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Pennsylvania Natural Gas
Marcellus Shale Extraction Tax Policy Binder
Prepared for the Pennsylvania Democratic Party

By
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Submitted in partial fulfillment of Honors Requirements
For the Policy Studies Department

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Pennsylvania
Natural Gas

Marcellus Shale
Extraction Tax Policy
Binder

Prepared for the Pennsylvania
Democratic Party

Kelly Rogers, Liberty Consulting, LLC
The Pennsylvania Democratic Party is faced with competing in the 2010 gubernatorial election. Our main candidates for office want to ensure that they are ready for the policy issues they will face on the campaign trail if elected as governor. One issue of particular concern for the candidates is severance tax policy on natural gas extraction from Pennsylvania’s Marcellus Shale formation. The issue is important to many citizens of the Commonwealth because natural gas extraction is occurring throughout the state (See Appendix A). Since a severance tax has been proposed previously and in this year’s budget proposal by Governor Ed Rendell, and since other states that extract natural gas from shale formations have a severance tax, the PA Democratic Party would like more information about severance tax policy.

We have hired Liberty Consulting to provide background information regarding potential impacts of the proposed Marcellus severance tax. Please consider arguments for and against such a tax, as well as the various ways in which tax revenue could be distributed. Please consider current practices of other states, as well as inter-generational impacts. These factors will help our candidates improve their policy platforms to suit the wants of the electorate.
Executive Summary

Due to improvements in technology, natural gas drilling has become increasingly widespread in Pennsylvania in recent years. The Marcellus Shale formation, the source of natural gas causing this increase, is an unconventional shale formation. Unconventional shale formations typically require extensive drilling procedures known as horizontal drilling and hydrofracking. For various reasons, many states with shale gas deposits have chosen to tax extraction of natural gas. Since the natural gas industry is fairly new in Pennsylvania, there are various contemporary policy debates surrounding drilling. Most prominent of these debates is in regard to the proposed severance tax on natural gas extraction.

In understanding why a severance tax has been offered as a policy option to address drilling, Liberty Consulting has articulated ethical, political, economic, and health implications of drilling in this policy binder. As the 2010 Pennsylvania gubernatorial election proceeds, severance tax policy will likely be discussed on the campaign trail. Due to the tremendous impact that Marcellus shale gas extraction is having on thousands of Pennsylvanians, it is essential that gubernatorial candidates are well-informed and articulate about severance tax policy. At the request of the Pennsylvania Democratic Party, Liberty has provided three severance-tax-related policy recommendations for the Democratic gubernatorial candidates to proceed with their political campaigns.

These recommendations include conducting a public opinion poll that is focused on the distribution of severance tax revenue, collecting more information about the natural gas industry’s policies and positions, and ultimately urging candidates to enact a 5% severance tax with revenue distribution mirroring Colorado’s plan. The Pennsylvania Democratic Party has
the potential to provide responsible leadership for the important extraction of this valuable natural resource.

Introduction

On October 9, 2009, Pennsylvania Governor Edward G. Rendell signed legislation to enact a $27.79 billion state budget for 2009-2010 ("Pennsylvania Governor" 1). Not included in the final 2009-2010 budget was a severance tax on natural gas production, despite having been a part of the budget negotiations since Governor Rendell introduced his budget proposal in January of 2009. In February of 2010, Governor Rendell re-proposed a severance tax on natural gas production in Pennsylvania as part of his comprehensive 2010-2011 budget proposal (Worden 1).

On October 12, 2009 the Executive Director of the Pennsylvania Democratic Party, Mary Isenhour, contracted Liberty Consulting, LLC to provide policy recommendations that would provide Pennsylvania’s Democratic gubernatorial candidates with background information about enacting a severance tax on Marcellus Shale gas drilling. Ms. Isenhour tasked Liberty Consulting with delivering information about the potential impacts of a tax, the public opinion on a tax, and the potential arguments for and against the tax. The PA Democratic Party hopes that Liberty Consulting will aid in developing severance tax public policy options by properly weighing ethical, political, economic, and health concerns.

“The Client”

Governor Rendell’s administration is near the end of its second term, which is up this year. The Pennsylvania Democratic Party will determine which Democratic gubernatorial
candidate receives the party's formal endorsement. The next gubernatorial candidate will be in a strong position to examine the severance tax issue. Even though on February 9, 2010 Governor Rendell proposed a 5% severance tax on natural gas drilling, severance tax policy will still be a very important campaign issue for the candidates. Last summer, the budget was not actually passed until October 9, 2009 (Scolforo 1). October is a key campaigning month. Regardless of when the 2010 budget is passed there will be a need for the gubernatorial candidates to state their position on the severance tax issue.

Pennsylvania Attorney General Tom Corbett received the Pennsylvania Republican Party's official endorsement in February, 2010 (Micek 1). The Democratic Party has not granted its official endorsement yet. Current Democratic candidates for governor include and Pennsylvania Auditor General Jack Wagner, Allegheny County Executive Dan Onorato, Montgomery County Commissioner Joe Hoeffel, and Democratic State Senator Anthony Williams. Currently Allegheny County Executive Dan Onorato leads the fundraising race, with $3.5 million raised last year (Infield 1).

