Tax	Sales transactions of certain companies doing business in Pa.	Corporate Sales Tax	Pa. General Fund
Sales and Use Tax	Sales transaction on consumers	Sales Tax	Pa. General Fund
Public Utility Realty Tax	Public utilities	Property Tax	Distributed to local governments
Realty Transfer Tax	Parties to real estate transactions	Property Tax	Pa. General Fund
Local Property Tax	Owners of land and buildings	Property Tax	Local Government
Personal Income Tax	Individuals	Income Tax	Pa. General Fund
Liquid Fuel and Fuels Tax	Consumer of fuel	Gasoline Tax	Motor License Fund
Oil Company Franchise Tax	Distributors of fuel	Corporate Tax	Motor License Fund
Motor Carrier Road Tax	Heavy Duty Vehicles operating in Pa.	Use Tax	Motor License Fund
International Fuel Tax	Heavy Duty Vehicles in interstate operations	Use Tax	Motor License Fund

Part 1 – Tax Credit Programs

Tax credit programs reduce the tax liability of the credit user. Because they provide a dollar-for-dollar reduction in tax payments due (as compared to reductions in the income on which a tax is applied), tax credits are among the most valuable types of tax expenditures.

Alternative Energy Production Tax Credit

Indirect - Established by Act 1 of Special Session of 2008, the Alternative Energy Production Tax Credit provides a tax credit of up to 15 percent of total costs of development or construction of alternative energy production projects approved for the credit by the state. Projects need to be located in the Commonwealth of Pennsylvania and have a useful life of more than four years. Waste coal and clean coal projects qualify in addition to renewable energy resources such as wind and solar. The credit is capped at \$1 million per taxpayer and the total amount of the

tax credits awarded can be between \$2 million to \$10 million per fiscal year.⁴ To date, no tax credits from this program have been earned.

- **\$0 was spent on these tax credits in 2012-2013** and \$10 million was projected for 2013-2014. However, guidance for applications to obtain the tax credit was made available by the Pennsylvania Department of Environmental Protection in 2009 yet funding for the program was eliminated in the legislature's budget process. Since then, the program has not been re-opened and zero tax credits have ever been awarded.

Pennsylvania Resource Manufacturing Tax Credit

Act 85 of 2012 created the Pennsylvania Resource Manufacturing Tax Credit for an entity purchasing ethane for use in an ethylene manufacturing facility in the Commonwealth that has made a capital investment of at least \$1 billion and created at least 2,500 full-time jobs. The credit is very specific and provides a useful example of legislative framing that seems to be targeting a specific industrial project under consideration. The tax credit is equal to \$0.05 per gallon of ethane purchased (\$2.10/barrel) for the period January 1, 2017 to December 31, 2042. The tax credit may be used to offset 20 percent of a taxpayer's liabilities for personal income tax, corporate net income tax, capital stock/foreign franchise tax, bank shares tax, title insurance company shares tax, gross premiums tax, and/or mutual thrift institutions tax. Within one year after the credit is approved, a taxpayer can apply to the Department of Community and Economic Development for approval to assign or sell eligible credits to another taxpayer. The eligible buyer of the credit may use the purchased credits to offset up to 50 percent of its Pennsylvania tax liabilities.

- **\$0 was spent on this tax credit in 2012-2013.** Realization of this expenditure is dependent on development of an eligible ethylene manufacturing facility in Pennsylvania.
- If utilized, the potential value of the credit has been estimated to be approximately **\$1.65 billion over a 25-year period.**⁵

⁴ 2014-2015 Governor's Proposed Budget, p. D13

⁵ Pennsylvania Budget and Policy Center, "Cracker Plant Tax Credit Expensive for Taxpayers While Promising Few Permanent Jobs," June 19, 2012.

Part 2 – Capital Stock/Foreign Franchise Tax

The capital stock tax is a property tax imposed on most organizations incorporated within the Commonwealth. The franchise tax is a privilege tax imposed on out-of-state companies doing business within Pennsylvania. Certain corporations are exempt from these taxes and some corporations are afforded special treatment. Subsidies arise when fossil fuel-related activities are granted special exemptions to these taxes. The Capital Stock and Foreign Franchise Tax is scheduled to be eliminated for all tax years commencing after December 31, 2015. Most revenues from these taxes are deposited into the General Fund though there are some revenue earmarks, such as to the State Lottery Fund and the Hazardous Sites Cleanup Fund.

Assets Used in Manufacturing, Processing, and Research and Development

Indirect - Corporations (except those which enjoy the right of eminent domain such as utilities) organized for and engaged in manufacturing, processing, or research and development may claim an exemption from the capital stock tax for certain investments within Pennsylvania. Investments in pollution control assets are included in the exemption for these corporations.

- Approximately 4,100 corporations benefited from this exemption at a cost of **\$139 million** in FY 2012-2013.⁶ For purposes of this analysis, the low-range 10 percent of this value, or nearly **\$13.98 million**, is being reported as a fossil fuel subsidy.

Pollution Control Devices

Indirect - Equipment, machinery, facilities, and other tangible property used during the tax year within Pennsylvania for water or air pollution control or abatement devices utilized for the benefit of the general public are exempt from the capital stock/foreign franchise tax. Presumably, this provision allows pollution control assets for corporations not involved in manufacturing, processing or R&D to be exempt from capital stock and franchise tax.

- The value of this exemption was **\$100,000** in FY 2012-2013; the low-range 10 percent of \$10,000 is used as the reported fossil fuel subsidy value.⁷

6 2014-2015 Governor's Proposed Budget, D29

7 2014-2015 Governor's Proposed Budget, D30

Part 3 – Gross Receipts Tax

A gross receipts tax is levied on the total gross revenues of a company. It is similar to a sales tax except that the tax is paid to the state by the seller of the good or service rather than the tax being paid by the buyer of the good or service as would occur with a sales tax. In Pennsylvania, the gross receipts tax is imposed on a variety of business enterprises in industries directly or partially involved with the fossil fuel sector such as pipelines; conduit; transportation companies; freight or oil transporters; and electric light, water power and hydroelectric energy companies. Gross receipts tax exemptions may or may not be considered a subsidy depending on certain factors. If a fossil fuel has a gross receipts tax but not a sales tax, one might conclude that there is no subsidy since other goods and services have the opposite (a sales tax but no gross receipts tax portion), and at the same rates. The Governor's Budget Book breaks out line items for the energy sector in both tax areas, potentially indicating the issue of double counting has been considered. More research is needed to understand potential overlaps to evaluate the following key criteria.

- **Is the gross receipts tax rate the same as the sales tax rate?** In Pennsylvania, the gross receipts tax rate ranges from 15 to 50 mills (each mill is \$0.001) depending on the entity, while the sales tax is 6 percent. For example, if a company earned \$500,000 in revenues, the gross receipts tax at 50 mills would be \$25,000 whereas the 6 percent sales tax would be \$30,000. Electric utility gross receipts tax rates of 44 mills can approach the sales tax rate due to the imposition of the 15 mills revenue neutral reconciliation rate.
- **Who pays the tax?** The gross receipts tax is meant to be paid by the company. However, these amounts are recovered in rates and, therefore, are effectively paid by the consumer.
- **Use of funds?** Gross receipts tax revenues are deposited into the General Fund. However, portions are diverted to various uses including the 25 mills to the Alternative Fuels Incentive Grant, a surcharge for PURTA, and 18 percent of electricity supplier receipts transferred to the Public Transportation Assistance Fund. In contrast, the full sales tax goes into the General Fund.

Municipally Owned Public Utilities

Indirect - Gross receipts of public utilities owned or operated by a municipality are exempt from tax to the extent the gross receipts are derived from business done inside the limits of the municipality. The figures for this expenditure are at the statutory utilities gross receipts tax rates applicable to the appropriate tax year.

- In FY 2012-2013, approximately 35 municipally-owned utilities operating in the Commonwealth benefited from this exemption at a cost of **\$10.4 million**.⁸
- According to 2014 data from the Pennsylvania Office of Consumer Advocate, there are 37 registered public utilities (e.g. gas, electric, water, telecommunications) and 57 percent of them are fossil fuel related.⁹ Therefore, we apply 57 percent to the \$10.4 million figure to reach **\$5.9 million**. This may be a slight overestimate as it does not account for the 63 percent fossil fuel factor on electricity.

Electric Cooperatives

Gross receipts of electric cooperatives are exempt from the tax. The figures for this expenditure are at the statutory utility gross receipts tax rates applicable to the appropriate tax year.

- In FY 2012-2013, approximately 13 cooperatives enjoyed a **\$17 million** benefit from this tax exemption.¹⁰ Since 63 percent of Pennsylvania's electricity supply comes from fossil fuel sources, **\$10.7 million** will be the subsidy value used.

Natural Gas Distribution Companies

Prior to Act 4 of 1999, the sale of natural gas was subject to the gross receipts tax. Act 4 of 1999 exempted natural gas company and utility sales from the gross receipts tax. According to Pennsylvania's 2012 tax compendium, the exemption was passed in preparation for the deregulation of the natural gas industry.¹¹ However, Pennsylvania's electricity market was also deregulated around the same time yet the gross receipts tax on that industry remains in place with no exemption. It is unclear why two industries undergoing deregulation received different treatment,

8 2014-2015 Governor's Proposed Budget, D35

9 "List of Public Utilities," Pennsylvania Office of Consumer Advocate.

10 2014-2015 Governor's Proposed Budget, D36

11 "The Tax Compendium," Pennsylvania Department of Revenue, October 2012, p. 11.

specifically, one industry (i.e. natural gas distribution) received an exemption while the other industry (i.e. electricity distribution) did not.

- Current government budget documents do not track the value of this exemption. However, at the time the natural gas gross receipts tax exemption was repealed in 1999, the estimated annual value of the exemption was **\$82.2 million**.¹² Using U.S. Bureau of Economic Analysis reported implicit price deflators (80.06 for 1999; 105.16 for 2012) for gross domestic product, based on the size of the industry in 1999, this exemption would be worth approximately **\$108 million** in 2012.

Part 4 – Public Utility Realty Tax

The Public Utility Realty Tax (PURTA) is imposed on public utilities furnishing services under the jurisdiction of the Pennsylvania Public Utility Commission or a regulatory body of another state or the United States. The commonwealth imposes this tax on public utility real estate in lieu of local real estate taxes and distributes revenue to local taxing authorities based on a realty tax equivalent. Further research is needed to compare the PURTA tax rates with local property tax rates; if they are lower, there would be an effective subsidy for utilities. Key issues to explore in determining any net subsidies would include:

- Are all utility and pipeline properties paying property taxes through one of the two methods (local appraisal and collection, or PURTA)?
- Are the rates applied equally to what is applied to other sectors?
- Are the valuation/appraisal methods similar or identical to what is used in other sectors?
- What happens to the money collected? Does it all go back to the locality (as would happen with a property tax) or is it being retained in part by the state (in which case there would be no subsidy to the fossil fuel sector, though there would be a cost to the locality from revenue stripping)?

Greater clarity is needed to better understand the nature of these PURTA exemptions. If assets are exempt from one type of property tax or are subject to property tax at much lower rates, then clearly a subsidy exists. However, if the tax simply shifts between collectors (e.g. from state to local collections), then a subsidy may not exist.

¹² Budget in Brief, 1999-2000 Commonwealth of Pennsylvania, February 2, 1999, page 8.

Utility Easements

Indirect – Easements, or similar interest in land that is owned by another entity that the public utility is entitled to use for the provision of utility service, are excluded from the PURTA base.¹³

- For FY 2012-2013, approximately 290 public utilities could have benefited from this exemption at a value of **\$2.5 million**.¹⁴ Given data from the Office of Consumer Advocate, the nature of these 290 public utilities is unclear. For purposes of this analysis, a mid-range of 25 percent of the value, or **\$625,000**, is being reported as a fossil fuel subsidy.

Railroad Rights-of-Way

Indirect - Railroad rights-of-way and superstructures thereon are excluded from the PURTA base. This tax relief was, in part, intended to encourage development of Pennsylvania's railroad network.

- In FY 2012-2013, approximately 75 railroad public utilities were eligible to benefit from this **\$5.9 million** tax expenditure.¹⁵ For purposes of this analysis, 25 percent of the value, or **\$1.475 million**, is being reported as a fossil fuel subsidy.
- According to 2011 data from the U.S. Department of Transportation, coal tonnage was the largest commodity category shipped by rail into, or out of, Pennsylvania.¹⁶ Therefore, any tax benefits afforded to the rail industry likely provides a benefit to the fossil fuel industry. In addition, these 2011 data do not include the influx of oil being shipped through Pennsylvania from North Dakota's Bakken formation for processing in Philadelphia-area refineries, further boosting the fossil-fuel related share of any rail subsidies.

13 It is unclear if the practice of exempting utility easements from the public utility real estate tax base is common practice in other states with comparable taxes or if such an exemption in Pennsylvania represents unique treatment. For purposes of this report, the provision has been identified because it was reported as a tax expenditure in the Governor's Budget book.

14 2014-2015 Governor's Proposed Budget, D37

15 2014-2015 Governor's Proposed Budget, D38

16 U.S. Department of Transportation, Bureau of Transportation Statistics, Table 3-4: Rail Shipments by State (2011), located at http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/state_transportation_statistics/state_transportation_statistics_2013/index.html/chapter3/table3_4

Municipal Utilities

Indirect - Municipalities or municipal authorities furnishing electric, natural gas, telephone, or water public utility services are exempt from the PURTA tax.

- In FY 2012-2013, approximately 500 municipal authorities and 35 municipal utilities benefited from this tax expenditure at a value of **\$3.2 million**.¹⁷ Because this amount applies to all public utilities (57 percent fossil fuel) and municipal authorities (in Pennsylvania, most are water-related), only 10 percent of the value, or **\$320,000**, is being reported as a fossil fuel subsidy.

Electric Generating Facilities

After December 31, 1999, land and improvements indispensable to the generation of electricity are subject to local real estate tax and are excluded from the PURTA tax base and the realty tax equivalent. Electric generation facilities were removed from the PURTA tax base because electric generation is no longer regulated as a public utility function. The electric competition statute, Act 138 of 1996, changed the definition of public utility, and generation facilities can be owned by unregulated entities. This exemption allows a level playing field for participants in electricity supply.

- In **FY 2012-2013**, approximately 22 electric utilities owning generation assets in Pennsylvania benefited from this tax expenditure at a value of **\$23.7 million**.¹⁸
- **Note:** After deregulation of the electric market, there was some controversy over computation of the PURTA tax for existing electricity generation assets.¹⁹ The key question surrounded the cost of the generation asset to which the PURTA tax rate is applied.

¹⁷ 2014-2015 Governor's Proposed Budget, D38

¹⁸ 2014-2015 Governor's Proposed Budget, D39

¹⁹ See PECO Energy Company v. Commonwealth of Pennsylvania, March 26, 2007. <http://caselaw.findlaw.com/pa-supreme-court/1069317.html>

Part 5 – Sales and Use Tax

A sales tax of 6 percent is levied on each retail sale made within the Commonwealth. The tax is paid by the ultimate consumer though collected by the vendor/seller, who then remits payment to the Commonwealth. A complementary use tax is imposed on use of tangible personal property or taxable service purchased at retail where the sales or use tax was not paid by the vendor, and is payable by the user to the Commonwealth. Use taxes are often implemented to prevent in-state consumers from bypassing sales taxes by purchasing goods from other states. Retail sales and purchases of tangible personal property are generally presumed to be taxable unless there is an exclusion or exemption.

As noted in the Governor's Budget Book, exemptions are provided for certain transactions that would otherwise be taxable, and exclusions prevent transactions from being considered for application of the tax. Both can be considered subsidies. There are several sales and use tax exemptions and exclusions for fossil fuels, all of which encourage the use of these fuels by reducing costs to the distributor, end user, or consumer. Pennsylvania's sales and use tax revenues make up a significant contribution to the state's overall budget. More research is needed to determine the extent to which Pennsylvania's favorable treatment of energy transactions is mirrored in other states, and the degree to which these exemptions and exclusions support increased production or consumption of fossil energy.

One issue of import with regard to sales taxes is "pyramiding." This occurs when a tax is imposed on multiple levels of production (e.g. intermediate, retail) and inputs used to manufacture a final product or service end up being taxed more than once as they move from raw material through production and on to final retail sale. This can result in an effective tax rate on the chain of transactions that exceeds the actual sales tax rate. A common theme behind supporters of the existing sales and use tax exemptions and exclusions is that they are needed to prevent pyramiding; removing them would create economic distortions and impose excessive taxation on businesses. Proponents of pyramiding argue that many exemptions result in some inputs or transactions never being taxed and that the exemptions create distortions of their own. Proponents also claim that needed state revenues are lost, political incentives to obtain a tax exemption rise, and certain sectors of the state don't adequately contribute to state revenues as a result.

A traditional retail sales and use tax would impose the tax at the point of retail sale. Pennsylvania's residential retail sales exemptions (e.g. coal, residential utilities) are clear subsidies, as are exemptions for favored businesses. The status of Pennsylvania's resale exemption as a subsidy is less clear because the practice of tax pyramiding is inconsistently applied among states and it is not clear if this

exemption is common practice or special treatment. See the “Decoding Fuels Transaction” text box for additional discussion.

Coal Purchase and Use Exclusion

The purchase or use of coal in all sectors is exempt from taxation. The origin of the exemption may have been linked to “providing or preserving employment when mining was a major employer within the Commonwealth.”²⁰ However, the revenue loss continues to be significant (roughly \$87 million/year). Further, the tax subsidy may also encourage continued use of highly polluting coal even in residential settings where pollution control technologies are limited.

- Approximately 70,000 households and 4,000 businesses benefit from this tax exemption at an estimated cost of **\$86.4 million in FY 2012-2013** and 87.5 million in FY 2013-2014.²¹ Although small coal consumers would also be beneficiaries of this provision, we believe that the majority of the revenue losses are associated with large industrial consumers.

Residential Utilities Exemption

As defined by law, “tangible personal property” specifies taxable goods and services for the purpose of sales and use tax applicability. Certain “Fuels” are specifically omitted from this definition including electricity; steam; natural, manufactured and bottled gas; and fuel oil when purchased directly by the user solely for his residential use. Court decisions have expanded the electricity exemption to include purchases for residential use through an agent where there is no commercial interest. Practically, this exemption means that all fossil fuel use by the residential sectors, whether for heat, hot water, cooking, or power, is exempt from Pennsylvania sales and use taxes. In contrast, the state levies a tax of 6 percent on the sale or use of most other retail goods and services. The scale of fuel consumption within Pennsylvania is large and, as a result, this exemption is one of the largest subsidies identified in this report. The subsidy distorts price signals to consumers and provides an increased competitive advantage for commodity fuels relative to other methods of energy generation that are not fuel dependent (e.g. renewable energy) or are based on reduced fuel use (e.g. demand-side management) to provide energy services.

20 2014-2015 Governor’s Proposed Budget, D50

21 2014-2015, Governor’s Proposed Budget, D50

Pennsylvania government documents identify that residential utilities are considered essential for maintaining a basic standard of life and that this expenditure reduces the regressive nature of the overlying tax and reduces the tax burden on families who spend a disproportionate share of income on these services. However, this justification deserves discussion. Applying an exemption to all energy users ignores the reality that many customers are able to pay this tax, and the tax exemption can trigger other problems such as undermining the economic returns on energy efficiency, conservation or customer-sited forms of energy generation. In fact, because all quantities consumed are exempt (rather than targeting the subsidy based on the lifeline service levels to poorer customers), it is likely that many of the subsidies also flow to wealthier residents. Finally, despite the fact that other Pennsylvania taxes are also regressive, blanket exemptions are not the norm.