Background to Marcellus Shale Gas Play

In the 1970s, as United States citizens searched for energy sources that would result in cleaner air, the demand for natural gas to generate electrical power rose, resulting in higher prices of natural gas. Producers aiming to profit from this increased demand began to look for "unconventional supply sources," including methane from coal beds and reservoirs from organic shale formations. The Marcellus Shale deposit is the largest shale deposit in the world (Considine). According to Professors Terry Engelder and Gary Lash, the Marcellus Shale has over 500 trillion cubic feet of gas in-place over a four state area. "Gas in-place" is the total
amount of free and absorbed gas within the Marcellus formation. By comparing the production levels of total gas in-place of the Barnett Shale formation in Texas (which is a comparable type of formation), Engelder and Lash predict that the Marcellus formation will result in 50 trillion cubic feet of recoverable natural gas over time (Engelder 4).

Advances in technology such as in horizontal drilling techniques, seismology, and the implementation of hydrofracturing help explain why gas has recently been determined to be “recoverable” (Considine 4). Horizontal drilling involves drilling a vertical hole to several hundred feet above the reservoir of gas, then drilling sideways instead of down. Horizontal drilling allows for increased access to reservoirs, even under “sensitive” areas such as wetlands and homes, where rigs cannot be set up. Combined with horizontal drilling, an understanding of hydrofracturing is important to the process of drilling (Harper 12).

Hydrofracturing, or hydraulic fracturing, is a process that provides a channel through which gas and fluid can flow into a drilling well. Once the well is drilled and “cased,” or closed, high pressure fluids are injected into the well. This causes the shale to crack, so that the fluid enters the shale fracture. Once the fractures are open, a solid material is added to the fracture fluid (typically sand) and ultimately into the fracture. This allows the natural gas, which was once stuck, to flow through the well and to the surface (Considine 5).

Approximately 1/3 of the water that is injected in the well eventually comes back to the surface through the well. Once it arrives at the surface, it is put in lined pits or tanks to be recycled or treated (Considine 15).

In addition to the costly measures required to store and properly handle frack water, there are other costs attendant to natural gas production. External costs, or externalities, are defined as “a negative effect of production or consumption, the cost of which is not paid for
by the producer but is imposed on others" ("External Costs" 1). For example, one group called the Citizens’ Campaign for the Environment, suggests that fugitive greenhouse gas emissions represent the largest external costs of natural gas drilling because the cost to mitigate these emissions is not included in the production or consumption price. This group cites three types of fugitive releases of greenhouse gases such as upstream combustion of fossil fuels, releases of unburned methane, and destruction of carbon sinks ("How Green" 1).

Examples of externalities cited by the Pennsylvania Budget and Policy Center include the additional costs of environmental damage not already born by the PA Department of Environmental Protection including groundwater contamination and depletion, forest fragmentation, habitat loss, soil erosion, abandoned wells and noise or air pollution. There is also concern for worker and public safety in and around well, wear and tear on roads and bridges, strain on educational systems, and strain on recorder of deeds offices (Wood 3). Also mentioned by this study is a sociological phenomenon called the “Gillette Syndrome” which represents the social dysfunction that sometimes occurs in gas producing towns. Since there is a new demand for specialized labor and a flux of labor and community members, there are distinct community responses such as uncertainty, panic and adaptation. Bradford County, PA is already experiencing some of these symptoms, and as a result has raised its hotel tax by over 20% since 2007 (Wood 21).

An interview with the Press Office of the Pennsylvania Department of Environmental Protection helped clarify some of these issues, most specifically the costs associated with environmental permitting. As of 2009, the PA DEP has increased the application fees for companies who wish to apply to drill for natural gas and these application fees go towards the
execution of the permit system. DEP suggests that environmental permitting and monitoring are not externalities because the cost of regulating the permits is born by the fees (Rathbun 1).

One built-in method to address any external costs are royalty payments to landowners of drill sites. The Commonwealth of Pennsylvania currently obtains revenue from gas extraction only if the gas is under state forest land, so royalties can be used to pay for public externalities or social costs only in these cases. Severance taxes can “internalize” these externalities, and thirty-five states have imposed severance taxes on resource extraction, which is especially important since royalties do not always cover the full costs of these externalities (Wood 3).

The size of severance tax in other states varies. Generally, states base calculations on the value and volume of gas produced. Some states allow exceptions or credits in unique situations such as periods of low gas prices, or with low production rate stripper wells (“Oil Severance Tax” 1). The most prominent gas-producing states with severance taxes include Texas, Wyoming, Arkansas, and West Virginia. Aside from Pennsylvania, New York is the only natural gas-producing state that does not levy a severance tax (Ward 1).

There are large differences in how states distribute severance tax revenue. Research completed by the Pennsylvania Budget and Policy Center suggests that the most common type of revenue breakdown is to share a portion of the revenue with local governments. Of the 35 states with severance taxes, ten states grant revenue to environmental cleanup and conservation programs. Eight of the 35 states send some revenue to the public school system. Four states also invest revenue in a fund that serves various purposes such as repaying bonds, known as a “permanent fund” (Wood 6). Proposals for a severance tax have been met with
considerable resistance due to fear that a severance tax might harm natural gas industry growth.

An economic impact analysis of the Marcellus “gas play” was released in July, 2009 by Penn State University. The analysis indicates that there is tremendous economic potential in drilling this natural resource. For example, according to the study, the PA gas industry generated $2.3 billion in total value added, with more than 29,000 jobs and $240 million in state and local revenue from taxes in 2008 alone. The projections for 2009 estimate that total economic output will be over $3.8 billion, job creation will exceed 48,000, and total state and local revenue will exceed $400 million. Projections for future years suggest that into 2020, the Marcellus industry could generate $13.5 billion in value added (Considine ii). According to these economists, a severance tax is a counter-productive policy, as a tax would result in an estimated $880 million net loss in estimated revenue between 2009 and 2020 because of fewer wells drilled and an unfavorable business climate (Considine 31). This study was released around the same time period in which several important pieces of legislation were debated in Harrisburg.

**Stakeholders**

Though the potential for economic growth in Pennsylvania due to the natural gas resources is incredibly high, the residents of PA are impacted by other factors such as potential environmental harms, potential health hazards, and positive and negative economic and sociological impacts of drilling. Drilling is a complicated process that sometimes results in spillover costs not borne by the natural gas industry or consumers of natural gas. For example, in a recent study, an eco-planning firm found that some states with natural gas
drilling have experienced external costs such as degraded wildlife, or increased pollutants harmful to humans and wildlife (Niemi 3).

Discussions of equity are critical in examining the citizens’ stake in policy negotiations. Even if it is true that PA citizens want more revenue flowing into their economy and their pockets through enhancing the natural gas industry, the tradeoffs to economic growth resulting from drilling might not be sufficient, in terms of overall welfare. For example, though the industry might bring many benefits to the Commonwealth in the present, there are legitimate inter-generational concerns if it is true that drilling poses a wildlife or human health risk. A severance tax has been seen by other gas-drilling states as a way to address potential overall deficits of citizen welfare (in terms of inter-generational issues), because it could raise revenue to compensate future generations (See Appendix B). Also of importance is the divergence between citizens’ actual interests, their perceived interests, the way they are represented by their legislators and other stakeholders.

Main stakeholders in the natural gas extraction issue are the natural gas companies. Represented through their umbrella organization, the Pennsylvania Oil and Gas Association (POGAM), they support the “general welfare of Pennsylvania's crude oil and natural gas exploration and production industry.” Some of the most prominent gas companies that are drilling in the Marcellus formation include Range Resources, Cabot Oil and Gas Corporation, North Coast Energy, Chesapeake Energy, Chief Oil and Gas, East Resources, Fortuna Energy, Equitable Production Company, Southwestern Energy Production Company, and Atlas Energy Resources (POGAM 1). The Pennsylvania Marcellus Shale Coalition is a group of over thirty natural gas companies that work with regulators and government officials to promote “responsible extraction of natural gas.” In terms of the severance tax, natural gas
companies often work under these umbrella coalitions to present their positions to legislators and other government officials (News- Marcellus Shale Coalition 1). (See Appendix C)

Another group of stakeholders are the renters, homeowners and local business owners in areas in which drilling occur. Renters have seen an incredible increase in rent prices, because out-of-town natural gas companies offer landlords much more than the going rent rate to secure continual housing for their workers. Homeowners have generally seen an increase in property values, while local businesses such as hotels and restaurants are thriving from the influx of new out-of-town industry members (Legere 3).

Another group of stakeholders representing different aspects of the Marcellus Shale issue include environmental groups. The leading, and most vocal, environmental groups involved in Marcellus Shale extraction policy have been Penn Future and the Chesapeake Bay Foundation (CBF). Penn Future, led by CEO Jan Jarrett and founded in 1988, is a prominent environmental advocacy group based in Harrisburg, with offices across the state. Penn Future opposed extensive drilling in state forest lands and supported a severance tax on natural gas extraction (Penn Future 1). The Chesapeake Bay Foundation works with government, businesses, and citizens to protect and restore the Chesapeake Bay. The Chesapeake Bay Foundation “sets the agenda, serves as a watchdog, and speaks out on behalf of the Chesapeake Bay to business, government, and the public.” Chesapeake Bay Foundation has pending litigation against the PA DEP for the way specific aspects of natural gas extraction permits have been handled (Chesapeake Bay Foundation 1). The link between Chesapeake Bay Foundation and natural gas extraction is very important, as gas drilling produces 9 million gallons of waste water per day. This amount is predicted to increase to 19 million gallons by 2011 (“Drilling for Natural Gas” 1).
The Governor's Administration

The Governor's Cabinet is comprised of the directors of various state agencies, who were nominated by the Governor and confirmed by the Pennsylvania Senate. The directors, or secretaries, of the agencies are responsible for serving as policy liaisons between the Governor's agenda and their respective agencies' agendas. The new governor will have the authority to re-name agency secretaries to each administrative agency, giving the governor tremendous influence over policy decisions in the Commonwealth. Of particular importance to Marcellus Shale natural gas extraction are the Departments of Environmental Protection and the Department of Conservation and Natural Resources.

The PA Department of Environmental Protection, currently headed by Secretary John Hanger, is responsible for “administrating Pennsylvania's environmental laws and regulations” (PA-DEP 1). The PA DEP contains 17 bureaus; the most relevant to natural gas extraction is the Bureau of Oil and Gas Management. According to this Bureau’s Marcellus Shale page, “DEP is responsible for reviewing and issuing drilling permits, inspecting drilling operations and responding to complaints about water quality problems (Please see Appendix A for a PA DEP map of well sites). DEP inspectors conduct routine and unannounced inspections of drilling sites and wells statewide” (PA-DEP 1). This role makes the agency important in the debate over the proposed severance tax, because it could potentially be a recipient of tax revenue if certain versions of the tax are passed by the Legislature as part of the 2010-2011 budget negotiations.