- Approximately 4.9 million households benefit from the electricity tax exemption at an estimated cost of **\$398.8 million in FY 2012-2013**, and \$407.8 million in FY 2013-2014.²² Discounting this value to account for only the 63 percent of Pennsylvania electricity supplied by fossil fuels would yield **\$251,244,000**.
- Approximately 3.7 million households benefit from the Fuel Oil/Natural Gas tax exemption at an estimated cost of **\$389.7 million in FY 2012-2013** and \$394.9 million in FY 2013-2014.²³

Gasoline and Motor Fuels Exclusion

Although Pennsylvania has high excise taxes on motor fuels relative to other states, these revenues are earmarked to build and maintain fuel-related in-state road infrastructure. To date, these collections have not been sufficient to maintain roadway infrastructure, suggesting that even these relatively high rates are inadequate to support their intended function. In contrast, sales and use taxes go to the state's General Fund, generating revenue to support a wide range of activities. To be on equal footing with other goods and services, motor fuels should both cover the costs of roads (i.e. an essential component of assuring an ongoing market for motor fuels) and be taxed at the same rate as other goods and services in the state.

Instead, Pennsylvania's legislature exempted gasoline and motor fuels from sales and use tax, substituting a new liquid fuels tax (later to be replaced with an oil company franchise tax). The resulting impact is that gasoline and motor fuels are

22 2014-2015 Governor's Proposed Budget, D51

23 2014-2015 Governor's Proposed Budget, D51

not put on an equal footing with other goods and services and the state forgoes much needed revenue.

- Approximately 4.5 million households and owners of more than 1.5 million heavy trucks buses, etc., benefit from this tax exemption at a cost of **\$1.4347 billion in FY 2012-2013**, and \$1.4345 billion in FY 2013-2014.²⁴
- Comparatively, in 2012-2013, actual revenues generated by the Liquid Fuels and Fuels tax (absent interest and penalties) were \$575,487,000 from Liquid Fuels and \$151,984,000 from Fuels Use for a total of \$727,471,000.²⁵ This is approximately **\$707 million less** than the value of what would have been collected if the Sales and Use tax on these fuels were in place.

24 2014-2015 Governor's Proposed Budget, p. D52

25 2014-2015, Governor's Proposed Budget, p.C2.9

Discussion of Pennsylvania's Gasoline Tax

According to a 2010 report of the Pennsylvania State Transportation Advisory Committee, the state needed to invest an additional \$3.5 billion annually to meet the needs of the transportation system (i.e. highways, bridges, public transportation²⁶ and local government road needs). The report determined that current funding structures for transportation were not adequate to meet existing or long-term transportation funding needs, citing:

“The current funding structure that relies primarily on gasoline taxes is not sustainable in the long term and is likely to erode more quickly than previously thought.”²⁷

The 2010 report examined several sources and strategies to augment transportation funding in Pennsylvania, and identified imposition of a sales tax on fuel as the highest yield potential revenue generator available to fund highways, bridges and transit.²⁸

In 2011, the Pennsylvania Governor's Transportation Funding Advisory Commission (TFAC) released its final report on transportation funding, noting the \$3.5 billion funding gap in 2010 could grow to a \$7.2 billion gap if action was not taken to increase transportation funding.²⁹ The TFAC report considered dedicating 1 percent to 2 percent of the existing sales tax revenue from the General Fund to transportation funding purposes but did not consider repealing the sales tax exemption on liquid fuels or boosting the liquid fuels tax rate to a level as high as the sales tax. It is noteworthy that the single largest potential revenue generation strategy identified in the

2010 report was not examined or discussed in the TFAC's final report.

In 2013, Governor Corbett signed Act 89 into law, which is estimated to generate approximately \$2.3 billion in additional transportation funds over a five year period. The new revenue is being generated through a variety of strategies. These include replacement of the existing 12 cent per gallon gasoline and diesel tax with the wholesale Oil Company Franchise Tax (OCFT). This replacement was meant to be revenue neutral. To raise funds, the \$1.25 cap on the formula used to calculate the OCFT tax is being phased out by January 2017 and a new floor price of \$2.99 will be established. This phaseout will generate \$1.85 billion annually.³⁰

As a result of these changes, Pennsylvania's tax rates on gasoline and diesel will be one of the highest in the country. However, in spite of these tax increases that provide much needed funding for transportation system maintenance, it seems there is still a considerable transportation funding shortfall.

It is notable that other states (e.g. Florida, Georgia, Hawaii, Michigan, West Virginia) impose a sales tax on liquid fuels in addition to a variety of other gasoline and diesel taxes.³¹ Since wholesale prices are lower than retail prices, any percentage tax (like the OFTC) at wholesale will be cheaper (i.e. generate less revenue) than the same rate applied at retail. Additionally, the OFTC seems to be set at 3.5 percent of wholesale value versus 6 percent for Pennsylvania's normal retail sales and use tax. All things being equal, moving the tax from retail to wholesale will result in reduced revenues to the state.

26 “Transportation Funding Study Final Report,” Pennsylvania State Transportation Advisory Committee, May 2010, p. 98.

27 “Transportation Funding Study Final Report,” Pennsylvania State Transportation Advisory Committee, May 2010, p. 99.

28 “Transportation Funding Study Final Report,” Pennsylvania State Transportation Advisory Committee, May 2010, p. 103.

29 “Transportation Funding Study Final Report,” Pennsylvania State Transportation Advisory Committee, May 2010, p. 11.

30 “Pennsylvania's New Transportation Funding Law,” Pennsylvania Highway Information Association, 2013.

31 “State Motor Fuel Tax Rates,” Federation of Tax Administrators, February 2014.

Commercial Vessel Fuel Purchase Exemption

Indirect - The purchase or use of fuel, supplies, equipment, ships or sea stores, and cleaning or maintenance supplies is exempt from taxation. This exemption applies to vessels of fifty tons or more designed for commercial use.

- An unknown number of taxpayers benefit from this exemption, valued at **\$4.4 million in FY 2012-2013** and \$4.4 million in FY 2013-2014.³² For purposes of this analysis, 25 percent of this value, or **\$1.1 million**, is being included as a fossil fuel subsidy.

Manufacturing Exemption (Manufacture and Processing)

Indirect - An exemption is provided for the purchase or use of machinery, equipment, parts and supplies (e.g. fuel), or the use of services or utilities used directly in the manufacturing and processing of personal property.

- Approximately 14,000 manufacturers and an unknown number of processors and remanufacturers benefited from this tax expenditure at a cost of **\$1.0287 billion** in FY 2012-2013.³³ For purposes of this analysis, the low-range 10 percent of this value, or **\$102.8 million**, is being included as a fossil fuel subsidy.

Manufacturing Exemption (Agriculture)

Indirect - An exemption is provided for the purchase or use of machinery, equipment, parts and supplies (e.g. fuel), or the use of services or utilities used directly in farming, dairying, horticulture, floriculture, or aquaculture.

- Approximately 62,100 farm operators benefited from this tax expenditure at a cost of **\$90.8 million** in FY 2012-2013.³⁴ For purposes of this analysis, 10 percent of this value, or **\$9.08 million**, is being included as a fossil fuel subsidy.

32 2014-2015, Governor's Proposed Budget, p. D53

33 2014-2015 Governor's Proposed Budget, D54

34 2014-2015 Governor's Proposed Budget, D55

Manufacturing Exemption (Public Utilities)

Indirect - An exemption is provided for the purchase or use of machinery, equipment, parts and supplies, or the use of services or utilities used directly in producing, delivering, or rendering a public utility service.

- Approximately 700 (fossil and non-fossil) public utilities benefited from this tax expenditure at a cost of **\$63.4 million** in FY 2012-2013.³⁵ Given 2014 data from the Office of Consumer Advocate indicating 37 Pennsylvania public utilities, it is unclear what the 700 number referenced in the Governor's Budget Book represents. For purposes of this analysis, 57 percent of this value, representing the percentage of electric and gas public utilities in Pennsylvania, or **\$36 million**, is being included as a fossil fuel subsidy.

Rail Transportation Equipment

Indirect - The purchase or use of rail transportation equipment by a business in the movement of its own personal property is exempt from taxation.

- An unknown number of taxpayers benefit from this expenditure valued at **\$17.6 million** in FY 2012-2013. For purposes of this analysis, 25 percent of this value, or **\$4.4 million**, is being included as a fossil fuel subsidy.

Decoding Fuels Transaction Exemptions to Sales Tax

Steam, electricity and fuel oil, and natural, manufactured or bottled gas and other fuels (herein collectively referred to as “Fuels”), are generally considered tangible personal property and, therefore, taxable. However, there are a host of exemptions for both the purchase of these Fuels and purchase of equipment and supplies³⁶ (e.g. propane tanks, wire, meters, panel boards, switch gear) used in connection with the consumption of these Fuels. In general, the following exemptions apply to purchase and use of these Fuels and associated supplies and equipment.

- **Residential Use Exemption:** Purchase and use of these Fuels by a residential purchaser solely for the purchaser’s own residential use is exempt.³⁷ This is identified earlier in this chapter as the “Residential Utilities Exemption.”
- **Commercial Use, Subject to Exemptions:** Purchase and use of these Fuels and associated equipment and supplies for commercial use is subject to tax unless there are exclusions or exemptions for favored businesses or transactions. See exemptions below.
- **Commercial Mixed Use, Subject to Exemptions:** The purchase of Fuels and associated equipment and supplies other than by a residential purchaser for the purchaser’s own residential use is presumed to be made for a commercial use and is subject to tax unless the purchaser is entitled to claim an exemption.³⁸ See exemptions below.

Exemptions³⁹ There are a number of exemptions to sales

and use tax in Pennsylvania. They fall into the following categories.

- **Resale Exemption:** The goal of this provision is to exempt inputs to production of a good or service that is ultimately taxed when sold at retail (to avoid tax pyramiding). Therefore, clear subsidies would arise if there is no tax on the final retail sales (as with many fuels and power, or with exports out of Pennsylvania). The purchase of Fuels by persons who will resell the property to others in the ordinary course of the purchaser’s business is exempt from tax. The purchase or lease of equipment and supplies associated with these Fuels by persons who will resell or lease tangible personal property in the ordinary course of the purchaser’s business to others is exempt from tax.⁴⁰ For example, the purchase of wholesale electricity by an electric distribution company is exempt from Sales and Use Tax as is the purchase of wholesale natural gas by a gas distribution company.
- **Political Subdivisions:** Local, state and federal governments. This provision may serve to avoid conflicts between subdivisions though it can still distort consumption patterns.
- **Exempt Organizations:** Charitable, volunteer firemen, religious organizations, nonprofit institutions. These exemptions parallel general tax exemptions these organizations receive though they reduce their incentive to minimize fossil fuel consumption.
- **Manufacturing and Processing:** The purchase or use of Fuels and related equipment, machinery, parts and supplies for direct use by a person engaged in the business of manufacturing or processing is exempt,⁴¹ provided the following conditions: 1) the fuel is an operating supply which is actively and continuously used in the operation of qualified

³⁶ Title 61, Part I, Subpart B, Article II, Chapter 32.25(c)

³⁷ Title 61, Part I, Subpart B, Article II, Chapter 32.25(b)(1)

³⁸ Title 61, Part I, Subpart B, Article II, Chapter 32.25(b)(3)

³⁹ Title 61, Part I, Subpart B, Article II, Chapter 32.25(d)

⁴⁰ Title 61, Part I, Subpart B, Article II, Chapter 32.35 (d)(1)

⁴¹ Title 61, Part I, Subpart B, Article II, Chapter 32.25 and 32.32

equipment or machinery;⁴² or 2) if the fuel is being used for space heating, cooling, ventilation and illumination, provided these services bear an active causal relationship to the manufacturing or processing operation.⁴³

- **Farming**
- **Dairy Industry**
- **Public Utilities**
- **Mining**

- **Printing**
- **Photographers, Photofinishers**
- **Municipal, Electric or Agriculture Cooperatives**

42 Title 61, Part I, Subpart B, Article II, Chapter 32.25 and 32.32(a)(3)(ii)

43 Title 61, Part I, Subpart B, Article II, Chapter 32.25 and 32.32(a)(3)(iii)(F)

Discussion:

- Exemptions from sales and use taxes on these Fuels and associated equipment and supplies are widespread. These include residential use, sale for resale and a host of favored commercial uses as well as exemptions for purchase of equipment and supplies needed to consume the Fuels. This distorts price signals to end users and creates a competitive disadvantage for energy resources that are not fuel dependent (e.g. energy efficiency, energy conservation, renewable energy).
- The wide-ranging exemptions create significant forgone revenues to the state though revenue losses from many of the exemption categories are not even tracked. This creates a taxpayer transparency problem.
- Distorting Distributed Resources: A taxpayer engaging in the manufacturing of electricity for resale may purchase all machinery, equipment, parts and supplies, starting with that used in the initial stage of the electricity generation process and ending in the final phase where electricity is acceptable to enter the electricity transmission and distribution system, without paying Sales and Use Tax.⁴⁴ This exemption benefits all non-residential electricity generators (i.e., utility scale generation such as coal, gas, wind, nuclear). However, purchase of equipment and supplies to distributed energy resources like micro-combined heat and power, solar, energy efficiency, bio-digesters and backup generators do not enjoy this exemption. This creates a comparative disadvantage.

44 Pennsylvania Department of Revenue, Pennsylvania Sales and Use Tax, No. SUT-05-003, Property Used in Manufacture of Electricity. Feb 23, 2005 (re-issued Feb 23, 2010).

Part 6 – Personal Income Tax

The personal income tax is levied against the taxable income of resident and nonresident individuals, estates and trusts, partnerships, S corporations, business trusts, and limited liability companies that are not taxed as corporations for federal purposes.

Expensing Intangible Drilling Costs

Effective tax year 2014, a taxpayer may recover intangible drilling costs (IDCs), as defined by federal rules, by using either a ten-year amortization period (standard capitalization), or electing to immediately expense up to one-third of the allowable costs and recovering the remaining costs over a ten-year period beginning in the taxable year the costs are incurred. Essentially, this subsidy allows for smaller fossil fuel extraction ventures to take advantage of a federal tax subsidy afforded to corporations.

- Since this subsidy became effective in 2014, there is no reported value for FY 2012-2013. Therefore, the report will use the value of **\$1.1 million** reported for **FY 2013-2014** as a proxy for the ongoing cost of the provision.⁴⁵

Part 7 – Realty Transfer Tax

The realty transfer tax is a levy on the value of any interest in real estate transferred by deed. The tax rate is one percent of the value of the real estate transferred. Each party involved with filing a document recording the transfer is jointly and severally liable for the total tax due. The only exceptions are when a party is an “excluded party” or the transaction itself is excludable by statute. The counties serve as the collection agent for this tax though revenues generated by counties are remitted to the Commonwealth and are mostly deposited into the General Fund. Some funds are dispersed elsewhere based on statutory earmarks (e.g. Keystone Recreation, Park and Conservation Fund).

Production or Extraction of Coal, Oil, Natural Gas or Minerals

Leases for the production or extraction of coal, oil, natural gas, or minerals and assignments thereof are excluded transactions. Further research is needed to

⁴⁵ 2014-2015 Governor’s Proposed Budget, D80

determine if this type of exemption is common practice for fossil fuel extraction states or unique to Pennsylvania. However, were the Commonwealth to levy a tax on fossil fuel leases in a manner similar to what it levies on other types of leases, the revenues would be significant. There are 1,375 companies producing fossil fuels within Pennsylvania that could be eligible to benefit from this tax expenditure. While **government documents have not provided a value for this expenditure**,⁴⁶ an upper-bound estimate can be made assuming the lease sale values approach to the market value of the produced minerals from oil, gas, and coal extraction sites. Using state-level data on production levels and market values for 2012,⁴⁷ **total revenues of \$16.8 billion** would translate to about **\$170 million per year** in revenues from the **1 percent tax**. The actual figure will be lower because not all production would come from leased lands, lease payments would be lower than the mineral value to allow a return to extraction operations, and the tax levy would apply only on lease initiation even though the lease period would run for multiple years. For purposes of this analysis, a conservative estimate of 10 percent, or **\$17 million** per year, is reported as the subsidy value. It would be important to understand if other states exempt the mineral estate or if Pennsylvania's treatment is unique.

Part 8 – Local Property Tax

Pennsylvania has an added benefit to all businesses (including oil and gas companies) in that only land and buildings are subject to property taxes. In other states, machinery and equipment, inventories, vehicle fleets and other items are covered by property taxes. Many believe Pennsylvania's property tax system is a competitive advantage for companies doing business in the state.⁴⁸

Oil and Gas Exemption to Local Property Taxes

Since the early 1900s, oil and gas reserves had been treated like mineral reserves and, therefore, were subject to real estate assessment and associated local property taxation. A 2002 decision from the Pennsylvania Supreme Court in the *Independent Oil and Gas Association of Pennsylvania v. Board of Assessment Appeals of*

46 2014-2015 Governor's Proposed Budget, D87

47 For purposes of general estimation, we can use U.S. EIA data to examine the impact of a 1 percent tax on annual production of Pennsylvania coal (54,719 thousand short tons in 2012 at \$72.92/short ton for average combined anthracite and bituminous price), oil (4,300 thousand barrels at \$94.05/barrel WTI average 2012 price), and natural gas production (gross withdrawals of 2,256,696 million cubic feet in 2012 at \$5.52 per thousand cubic feet citygate price).

48 "Improving Business Taxes," Pittsburgh's Future.

Fayette County exempted leased oil and gas reserves and operating wells from being included in property tax assessments, therefore allowing all oil and gas interests to escape local property taxes. Coal reserves and mines, limestone reserves and mines, and other extraction industries are still included in property tax assessments and are paying local property taxes. In large gas production states like Pennsylvania, it is common for most gas producers to pay both production (i.e. severance) taxes and property taxes. For example, in Texas, oil and gas producers paid about \$3.7 billion in property taxes in one fiscal year, approximately equal to the amount paid in severance taxes in the same time frame.⁴⁹

Property taxes provide revenue for counties, municipalities and school districts. Exempting oil and gas requires other local taxpayers to assume increased burdens for local financial liabilities. Currently, only a handful of industry sectors are exempted from local property taxes: Churches, hospitals, schools, nonprofits, governments, and oil and gas properties. Oil and gas is the only exempted segment that is purely a commercial enterprise.

- **\$477,730,000** is the estimated value of this exemption related to forgone revenue from potential local property taxes on oil and gas properties in 2012. As more wells are drilled, the value of this exemption will increase. The value is expected to grow to **\$600 million** in 2013 and **\$977 million** in 2014.⁵⁰

Part 9 – Motor License Fund Tax Expenditures

The Motor License Fund provides for highway and bridge improvement, design, maintenance and purchase of rights-of-way, aviation activities, Pennsylvania Department of Transportation licensing and safety activities, and State Police highway patrol operations, and contributes to local road construction and maintenance. The Fund includes revenues from the Liquid Fuels and Fuels Tax, Oil Company Franchise Tax and Alternative Fuels Tax, and other revenue sources. The Liquid Fuels and Fuels Tax of 12 cents per gallon on all taxable liquid fuel or fuels sold and delivered by distributors of the Commonwealth was eliminated by Act 89 of 2013, effective January 1, 2014 (see the discussion of Gasoline and Motor Fuels Exemption in the Sales and Use Tax section of this chapter). However, separate rates were established for aviation (5.9 cents per gallon) and jet fuels (2 cents per gallon). Act 89 of 2013 also made changes to the Oil Company Franchise Tax in order to create revenue neutrality with respect to the Liquid Fuels and Fuels

⁴⁹ "Economic Impact," Texas Oil and Gas Association.

⁵⁰ Estimates provided by Resource Technologies Corporation and Jeff Kem, November 30, 2011.

Tax elimination, and to increase the revenue generation potential of the OCFT.