The PA Department of Conservation and Natural Resources, currently headed by Secretary John Quigley, is responsible for the following areas: Forestry, State Parks,
Environmental Education, Facility Design and Construction, Management Services, Community Recreation Assistance, Rivers Conservation, Trails and Greenways, Topographic and Geologic Survey, and the Conservation and Natural Resources Advisory Council (DCNR 1). The bureau that handles most natural gas extraction issues is the Bureau of Topographic and Ecologic Survey, which provides and disseminates information about gas and oil wells in the Commonwealth. Additionally, the 2009-2010 budget that was signed on October 9, 2009 mandated that a minimum bid of $2,000 and royalties of 18% from natural gas drilling be granted to DCNR for the preservation and maintenance of State parks (“PA DCNR” 1). DCNR could be another source for distribution of severance tax revenues, since it has a large role in the Marcellus operations.

Legislation

HB 1489, sponsored by Pennsylvania State Representative Bud George (D-Clearfield), became the leading severance tax proposal debated by the Legislature in summer of 2009 and which was introduced to the House Environmental Resources and Energy Committee. This bill proposed a 5% tax on every producer who severs natural gas in PA. The tax was proposed to be 5% of the gross value of units severed at the wellhead during a reporting period, plus 4.7 cents per unit of cubic feet severed. An amendment, A02021 by Representative George provided for accreditation and certification of well-head meters, provided some well-head exemptions, and provided fund transfers from the Natural Gas Severance Fund. The bill was reported as amended by a vote of 15-11 on June 23, 2009 (Collins 1). All Democratic members of the Committee, except for Rep. Jim Wansacz (D-Lackawanna) voted for the bill
and all Republican members, except Rep. Chris Ross (R-Chester) voted against the bill (Pennsylvania Legislative Services 1).

The timeframe in which HB 1489 reached the House floor is important, as September 30, 2009 marked a time in which Pennsylvania’s legislature was stuck in political gridlock over the long-overdue state budget. The state budget was supposed to be completed by June 30, 2009, yet there was such great political inertia that the budget was not signed until October 9, 2009. This 101-day delay saw myriad political compromises from both the Democratic Governor and House of Representatives, as well as from the Republican-led Senate (Dopp 1).

For example, Governor Rendell proposed the 5% severance tax in February, 2009 (which was later mirrored by HB 1489). By September 1, 2009, he publicly rescinded his support for enacting the severance tax this year. At an August 31, 2009 press conference, the Governor said "They (the industry) have asked us to go slow. They've asked us to see how they develop" (Swift 1). He also indicated that he would support a severance tax in the future, but “not at the beginning” (Swift 1). Instead of taxing the gas extracted, the final budget that was signed on October 9, 2009 included a provision that allowed Pennsylvania to lease state forest land for natural gas production (“Pennsylvania Governor” 3).

An important factor to consider when reviewing severance tax proposals is allocation of revenue. HB 1489 proposes that 60% of the severance tax revenue go into the legislature’s General Fund, 3% to the Department of Public Welfare, 15% to the Environmental Stewardship Fund, 4% to the Hazardous Sites Cleanup Fund, 5% to the Liquid Fuels Tax Fund, 4.5% to municipalities where natural gas has been severed, 4.5% to counties where natural gas has been severed, 2% to the PA Game Commission, and 2% to the PA Fish and
Boat Commission (PLS 2009). The Environmental Stewardship Fund was created in 1999 as part of Governor Ridge's 1999-2000 state budget. Legislation apparently similar to HB 1489, which proposes a 5% severance tax, includes different revenue distributions. For example, Senator Musto's proposal would put all severance tax revenue into the legislature's general fund. Senator Dinniman's proposal, SB 997, would place a higher percentage of funds into an Environmental Stewardship fund (22% as opposed to Representative George's 15% proposal).

(See Appendices D and E for revenue distribution options)

**Policy Considerations:**

In assessing a controversial policy issue like the proposed severance tax on natural gas, ethical, political, economic, and health factors must be evaluated. Liberty provides the following considerations for the PA Democratic gubernatorial candidates to assess as they move forward on this issue.

**Ethical Considerations**

The ethical considerations of natural gas extraction policy, specifically the severance tax proposal, are significant across generations. Essentially there are two key ethical questions: 1) Considering future generations in our market and political structure; and 2) Revenue distribution among groups in the same generation.

Some aspects of natural gas drilling have consequences that will impact future generations. Proponents of a tax see this as one more reason that the distribution of benefits from drilling today should be extended to cover future harms. For example, if methane gas leaks contribute to global climate change, and global climate change has severe consequences
for future generations, should the costs of environmental damage caused by global warming be factored into an analysis of drilling? Or, if as the EcoNorthwest study suggests, drilling has the possibility to disrupt wildlife habitats, should the costs of future environmental biodiversity loss be factored into an analysis of drilling? Different groups of stakeholders give different weight to present and future generations.