As a result of the changes above, the data on the Motor License Fund subsidies reported in FY 2012-2013 will not be representative of revenue losses in future years. Rather, ***exemptions reported below from the Liquid Fuels and Fuel Tax will no longer be relevant in the future while the value of exemptions from the OCFT will greatly increase.***

Unlike taxes that go into Pennsylvania's General Fund, taxes on motor fuels act more like user fees, with collected revenues applied to build and maintain transport-related infrastructure and operations. Tax exemptions for vehicles not using this infrastructure (e.g., fuel use by farm equipment on the farm) may make sense. However, exemptions for social service, government, or other nonprofit entities that rely on this infrastructure may not. These entities are all using common infrastructure but not paying for upkeep. Public subsidies to these organizations could be made in a more general way so that the sectors (e.g., bus and ambulance companies) see more realistic price signals on the fuel costs of operating their vehicles.

Political Subdivision Exemption

U.S. and state government (and political subdivision) purchases of natural gas, fuel oil and kerosene, steam, manufactured gas, and electricity (and related equipment, machinery, parts and supplies)⁵¹ are exempt from the Liquid Fuel and Fuels tax and Oil Company Franchise Tax.⁵² In basic terms, this means fuels purchased by political subdivisions of the Commonwealth are exempt from tax. In addition, purchase, use, lease, repair or maintenance of equipment and supplies (e.g. storage tanks, wires, meters) used in connection with the consumption of these fuel sources are exempt. According to government documents, this exemption is an indirect means of assistance to local governments and may reduce the taxes levied by these entities. Approximately 3,130 government units benefit from these tax expenditures. The estimated costs of these exemptions include:⁵³

- Liquid Fuels: **\$4.4 million in FY 2012-2013** and \$2.5 million in FY 2013-2014;
- Fuels: **\$5.8 million in FY 2012-2013** and \$3.4 million in 2013-2014; and
- Oil Company Franchise: **\$19.6 million in FY 2012-2013** and \$27.8 million in

51 Title 61, Part I, Subpart B, Article II, Chapter 32.25 (c)

52 Title 61, Part I, Subpart B, Article II, Chapter 32.25 (d)(2)(i)

53 2014-2015 Governor's Proposed Budget, D100

FY 2013-2014.

Volunteer Emergency Vehicles

Fuel purchased by volunteer fire companies, ambulance services or rescue squads, and used solely in official vehicles, is exempt from these taxes. According to government documents, these emergency organizations provide a public service that is perceived to benefit citizens and this exemption permits these services to be rendered at a reduced cost.⁵⁴ Approximately 2,300 volunteer organizations benefit from this exemption at the following estimated costs:⁵⁵

- Liquid Fuels: **\$400,000 in FY 2012-2013**, \$200,000 in FY 2013-2014;
- Fuels: **\$2.6 million in FY 2012-2013**, \$1.5 million in FY 2013-2014; and
- Oil Company Franchise: **\$6.3 million in FY 2012-2013** and \$9 million in FY 2013-2014.

Nonprofit, Non-Public Schools

Fuel purchased by any nonprofit, non-public school in which a Commonwealth resident may legally fulfill compulsory school attendance requirements is granted an exemption from these taxes.

- Oil Company Franchise Tax: **\$200,000** in FY 2012-2013.⁵⁶
- Liquid Fuel and Fuels Tax: N/A.

Second Class Port Authorities

Purchases of fuel by second class county port authorities are exempt from these taxes.

- Oil Company Franchise Tax, Liquid Fuel and Fuels Tax: N/A.⁵⁷

54 2014-2015 Governor's Proposed Budget, D100

55 2014-2015 Governor's Proposed Budget, D100

56 2014-2015 Governor's Proposed Budget, D101

57 2014-2015 Governor's Proposed Budget, D101

Electric Cooperatives

Fuel purchases for vehicles operated by electric cooperatives are exempt from these taxes.

- Oil Company Franchise Tax, Liquid Fuel and Fuels Tax: Nominal (<\$100,000).⁵⁸

Agricultural Use

A full refund of tax paid is granted for fuel consumed in agricultural use relating to the actual production of farm products. Fuel used in farm machinery or equipment engaged in the production or harvesting of agricultural products is exempt from taxation under these provisions.

- Liquid Fuels: **\$700,000** in FY 2012-2013.
- Fuels: **\$300,000** in FY 2012-2013.
- Oil Company Franchise: **\$1.7 million** in FY 2012-2013.⁵⁹

Truck Refrigeration Units

A full refund of tax paid is granted for undyed diesel fuel used in truck refrigeration units when the tank that fuels the refrigeration unit is used solely for that purpose and is separate from that which powers the vehicle.

- Fuels: **\$800,000** in FY 2012-2013.
- Oil Company Franchise: **\$1.8 million** in FY 2012-2013.⁶⁰

Power Takeoff for Farm Equipment

A full refund of tax paid is granted for undyed fuel consumed in a power takeoff unit used to load or unload farm feed, feed products, lime, or limestone products for agricultural use at a farm. Tax paid will be refunded provided that the fuel usage is documented by an electronic monitoring device used in conjunction with an electronically controlled engine.

58 2014-2015 Governor's Proposed Budget, D102

59 2014-2015 Governor's Proposed Budget, D102

60 2014-2015 Governor's Proposed Budget, D103

- Oil Company Franchise Tax, Liquid Fuel and Fuels Tax: Nominal (<\$100,000).⁶¹

Foreign Diplomat

Fuel purchased by foreign diplomats whose countries have entered into a treaty with the United States is exempt from payment of the tax.

- The value of these exemptions are unknown but presumed to be nominal.⁶²

Distributor Discount

Fuel distributors are granted a discount on amounts due on the liquid fuels tax if the returns are filed in a timely manner. This allowance is in stark contrast to most government taxes where timely filing is assumed, and penalties and interest accrue from the moment it is late. A distributor is permitted a variable percentage discount based on gross tax due provided the liquid fuels and fuels tax return and payment due are timely filed. This will be in effect until December 31, 2013. Starting January 1, 2014, the discount will be based on the gross tax due on the Oil Company Franchise Tax mills added by Act 89 of 2013.

- Liquid Fuels: **\$4.1 million** in FY 2012-2013.
- Jet fuel and Aviation Gas: **\$1 million** in FY 2012-2013.
- Fuels: **\$1.5 million** in FY 2012-2013.⁶³

Buses

A bus company is entitled to a refund equal to 55 mills of the Oil Company Franchise Tax imposed on fuels consumed by motorbuses within the Commonwealth.

- Oil Company Franchise Tax refund: **\$400,000** in FY 2012-2013.⁶⁴

61 2014-2015 Governor's Proposed Budget, D103

62 2014-2015 Governor's Proposed Budget, D104

63 2014-2015 Governor's Proposed Budget, D104

64 2014-2015 Governor's Proposed Budget, D105

Part 10 - Motor Carrier Road Tax/International Fuel Tax Agreement

Pennsylvania joined the International Fuel Tax Agreement (IFTA) in 1995 to provide for state reporting and mechanism of fuel taxation for operators of qualified motor vehicles used in interstate operations. The IFTA is an agreement between the U.S. and Canada to simplify reporting of fuel use by motor carriers of qualified vehicles that operate over multiple states and jurisdictions. Qualified vehicles are larger vehicles (e.g. exceeding 26,000 pounds). Qualified vehicles operated in Pennsylvania for intrastate-only activities are subject to fuel taxation under the Motor Carrier Road Tax (MCRT). Both the IFTA and the MCRT are imposed on fuel consumed by qualified motor vehicles (large vehicles such as hauling trucks) operated within Pennsylvania. The tax rate is equivalent to the rate per gallon currently in effect on liquid fuels, fuels or alternative fuels plus an oil company franchise tax component.

The Commonwealth combined tax expenditures related to the fuels tax and the OCFT refund, making it impossible to determine the composition by exemption. The relationship between these values would be useful to understand in order to more accurately assess how Act 89 of 2013 will impact future exemption amounts. However, both portions are subsidies to fossil fuels.

Political Subdivisions

Vehicles operated by political subdivisions are exempt from the requirements of the Motor Carrier Road Tax.

- Approximately 3,130 government units benefit from this tax expenditure at a cost of **\$17.3 million** in FY 2012-2013.⁶⁵

Farm Vehicles

Qualified motor vehicles bearing a Pennsylvania farm truck registration operating under restricted use, and farm vehicles exempt from registration, are exempt from the Motor Carrier Road Tax.

- Individuals operating approximately 63,200 farms benefit from this tax expenditure in FY 2012-2013 at a cost of **\$5.3 million**.⁶⁶

65 2014-2015 Governor's Proposed Budget, D106

66 2014-2015 Governor's Proposed Budget, D106

Emergency Vehicles

Fire, rescue, ambulance, and select other emergency vehicles are exempt from the Motor Carrier Road Tax.

- Approximately 2,400 fire departments and an unknown number of other organizations benefited from this tax expenditure in FY 2012-2013 at a cost of **\$9 million**.⁶⁷

Charitable and Religious Organizations

Vehicles operated by charitable and religious organizations are exempt from the Motor Carrier Road Tax.

- Approximately 27,000 charitable and religious organizations may benefit from this tax expenditure in FY 2012-2013 at a cost of **\$1.9 million**.⁶⁸

School Buses

Buses designed to carry 11 or more passengers used for the transportation of pre-primary, primary, or secondary school students to or from public, private, or parochial schools or school-related activities or events are exempt from the Motor Carrier Road Tax.

- Approximately 5,700 schools benefit from this tax expenditure at a cost of **\$9.2 million** in FY 2012-2013.⁶⁹

Various Exemptions

(With No or Nominal Values Reported)⁷⁰

SPECIAL MOBILE EQUIPMENT

- Vehicles not designed or used primarily for the transportation of persons or property, and that only incidentally operate or move over a highway, such as ditch digging apparatus, well boring apparatus, and earth moving and road

⁶⁷ 2014-2015 Governor's Proposed Budget, D107

⁶⁸ 2014-2015 Governor's Proposed Budget, D108

⁶⁹ 2014-2015 Governor's Proposed Budget, D109

⁷⁰ 2014-2015 Governor's Proposed Budget, D107-D110

construction machinery, are exempt from the Motor Carrier Road Tax.

IMPLEMENTS OF HUSBANDRY

- A vehicle designed or adapted to be used exclusively for agricultural operations is exempt from the Motor Carriers Road Tax.

CHURCHES

- A motorbus owned by and registered to a church, exempt under section 1901 of Title 75, is exempt from the Motor Carrier Road Tax.

ELECTRIC COOPERATIVES

- Qualified motor vehicles operated by electric cooperatives are exempt from the Motor Carrier Road Tax.

VEHICLES NEEDING EMERGENCY REPAIRS

- A qualified motor vehicle needing emergency repairs and which was granted authorization from the Pennsylvania State Police to enter the Commonwealth is exempt from the Motor Carrier Road Tax.

VEHICLES SECURING REPAIRS OR RECONDITIONING

- Exemption from the Motor Carrier Road Tax is provided for unladen or towed motor vehicles, or unladen trailers, entering Pennsylvania solely for the purpose of securing repairs or reconditioning.

RECREATIONAL VEHICLES

- Qualified motor vehicles such as motor homes, pickup trucks with attached campers, and
- Buses when used exclusively for personal pleasure by individuals, are exempt from the Motor Carrier Road Tax.

Conclusion

Pennsylvania maintains a complex array of fossil fuel subsidies in the form of tax expenditures. Many of these subsidies were developed decades ago and existing policymakers may not be aware of their existence or impacts. A handful of the subsidies identified are less straightforward and may represent partial or indirect subsidy values, or may not actually be considered subsidies when taken into national context. Greater research is needed to ensure each subsidy is given a dollar value, and subsidies should be examined to determine distortionary impacts on markets and consumer behaviors. Lastly, policymakers should examine whether these subsidies should continue or be eliminated.

Priority subsidies to review include the most clear and direct subsidies, subsidies with the greatest distortionary impacts, and subsidies with high dollar values including:

- natural gas distribution company exemption from Gross Receipts Tax;
- Sales and Use Tax exemptions for
 - coal,
 - residential utilities,
 - gasoline and motor fuels,
 - commercial use (i.e. favored businesses), and
 - equipment and supplies; and
- oil and gas exemption from local property tax.

CHAPTER 3

Direct Spending

Introduction

This chapter examines direct spending by the Commonwealth of Pennsylvania in two fossil fuel-related areas: trust funds and direct spending. State governments may also have programmatic spending related to staff support for fossil fuel activities. This area of potential fossil fuel subsidy was not covered in this report.

Extractive natural resources industries often require extra oversight by government health, safety, and environmental regulators, and may generate reclamation or post-closure management challenges not present in other industries. Targeted trust funds are a commonly-used government tool to address the financial burdens these activities can generate, particularly since expensive problems often appear after the most profitable phases of production have ended and the entities themselves may no longer exist. Funds raised to cover these costs are often at least partially financed by user fees levied on the relevant industry.

Pennsylvania maintains a significant collection of funds in trust, aimed at supporting various aspects of the fossil fuel industry. Most of these funds support the remediation of legacy fossil fuel development activities. However, some are also targeted at bolstering the economics of current fossil fuel development, production and use.

Most of Pennsylvania's funds are supported by a combination of both fossil fuel industry fees and taxpayer contributions. Some have existed for a very long time. Both aspects make it difficult to track the exact value of the subsidy over time. In general, taxpayer funding would qualify as a subsidy whereas funds from industry or fuel consumers would serve as an offset to the public cost of the program. Determining whether or not these funds represent a fossil fuel subsidy depends on long term fund balances, sources and uses of funds, rate of interest accrued (or charged if deficits), nature of the programs being supported, and other factors.

User fees are levied on the firms or industries that will also benefit directly from the programs the fees are used to support. In practice, this often means special levies imposed on the creator of a problem, the proceeds from which will be used (at

least partly) to address specific needs. If the user fees deposited into a fund do not generate enough money to pay for the services supported by the fund, the shortfall represents a subsidy and cash infusions from taxpayers may be needed to bridge the shortfall. If fees collected from the industry cover these costs or are in excess of what is needed to provide the intended service, there would be no residual subsidy and, in fact, there might be a residual tax. Unfortunately, we were unable to document the long term performance of most of the fossil fuel-related trust funds to make this determination.

Tracking Legacy and Commingled Subsidy Amounts

Many funds and direct spending programs that support fossil fuels are capitalized with taxpayer monies, representing a subsidy. Over time, funding for these programs is commingled with fees from the fossil fuel or other industries, making tracking of subsidy amounts less clear. In the absence of data showing annual inflows and outflows, it is impossible to clearly determine subsidy amounts. Additionally, many of the taxpayer subsidies were provided in the past, making it difficult to represent the subsidy value in a single fiscal year snapshot. Initial taxpayer funding is noted where available, but is often from many years ago and is not counted in the subsidy total. Further, particularly for large remediation programs that show little disbursement activity, there is a possibility that other parts of state government have made substantial expenditures in those same policy areas that we did not capture. Long-term data on fund balances likely exists within the Commonwealth. If so, further research could identify subsidy values in many of the funds and direct spending programs.

We have placed fossil fuel-related funds into four main categories: remediation funds, production and use funds, grant programs, and market support.

Remediation Funds

Nearly 150 years of fossil fuels extraction in Pennsylvania has resulted in widespread environmental degradation. In the industry's early days, environmental problems were often not well understood or regulated. Few industries employed practices to avoid environmental damage and, generally, they were not required to pay for the damage they were causing to Pennsylvania's environment. The trust funds described below were created to help address these legacy problems stemming not only from pre-regulatory days but from more recent production

activities as well, where site owners or operators nonetheless did not properly remediate their sites.

In most cases, these funds are supported in part by fees on impacted fossil fuel industries. Over a long period of time, however, collections from user fees have often been insufficient to cover the cost of remediating environmental damages. These funding gaps have been filled by taxpayer subsidies.

The cost of treating acid mine drainage from legacy coal mining in Pennsylvania is a useful example, estimated to cost on the order of \$15 billion.¹ The scale of this cost underscores the importance of properly identifying environmental impacts of fossil fuel development early in its development process and establishing funding and oversight mechanisms to ensure remediation expenditures are paid by the causal industry rather than dumped onto the public many years later. Two central elements to avoid subsidized remediation expenditures include: 1) developing proper regulations upfront in order to avoid environmental damage and liabilities; and 2) ensuring industry-funded fees to clean up past and future liabilities are adequate to actually cover the cost of long-term remediation and treatment.

Although the Commonwealth now has many trust funds in place to deal with different problems linked to fossil fuel development, too often these structures were added only after substantial environmental or economic losses.

Coal and Clay Mine Subsidence Insurance Fund

The Coal and Clay Mine Subsidence Insurance (CCMSI) Fund was created by Act 484 of 1961 to provide an insurance option for homeowners living above legacy underground mines against subsidence (e.g. land sinking or cave-in) or interruptions in water supplies caused by mines.

Subsidence of defunct mines under properties and homes in Pennsylvania has caused significant damage across the Commonwealth and created significant financial and safety risks for individual property owners. Although mining has mostly shifted away from underground tunneling, the older mine sites remain and are expected to continue causing damage for the foreseeable future as old mine voids cave in. The problem is not small-- there remain over one million structures that stand over mine voids in Pennsylvania.² Despite the risks, less than 10 percent

1 Burt A. Waite, "Letter AMD & AML 03/08/2004," Pennsylvania Department of Environmental Protection, March 8, 2004.

2 "Coal and Clay Mine Subsidence Insurance Fund and Program: Annual Report for State Fiscal Year 2010-2011." Pennsylvania Department of Environmental Protection, April 2012: 3.

of these at-risk homeowners, mostly in southwestern Pennsylvania, have mine subsidence insurance.³

The CCMSI Fund was originally established because the private sector deemed subsidence to be an uninsurable risk, either due to lack of actuarial data to derive premium prices, or because losses would be too high to justify entering the market.⁴ Private sector provision of subsidence insurance is quite rare in the United States. Pennsylvania's CCMSI Fund, the first of its kind, received an initial transfer of \$1 million from the General Fund that was invested in U.S. bonds.⁵ This fund seems to be operating on a financially-sound basis. Despite the initial taxpayer capitalization, premium collections plus interest on premium balances enabled the fund to reach a balance of more than \$90 million by 2013.

Premium funding aside, it is important to note that the lack of industry responsibility for subsidence over many decades of operation resulted in inadequate attention and investment in risk reduction during mining operations. This likely enabled some mining activity to proceed that would have made no economic sense had operators been forced to internalize their own subsidence risks and long-term liabilities.

Pennsylvania's "three estates" property rights system (surface, support, mineral) allocated the right of support (soil and minerals to stabilize extraction operations) as a separate property right and, with this division, segregated the risk of subsidence. Until the Bituminous Mine Subsidence and Land Conservation Act was passed in 1966, the three estates framework meant that the mine operator who owned the right of support was not liable for preventing or repairing damage. As a result, early mining companies were not required to address the subsidence issue and instead, the cost of insuring this risk has been shifted from the coal industry onto the surrounding population.

- **Discussion:** A subsidy exists through creation of the insurance pool and the ability of coal mining firms to avoid that liability. The funding of that subsidy is through the \$1,000,000 initial grant. However, the largest source of subsidy arises through the cost shifted to homeowners to cover risks created by the mining industry. Insurance premiums provide a partial metric of this transfer. However, uncovered risks of property damage or other liabilities from subsidence likely comprise the largest portion. Uncovered risks include the

3 Mary Ann Thomas, "Mine subsidence in region a constant problem for DEP," Pittsburgh Tribune-Review, August 4, 2013.

4 "Coal and Clay Mine Subsidence."

5 PA "Anthracite and Bituminous Coal Mine Subsidence Board Meeting, July 2 1962." Mine Subsidence Insurance Board, 1962: 2.

majority of homeowners with no insurance policy at all as well as those who do have some coverage if available levels are too low.

- **Further Research:** In Pennsylvania, it seems the only mine subsidence insurance available is through the state program. Further research is needed to determine why private insurers do not offer independent policies given the positive balances in the state's subsidence program and that decades of actuarial data are now available.

Coal Lands Improvement Fund

The Coal Lands Improvement (CLI) Fund was established in 1965. The Fund's authorizing legislation also enabled the Commonwealth to purchase or, in some cases, seize land previously used for open pit or strip mining if the site was harmful to citizens' health or safety. The CLI Fund was capitalized by an initial transfer of \$1 million from the General Fund.⁶

The CLI Fund uses taxpayer dollars to finance the rehabilitation of land harmed by open pit or surface mining, a cost that should have been incurred by the industry. Nearly 50 years later, the fund remains solvent, with a positive balance of just under \$3 million in 2013. The sale of rehabilitated lands and interest payments on fund balances may have helped with solvency.

However, the stable fund balance may mask much larger fund inflows and outflows. For example, damaged coal lands are expensive to rehabilitate and stabilize, requiring investment before they can be sold or repurposed for other uses. In Pennsylvania, the primary mechanism to fund the reclamation of land and water damaged by legacy strip mining operations is through the federal Surface Mining Control and Reclamation Act (SMCRA), created in 1977. SMCRA places a fee on every ton of coal currently being mined in the U.S. and places these funds in the federal Abandoned Mine Reclamation Fund (AMRF). Funds are redistributed to states in the form of annual grants and these grants comprise the major element of funding for remediation of legacy coal sites. The total grants that Pennsylvania expects to receive under SMCRA from 2008 to 2022 are approximately \$1.4 billion.⁷

Yet even that amount remains well below the need. Pennsylvania's legacy abandoned mine land problem (i.e. meaning no existing entity exists from which

6 "Open Pit or Strip Mines – Acquisition and Reclamation." Commonwealth of Pennsylvania, 1965.

7 "Basics of SMCRA Title IV," Western Pennsylvania Coalition for Abandoned Mine Reclamation, May 2007.

to pursue cost recovery for damage) has been estimated to be approximately \$15 billion. This includes 2,500 miles of polluted streams from acid mine drainage, 250,000 acres of unreclaimed surface mine land, and 100 million cubic feet of burning coal refuse and potential subsidence issues for thousands of acres.⁸ It seems that even with the combination of SMCRA funding via industry fees and CLI funding, cleanup of Pennsylvania's abandoned mine lands and associated problems remains inadequate.

- **Discussion:** The CLI program and fund represents a subsidy because the state is “purchasing” contaminated land with liabilities in excess of value. Even if the state pays nothing for the land, the damages are often sufficiently severe that a private sector buyer would assess a large negative value. State losses grow through the use of taxpayer funds to remediate the land that was damaged by the industry. Although the state does generate some revenue through sale of remediated land, large losses are the norm. To the extent that these are covered through fees on current coal extraction as assessed under SMCRA, state subsidies to current cleanup operations remain low.

Surface Mining Conservation and Reclamation Fund (Conversion to Full Cost Bonding)

In addition to the abandoned mine reclamation program discussed above, SMCRA includes a regulatory program that is intended to reduce the likelihood of current mines being abandoned before reclamation and pollution discharges (primarily mine drainage) have been fully addressed. One mechanism SMCRA uses to guarantee that each mine's reclamation plan is completed is a financial performance bond.

Pennsylvania's Surface Mining Conservation and Reclamation Fund (SMCRF) was developed to assist in the Commonwealth's implementation of SMCRA. Since 1972, state law required mine operators have mining licenses in order to operate and to renew them annually⁹. Additionally, a permit is required for every mining operation. The permit scheme has been modified over the years but currently requires that a detailed reclamation plan be submitted with the application.¹⁰ In 1982, Pennsylvania acquired a status known as “primacy,” which enabled it to regulate surface mining activity under a state program adopted to meet minimum

⁸ “The scope of the AMD problem,” LEO EnviroSci Inquiry.

⁹ “Surface Mining Conservation and Reclamation Act: Act of May 31, 1945, P.L. 1198, No. 418.” Commonwealth of Pennsylvania. Page 7.

¹⁰ “Surface Mining Conservation and Reclamation Act”, page 19.

standards established by SMCRA.¹¹ When it attained primacy, Pennsylvania already was employing an “alternative” bonding system (ABS) for certain categories of coal mining operations.¹² Under the ABS, mine operators posted site-specific reclamation bonds that were consciously set below the full costs of reclamation and also paid a fee into a statewide pool that was used to make up any shortfall when a site-specific reclamation bond was forfeited and collected.

In 1991, the federal government found that Pennsylvania’s ABS was failing to meet SMCRA’s standards because the statewide pool had too little funding to complete the reclamation of all the mines where bonds had been forfeited. After sporting, environmental, and community organizations instituted court proceedings in 1999,¹³ Pennsylvania decided in 2001 to transition from the ABS to a conventional bonding system (CBS) in which the site-specific bonds are set at the full (estimated) cost of reclamation.

One immediate obstacle to the transition from the ABS to the CBS was that some mine operators were unable to obtain, from private surety companies, the additional bonds needed to meet the full-cost standard. To fill this gap, the **General Assembly appropriated \$7 million** in 2001 against which the state could write up to \$70 million in site-specific “conversion assistance” reclamation guarantees,¹⁴ which are now called “Land Reclamation Financial Guarantees” (LRFGs).¹⁵ In providing LRFGs, Pennsylvania is acting as a private surety company. For a fee, the state provides sum certain financial guarantees for part of the mine operator’s potential land reclamation liability. In the event of bond forfeiture, the LRFG Account must cover the amount of the sum certain financial guarantee written against it. As of October 2014, however, the fees collected and interest earned have grown the LRFG Account from the initial \$7 million to more than \$12 million.¹⁶

Dozens of mines that were bonded under the ABS had already suffered forfeiture of the reclamation bonds by the time the transition to the CBS began in 2001. Those ABS “legacy” mines that left behind two kinds of reclamation liabilities. The first were land reclamation liabilities. To address this legacy, the **General Assembly appropriated \$5.5 million** for the ABS Closeout Fund (a sub-fund

11 “Assessment of Pennsylvania’s Bonding Program for Primacy Coal Mining Permits: Permit Forfeiture and Land Reclamation Status Report,” Pennsylvania Department of Environmental Protection, February 2000: 2.

12 Specifically, the ABS covered surface coal mines, coal refuse reprocessing operations, and coal preparation facilities.

13 “Pennsylvania Coal Mine Bonding Program -- 1999 Citizen Suit,” PennFuture, 2009.

14 “Pennsylvania Regulatory Program Amendment Regarding Pennsylvania’s Defunct Alternative Bonding System.” Pennsylvania Department of Environmental Protection, 2008.

15 Act of October 24, 2012, P.L. 1276, No. 157, § 2.

16 44 Pa. Bull. 6781, 6782 (October 25, 2014).

under SMCRF), which is dedicated to reclaiming land that was neglected under ABS.¹⁷ Although substantial progress has been made, land reclamation still must be completed at several of the forfeited ABS mines.

The second and more costly legacy was the dozens of untreated discharges of polluted mine drainage flowing from the forfeited ABS mines. Pennsylvania attempted to relegate these discharges to the federal abandoned mine program but the U.S. Court of Appeals for the Third Circuit ruled in 2007 that they remained the responsibility of Pennsylvania's ABS.¹⁸ As a result, the state was required to develop financial mechanisms to fund their perpetual treatment. The plan DEP devised in 2008 involved the creation of two new trust accounts: the ABS Reclamation Fee O&M Trust Account and the ABS Legacy Sites Trust Account.¹⁹

The Reclamation Fee O&M Trust Account went into operation in 2008 and will remain in operation at least until DEP completes the installation of treatment systems for all of the discharges from the forfeited ABS mines (known as "ABS Legacy Sites"). The account, which receives revenue from several sources including civil penalties assessed against coal mine operators, pays for the operation and maintenance (O&M) of all the treatment systems that have been installed at ABS Legacy Sites. If necessary to maintain the required minimum balance of \$3 million in the account, DEP is authorized to charge certain newly-permitted mining operations a per-acre "reclamation fee." Since 2008, however, DEP has maintained the minimum balance without having to charge the fee. In part, this results from the delay in installing treatment systems at all of the ABS Legacy Sites. DEP originally estimated that it would cost \$1.6 million per year (potentially in perpetuity) to treat all the discharges from the ABS Legacy Sites but the most DEP has spent from the Reclamation Fee O&M Account in any single year was just over \$800,000.²⁰ DEP still must install treatment systems at more than a dozen ABS Legacy Sites.

A law enacted in 2012 allows DEP to transfer certain fees and interest from the LRFG Account into the Reclamation Fee O&M Trust Account,²¹ but, to date, such transfers have not been necessary to maintain the \$3 million minimum balance. The same law also provides for an annual appropriation to DEP of up to

17 "Pennsylvania Regulatory Program Amendment Regarding Pennsylvania's Defunct Alternative Bonding System." Pennsylvania Department of Environmental Protection. Commonwealth of Pennsylvania, 2008.

18 *Pennsylvania Federation of Sportsmen's Clubs, Inc. v. Kempthorne*, 497 F.3d 397 (3d Cir. 2007).

19 "Pennsylvania Regulatory Program Amendment."

20 Kurt J. Weist, "Reclamation Fee Fiscal-year Report 2013," Pennsylvania Department of Environmental Protection, 2013.

21 Act of October 24, 2012, P.L. 1276, No. 157, § 2

\$2 million from the gross receipts tax on sales of electric energy in Pennsylvania for transfer into the Reclamation Fee O&M Trust Account²² however, to date, the General Assembly has not made such an appropriation.

The ABS Legacy Sites Trust Account is intended eventually to take over from the Reclamation Fee O&M Trust Account in paying for the treatment costs at ABS Legacy Sites. The ABS Legacy Sites Trust Account is supposed to be self-sustaining, with its own earnings on investments covering all costs of treatment in perpetuity. As a result, one prerequisite to it going into operation is that it contains enough money to cover all O&M costs, and all costs of replacing the capital components of the treatment systems, forever. Another prerequisite is that DEP complete the installation of the treatment systems at all remaining ABS Legacy Sites.

- Discussion:
 - Taxpayers subsidized the transition from the ABS to the CBS through appropriations totaling \$12.5 million used to help pay for the reclamation of mines that should be been reclaimed by the statewide ABS bond pool, and to assist active miners in converting to full cost bonds.
 - Another subsidy came in the form of the long delay in land reclamation and mine drainage treatment at certain ABS mines, which imposed additional externalized costs that were (and, perhaps, continue to be) absorbed by the affected communities and businesses.

Production and Use Funds

These subsidies support the production and use of fossil fuels and fossil fuel-related industries in Pennsylvania, primarily through financial assistance, low-interest loans, and grants. Some of these subsidies go directly to improving the economics of fossil fuel development and use. Others provide indirect subsidies by supporting fossil fuel markets or businesses and equipment manufacturing that are dependent on fossil fuels. Subsidies that support inefficient industries, mature industries that should stand on their own, or heavily polluting sectors require particularly careful evaluation.

Anthracite Emergency Bond Fund

The Anthracite Emergency Bond (AEB) Fund was established in 1986 to address problems faced by anthracite deep mine operators in obtaining reclamation bond coverage. Mine operators who have been rejected by at least three bonding

22 Id.

companies, or had their bonds canceled due to bankruptcy or insolvency of an insurance company, were eligible to rely on AEB to procure needed coverage.²³ The mine operator is expected to pay a minimum participation fee of \$1,000 to the Department of Environmental Protection, and is assessed a \$0.25 fee for each ton of coal removed. The AEB Fund then provides the operator with a loan so that it can obtain bonding. Since its establishment in 1986, the Fund has received three transfers of \$50,000 each from the general fund but has otherwise remained solvent. The fund currently has a balance of more than \$500,000.

- **Discussion:** The primary subsidy is the offering of a program to make insolvent or otherwise financially insecure mining operators eligible for reclamation bonding. The cost of the subsidy is being financed by \$150,000 in taxpayer funds.

Pennsylvania Industrial Development Authority and Infrastructure Development Program

The Pennsylvania Industrial Development Authority (PIDA) offers low-interest loans to companies as they expand their industrial capacity through land and building acquisition, construction and renovation, and industrial park development.²⁴ The program is periodically supported by transfers from the General Fund. The low interest rate loans have a 15-year term and are capped at \$2 million per borrower. Some of the largest loans made since 2000 have gone to companies connected to fossil fuel production. For example, the mining supplies manufacturers KH Controls, Inc. and Fulton Precision, Inc. both received loans for over \$1.3 million. Other loans have supported firms connected to the fossil fuel industry as well as alternative and renewable energy projects.²⁵

The Infrastructure Development Program (IDP) offers grants and low-interest loans for infrastructure improvements to private and public firms²⁶. These grants and loans, capped at \$1.25 million per borrower, may be used for transportation, energy and parking facilities, water systems, and other projects. Fossil fuel-related activities are eligible to participate in these programs and grants, and low interest loans have been provided to fossil fuel related companies and projects.

- **Discussion:** PIDA and IDP are supported by General Fund monies (either

²³ "Laws of Pennsylvania: No. 1986-171". Commonwealth of Pennsylvania, 1986.

²⁴ "Pennsylvania Industrial Development Authority," Pennsylvania Department of Community and Economic Development, 2014.

²⁵ "Subsidy Tracker 2.0.," Good Jobs First, 2014.

²⁶ "Infrastructure Development Program," Pennsylvania Department of Community and Economic Development, 2014.

through grants or by offering below-market interest rates), creating a subsidy when taxpayer dollars are used to make business expansion and development opportunities more affordable to the fossil fuel industry.

Grant Programs

Pennsylvania First Grant Program

The Pennsylvania First Grant program combined funding from three existing grant programs (Opportunity Grant program, Customized Job Training program and Infrastructure Development program) and essentially eliminated the restrictions and limitations that had governed these underlying programs. For example, the Opportunity Grant's enabling statute required development of guidelines to limit project award size. The Department of Community and Economic Development (DCED), which administered the Opportunity Grant program, established a \$5,000 per job created or retained limit. In 2012, Monroe Energy LLC received a \$30 million Opportunity Grant from the Commonwealth. Monroe Energy is an oil refinery and petroleum product manufacturer. The project was expected to create or retain 402 jobs, essentially limiting funding under the Opportunity Grant to \$2.01 million. The Pennsylvania First Grant program was developed through budget legislation intended to eliminate programmatic restrictions and limitations of the three underlying grant programs. By eliminating the employment retention/generation per dollar spent and other requirements, the new Pennsylvania First Grant program was allowed to award Monroe Energy a much larger grant (i.e. \$30 million) than would have been permitted under the previous programs.

Philadelphia Energy Solutions

Philadelphia Energy Solutions (PES) is a joint venture between the Carlyle Group and Energy Transfer Partners, which took over the economically-struggling refinery in Philadelphia that was formerly owned by Sunoco. The PES refinery processes a variety of fossil fuels including crude oil and natural gas products. PES has received numerous grants from the Commonwealth of Pennsylvania including:

- December 23, 2013 - \$5 million in RCAP grants for a catalytic cracker;²⁷
- December 12, 2013 - \$10 million in PennDOT Capital Budget/ Transportation

²⁷ "Corbett Administration Announces Economic Growth Initiative Projects," Office of the Governor, December 23, 2013.

Assistance Program grants to construct nearly 30,000 feet of track and a rail car maintenance area; install 16,000 feet of pipeline to transport crude oil from the off-loading facility to the storage tank area; and complete improvements to yard facilities.²⁸ The Rail Transportation Assistance Program is funded by general obligation bonds;²⁹

- February 11, 2013 - \$5 million in Redevelopment Assistance Capital Program (RACP) grants for refurbishing a catalytic cracker unit;³⁰ and
- Several news reports³¹ indicate that PES received a \$10 million RTAP grant prior to October 2013, however, this hasn't been confirmed through official grant announcements and is therefore excluded from the subsidy calculation.

Act 13 Natural Gas Vehicles

Act 13 of 2012, among other things, established a \$20 million, multi-year Natural Gas Vehicle Grant Program at the Pennsylvania DEP. The grant program is funded from a portion of per-well impact fee revenues paid for by the natural gas industry. The grant program was meant to help pay the incremental purchase and conversion costs of natural gas vehicles (NGV). Program guidance was developed complete with eligible project criteria, project funding limits, etc. On December 1, 2012, \$10 million was made available for competitive grant applications. Forty-nine applications were received totaling over \$12 million and 19 projects were selected for a total award amount of \$6,809,263.³²

- **Discussion:** The funds to support the NGV grant program are collected from the natural gas industry. However, the gas industry benefits from this grant program by expanding markets for natural gas sales to the transportation sector. If the natural gas Impact Fee from Act 13 of 2012 is insufficient in compensating state and local governments from damages related to gas development, then use of impact fee funds for natural gas market expansion represents a subsidy.

28 "Corbett Administration."

29 Kevin E. McCarthy, "Pennsylvania Freight Rail Assistance Programs," January 13, 2010.

30 "Corbett Administration Announces Economic Growth Initiative Awards," Office of the Governor, February 11, 2013.

31 Kelli Roberts, "Governor Corbett Joins Refinery Workers to Open New Rail Unloading Facility; Celebrate Refinery's Continued Operation," Pennsylvania Department of Community and Economic Development, October 2, 2013; And "CSX-served crude unloading facility opens at Philadelphia refinery," Progressive Railroading, October 3, 2013.

32 "2013 Annual Act 13- Unconventional Gas Well Impact Fee Report to the Pennsylvania Legislature and the Governor's Budget Office," Pennsylvania Department of Environmental Protection, 2013.

Alternative Fuels Incentive Grant Program

The Alternative Fuels Incentive Grant (AFIG) and rebate programs were developed by the Alternative Fuels Incentive Act of 2004. The program is funded by an annual allocation from the General Fund representing 0.25 mills of utility gross receipts tax, which typically amounts to \$5-\$6 million annually.³³ The program aims to reduce mobile source emissions, improve air quality and promote use of domestically produced fuels. It aims to be fuel neutral, supporting projects that use ethanol, biodiesel, compressed natural gas, liquefied natural gas, hydrogen, hythane (mixture of natural gas and hydrogen), liquefied petroleum or propane gas, electricity, and fuels derived from coal and biomass. DEP has a set of grant program guidelines and offers competitive solicitations for applications on an annual basis. According to DEP, the AFIG program was not offered in program year 2012 and the funds from the 2012 gross tax receipts were rolled over for award in the 2013 program year. For purposes of this report, the subsidy amount will be reported as the approximately \$6 million that was to be spent in the 2012 program year.³⁴ This grant and rebate program uses General Fund monies collected from the utility gross receipts tax that are earmarked for the program in order to support transportation sector markets for (primarily) fossil fuel-based technologies.

Growing Greener Grants

Growing Greener I (GGI) was approved by the General Assembly in 1999 and committed \$645 million in appropriations to “address Pennsylvania’s critical environmental concerns,” to be spent over five years. Consequently, all monies from GGI can be considered grants and are likely subsidies. GGI was supplemented in 2002 by legislative action to earmark \$4/ton in waste tipping fee surcharges. This represents a cross-subsidy between land disposal of solid waste to uses of the funds that are in other environmental areas. However, for purposes of fossil fuel subsidies, it is still clear that any grants made to the fossil fuel sector are not being paid for by the industry and are thus a subsidy.

Growing Greener II (GGII), established by Act 45 of 2005, approved an additional \$625 million bond (\$1.27 billion total) to support the program. Debt service for this bond is paid via the tipping fee surcharge funds. We assume the collections cover both interest and principal, though this is not clearly stated in program descriptions. Of the roughly \$60-\$65 million/year in tipping fee revenue, only about \$15-\$25 million is left after debt service on GGII bonds to fund more GGI

33 “2012-2013 Annual Report to the Pennsylvania Legislature: Alternative Fuels Incentive Grant Program,” Pennsylvania Department of Environmental Protection, November 2013.