The second major ethical question concerns the distribution of revenue across different groups within generations. Should the revenue be allocated to the General Fund, to the Environmental Stewardship fund, to either funds, or elsewhere? Some proponents of a severance tax think that revenue should be distributed locally to the counties where drilling occurs. The next governor will have the ability to guide these types of policy questions.

**Political Considerations**

As seen with 2009 state budget negotiations, a severance tax on natural gas is a politically contentious issue. To understand why, an understanding of the political party breakdown in Pennsylvania is important. In the Pennsylvania legislature, there are 253 legislators; 50 State Senators and 203 State Representatives. The Pennsylvania Democratic Party has majority control in the Pennsylvania House of Representatives, with 104 Democrats and 99 Republicans. The Pennsylvania Republican Party has majority control of the Senate; with 29 Republican Senators to 21 Democratic Senators (The Pennsylvania General Assembly 1) The Republican party has controlled the PA Senate for most of the last thirty years. In fact, as of the 2008 general election, the Pennsylvania State Senate is the last Republican controlled chamber of a state legislature in the entire northeastern United States (Levy 1). The fact that
each party has control of a different chamber is a major reason why the 2009 budget negotiations were at a gridlock for so long.

With regard to natural gas policy, as seen by the committee vote on HB 1489, Democratic legislators tend to favor a severance tax more than Republican legislators. This could be due to general differences in political philosophy, sources of campaign donations, and the influence of lobbyists. In terms of political philosophy, Democratic legislators tend to favor government taxes more than Republican legislators. This could be because Democrats desire additional revenue to execute policies, or because Democrats tend to grant more consideration to environmental concerns (Mastrull 1).

In March, 2009, Fairbank, Maslin, Maullin & Associates, a bipartisan opinion research and public policy analysis firm completed a statewide survey of PA voters on natural gas drilling policies. The results of the survey found that a majority of PA voters support using state revenue from natural gas drilling to support environmental conservation. 53% of voters indicated they would support a severance tax in PA, while only 37% opposed. 87% of PA voters supported using the potential severance tax revenues for conservation programs, while only 10% of PA voters opposed and 3% were not sure. The poll breaks these numbers down by geographical location as well. Total support for dedicating natural gas severance tax revenues to conservation was highest in northeastern Pennsylvania, at 93% and lowest in the greater Pittsburgh area, at 82%. (Metz 1).

There is significant room for criticism with this poll. First, the margin of sampling error for the full statewide sample is +/- 5.7% while the margin of sampling error for each individual region is +/- 9.8%. These are relatively high margins of errors. Additionally, the poll is a bit misleading in that it chiefly focuses on the question “If a severance tax was
established...do you support dedicating some revenues to conservation?” Though this is important information, it is not as important as measuring the initial public support for or against a tax. The only information provided in this poll related to whether or not the public supports a severance tax (regardless of where the revenue goes) is the statistic that 53% of voters indicated that they would support establishing a severance tax in PA, with 37% opposed. If you consider the margin of error this split could really be closer to 48% in favor and 42% opposed. Lastly, the poll was conducted in March, 2009 which makes it one year old. Public opinion can shift dramatically within one year.

A different poll was conducted in March 2010 by Quinnipiac University. The Quinnipiac poll showed that 49% of people polled supported Governor Rendell’s recent severance tax proposal, while 41% opposed. The Quinnipiac poll did not report public opinion on severance tax revenue distribution, but it did show geographic and gender breakdown. (“Corbett” 11) (Please See Appendix F).

This poll is more telling, as it is more up to date and has a slimmer margin of sampling error. The overall sampling margin of error is only +/- 2.6 percentage points in this poll, and the sampling pool is much larger (1,452 Pennsylvania registered voters sampled, while the Fairbank poll only sampled 600 Pennsylvania registered voters). Ultimately, these numbers do depict that there is slim support for a severance tax. For Democratic gubernatorial candidates, the most important statistics shown by this poll are the percentages of Independents who support and oppose Governor Rendell’s severance tax proposal. The pool of Independent voters is where there is room to gain (or lose) support for candidates’ platforms.

This poll would be even more helpful if it further explained two pieces of information. First, are the statistics of support or opposition for Governor Rendell’s severance tax proposal
specific to Governor Rendell’s proposal, or did pollsters give background information on other types of proposals being offered? Additionally, Governor Rendell’s proposal for revenue distribution of the severance tax has changed over the past year. Were registered voters being asked about his proposal for this upcoming budget, or last year’s budget? It would be helpful to know more information about the background presented to registered voters before they responded to the poll. The second piece of information related to this poll that would make it more valuable would be the geographical breakdown of Independent voter support and opposition. Obtaining this information would allow candidates to pinpoint where (geographically) there is most opportunity to gain support for their severance tax proposal while they are campaigning.

Another important factor to consider when examining the political situation of the severance tax is the recent political trends in Pennsylvania. Statewide, Pennsylvania generally votes in favor of the Democratic Party as a whole than the Republican Party. Pennsylvania has not voted for a Republican candidate for President since 1988. This trend continued in the 2008 general election, especially due to the large increase in voters who registered to vote as Democrats, versus those who registered to vote Republican. In the 2008 general election, Pennsylvania granted Barack Obama 21 electoral votes (“Pennsylvania Election Results” 1). These trends, combined with the mostly party-line committee vote on HB 1489, and the policy platforms of most of the gubernatorial candidates suggest that Democrats are more likely to support a severance tax. This is still an assumption, as there has been no official legislative vote on a severance tax.
Money Politics

According to *The Philadelphia Inquirer*, the natural gas lobby spent more than $1.6 million lobbying in Pennsylvania in only the first half of 2009. Range Resources Appalachia, LLC invested the most in lobbying—over $600,000—which was an increase from the $200,000 it spent in 2008 (Cattabiani 1). The Pennsylvania Department of State, Bureau of Commissions, Elections and Legislation, Division of Lobbying Disclosure does not provide lobbying disclosure information broken down specifically by natural resource industry. This makes it impossible to know for sure how much money was spent on lobbying for each political party in the legislature. Knowing this, a conclusion cannot be drawn about the influence of natural gas lobbyists or environmental lobbyists on each political party.

Additionally, the “Public Reports” section of the Lobbying Disclosure section of the Pennsylvania Department of State’s website does not allow one to distinguish how much was spent in lobbying on natural gas policy issues. For example, the Public Report section lists total 2009 expenditures by category. Categories related to natural gas policy include “Environment,” with total 2009 lobbying expenditures of over $7 million, “Energy,” with total 2009 lobbying expenditures of $10 million, “Natural Resources,” with total 2009 lobbying expenditures of $1.5 million, and “Taxation,” with total 2009 expenditures of $10 million (“Campaign Finance and Lobbying Disclosure” 1). There is no description explaining what is included in each of these categories, so it is unclear in which category principals and lobbying firms filed expenditure reports for the natural gas severance tax issue.

Campaign donations are also an important factor to consider. Donations may have been a significant factor in Governor Rendell’s policy switch from favoring the severance tax to opposing it for the 2009 budget negotiations (Worden 5). The first donation from Range
Resource’s political action committee went to 2010 Republican gubernatorial candidate and Attorney General Tom Corbett (Worden 5). Range also already donated to Democratic gubernatorial candidate and Auditor General Jack Wagner, as well as to President Pro Temp of the PA Senate, Senator Joseph Scarnati (“Campaign Finance and Lobbying Disclosure” 1). Auditor General Wagner has not offered his political stance on Marcellus taxation on his website yet, so it is difficult to determine whether these campaign donations have had a meaningful impact in terms of political influence. Berwood Yost stated that though candidates might not be expected by donors to grant political favors, donors might give because they “hope that they have a chance to be heard” (Infield 1).

Economic Considerations

The current economic climate in Pennsylvania is important to consider when deciding whether or not to propose a severance tax. A severance tax is seen by some people as a good way to help balance the state budget. Senate Appropriations Chairman Jake Corman, (R-Bellefonte) is estimating that the PA budget deficit will reach $1 billion by June 30, while the Governor’s estimates are less dire, at an estimated $750 million shortfall (which he plans to patch using revenue sources such as tax collections and federal money). Regardless of the actual budget hole, two recent unexpected events have left citizens of Pennsylvania wondering where the money will come from to balance the budget by the summer. First, in early April 2010, the federal government rejected Governor Rendell’s plan to toll interstate 80. This decision alone left a $472 million hole in the Governor’s proposed budget (McNichol 1). Also, in mid-April 2010, Pennsylvania’s Commonwealth Court ruled that the Governor could no longer use money out of the M-care fund to cover budget shortfalls like he did last year. This
is problematic for the Governor’s proposals because the court ordered that the state put
between $565 million and $715 million from the General Fund back into the M-care fund
(Couloumbis 1).

In spite of the fact that a severance tax could fill a gap in the state budget, the potential
harm done to the natural gas industry’s presence in Pennsylvania should also be considered. A
study completed by Pennsylvania State University, which The Philadelphia Inquirer claims is
funded by $100,000 from 50 natural gas companies, calculates current and future economic
impacts using an input-output equation, also known as IMPLAN (Considine). The Penn State
study estimated that during 2009, the Marcellus industry would generate $3.8 billion in value
added, over 48,000 jobs, and $400 million in state and local tax revenues. The authors predict
that in over ten years by 2020, the Marcellus industry could generate 175,000 jobs annually
and more than $13 billion value added. Due to the fact that drilling activity is “quite sensitive
to rates of return,” this study found that the proposed 5% severance tax would have
“unintended consequences,” and that the tax would reduce drilling by over 30% and would
result in a net loss in tax revenue to the state. This study found that “choking off the industry
with a severance tax at this critical time would stunt infrastructure development and limit
future drilling activity” (Considine 33).

There are several reasons to challenge the assertion that a tax would choke the industry.
First, another study, by the Pennsylvania Budget and Policy Center cites US Bureau of Labor
Statistics data to challenge the claim that a tax would choke the industry’s production, by
citing other states. For example, a Wyoming study, found that raising tax rates contributed
greatly to government revenues, with little impact on natural gas production. This is
significant, because as of 2007, Wyoming is the second largest producer of natural gas in the
According to the Pennsylvania Budget and Policy Center, "companies fully expect to pay the tax" (Wood 34).

Even without the use of Wyoming as a case study, the assumptions of the Penn State study are questionable. First, in order to measure the level and consumption of the Marcellus industries, the authors of the Penn State study conducted a survey. There is no mention about the methodology or oversight of their survey. There is little discussion granted to the boundaries of the survey. This becomes problematic. For example, they rely on the survey information to find out the location, dollar amount, and description of all purchases by natural gas industry firms so that they can include the Marcellus shale industry into the input-output model of economic impact analysis. The authors never clarify what locations of suppliers count for "in the region." In other words, the reader does not know the confines of the geographical location of which this economic impact analysis focuses.