34 “2012-2013 Annual Report to the Pennsylvania Legislature.”

activities. Currently, all GGII fund principal has been distributed.

The categories of project eligible for Growing Greener funding include watershed protection, energy development, conservation re-enhancement, dam safety, geological hazards, mine cleanup and drainage, oil and gas clean up, and brownfields. Growing Greener dollars have been divided for use among four agencies: the Department of Agriculture, the Department of Conservation and Natural Resources, the Pennsylvania Infrastructure and Investment Authority, and the Department of Environmental Protection. Since its inception, Growing Greener has financed a total of 4,500 projects.

Though some grants have been allotted to environmental protection and conservation efforts, many have financed projects related to damage caused by the fossil fuel industry. These costs are properly borne by the fossil fuel industry rather than financed using taxpayer dollars; grants from taxpayers constitute fossil fuel subsidies. Of the \$1.27 billion committed to Growing Greener I and II, nearly half (\$547 million) was provided to DEP for the following types of projects: “acid mine drainage abatement, mine cleanup efforts, abandoned oil and gas well plugging and local watershed-based conservation projects.”

Of the \$471 million in grants that DEP has made thus far, over \$89 million or about 19 percent has been allotted to projects involving the mitigation of the impact of fossil fuels, especially to limit acid mine drainage. This number was identified by going through the DEP grant database and selecting those awards that were fossil fuel related based on their project descriptions. This is a conservative estimate of fossil fuel subsidies since it is unclear whether or not all fossil fuel projects were identified. The fossil fuel projects included in our \$89 million total were primarily acid mine drainage abatement projects, abandoned mine reclamation projects, and oil and gas well plugging projects.³⁵ The \$89 million figure represents projects funded since the inception of Growing Greener, therefore, this value cannot be used to represent a fiscal year snapshot of subsidy amounts. The subsidy amounts should also include interest paid on the GGII bond debt but this calculation was not available.

- **Discussion:** The primary subsidy is the use of taxpayer funds to clean up environmental damages caused by the fossil fuel industry. Further research is needed to determine the exact value of Growing Greener subsidies to the fossil fuel industry. Due to the timing of Growing Greener fossil fuel subsidies, which were outside of the fiscal year 2012-2013 snapshot, the value of these subsidies was not included in the report’s overall tally of subsidies.

³⁵ A complete list of Growing Greener grants award by the DEP may be found at: <http://www.depreportingservices.state.pa.us/ReportServer/Grants/GrantSearch>

Market Support

Alternative Energy Portfolio Standard Tier II

The Alternative Energy Portfolio Standard (AEPS) Act of 2004 requires electric distribution companies and generation suppliers to supply a percentage of electricity sold by renewable (Tier I) and alternative (Tier II) resources. The Tier I requirement is structured similar to renewable portfolio standards employed in many states. The Tier I requirement of 8 percent of electricity sold by 2021 must be comprised of renewable resources such as wind and solar. The Tier II requirements include resources not normally included in portfolio standards in other states. The Tier II requirement of 10 percent of electricity sold by 2021 includes not only less renewable resources such as pumped hydro storage and municipal solid waste but fossil fuels such as waste coal.³⁶ Electricity distribution and generation supply companies typically comply with AEPS by purchasing credits that are generated by qualified facilities. The aggregate cost of the credits provides a good estimate for the subsidy conferred by the purchase mandates. For the 12-month energy year spanning 2012-2013, over 8.8 million Tier II credits were procured at a weighted average price of \$0.17 for a total cost of \$1,030,664.³⁷ Electricity customers pay this extra cost through a charge on their electricity bills. The majority of Tier II resources are fossil fuel based including hydro pumped storage (65.3 percent) and waste coal (16.5 percent). Hydro pumped storage uses cheap electricity at night to pump water uphill to reservoirs and then releases the water during the day to make electricity when power prices are high. Pumped storage uses more power than it generates but does provide a valuable dispatchable resource to meet peak power needs. Due to its reliance on grid power that is over 63 percent fossil fuel based, it is considered a fossil fuel resource for purposes of this report. Use of electricity ratepayer funds to support fossil fuel resources is a subsidy.

Coal Use in Government Buildings

Act 28 of 1990 requires that heating systems or heating units installed in a facility owned by the Commonwealth be fueled by coal except if provided as an exemption. Exemptions include providing a detailed justification for not using

³⁶ Tier II sources include waste coal, distributed generation systems, demand side management, large scale hydropower, municipal solid waste, generation of electricity outside of Pennsylvania utilizing by products of the pulping process and wood manufacturing process including bark, wood chips, sawdust and lignin in spent pulping liquors and integrated combined coal gasification technology.

³⁷ "2012 Annual Report Alternative Energy Portfolio Standards Act of 2004," Pennsylvania Public Utility Commission, October 2013.

coal that includes at least eight separate considerations ranging from cost, space availability, operations and maintenance requirements, air quality considerations, or use of natural gas from wells located in Pennsylvania (an acceptable alternative).³⁸ A fuel feasibility study may or may not also be required depending on the preliminary information provided. It is unclear if the Department of General Services is enforcing this provision and/or how often they are allowing for exemptions to the coal heating requirement. Requiring coal to be used as a heating fuel in Commonwealth buildings is a clear subsidy. More research is required to determine how widely this subsidy is being employed in Pennsylvania.

Conclusion

Pennsylvania's long history of fossil fuel extraction and use has led to the development of a wide variety of programs and funds aimed at improving the economics of fossil fuel extraction, use and remediation. It is clear that many of these programs provide significant subsidies. For some programs, more research and access to data is needed to identify exact subsidy amounts. In the future, it would be useful to examine whether or not these programs are currently prudent or should be eliminated.

Further research should focus on the following:

- a detailed examination of inflows and outflows in the remediation and production and use funds to better understand the level of subsidy provided;
- the total fossil fuel subsidy amounts being awarded in government grant and loan programs;
- examination of the need for continued public support for certain programs that could be provided by the private sector (e.g. subsidence insurance, full cost bonding conversion); and
- examination of the usefulness of existing subsidy programs (e.g. coal lands improvement fund, anthracite emergency bond fund, coal use in government buildings).

38 "Project Procedure Manual 2010 Edition," Pennsylvania Department of General Services, 2010.

CHAPTER 4

Unconventional Shale Gas

This chapter attempts to examine selected aspects of fossil fuel development in Pennsylvania to begin to highlight how certain unconventional shale gas development activities may result in subsidies. Many of the subsidies identified below apply not only to unconventional natural gas but to conventional natural gas, oil and/or coal.

Although this chapter does not represent a full discussion of the costs or benefits of unconventional natural gas development, it aims to provide an overview of issues related to the shale gas development that most likely results in subsidies. This issue is very important because subsidy values may accelerate unconventional shale development in inappropriate ways; many of these issues require further research and estimation of associated subsidy values. For example, determining the existence and associated value of a tax break is much clearer than determining the existence and associated subsidy value of a regulatory exemption. This chapter is a first step toward providing a more comprehensive framework for understanding unconventional gas subsidies in Pennsylvania, though much more analysis is needed to clarify these issues.

In the discussion that follows, we will review the following types of subsidy policies: federal regulatory subsidies that impact Pennsylvania; state regulatory subsidies; tax breaks and special tax treatment; and emerging, broad-based issues.

Federal Regulatory Subsidies

Regulatory subsidies arise if particular industries or activities are exempted from requirements levied on similar activities or pollutants in other sectors, or granted other preferential terms on environmental controls. While state regulators do not set federal regulations, they often have the responsibility to oversee and enforce them. In other cases, state regulations may exceed federal requirements. Under either scenario, regulatory gaps or exemptions can materially affect energy activities in the state.

Below is a summary of federally-granted regulatory subsidies enjoyed by the unconventional gas development industry operating in Pennsylvania.¹ In general, these exemptions reduce compliance costs to industry and increase emissions, with concomitant increases in health and environmental damage.

Clean Water Act (CWA) Stormwater Permit Exemption

One of the objectives of the CWA is to reduce and eliminate stormwater (i.e. rainwater) pollution discharges into waters of the United States. State issuance of permits for discharging stormwater pollution into receiving waters such as streams, lakes, rivers, and wetlands is an important aspect of achieving this goal.

Fuel extraction activities disturb land cover and increase pollution from stormwater runoff. In 1987, Congress developed a permitting program to control stormwater runoff-related pollution, but in 2005 chose to exempt all activities related to oil and gas exploration, production and processing — including construction activities -- from stormwater permit requirements under the federal National Pollutant Discharge Elimination System (NPDES) program. The Pennsylvania Department of Environmental Protection (DEP) has developed a state-only stormwater permitting program for oil and gas activities under the Pennsylvania Clean Streams Law but the program is less stringent than the federal NPDES program that is applied to most other industries.

Clean Air Act (CAA) Aggregation Exemption

The CAA is a comprehensive federal law aimed at regulating air emissions from a variety of sources. Under the CAA's toxic pollution control program (the National Emission Standards for Hazardous Air Pollutants, or NESHAP), emission standards are developed for major sources of hazardous emissions. Smaller sources of Hazardous Air Pollutants (HAPs) that are under the common control of the same operator, are located in close proximity to each other, and perform a similar function are typically “aggregated” and considered to be one source. However, section 112 (n)(4) of the CAA exempts “any oil or gas exploration or production well (with its associated equipment) and emissions from any pipeline compressor or pump station” from aggregation. Because smaller sources face less stringent regulatory controls, escaping from source aggregation allows oil and gas sources to escape “major source” determinations and thereby avoid having to invest in

¹ Renee Lewis Kosnik, “The Oil and Gas Industry’s Exclusion and Exemptions to Major Environmental Statutes,” Earthworks and the Oil and Gas Accountability Project, October 2007.

pollution controls. Additionally, hydrogen sulfide, a chemical associated with the extraction of oil and gas, was removed from the CAA's list of HAPs.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Liability Exemptions for Oil and Gas

CERCLA established the Superfund program and aims to hold polluters and other potentially responsible parties liable for toxic or hazardous pollution dumped into the environment. However, CERCLA contains exemptions from liability requirements associated with many hazardous substances found in crude oil or petroleum products used in hydraulic fracturing. As a result, hazardous substances that would otherwise be covered under CERCLA are exempt if they are associated with petroleum products used in natural gas production. The definition of “potentially responsible parties” that could be held liable for cleanup costs associated with hazardous pollution releases excludes the oil and gas industry as well. Because they can more easily escape liability if problems occur, this exemption creates a disincentive for the oil and gas industry to minimize pollution discharges.

Emergency Planning and Community Right-to-Know Act (EPCRA) Reporting Exemption

The toxic release inventory (TRI) was created through the EPCRA in order to require industries to report and publicly disclose toxic substances. The TRI provides valuable information on a wide range of toxic pollution released into air and land through waste products and more. However, oil and gas facilities are not required to report to the TRI, leaving communities in oil and gas production areas ill-informed about toxic pollution releases in their neighborhoods.

Resource Conservation and Recovery Act (RCRA) Hazardous Waste Exemption

Among other goals, RCRA was established to protect the public and the environment from hazards associated with waste products including aspects of waste generation, transport, treatment, storage, and disposal. RCRA explicitly excluded drilling fluids, produced waters and other wastes associated with oil and natural gas exploration, development or production from the definition of hazardous waste. Despite the fact that many of the waste products created by the oil and gas industry contain toxic chemicals, they are allowed to be treated as solid (as opposed to hazardous) wastes and thereby exempted from various hazardous waste regulations including cradle-to-grave tracking requirements designed to ensure that all dangerous wastes are accounted for and properly disposed.

Safe Drinking Water Act (SDWA) Underground Injection Control Program Exemption

The SDWA's Underground Injection Control Program was established, in part, to protect groundwater resources from activities that involve injection of materials underground. The 2005 Energy Policy Act amended the definition of "underground injection" in the SDWA to exclude the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil and gas. This exemption basically means that operators of hydraulic fracturing wells can inject anything underground, other than diesel fuel, without having to obtain a permit for this activity. This poses a host of risks including, but not limited to, underground migration of injected chemicals and potential groundwater contamination as the injected materials pass through potentially compromised well wall sealants that penetrate the groundwater table.

Pennsylvania Regulatory Subsidies

The following is a summary of state-granted regulatory provisions that may or may not be considered as subsidies to the unconventional shale gas industry.

Fair Market Values of Public Land Leases and Royalties

Over a third of Pennsylvania's roughly 2 million acres of State Forest land is already available for oil and gas development, either because it has been leased by the Department of Conservation and Natural Resources or because oil and gas rights are now owned by the Commonwealth. Providing fossil fuels developers (natural gas, coal, oil) with access to publicly-owned lands for purposes of fuel extraction and development is not in itself a subsidy. Rather, if the terms of access are below market, a subsidy exists. Specifically, a subsidy exists if Pennsylvania policies do not require proper compensation for access, damages and severance from the underlying resources. Such lost or foregone government resources should be accounted for as a subsidy. One illustrative example of this phenomenon can be examined through the federal government's below market price lease payment for coal extraction in the Powder River Basin. In his 2012 report, Tom Sanzillo of the Institute for Energy Economics and Financial Analysis found that since 1982, the federal fair market value (FMV) lease process provided a \$28.9 billion subsidy to coal producers and utilities in the form of below fair market value leases.²

2 Tom Sanzillo, "Public Financing: Federal Fair Market Value Coal Leases In the Powder River Basin

- **Discussion:** It is unclear if lease agreements and royalty payments between developers and the Commonwealth represent fair market values. This seems to be an area where further research is needed in order to determine if a subsidy exists.

Degradation of Public Lands

A subsidy would be created if a gas or other fossil fuel developer were allowed to access Commonwealth lands for fuel development but caused damage to the land or other environmental resources that were not fully compensated. Under this scenario, the damages and associated liabilities would be externalized to the Commonwealth. Proper oversight of fuel development activities including but not limited to protecting air, land and water resources could help avoid this subsidy. In addition, adequate levels of reclamation bonding and insurance coverage would be needed for operations and long-term liability of the site. A 2014 report from the Pennsylvania Department of Conservation and Natural Resources (DCNR) found that 1,486 acres of forest had been “converted” through 2012 to gas development and uses³ — and this number represents only the industry’s actual footprint. It does not account for indirect and cumulative impacts. The report found that invasive species growth in disturbed areas is an observed impact of gas development on public lands along with noise pollution (from compressor station engines used to mine gas) and reduced enjoyment for some recreational users.⁴ There have also been concerns reported about private sector companies operating on public lands and how those operations may be negatively impacting area homeowners and businesses.⁵

Concerns about gas development on public lands have triggered a host of lawsuits. Although a comprehensive discussion of these cases is beyond the scope of this report, key issues often include negative and non-monetized impacts on environmental quality, the recreational economy and local communities; the scale of development and impacts on forest fragmentation and health; and the government’s use of funds generated from oil and gas leasing.

- **Discussion:** While these environmental and social impacts have not been monetized, documented concerns about a wide range of damages to public

Are a Public Subsidy,” Institute for Energy Economics and Financial Analysis (presented at Training: Financial Issues and Future of Coal January 10-11, 2012).

3 Christina Novak, “DCNR Releases First Report on Monitoring the Impacts of Shale Gas Development on State Forest,” Pennsylvania Department of Conservation and Natural Resources, April 16, 2014.

4 Novak, “DCNR Releases First Report.”

5 Marie Cusick, “On public land, a gas company takes private control,” StateImpact Pennsylvania, August 11, 2014.

lands and neighboring communities that are being externalized by gas developers suggests they are significant. For purposes of identifying potential subsidies, there is a need to better understand and monetize the cost of these impacts and any associated liabilities.

Insufficient Regulatory Oversight of Shale Development

An August 2014 report from the Pennsylvania Auditor General found many problems with DEP's oversight of shale development in the state.⁶ In general, the report found the department was underfunded, understaffed and either inconsistently applied, or failed to apply, departmental policies related to oil and gas. The Auditor General found that this impeded the ability of the department to effectively administer existing laws and regulations aimed at protecting drinking water, and reduced responsiveness to citizen complaints.

- **Discussion:** A subsidy is created if the oil and gas industry fails to adhere to laws and regulations due to lack of enforcement or oversight by regulators. There exists an economic incentive to reduce spending aimed at meeting regulatory requirements if a driller believes the probability of being caught is low and/or if the costs of penalties if caught are less expensive than the cost of the compliance investment.

Insufficient Bonding Requirements

Resource extraction can cause a wide range of damages including pollution of surface waters and wetlands, habitat loss and fragmentation, drinking water contamination, property value loss, negative impacts on human health on nearby populations, degradation of public infrastructure and services, and more.

Today, it is standard practice to require natural resource extraction activities that impact the Commonwealth to provide upfront financial assurance that damages created as a result of the resource extraction process will be corrected. Financial assurances can take the form of surety bonds, personal or collateral bonds, trust funds, or insurance. All of these approaches establish financial resources independent of the specific well operation to pay for environmental damages caused by resource extraction should the well operator become insolvent. Financial assurance requirements also put a price on careful environmental management, thereby providing a financial incentive to limit environmentally risky practices.

⁶ "Auditor General DePasquale Says Rapid Shale Gas Development Outpaced DEP's Ability to Oversee Industry, Protect Water Quality," Pennsylvania Department of the Auditor General, July 22, 2014.

They also enable prompt remediation of environmental harms by allowing regulators to quickly access bonding funds to fund cleanup costs rather than engaging in lengthy litigation prior to the start of remediation. Finally, financial assurance mechanisms can protect the public from having to absorb the cost of environmental cleanups caused by the industry.

Unfortunately, historical data indicates that the mandated financial assurance levels are often insufficient to cover realized damages. Further, the use of financial assurance mechanisms is relatively new. Prior to their implementation, development of oil and gas in Pennsylvania historically left a legacy of unplugged, orphaned (i.e., lacking an existing or solvent owner to take financial responsibility) oil and gas wells. Fees began to be collected from existing oil and gas operators and were augmented by public funds (a subsidy) to help address the abandoned well problem. However, DEP found that at 2004 funding rates, it would take roughly 160 years to plug all of the existing orphaned wells in the state.⁷

A subsidy exists if there is a shortfall between the required level of financial assurance and the actual cost of damages caused by the resource extraction.

If Pennsylvania's financial assurance requirements for fracking are insufficient, this would lead to a subsidy for unconventional gas development in Pennsylvania.⁸ For example, if the state's bonding requirements fail to cover the full range of costs that may ultimately result from fracking, the state may be left to deal with liabilities and costs associated with the shortfall. Many draw comparisons to the state's early experiences with the timber and coal industries, which resulted in widespread and costly environmental damage.

According to Mitchell and Casman,⁹ Pennsylvania's oil and gas bonding and regulatory structure suffers from several critical deficiencies likely to result in costs to taxpayers. Changes to Pennsylvania laws since publication of that paper may have reduced taxpayer risk somewhat but they have not eliminated the subsidies to current operators.

- **Inadequate bonding cost requirements.** The total average cost to cover unconventional gas well and site remediation is estimated to be between \$60,000–\$100,000 (3,000 foot depth well).¹⁰ If the cost of remediation is greater than the cost of the bond, the operator is likely to forfeit the bond

7 Pennsylvania Department of Environmental Protection, "Orphan Oil and Gas Wells and the Orphan Well Plugging Fund," Pennsylvania Department of Environmental Protection, 2007.

8 Tony Dutzik, Benjamin Davis, Tom Van Heeke and John Rumpler, "Who Pays the Costs of Fracking? Weak Bonding Rules for Oil and Gas Drilling Leave the Public at Risk," Environment America Research and Policy Center, 2013.

9 Dutzik, "Who Pays the Costs."

10 Dutzik, "Who Pays the Costs."

and leave the state with the remediation responsibility. Bond forfeiture is not an abstract notion: Pennsylvania's coal industry is instructive. Between 1985-1999, a total of 348 permits (nearly 10 percent of those issued) were forfeited, covering a total area of 63,197 acres.¹¹ In February 2012, Pennsylvania enacted a new bonding law for gas wells which refined bonding levels to incorporate key cost drivers such as well depth and the number of wells operated by the permit holder. These changes increased bonding requirements overall though they still appear inadequate based on available data on remediation costs. For example, permit holders/operators for wells under 6,000 feet pay per well bonds (typically \$4,000 per well plus a flat fee) for increments of 0-50, 51-150; 151-250, and over 250 wells. However, the total bond amount is capped so that no bond may be required to exceed \$35,000, \$60,000, \$100,000, or \$250,000, respectively. If the cost of remediating a single well can be \$60,000 to \$100,000 (for a 3,000 foot deep well) and an operator has to remediate 250 wells, it is evident how quickly coverage bonding shortfalls can arise. Complicating this matter, Pennsylvania law apparently prevents private landowners from securing financial assurances from the drilling operator beyond what state regulations require.

- **Discussion:** A subsidy is created when bonding levels are set below realistic loss scenarios. Even if there is no loss, the well operator has shifted operating risks onto taxpayers or surrounding neighbors. The forfeiture of the bond and resulting additional state expenditures on remediation are indicators that bonding levels are too low. Where upfront bonding or insurance requirements are set at an appropriate and unsubsidized level, the cost of buying the coverage provides important price signals for operators to choose the most economic sites, and employ best practices in operations and maintenance, to avoid damages and minimize liabilities.
- **Lack of long term operational and maintenance costs in bonding requirements.** In Pennsylvania, bonded monies are released one year after DEP deems reclamation requirements have been met. As a result, there are no financial assurances to cover any long term maintenance or reclamation activities, or assurances that funding will be available to deal with any post-closure liabilities (e.g. water contamination from well casing failure) that were not picked up in that first year.
- **Current structure allows for transfer of liabilities to potentially insolvent parties.** Gas production at a shale well declines at a rapid rate, requiring refracking of the well or the need to continuously move to new frack well sites in order to sustain production levels. Large drilling companies often transfer

¹¹ "Assessment of Pennsylvania's Bonding Program for Primacy Coal Mining Permits: Permit Forfeiture and Land Reclamation Status Report," Pennsylvania Department of Environmental Protection, February 2000: 13.

ownership of marginally producing wells (e.g. a well that has been refracked) to smaller operators or to surface owners. Pennsylvania's Oil and Gas Act permits this activity as long as the new owner meets the bonding requirements. However, there is no mechanism to prevent an owner from accepting a well with liabilities greater than his/her financial means. In other words, contamination or damages caused by the initial large-scale drilling operator can be transferred to a less financially secure, small scale operator who is more likely to default on the bond. Increased risks to taxpayers arise from a number of factors associated with smaller operations/operators including potential for lower operational competency, reduced access to financial resources for operations or financial assurance, and fewer assets to attach in litigation should problems arise on a site that are greater than bonding levels. This regulatory weakness could result in known or unknown damages being assumed by the state if the secondary operator forfeits its bond.

- **Discussion:** A subsidy would be created if the initial driller knowingly or unknowingly transfers the well asset to a less financially stable operator and the cost of reclamation exceeds the value of the bond. The larger financial risk associated with smaller operators means the probability that the state will incur reclamation and remediation costs rises with site transfers even if the total cost of that reclamation and remediation remains constant.

Financial assurance for drilling accidents is a separate area of potential liability for the state from remediation and reclamation. It is unclear whether the financial assurances currently in place to cover accidents or issues that occur during actual drilling operations are sufficient to fully internalize those costs to private well operators. Bonding requirements focus on costs associated with closing and remediating a site, and mapping the gaps in other areas such as accidents would also be important. For example, it is unclear if operators are required to hold liability insurance, in what amounts, and what activities this insurance may or may not cover. In general, most casualty policies provide “sudden accidental coverage” and have defined discovery and reporting periods that potentially limit claims. There are “pollution policies” that provide for “gradual accidental coverage” that provide for greater coverage beyond general liability.¹²

Water Use Fees

The Susquehanna River Basin Commission (SRBC) regulates water use by natural gas drillers operating in central Pennsylvania. Fracking a single horizontal well

12 “Balancing the opportunities and risks of shale gas exploration,” Zurich, 2011.

takes, on average, 4.4 million gallons of water, often within a 24-48 hour period,¹³ so access to water and water costs are important to the drilling industry. SRBC regulates both the withdrawal of water and the consumptive use (i.e., water that is used and not necessarily returned to the water body from which it was taken) of water in waterways that impact the Susquehanna River. Consumptive use of water in the Susquehanna River Basin (SRB) has grown recently as a result of fracking activities and SRBC has responded by requiring drillers to obtain a permit for consumptive use of water in the SRB. The permit also requires a fee of approximately 28 cents per thousand gallons, or about \$840 for the 3 million gallons it would take to drill a well.

Given the other costs of well operations, the SRBC price of water is not material. Yet, it is unclear if the consumptive water use fees adequately compensate for the permanent loss of the resource or if the existing low-flow protection requirement mechanisms are sufficient to ensure long-term water resource adequacy. Both factors are important in ensuring equitable access to available water supply by other users.

There is some evidence that SRBC pricing is far too low. In the secondary water market that has matured in the SRB, for example, operators are willing to pay significant sums of money for water. In one 2009 contract obtained by PennFuture, an oil and gas operator agreed to pay the counterparty (which had obtained a water withdrawal approval from the SRBC) \$6.00 per thousand gallons of water — 21 times what the counterparty was required to pay the SRBC in consumptive use fees.¹⁴ Not surprisingly, since Pennsylvania's shale gas boom began, numerous private companies have gone into the business of buying water inexpensively from the SRBC and selling it at a premium to oil and gas companies.

- **Discussion:** A subsidy would exist if the consumptive water use fee is insufficient to cover the cost of the resource including damage to the environment or other industries that require water use access. Given data related to private contractual agreements, a subsidy clearly exists and is a multiple of current SRBC charges. Given the differential between the SRBC price and the market price in the private contract, it seems that the former serves only as a price floor.

¹³ "How Much Water Does It Take to Frack a Well?" StateImpact Pennsylvania, March 12, 2013. and "Accommodating a New Straw in the Water: Extracting Natural Gas from the Marcellus Shale in the Susquehanna River Basin," Susquehanna River Basin Commission, February 2009.

¹⁴ "Water Use Agreement" dated February 15, 2011 between Southwestern Energy Production Company (SEPCO) and Anadarko E&P Company LP.

Lack of Private Well Water Standards

Pennsylvania is one of only a few states that do not have water quality standards for private water wells.¹⁵ In August 2014, DEP released data identifying almost 250 incidents of private well water damage since 2007.¹⁶ The damage was related to both conventional and unconventional (i.e. shale) drilling and included issues such as water reduction or pollution (e.g. methane migration or other contamination into well water). Lack of water well standards may also make it more difficult for either DEP or landowners to prove that gas development did or did not result in well contamination.

- **Discussion:** A subsidy exists if oil and gas development results in damage to owners of private water wells and this damage is not corrected or paid for by the developer in question. In these cases, water well owners experience reduced property values, health concerns, water treatment costs, water availability issues, and other negative externalities related to oil and gas drilling activities.

Adequacy of Fees for Penalties and Violations

In general, permitting fees and fines for violations are used to help support DEP operations associated with oil and gas. In Pennsylvania, permitting fees were raised from \$100 to a sliding scale based on well bore length. In 2013, DEP determined the average fee was approximately \$3,200.¹⁷ Additionally, DEP received around \$6 million in funding from impact fee revenues to be returned to the department's oil and gas program that processes applications and conducts enforcement activities. The Pennsylvania Auditor General recently issued a report indicating DEP's program is understaffed and underfunded, resulting in the department being unable to effectively administer laws and regulations.¹⁸ This lack of funding and staff may be related to insufficient funding being available to the department through statutory appropriations, the impact fee, and/or permitting fees.

- **Discussion:** Independent of the source of funding inadequacy (i.e. permitting fee, impact fee or appropriations), it appears that a regulatory subsidy exists due to lack of enforcement and oversight of the industry and resultant negative outcomes (i.e. damage to water quality, lack of response to citizen complaints).

15 Bryan R. Swistock, M.S., Stephanie Clemens, M.S. and William E. Sharpe, Ph.D., "Drinking Water Quality in Rural Pennsylvania and the Effect of Management Practices," The Center for Rural Pennsylvania, January 2009.

16 "Water Supply Determination Letters," Pennsylvania Department of Environmental Protection, December 31, 2014.

17 "3-Year Regulatory Fee and Program Cost Analysis Report to the Environmental Quality Board," Pennsylvania Department of Environmental Protection, April 23, 2013.

18 "Auditor General DePasquale," Pennsylvania Department of the Auditor General.

The sufficiency of these funding sources, including permitting fees, should be examined to determine how to ameliorate the current problem.

In general, fines on operators resulting from violations of the law are intended to cover a variety of costs including environmental impacts, departmental oversight, and permitting costs, and to serve as a financial deterrent to future violations. If fines are too low, they will fail in all of these areas; it is not clear that Pennsylvania's current fee levels are adequate. Signs of fees being too low would be very low collections, the ratio of fines levied to the value of associated production being very low and therefore a cost of doing business rather than an effective deterrent, or a need to use general funds to deal with environmental damages and industry oversight because the fee revenues are insufficient. Some early research suggests violations are not being categorized and tracked properly, potentially resulting in environmental, health and safety violations being categorized as less costly administrative violations.¹⁹ Further research is needed to determine if the value of the fines are sufficient to meet intended goals.

Air Permitting Aggregation

In October 2012, DEP issued "Guidance for Performing Single Stationary Source Determinations for the Oil and Gas Industries" that identified criteria to be used in determining whether multiple drilling and transmission facilities under common control of the same operator should be aggregated and treated as one single source. The guidance established a "rule of thumb" whereby sources that are within ¼-mile of each other and under common control should be aggregated whereas sources farther than ¼-mile from each other should be aggregated only on a case-by-case basis and after consideration of various factors. In practice, however, it appears that DEP is treating the ¼-mile rule of thumb as a definite cutoff point or, at a minimum, accepting aggregation analyses by operators that do not consider sources farther than ¼-mile away.

Aggregation as a single source would both trigger more stringent permit requirements and pollution controls, and require emission offsets, thus increasing costs to drillers. The practice is allowed under the Clean Air Act (CAA) and Pennsylvania regulations when sources are located on contiguous or adjacent properties and are under common control. Environmental groups argue that permitting multiple minor sources (e.g. gas pipeline compressor stations, gas wells) in close proximity to one another bypasses major source permitting requirements related to ambient air quality and pollution control requirements. The industry

¹⁹ Matt Kelso, "'Administrative' Violations Should not be Dismissed," FracTracker Alliance, February 16, 2012.

maintains that these major source requirements would be too costly and are inappropriate. As evidenced by the myriad lawsuits spurred by DEP's approach to aggregation, the state's view is controversial even in light of the CAA's allowance of aggregation. A central question surrounding Pennsylvania's aggregation approach is whether or not it is consistent with federal aggregation criteria of common control, industrial grouping (facilities have to be used for a similar purpose), and whether sources are contiguous or adjacent. Admittedly, even the U.S. Environmental Protection Agency's (EPA) recent interpretation of the aggregation provisions of the CAA are controversial,²⁰ leading to broad-based uncertainty over how to interpret and comply with the law.

- **Discussion:** A subsidy to the drilling industry would exist if Pennsylvania regulators are implementing an aggregation policy that is inconsistent with the law and, as a result, reduces costs to the drilling industry as pollution to the environment (i.e. externalities of drilling) is increased.

Tax Breaks and Special Taxes

Fossil fuel industries generally enjoy a host of tax breaks in Pennsylvania. A more robust discussion of these provisions is included in the Tax Expenditures chapter. It is worthwhile to note the following subsidy provisions that apply to the natural gas industry:

- oil and gas reserves are exempt from local property taxes;
- transfers of oil, gas and coal property are exempt from real estate transfer tax;
- natural gas utility companies do not pay gross receipts tax;
- sales of natural gas to the residential sector are exempt from sales tax;
- assets (such as land and buildings) used to manufacture and process natural gas are exempt from capital stock and foreign franchise tax;
- equipment used to manufacture and process natural gas is exempt from sales and use tax;
- individuals and small natural gas extraction companies can expense intangible drilling costs;
- use of natural gas in manufacturing and processing is exempt from sales tax;
- natural gas sales are exempt from sales and use tax for a host of favored businesses and uses;

20

Summit Petroleum Corporation v. Environmental Protection Agency; Lisa Jackson.

- a tax credit program exists to manufacture ethane (a natural gas co-product) into ethylene, valued at \$1.65 billion over a 25-year period; and
- equipment and services related to hydraulic fracturing are exempt from sales and use tax (see below).

Mining Exemption to Sales and Use Tax for Fracturing Services

In September 2010, the Pennsylvania Department of Revenue issued a letter ruling (No. SUT-10-003) clarifying that equipment and materials (e.g. gases, sand, cement) predominately used directly in the performance of fracturing services are exempt from state sales and use tax. Additionally, fracturing services and sale of tangible personal property are also exempt from sales and use tax. The mining exemption from sales and use tax is part of Pennsylvania law;²¹ the letter ruling simply served to clarify its applicability to shale gas drilling operations. According to the Pennsylvania Budget and Policy Center, this type of exemption is not universal among other states.²² For example, in Texas, equipment supplies, repair services and other contracted well services are subject to sales tax.

Emerging Issues Generally Applicable to Fossil Fuel Development and Unconventional Gas

In addition to the issues identified above, the broader issues below require greater research to understand in general and then determine the presence or absence of any subsidies and associated values.

Health Impacts from Unconventional Gas Development Activities

A subsidy exists if drilling activities cause negative health impacts to the public, hence externalizing pollution and related costs to the public. Environmental laws and regulations are often based on (and sometimes directly establish) health-based standards, and their most important purpose is to prevent negative health impacts. The emergence of hydraulic fracturing has opened the door to many questions about human health risks, the adequacy of existing pollution standards, and the ability of DEP to enforce standards to the extent they are adequately protective.

²¹ 72 P.S. § 7201(k)(8); 61 Pa. Code § 32.35(a)

²² "Representation without Taxation: How Natural Gas Producers Escape Taxes in Pennsylvania," Pennsylvania Budget and Policy Center, [April 25, 2011](#).

Although more research is needed to better understand the impacts of fracking on public health,²³ a large and growing body of work indicates public health concerns exist. Studies have shown, for example, that residents living closer ($\leq 1/2$ mile) to unconventional gas wells have a greater risk for negative health impacts related to exposures to air emissions than residents living further away.²⁴ In addition, residents in communities where substantial shale gas extraction is taking place often experience stress due to perceived health impacts from shale drilling activities.²⁵ Many more studies raise concerns about contamination of well and ground water as well as the release of toxic or other gases into the air. A subsidy exists if drilling activities cause negative health impacts to the public that are uncompensated, hence externalizing pollution and related costs to the public.

Infrastructure Damage from Unconventional Shale Development in Pennsylvania

In 2010, Scott Christie, Deputy Secretary for Highway Administration at the Pennsylvania Department of Transportation, estimated that repairing existing roads and those roads expected to be impacted by Marcellus Shale drilling would cost a total of \$265 million, a figure which includes secondary roads only and excludes costs related to impacts on main traffic routes.²⁶ To put this into context, the amount is more than the entire value of the \$204 million in impact fee revenues collected by Pennsylvania in 2011, less than 60 percent of which is returned to local governments. In some drilling counties, such as Bradford, there has been a six-fold increase in truck traffic in just a three year period. This has resulted in premature road deterioration and a much shorter useful life for pavement investments.²⁷ These costs have been borne by general taxpayers. A 2014 report by the Rand Corporation estimated that each well drilled in 2011 in Pennsylvania's Marcellus Shale cost \$13,000-\$23,000 for all state roadway types or \$5,000 - \$10,000 per well if roadways with the lowest traffic volumes are excluded.²⁸

- **Discussion:** A subsidy is created if drilling industry operations cause damage to

23 Mike Mitka, "Rigorous evidence slim for determining health risks from natural gas fracking", *The Journal of the American Medical Association* 307:20 (2012).

24 McKenzie et al, "Human health risk assessment of air emissions from development of unconventional natural gas resources", *Science of the Total Environment* 424 (2012): 79-87.

25 Ferrar et al, "Assessment and longitudinal analysis of health impacts and stressors perceives to result from unconventional shale gas development in the Marcellus Shale region", *International Journal of Occupational and Environmental Health* 19:2 (2013): 104-112.

26 Scott Christie, "Impacts of Marcellus Shale" (presented at House Transportation Funding Hearing on June 10, 2010), House Majority Policy Committee.

27 Christie, "Impacts of Marcellus Shale."

28 Shmuel Abramzon, Constantine Samaras, Aimee Curtright, Aviva Litovitz and Nicholas Burger, "Estimating the Consumptive Use Costs of Shale Natural Gas Extraction on Pennsylvania Roadways," *Journal of Infrastructure Systems*, 2014.

local roads and infrastructure for which someone else has to pay. Given the data provided, it would appear that the costs of road damage are greater than the fees being collected to help local governments deal with drilling impacts although road impacts are but one of many costs related to drilling that the towns incur.

Water Impacts

Water resources and management is a significant issue with shale gas development that requires further research in order to be understood²⁹ and, consequently, determine if a subsidy exists. Developing unconventional gas wells requires developing well pads, access roads, pipelines, and a host of other infrastructure investments. The construction and operation of this infrastructure can cause erosion and sedimentation that pollutes waters as well as creating pollution from post-construction stormwater. The actual fracking process requires significant volumes of water to be obtained in order to be mixed with sand and chemicals and then injected underground. Issues have been raised about the gas industry's access to such large quantities of water and whether use of the state's water resources is creating costs to other industries (e.g. via reduced access or increased costs associated with consumptive water use) or causing negative environmental impacts. Much of the injected water flows back to the surface and must be treated to remove impurities. Currently, much of the flowback and produced water being generated from oil and gas operations is being recycled but, ultimately, the industry will produce much more wastewater than can be used. This calls into question the ability of existing water treatment facilities to process this contaminated water, and whether Pennsylvania has adequate regulatory systems to set and monitor water treatment standards (e.g. radiation). Some of the water stays underground, raising worries about contaminated water migrating underground, via cracks in well casings, during the fracking process, potentially polluting groundwater.

29 "Water Resources and Shale Gas/Oil Production in the Appalachian Basin—Critical Issues and Evolving Developments," U.S. Geological Survey, 2013.

Impact Fees and Severance Taxes

In 2012, Pennsylvania enacted an “impact fee” policy on gas wells drilled in the Marcellus Shale formation, allowing local governments to implement or reject imposition of this fee. The per well fee changes from year to year based on natural gas prices and the consumer price index. Revenues from the impact fee are first disbursed to the Unconventional Gas Well Fund for distribution to specific state agencies. Of the remaining amount, 60 percent goes to local governments hosting wells, with the remaining 40 percent going to the Marcellus Legacy Fund. Note that some activities supported by the Marcellus Legacy Fund benefit the gas industry (i.e. natural gas vehicles grant program) rather than compensate local communities for gas drilling impacts.