There is also a problem with the multiplier effect that they used to calculate total economic output for Pennsylvania. The multiplier effect is the defined as:

An effect in economics in which an increase in spending produces an increase in national income and consumption greater than the initial amount spent. For example, if a corporation builds a factory, it will employ construction workers and their suppliers as well as those who work in the factory. Indirectly, the new factory will stimulate employment in laundries, restaurants, and service industries in the factory's vicinity ("Multiplier Effect").

The authors claim that "for every $1 that the Marcellus industry spends in the state, $1.94 of total economic output is generated" (Considine 23). In other words, this is a multiplier of 1.94. The study acknowledges that this multiplier is "considerably above" the
multiplier used to calculate economic impact of natural gas industries in Louisiana (1.34 multiplier), New Mexico (1.43) and Oklahoma (1.55). The authors of the Penn State study dismiss these differences because their expenditure analysis is "based upon company accounting data, which provide(s) a more accurate measurement of inter-industry purchases" (Considine 23). As already acknowledged, the company accounting data comes from a "survey," -- a survey for which there is no mention of methodology or oversight.

The last area that is questionable in the Penn State study is the section on future development prospects. In this section, the authors use regression analysis to calculate future drilling activity when there is a change in price. They are using a linear model of price by saying that prices "significantly affect drilling," because the T-ratio is high. They are not controlling the equation for other non-price variables that could be included and would independently alter the amount of drilling. Additionally, their analysis uses data from the Barnett Shale formation which was gathered from 1993-2008 and then they calibrate the equation with Marcellus drilling activity by comparing it to a 2009 survey by the Marcellus Shale Committee (Considine 28). This data could be completely outdated and misleading, as it was procured as early as 17 years ago.

Though these criticisms of the Penn State study might not undermine its conclusions, they are worth raising, especially since there are no comprehensive alternatives to the Penn State findings. If some of these criticisms are accurate, then it might be the case that policy makers know less than they think they know about the economic impact of the Marcellus Shale formation.
Health Considerations

There are considerable health concerns related to drilling for both humans and various animal species. One area of concern involves the salty waste water or “brine,” that results from fracturing. If not handled correctly, it can have negative environmental consequences such as harming aquatic life and drinking water. In some cases the brine is spread on dirt roads for dust suppression or to pre-wet roads for de-icing in the winter (PA DEP 1).

According to Lou D’Amico, executive director of the Independent Oil and Gas Association of Pennsylvania, the chemicals used in fracking have been disclosed, but their proportions have not been disclosed (“News” 1).

Most companies in the Marcellus formation use four to five chemicals in the diluted substance for hydraulic fracturing. Friction reducer is used to reduce friction between fluid and pipe. Biocide is used to eliminate bacteria in water. Scale inhibitor is used to prevent deposits in the pipe that could inhibit gas flow. Oxygen scavenger is used to remove oxygen from the water to prevent pipe corrosion. Lastly, diluted acids are used to clean the pipe and help dissolve the cement and minerals to allow fractures to develop.

Many environmental groups believe that the chemicals used in hydraulic fracturing are harmful, though it is difficult to demonstrate a direct connection between apparent instances of water pollution and the hydraulic fracturing procedures (Gjelten 1). Also, the sheer amount of waste water raises concerns, as the first waste water treatment facility for gas drilling waste water will not be online until 2013. It will have a capacity of 0.4 million gallons of water per day, which is just a fraction of the 9 million gallons of waste water produced (“Drilling for Natural Gas” 1). One example that confirmed environmentalists’ fears of frack water occurred in Dimock, Pennsylvania. In September 2009, 8,000 gallons of frack fluids spilled at a site run
by Cabot Oil & Gas. The contaminants, which journalists suggested contained a “potential carcinogen,” spilled into a nearby stream and resulted in a major “fish kill,” according to the PA DEP (Lustgarten 1).

The soil erosion and waste water that results from drilling is regulated by the PA DEP. Regulation started in 1984 with The Oil and Gas Act, which required that all new wells be permitted before drilling. The PA DEP regulates the bonding, permitting, and registration of wells, environmental requirements for drilling operations, waste disposal, cementing and casing of wells, and proper plugging of wells upon abandonment (Rathbun 1). There is concern that DEP has proper resources to effectively handle all of these Marcellus-related responsibilities, especially after its fiscal budget was cut by 27% in the 2009 negotiations (Hopey 1).

Another health concern deals with the “Halliburton Loophole,” or an exemption from the 2005 Energy Policy Act. This loophole takes away the Environmental Protection Agency’s authority to regulate the frack water used in natural gas drilling. It is called the Halliburton Loophole because in the 1940s Halliburton invented the hydrofracturing process. The exemption was inserted into the 2005 Energy Policy Act during the timeframe in which former Vice President Dick Cheney was in the White House. Vice President Cheney was formerly the CEO of Halliburton. The lack of federal regulation of the fracking process is concerning to many people, especially those who have experienced water contamination cases resulting from the fracking process. This is an especially contentious issue in the New York watershed, which experienced increased drilling from the region of the Marcellus formation that extended into New York until the State government imposed a moratorium on drilling (“An Unconventional” 1).
In addition to soil and water contamination, methane leakage is a serious health concern. One prominent incident in Dimock, PA and involved resident Norma Fiorentino. On New Year’s Day 2008, methane from a local natural gas drilling site leaked into Ms. Fiorentino’s home and caused an explosion. Additionally, methane was found in her drinking water. At fault, the DEP decided, was Cabot Oil and Gas’ nearby drilling operations. This is not an isolated incident, as methane leaks into drinking water have been found across the United States (Lustgarten 1).