Debate persists about the adequacy of the impact fee and/or the need to develop additional taxes such as a severance tax. Typically, severance taxes are imposed on the removal of non-renewable resources, effectively “severing” the natural resource from the state, and revenues are used to support general fund operations or paid into sovereign wealth funds that build a self-sustaining but diversified investment portfolio outside of the oil and gas industry to support future residents of the state or country. Pennsylvania does not levy a severance tax, and the Marcellus Legacy Fund does not operate like a traditional Sovereign Wealth Fund. For purposes of identifying subsidies, several criteria need to be examined to determine if Pennsylvania’s current impact fee approach is or is not a subsidy.

IS THE IMPACT FEE ADEQUATE TO COVER DAMAGES FROM GAS INDUSTRY OPERATIONS?

The answer to this question is unclear, though given concerns related to inadequate resources for regulatory oversight, water consumption, road and infrastructure maintenance costs, potential health impacts, and inadequate bonding requirements for drillers, it is probable the impact fee is insufficient to fully compensate the state for these drilling damages. A subsidy exists if damage is being created by the drilling industry and the industry is not fully compensating for these costs.

Impact fee revenues are tied to number of wells (and adjusted for wholesale gas prices). Revenues generated can actually decrease as more gas is produced or if the price of natural gas falls. For example, the fee generated \$204 million in 2011 as approximately 1 trillion cubic feet of gas was produced. In 2012, the amount of gas produced in Pennsylvania doubled to 2 trillion cubic feet yet impact fee collections declined 3 percent to only \$199 million.¹ A concern emerges in that impact fee revenue generation may not be aligned with increased production activities.

IS A SEVERANCE TAX STANDARD PRACTICE FOR EXTRACTION STATES?

Pennsylvania remains the largest U.S. natural gas producing state without a severance tax.² This fact, coupled with the perceived shortcomings of the impact fee, infers absence of a severance tax in Pennsylvania is a subsidy. Other states use severance tax funds to support investments in education, transportation, infrastructure, general operating funds, and other activities.³ Pennsylvania continues to operate at a deficit while many other states are experiencing surpluses.⁴ This may heighten pressure to correct for Pennsylvania's lack of a natural gas severance tax. For example, a study by the Pennsylvania Budget and Policy Center found that replacing Pennsylvania's impact fee with a moderate 4 percent severance tax that is tied to the amount of gas produced would raise \$1.2 billion annually by 2019-2020, or approximately three times the amount

of the impact fee.⁵ One study found that, over time, Pennsylvania's impact fee will fall to 2 percent or less as the fee grows much more slowly than the value of the gas. This ranks Pennsylvania's impact fee as equivalent to one of the lowest tax rates in the country.⁶

ARE FEES TO SUPPORT DAMAGES AND OTHER STATE ACTIVITIES GENERATED BY OTHER MEANS?

Assuming the impact fee is insufficient and there is no severance tax, it is possible that the state could be generating funds from the industry by other means to compensate for damages and severed resources. Corporate income tax on gas drillers supports the general fund much like funds generated from a severance tax. However, it seems that Pennsylvania's general fund collections may not be benefiting commensurately from the state's natural gas boom as data indicates that a variety of state and federal tax policies lead to extremely low effective corporate tax rates for drillers in Pennsylvania.⁷

Given the perceived inadequacies of the impact fee, the atypical practice of a heavy extraction state not having a production tax in place, and lack of any other mechanism to generate state revenues from the drilling industry, it appears that lack of a severance tax does represent a subsidy.

1 "Pa. impact fee misses billions in revenue, researchers say," Pocono Record, May 12, 2013.

2 Cassarah Brown, "State Revenues and the Natural Gas Boom, An Assessment of State Oil and Gas Production Taxes," National Conference of State Legislatures, June 2013.

3 Brown, "State Revenues."

4 Reid Wilson, "At a time of surplus elsewhere, Pennsylvania faces deficit," The Washington Post, February 7, 2014.

5 Michael Wood, "A Look at Other States Shows Marcellus Impact Fee Shortchanges Pennsylvanians," Pennsylvania Budget and Policy Center, August 8, 2013.

6 "Pa.'s Marcellus Impact Fee Comes Up Short," Pennsylvania Budget and Policy Center, June 18, 2013.

7 "Gas Production Booms, Drillers' Corporate Tax Payments Plummet," Pennsylvania Budget and Policy Center, June 6, 2013.

Conclusion

Pennsylvania's long history of fossil fuel extraction and production provides helpful insights into the opportunities and pitfalls of energy development. Unconventional shale gas resources provide significant economic development opportunities, though also potential risks. The Commonwealth provides a host of regulatory, tax and other subsidy programs that, in combination with additional subsidies at the federal level, can act to distort market choices among energy options for both producers and consumers. Some of these subsidies, such as many special tax breaks, are already tracked by state government. Others, such as many regulatory gaps, have little visibility or quantification at this stage and our understanding of them is still evolving. Pennsylvania's negative environmental and social impacts from the early coal, oil and timber industry booms can provide valuable lessons in guiding future choices related to balancing economic growth with sustainable resource development. Part of assessing these choices should include greater research, analysis and examination of regulatory subsidies to fossil fuel production in the state, with a particular focus on burgeoning unconventional shale gas development and how it impacts energy markets, the environment, and the long-term liabilities of the Commonwealth.

Key areas that require further research include:

- identification and monetization of state regulatory subsidies including but not limited to
 - public lands — fair market value of leases, land degradation;
 - sufficiency -- remediation bond requirements, regulatory oversight, value of fees and violations;
 - water — adequacy of water use fees, sufficiency of water well standards; and
 - air permitting issues related to aggregation policy;
- individual (i.e. per subsidy) and cumulative impacts of state-based tax breaks and special treatment;
- comprehensive analysis of emerging issues related to infrastructure impacts, public health exposures and costs, and myriad water issues; and
- an analysis of the adequacy of the existing impact fee combined with other potential revenue generation sources from the unconventional gas industry. This would help inform discussion around the need for an additional industry-based revenue stream to compensate the Commonwealth such as a severance tax.

CHAPTER 5

Analysis and Recommendations

Pennsylvania clearly provides a robust portfolio of fossil fuel subsidies, primarily aimed at improving the economics of energy usage. These subsidies, layered on top of federal fossil fuel subsidies, distort energy markets and price signals to energy users and producers. Additionally, evidence from Pennsylvania's past suggests a pattern, whether intended or accidental, of shifting liabilities and risks from the energy industry to the taxpayer.

As stated in the recommendations section below, more research is needed to better understand, identify and calculate the value of Pennsylvania's fossil fuel subsidies. The amounts and analysis listed below may inaccurately capture subsidy amounts due to inclusion or exclusion of subsidies, difference in interpretation of the existence of a subsidy, and/or by treatment of indirect subsidies. On the other hand, the figures below may underestimate the value of the state's fossil fuel subsidies because many subsidies were identified for which dollar value estimates are not available. In addition, the numbers below represent a single fiscal year snapshot in time and, therefore, may or may not be indicative of future or past subsidies' availability or costs.

Subsidy Summary

Based on the data and assumptions identified in this report, Pennsylvania provided over \$3.2 billion in fossil fuel subsidies in fiscal year 2012-2013. Approximately 92 percent (\$3 billion) of these subsidies came in the form of tax breaks (i.e. tax exemptions and tax credits) where the full value can be attributed to the fossil fuel industry. Another 5 percent (~\$175 million) came from tax breaks that indirectly benefit the fossil fuel industry but also benefit other industries. For example, exempting purchase or use of machinery, equipment, parts and supplies (including fuels), and utilities for manufacturing and processing benefits many industries including but not limited to the fossil fuel industry (through the exemption for use of fuels and utilities as well as the manufacturing of products). Lastly, approximately 2 percent (~\$63 million) of the subsidies was provided by direct spending through grants and market support. Additional subsidies not included

in the \$3.2 billion estimate exist through a host of legacy funds related to the coal industry along with economic development grants that offer below-market interest rates. Further research is needed to determine the existence and associated values of these subsidies.

Pa. Fossil Fuel Subsidy Summary	
Tax Breaks	
Full	\$ 3,016,844,000
Partial mid-value scenario	\$ 175,926,000
Direct Spending	
Funds	Not quantified
Grants and Market Support	\$ 63,823,027
	\$ 3,256,593,027

To provide context to the reader, this subsidy value is broken down by contribution by each Pennsylvanian (based on 12.7 million people) and by Pennsylvania taxpayer (based on approximately 4.1 million Pennsylvania tax filers with tax liability). These figures are provided only to give the reader potential subsidy value context and do not represent the true cost of subsidies in Pennsylvania. The true cost of subsidies could be greater (for example, due to cost of pollution or underestimates of subsidy values) or lower (for example, the tax burden of each subsidy will not be spread evenly by each taxpayer due to underlying tax liabilities).

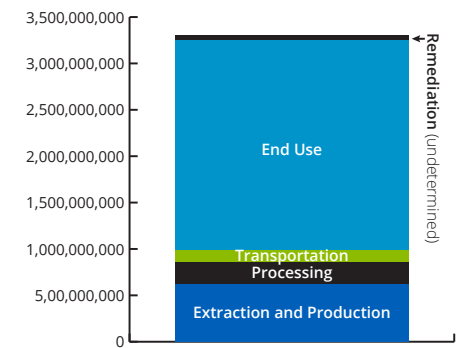
- **\$256** per Pennsylvanian, in fiscal year 2012-2013
- **\$794** per Pennsylvania taxpayer, in fiscal year 2012-2013

Fuel Cycle Analysis

In general, there are five phases to the fossil fuel cycle:

- Extraction and production of fuels -- for example, removing fuels from the surface or underground mines or wells.
- Processing of fuels -- for example, manufacturing fuels to prepare for end use or converting fuels to other forms of energy, such as converting coal or gas to electricity
- Transporting fuels -- for example, distributing fuels by rail or pipeline, or distributing fuels to end users via electricity transmission or distribution grids
- End use of fuels -- for example, use of gasoline in a vehicle, or use of electricity or heating fuels in homes or businesses
- Remediation -- for example, clean-up of land or water impacts that result from fuel development or use

CHART: PA FOSSIL FUEL SUBSIDY - FUEL CYCLE BREAKDOWN



As shown in Appendix A (Federal Fossil Fuel Subsidies), most federal fossil fuel subsidies are directed toward the “extraction and production” phase of the fuel cycle, essentially improving the economics of fossil fuel extraction.

In Pennsylvania, the majority of state-based subsidies are directed toward the “end use” phase of the fuel cycle, making use of fossil fuels more attractive to users in the state and thereby providing greater market opportunities for the fuel industry. The chart and table below do not accurately represent the remediation portion of Pennsylvania’s fossil fuel subsidies due to uncertainties about public monies contributed to remediation funds established decades prior and for which tracking of exact subsidy amounts was not possible due to data limitations. However, due to relative dollar value potential per phase, this omission does not change the overall conclusion regarding the dominance of “end use” subsidies.

TABLE: PA FOSSIL FUEL SUBSIDY - FUEL CYCLE BREAKDOWN

Extraction and Production	\$618,100,000
Processing	\$235,778,000
Transportation	\$131,448,000
End Use	\$2,271,267,027
Remediation	\$-
TOTAL	\$3,256,593,027

Recommendations

The following recommendations are provided to help guide future work on understanding, identifying and assigning value to Pennsylvania’s fossil fuel subsidies.

- **Greater Transparency:** In general, Pennsylvania does a good job of calculating the value of tax exemptions through the budget documents released annually by the Governor’s Budget Office. This is an incredibly valuable tool in helping taxpayers and policymakers understand the value of foregone revenues. However, there are several tax exemptions that are not included in the budget documents. Correspondingly, there is no comprehensive source of information that identifies fossil fuel or overall energy subsidies and associated values. The subsidy value of legacy funds or grant programs, regulatory subsidies and other special treatment is unknown. This is an impediment to policymakers and taxpayers in their understanding of foregone revenues, market failures and other impacts on competitive energy markets.
 - **Recommendation:** A nonpartisan, governmental organization should develop and periodically update a comprehensive report on Pennsylvania’s

energy (fossil and non-fossil) subsidies and assign values to each subsidy.

- This report should pay special attention to addressing the need to complete further research in order to understand and monetize a wide range of subsidies. The conclusion sections of the “Tax Expenditure,” “Direct Spending,” and “Unconventional Shale” chapters provide recommendations for prioritization of future research needs.
- **Evaluate Ongoing Subsidy Needs:** This report has attempted to identify the existence of subsidies, explain the nature of these subsidies to the reader, and periodically identifies how the subsidies may create competitive advantages and disadvantages to various resources. This report has not endeavored to assert whether certain subsidies should be discontinued or maintained. Going forward, if the state has the need to raise revenues, it may be advantageous to examine discontinuation of certain subsidies based on a consistent and balanced set of criteria.
 - **Recommendation:** After completion of the nonpartisan comprehensive subsidy report referenced above, identify and prioritize subsidies that could be eliminated and examine the costs and benefits of elimination. Costs and benefits should include monetized and non-monetized (e.g. externalities) impacts as well as how various entities (i.e. industry, residents) may be effected.
- **Further Research on Issues with Unconventional Shale Development:** Use of natural gas has benefits and costs. This report attempted to identify issues related to Pennsylvania’s shale development that may or may not be considered subsidies. Further research is needed to determine if subsidies exist and the value of these subsidies. This research is critical to understanding the cost and benefits of eliminating or continuing the subsidies. As detailed in the report, Pennsylvania’s legacy coal mining industry created billions of dollars of damages and liabilities that the public and active coal mining industries are now paying to slowly clean up. Pennsylvania’s shale boom is still in its early stages, which creates an opportunity to better understand and correct for the most harmful subsidies, thereby avoiding costs and liabilities for which future gas developers and the public may be forced to compensate.
 - **Recommendation:** A nonpartisan, governmental organization should develop a comprehensive report on Pennsylvania shale development and identify potential subsidies (including regulatory subsidies) that exist or could exist. Subsidies should be assigned a range of values and the existence of the subsidies should be evaluated based on potential individual and cumulative impacts, costs, and liabilities to the public, gas industry and broader economy. Practices of other states should be considered and compared to Pennsylvania practices.

APPENDIX 1

Federal Fossil Fuel Subsidies

Federal Subsidies

Pennsylvania-based, state-level fossil fuel subsidies are the focus of this report. However, the impact of fossil fuel subsidies provided by the federal government cannot be ignored in the state context. The impact of federal subsidies serves to distort market signals to both producers and consumers of energy, with state-level subsidies compounding these impacts.

Federal Tax Rate

According to a February 2014 joint report issued by Citizens for Tax Justice and the Institute on Taxation and Economic Policy, many U.S. corporations are paying far less than the 35 percent federal income tax rate on their U.S. profits.¹ This is due to a variety of loopholes and federal tax breaks enjoyed by some of the largest, most profitable companies doing business in the United States.

The report looked at the profits and U.S. federal income taxes of the 288 Fortune 500 companies that were profitable each of the five years between 2008 and 2012, and excluded any company that experienced even one unprofitable year in this period.

The report found that the “gas and electric utility sector” has the lowest effective corporate tax rate, at only 2.9 percent (far lower than the federally mandated 35 percent), of any sector examined. The industry’s taxes declined steadily over the five-year period from 12.8 percent in 2008 to 1.8 percent in 2012, perhaps in part due to the recession. According to the report, this decline was in large part due to the ability of these companies to access accelerated depreciation tax breaks on capital investments. The “oil, gas and pipeline” sector had the fourth lowest

¹ “The Sorry State of Corporate Taxes: What Fortune 500 Firms Pay (or Don’t Pay) in the USA and What they Pay Abroad,” Citizens for Tax Justice and the Institute on Taxation and Economic Policy, February 2014.; and, “Effective Tax Rates of Oil & Gas Companies: Cashing in on Special Treatment,” Taxpayers for Common Sense, July 30, 2014.

effective tax rate, at 14.4 percent, of all sectors examined. Regarding the effective tax rate on the “oil, gas and pipeline” segment, these figures likely overestimate the amount of taxes paid by this sector due to the report’s examination of only C corporations. An increasing proportion of pipelines are now organized under master limited partnerships, a special form of corporate organization often used by fossil fuel companies that has a zero effective tax rate at the corporate level. Lastly, many firms involved with fossil fuel extraction activities are organized through private partnerships, which do not pay a corporate tax.

The report estimated that the value of the reduced effective tax rate federal subsidies to the gas and electric utility sector, for just the firms examined, was approximately \$54.45 billion. For the companies examined in the oil, gas and pipeline sector, the value of the reduced effective tax rate subsidy was \$45.9 billion.

Below is a list of select utility and oil and gas companies doing business in Pennsylvania that were examined in the corporate tax report. As you can see, these companies are all enjoying significant subsidies that provided a deep discount from the 35 percent federal income tax rate.

Company Name	5-year Tax Rate	2012 Tax Rate
Electric and Gas Utility		
First Energy	-3.0%	-9.4%
PPL	3.0%	-
Exelon	11.6%	1.9%
UGI	15.0%	-6.5%
Oil, Gas and Pipeline		
Devon Energy	2.8%	3.5%
Chesapeake Energy	4.9%	4.7%
Peabody Energy	5.9%	9.7%
Consol Energy	16.9%	17.1%
ConocoPhillips	21.0%	1.6%
Spectra Energy	11.3%	12.8%

Federal Fossil Fuel Subsidies Overview

The information in this section has been obtained from “Cashing in on All of the above: U.S. Fossil Fuel Production Subsidies Under Obama,” an Oil Change International Report.² Not all of the subsidies identified in the “Cashing In” report are highlighted in this section, therefore this section underestimates the total value of federal fossil fuel subsidies.

- Federal subsidies for fossil fuel “production and exploration” have increased substantially during Obama’s terms, from \$12.7 billion to \$18.5 billion since 2009, a 45 percent increase.³ This is indicative of the growing level of domestic drilling.
- Subsidies to oil and gas production and exploration at the federal level and for a subset of states totaled \$21.6 billion in 2013. Federal and state consumption subsidies amounted to an additional \$11.2 billion in 2013.⁴

General Federal Subsidies that Largely Benefit the Fossil Fuel Industry

Master Limited Partnership (MLP): “Combines the tax benefits of a limited partnership with the liquidity of publicly traded securities.” Because MLPs are categorized as “partnerships,” they do not pay corporate income tax on federal and state levels. The MLP program began in 2010. As of March 2013, there were \$385 billion in fossil-fuel assets that are exempt from corporate income taxes.⁵

FEDERAL SUBSIDY IN 2013: **\$3.9 BILLION⁶**

2 “Cashing in on All of the above: U.S. Fossil Fuel Production Subsidies Under Obama,” Oil Change International, 2014.

3 “Cashing in on All of the above,” page 4.

4 “Cashing in on All of the above,” page 4.

5 Doug Koplow, “Too Big to Ignore: Subsidies to Fossil Fuel Master Limited Partnerships”, Oil Change International, July 2013.

6 “Cashing in on All of the above.”

Federal Fossil Fuel Production and Exploration Subsidies

Deduction for Intangible Drilling Costs (IDC): Costs to producers in the oil and gas industry that do not produce physical assets. The IDC deduction removes the risk from “exploring” for oil and natural gas producers — they are willing to drill for gas and oil even where they are not certain they will generate a good return because the federal government compensates them for such expenses. The result is more exploration and greater environmental damage even when there are little to no fossil fuels extracted from the operation. This program has existed since 1913.

FEDERAL SUBSIDY IN 2013: **\$3.5 BILLION**

Excess of Percentage Depletion of Cost Depletion: Allows independent fossil fuel producers to deduct 14 to 15 percent of large investment costs, including for exploration, from income taxes.

FEDERAL SUBSIDY IN 2013: **\$900 MILLION**

Domestic Manufacturing Deduction: Allows fossil fuel producers to claim a tax break intended for U.S. manufacturing to prevent job outsourcing. While other manufacturing industries also enjoy this deduction, the oil and gas industry is different in that a core element of its “manufacturing” is the resource endowment of the oil or gas.⁷

FEDERAL SUBSIDY IN 2013: **\$537 MILLION**

Amortization of Geological and Geophysical Expenditures: Allows oil and gas companies to recover costs of seismic surveys and exploration drilling through income tax deductions.

FEDERAL SUBSIDY IN 2013: **\$110 MILLION**

Expensing of Exploration and Development Costs: Allows coal companies to deduct exploration costs from income tax payments.

FEDERAL SUBSIDY IN 2013: **\$26 MILLION**

⁷ Doug Koplow, “The Domestic Manufacturing Tax Credit and the Oil and Gas Industry,” Earth Track, April 1, 2011.

Royalties Loss or Reduction: Fossil fuel companies benefit from eliminated or reduced royalties for leasing land. The royalties paid by oil and gas companies are based on the amount of oil and gas they produce. However, gas is routinely emitted in the production process through venting and flaring processes that release methane without any royalties being collected. Not only does this process increase emissions but it also deprives the federal government of royalties it would gain if the gas were harnessed⁸.

FEDERAL SUBSIDY IN 2013: **\$2.2 BILLION**⁹

Low Cost Leasing of Coal-Producing Federal Land: Lands are often leased to coal producers at less than market value. The example in the article provided is that of the Powder River Basin, which is a “major coal producing region but is not designated as such by the federal government, resulting in low lease rates.”¹⁰

FEDERAL SUBSIDY IN 2013: **\$1 BILLION**

Temporary 50 Percent Expensing for Liquid Fuel Refining Equipment: Tax deduction for expansion of refineries that process oil from shale or tar sands.

FEDERAL SUBSIDY IN 2013: **\$610 MILLION**

Dual Capacity Taxpayer Deduction: Makes it possible for oil and gas companies operating abroad to deduct royalty payments to foreign governments from U.S. income taxes as though these royalty payments were foreign taxes. This converts what should be a tax deduction into a more valuable tax credit.

FEDERAL SUBSIDY IN 2013: **\$530 MILLION**

Amortization Period for Coal Pollution Control: Allows coal-fired facilities to deduct greater levels of pollution control costs.

FEDERAL SUBSIDY IN 2013: **\$400 MILLION**

Tax Credit for Investment in “Clean Coal” Facilities

FEDERAL SUBSIDY IN 2013: **\$400 MILLION**

8 “Opportunities Exist to Capture Vented and Flared Natural Gas Which Would Increase Royalty Payments and Reduce Greenhouse Gases,” Government Accountability Office, 2010.

9 “Cashing in on All of the above,” page 9.

10 “Cashing in on All of the above,” page 11.

Accelerated Depreciation of Natural Gas Distribution Pipelines: Allows natural gas companies to deduct higher levels of pipeline depreciation costs upfront.

FEDERAL SUBSIDY IN 2013: **\$100 MILLION**

Treatment of Coal Royalties as Capital Gains: Royalties to private owners of coal rights are taxed at the lower capital gains tax rate as opposed to income tax rate.

FEDERAL SUBSIDY IN 2013: **\$80 MILLION**

Alternative Fuel Production Credit: Tax credit for producers of coke and coke gas.

FEDERAL SUBSIDY IN 2013: **\$10 MILLION**

Federal Fossil Fuel Pollution Subsidies

Deduction for Oil Spill Remediation Costs: Allows companies to deduct costs of oil spill cleanup from tax payments as a “standard business expense.”

FEDERAL SUBSIDY IN 2013: **\$679 MILLION**

Tar Sands Exemption from Payments to the Oil Spill Liability Trust Fund: Tar sands producers are currently exempt from paying the 8 cent per barrel tax into the fund. The fund is meant to provide \$2 billion in resources for oil spill cleanup. However, due to low revenue collection and a draining of money from the fund (due to the BP Gulf of Mexico disaster and the Enbridge tar sands pipeline spill in Michigan), the unobligated resources of the fund were just \$120 million in 2013.¹¹

FEDERAL SUBSIDY IN 2013: **\$44 MILLION**

Tax Deduction for Costs from Cleanup and Closure of Coal Mining and Waste Sites: Allows coal companies to deduct expenses associated with mine closure and waste cleanup from tax payments.

FEDERAL SUBSIDY IN 2013: **\$40 MILLION**

A complete inventory of federal fossil fuel subsidies from the “Cashing In” report is included in Table 6.

11 “Cashing in on All of the above,” page 13

APPENDIX 2

Subsidy Tables

Table 1 – PA Fossil Fuel Subsidy Summary

Tax Breaks		FY 2012-2013	
Full		\$3,016,844,000	92.6%
Partial		\$175,926,000	5.4%
Direct Spending			
Funds		Not quantified	
Grants & Mkt Support		\$63,823,027	2.0%
TOTAL		\$3,256,593,027	
	\$256	per Pennsylvanian, per year (assuming 12.7 M people)	
	\$794	per PA Taxpayer (based on approximately 4.1 M PA tax filers with a tax liability)	

Table 2 – PA Fossil Fuel Subsidy - Fuel Cycle Breakdown

Fuel Cycle Type	Subsidy Program	Value	Subsidy Type
Extraction and Production		\$618,100,000	
	Intangible Drilling Costs (2013-2014)	\$1,100,000	Tax Exemption
	Production or Extraction of Coal, Oil, Natural Gas or Minerals**	\$17,000,000	Tax Exemption
	Oil and Gas Property Tax Exemption*	\$600,000,000	Tax Exemption
Processing		\$235,778,000	
	Pennsylvania Resource Manufacturing Tax Credit	\$-	Tax Credit
	Pollution Control Devices	\$10,000	Tax Exemption
	Electric Generation Facilities	\$23,700,000	Tax Exemption
	Assets used in Manufacturing, Processing and Research and Development	\$13,980,000	Tax Exemption
	Manufacturing Exemption (Manufacture and Processing)	\$102,870,000	Tax Exemption
	Manufacturing Exemption (Agriculture)	\$9,080,000	Tax Exemption
	Manufacturing Exemption (Public Utility)	\$36,138,000	Tax Exemption
	Monroe Energy LLC (refinery)	\$30,000,000	Direct Spending
	Philadelphia Energy Solutions (refinery)*	\$20,000,000	Direct Spending
Transportation and Distribution		\$131,448,000	
	Electric Cooperatives	\$10,700,000	Tax Exemption
	Natural Gas Distribution Companies (2012 adjusted value)	\$108,000,000	Tax Exemption
	Easements	\$625,000	Tax Exemption
	Railroad Rights-of-Way	\$1,475,000	Tax Exemption
	Municipalities (Municipal Utilities)	\$320,000	Tax Exemption
	Rail Transport Equipment	\$4,400,000	Tax Exemption
	Municipally-Owned Public Utilities	\$5,928,000	Tax Exemption
End Use		\$2,271,267,027	
	Alternative Energy Production Tax Credit	\$-	Tax Credit
	Coal Purchase and Use Exemption	\$86,400,000	Tax Exemption
	Residential Utilities (Electric, Gas, Oil)	\$640,944,000	Tax Exemption
	Gasoline and Motor Fuels Exemption	\$1,434,700,000	Tax Exemption
	Liquid Fuels and Fuels Exemptions	\$22,000,000	Tax Exemption
	Oil Company Franchise Tax Exemptions	\$29,600,000	Tax Exemption
	Motor Carrier/IFTA	\$42,700,000	Tax Exemption
	Act 13 Natural Gas Vehicles (CY 2013)	\$6,809,263	Direct Spending
	Alternative Fuels Incentive Grant Program**	\$5,983,120	Direct Spending
	Alternative Energy Portfolio Standard (Tier II)	\$1,030,644	Direct Spending
	Commercial Vessel Fuel and Equipment Exemption	\$1,100,000	Tax Exemption
Remediation		\$-	
	ABS Close Out Fund		Direct Spending
	ABS to CBS Transition		Direct Spending
	Coal and Clay Mine Subsidence Insurance Fund		Direct Spending
	Anthracite Emergency Bond Fund		Direct Spending
	TOTAL	\$3,256,593,027	

Table 3 – Pennsylvania's Fossil Fuel Subsidies - Tax Breaks (Full)

Description	FY 2012-2013	Governor's Budget Page
General Fund Tax Expenditures For Fossil Fuel Subsidies		
Credit Programs		
Alternative Energy Production Tax Credit	\$-	D13
Pennsylvania Resource Manufacturing Tax Credit	\$-	D17
Exemptions from Gross Receipts Tax		
Electric Cooperatives	\$10,700,000	D36
Natural Gas Distribution Companies (2012 adjusted value)	\$108,000,000	C1.14
Exemptions from Public Utility Realty Tax		
Electric Generation Facilities	\$23,700,000	D39
Exemptions from Sales and Use Tax		
Coal Purchase and Use Exemption	\$86,400,000	D50
Residential Utilities Exemption		D51
Electricity (63 percent of reported value)	\$251,244,000	
Fuel Oil/Natural Gas	\$389,700,000	
Gasoline and Motor Fuels Exemption	\$1,434,700,000	D52
Steam, Electricity and Fuel Oil, and Natural, Manufactured or Bottled Gas		
Sale for Resale	not available	
Commercial Use Exemptions (Favored Businesses)	not available	
Equipment and Supplies	not available	
Exemptions from Personal Income Tax		
Intangible Drilling Costs (2013-2014)	\$1,100,000	D80
Exemptions from Realty Transfer Tax		
Production or Extraction of Coal, Oil, Natural Gas or Minerals**	\$17,000,000	D87
Local Property Tax		
Oil and Gas Property Tax Exemption*	\$600,000,000	Reported value for 2013
Motor License Fund Tax Expenditures		
Exemptions from Liquid Fuels and Fuels Tax and Oil Company Franchise Tax		
Political Subdivision Exemption		D100
Liquid Fuels	\$4,400,000	
Fuels	\$5,800,000	
Oil Company Franchise	\$19,600,000	
Volunteer Emergency Vehicles		D100
Liquid Fuels	\$400,000	
Fuels	\$2,600,000	
Oil Company Franchise	\$6,300,000	
Non-Profit Non-Public Schools		
Oil Company Franchise	\$200,000	D101
Second Class Port Authorities	\$-	D101
Electric Cooperatives	\$-	D102
Agricultural Use		D102
Liquid Fuels	\$700,000	
Fuels	\$300,000	
Oil Company Franchise	\$1,700,000	
Truck Refrigeration Units		
Fuels	\$800,000	
Oil Company Franchise	\$1,800,000	
Power Take-Off for Farm Equipment	\$-	D103
Foreign Diplomat	\$-	
Distributor Discount		D104
Liquid Fuels	\$4,100,000	
Fuels	\$1,500,000	
Jet Fuel and Aviation Gas	\$1,000,000	
Buses	\$400,000	D105
Exemptions from Motor Carrier Road Tax/IFTA		
Political Subdivisions	\$17,300,000	D106
Farm Vehicles	\$5,300,000	
Emergency Vehicles	\$9,000,000	
Charitable and Religious Organizations	\$1,900,000	
School Buses	\$9,200,000	
TOTAL	\$3,016,844,000	
* Value projected for calendar year 2013. Projected estimates provided by Resource Technologies Corporation and Jeff Kern, November 2011.		
** estimate provided by taking one percent of the value of total PA production for oil, coal and natural gas at the average commodity price for those fuels, then further reducing this number by 10 percent.		

Table 4 – Pennsylvania's Fossil Fuel Subsidies - Partial Tax Breaks (w/Sensitivity Analysis)

Description	2012-2013	Unique Scenario	Low - 10%	Mid - 25%	High - 60%	Governor's Budget Page
General Fund Tax Expenditures						
Exemptions from Capital Stock/Foreign Franchise Tax						
Assets used in Manufacturing, Processing and Research and Development	\$139,800,000		* \$13,980,000	\$34,950,000	\$83,880,000	D29
Pollution Control Devices	\$100,000		* \$10,000	\$25,000	\$60,000	D30
Exemptions from Gross Receipts Tax						
Municipally-Owned Public Utilities	\$10,400,000	* \$5,928,000				D35
(Assumes 57 percent of 37 PA public utilities are fossil fuel)						
Exemptions from Public Utility Realty Tax						
Easements	\$2,500,000		\$250,000	* \$625,000	\$1,500,000	D37
Railroad Rights-of-Way	\$5,900,000		\$590,000	* \$1,475,000	\$3,540,000	D38
Municipalities (Municipal Utilities)	\$3,200,000		* \$320,000	\$800,000	\$1,920,000	D38
Exemptions from Sales and Use Tax						
Commercial Vessel Fuel and Equipment Exemption	\$4,400,000		\$440,000	* \$1,100,000	\$2,640,000	D53
Manufacturing Exemption (Manufacture and Processing)	\$1,028,700,000		* \$102,870,000	\$257,175,000	\$617,220,000	D54
Manufacturing Exemption (Agriculture)	\$90,800,000		* \$9,080,000	\$22,700,000	\$54,480,000	D55
Manufacturing Exemption (Public Utility)	\$63,400,000	* \$36,138,000				D55
Rail Transport Equipment	\$17,600,000		\$1,760,000	* \$4,400,000	\$10,560,000	D61
Applicable Totals		\$42,066,000	\$126,260,000	\$7,600,000		
*Values as they correspond to those identified and used for reporting applicable totals in this report.						

Table 5 – PA Fossil Fuel Subsidy - Direct Spending and Market Support

	FY 2012-2013	2013 Balance	Initial Public Subsidy	Date of Initial Public Subsidy
Remediation Funds				
Coal and Clay Mine Subsidence Insurance Fund		\$90,000,000	\$1,000,000	1961
Coal Lands Improvement Fund		\$2,800,000	\$1,000,000	1965
Surface Mining Conservation and Reclamation Fund				
ABS Close Out Fund			\$5,500,000	2001
ABS to CBS Transition			\$7,000,000	2001
ABS Legacy Sites Trust Account		\$5,686,848		
Production and Use Funds				
Anthracite Emergency Bond Fund		\$549,000	\$150,000	
Pennsylvania Industrial Development Authority				
Infrastructure Development Program				
Grant Programs				
Opportunity Grant/PA First				
Monroe Energy LLC (refinery)	\$30,000,000			
Philadelphia Energy Solutions (refinery)*	\$20,000,000			
Act 13 Natural Gas Vehicles (CY 2013)	\$6,809,263			
Alternative Fuels Incentive Grant Program**	\$5,983,120			
Growing Greener I & II (acid mine drainage)		\$89,000,000		1999- ongoing
Market Support				
Alternative Energy Portfolio Standard (Tier II)	\$1,030,644			
Coal Use in Government Buildings	\$-			
TOTAL	\$63,823,027			
* Philadelphia Energy Solutions grants identified were awarded between February and December of 2013.				
**AFIG - This represents the funds transferred to the AFIG program and available in FY 2012-2013 for award. These funds were rolled over for award in the next fiscal year because DEP did not offer the program in FY 2012-2013 year.				
http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-99849/0120-RE-DEP4436%20%202013%20NGV%20and%20ESF%20Annual%20Report.pdf				
http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-97965/0340-RE-DEP4427.pdf				
http://www.puc.state.pa.us/electric/pdf/AEPS/AEPS_Ann_Rpt_2012.pdf				

Table 6 – U.S. Federal Fossil Fuel Exploration and Production Subsidies

Subsidy Name & Description	Subsidy Type	Fossil Fuel Type	Subsidy Amount in 2013 (unless otherwise noted)	Source
Subsidies Specifically Targeted at Fossil Fuel Exploration and/or Production				
Deduction for intangible drilling costs – 100% tax deduction for costs not directly part of the final operating oil or gas well*	Exploration & Production	Oil & Gas	\$3.5 billion	OMB
Lost/reduced royalties from leasing of federal lands for onshore and offshore drilling	Production	Oil & Gas	\$2.2 billion	GAO
Powder River Basin not designated as a coal-producing region – allows coal companies to lease federal land at low costs	Production	Coal	\$1 billion (2011)	Institute for Energy Economics & Financial Analysis
Petroleum reserves – Strategic Petroleum Reserve, Naval Petroleum and Oil Shale Reserves, and Northeast Home Heating Oil Reserve; the subsidy is due to the public provision of the reserves, rather than requiring the private sector to build and maintain stockpiles	Production	Oil	\$924 million (2011)	OECD, ELI, DOE39
Percentage depletion allowance – independent producers can deduct 14-15% of large investment costs from income taxes*	Exploration & Production	Oil, Gas & Coal	\$900 million	OMB
Deduction for oil spill remediation costs – companies can deduct costs of oil spill clean-up from income taxes	Exploration & Production	Oil	\$679 million	JCT
Temporary 50% expensing for liquid fuel refining equipment – tax deduction for expansion of refineries that process oil from shale or tar sands	Production	Oil	\$610 million	OMB
Domestic manufacturing deduction – allows oil producers to claim a tax break intended for U.S. manufacturers to prevent job outsourcing*	Exploration & Production	Oil, Gas & Coal	\$587 million	OMB
Research & development – includes programs on oil and gas exploration and production, enhanced oil recovery, carbon capture and sequestration, coal fuels, turbine technologies	Exploration & Production	Oil, Gas & Coal	\$587 million (2011)	OECD
<p>1 See Footnotes 6-15 for detailed source information, unless otherwise noted. “OMB” refers to U.S. Office of Management and Budget (OMB), Analytical Perspectives: Budget of the U.S. Government, http://www.gpo.gov/fdsys/browse/collectionGPO.action?collectionCode=BUDGET, “JCT” refers to Joint Committee on Taxation (JCT), Estimates of Federal Tax Expenditures, https://www.jct.gov/publications.html?func=select&id=5, “OECD” refers to Organization for Economic Cooperation and Development (OECD), OECD-IEA Fossil Fuel Subsidies and Other Support, http://www.oecd.org/site/tadffss/, ELI refers to Environmental Law Institute, Estimating U.S. Government Subsidies to Energy Sources: 2002-2008, September 2009, http://www.eli.org/sites/default/files/eli-pubs/d19_07.pdf, and “FOE” refers to Friends of the Earth, Green Scissors 2012: Cutting Wasteful and Environmentally Harmful Spending, June 2012, http://greenscissors.com/content/uploads/2012/06/GS2012-v7E.pdf.</p>				

Table 7 – Federal Fossil Fuel Subsidies

Federal Subsidies	2013
General	
Master Limited Partnerships	\$3,900,000,000
Last in, First Out Accounting	\$857,000,000
Production and Exploration	
Deduction for Intangible Drilling Costs	\$3,500,000,000
Percentage Depletion Allowance	\$900,000,000
Domestic Manufacturing Deduction	\$537,000,000
Amortization of Geological and Geophysical Expenditures	\$110,000,000
Expensing of Exploration and Development Costs	\$26,000,000
Royalties Loss or Reduction	\$2,200,000,000
Low Cost Leasing of Coal Producing Federal Lands	\$1,000,000,000
Temporary Expensing for Liquid Fuel Refining Equipment	\$610,000,000
Dual Capacity Taxpayer Deduction	\$530,000,000
Amortization Period for Coal Pollution Control	\$400,000,000
Tax Credit for Investment in "Clean Coal" Facilities	\$400,000,000
Accelerated Depreciation of Natural Gas Distribution Pipelines	\$100,000,000
Treatment of Coal Royalties as Capital Gains	\$80,000,000
Alternative Fuel (coke) Production Credit	\$10,000,000
Pollution	
Deduction for Oil Spill Remediation Costs	\$679,000,000
Tar Sands Exemption from Payments to Oil Spill Liability Trust Fund	\$44,000,000
Tax Deduction for Costs from Clean-Up and Closure of Coal Mining Waste Sites	\$40,000,000
TOTAL	\$15,923,000,000
Values from Federal Fossil Fuel Overview, p. 83-86	



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