Methane emissions resulting from natural gas drilling operations also pose significant health risks in the long-term, the most serious of which is the correlation between natural gas methane leaks and global climate change. According to the New York Times, three trillion cubic feet of methane leak into the atmosphere as a result of natural gas drilling (Revkin 1). According to the EPA, methane emissions from oil and natural gas systems make up 2% of total US greenhouse gas emissions (Blackman 1). Additionally, methane is one of the most potent of all greenhouse gases because it is 20 times more effective in trapping heat in the atmosphere than carbon dioxide ("US EPA" 1). A World Health Organization report indicates that global climate change temperature fluctuations impacts health in a variety of ways such as increased disease risk, flooding, heat-related deaths, and harmful air pollution (Patz 1). (See Appendix G)

In spite of harmful methane emissions, the overall carbon emissions of natural gas are much cleaner than those of coal and oil. According to the American Clean Skies Foundation, natural gas can generate electricity with less than half the carbon dioxide emissions of coal. Also, transportation vehicles powered by natural gas releases about twenty-five percent less global warming pollution than gasoline powered ones (Kuuskraa 1). The relatively clean
emissions from natural gas make it a more favorable non-renewable resource for the Commonwealth than other carbon-intensive resources.

Conclusion

The Marcellus shale formation is an extremely valuable natural resource that has the potential to bring great economic benefit to Pennsylvania. With the value of this resource comes tremendous responsibility, particularly on the state policymakers. In determining the best course of action for distributing the costs and benefits of this resource, policymakers should heavily weigh ethical, political, economic, and health concerns. To assist the Pennsylvania Democratic Party in preparing gubernatorial candidates for striking this balance, Liberty Consulting, LLC proposes the following recommendations.
Recommendations

Since Governor Rendell has already included the severance tax as part of his 2010-2011 budget proposal, Liberty Consulting’s recommendations focus on two primary objectives. First, the PA Democratic Party should urge Democratic candidates to elaborate more explicitly their platforms on the severance tax revenue distribution. Second, Liberty believes that it would be helpful for the PA Democratic Party to gather more information and viewpoints on severance tax revenue distribution. These two objectives can be accomplished through the following three recommendations.

**Recommendation 1: Tell candidates to clarify their policy platforms to adopt a severance tax**

*See Appendixes H and I for current policy platforms*

We at Liberty Consulting, LLC suggest that Pennsylvania Democratic gubernatorial candidates adopt a 5% severance tax to their policy platforms. In terms of revenue distribution, Pennsylvania should adopt a severance tax that mirrors Colorado’s: 0% of revenue to the General Fund, 50% to local governments, 25% to environmental programs, and 25% into a Permanent Fund. There should be one moderation to Colorado’s plan when adopting it in Pennsylvania: in Colorado, the 50% to local governments is available via a formula and competitive grants. Due to the location and political representation of the counties that host the most natural gas drilling in Pennsylvania (which are chiefly rural and relatively less powerful than Pittsburgh and Philadelphia), we suggest that the local government grant process be strictly based on formulaic considerations.
Choosing not to grant any distribution of severance tax revenue to Pennsylvania’s General Fund avoids two significant problems. First, the severance tax revenue will actually be going towards where it is needed (related to revenue sources), as opposed to going towards unrelated projects. There is a fear amongst former and current staffers in Harrisburg that putting more money into the General Fund will result in increased funding elsewhere in the budget (Lewis 1). Additionally, this revenue distribution is politically more feasible, as members of the Republican caucus have already stated that they would consider supporting a severance tax if the revenue distribution was less favorable towards the general fund (Yaw 1).

Until the time that the PA Democratic Party endorses a candidate, it is important that Democratic candidates accurately and frequently portray their viewpoints on the severance tax issue to PA voters. Currently, the candidates are not especially clear about how severance tax revenue should be distributed. This information could be publicized on the candidates’ websites, or the Party could host candidate forums throughout the state on the issue. So far, Dan Onorato and Joel Hoeffel have released statements about Marcellus. Their policy proposals are remarkably different, which suggest that this could be a contentious issue leading up to the Democratic primary.

**Recommendation 2: Gather more information from the public**

So far there have only been two bi-partisan public opinion polls conducted on the severance tax issue. First was the 2009 poll by Fairbank, Maslin, Maullin & Associates and Public Opinion Strategies. The poll showed that a slim majority of citizens supported natural gas companies paying a fee in PA, in the form of a tax, as they do in other states. The poll does not go into specifics about public opinion on revenue distribution, other than discussing
using revenue for conservation purposes. The second was the March 2010 poll conducted by Quinnipiac University which showed that there is plurality support for Governor Rendell’s 2010-2011 severance tax proposal of 49% to 41%. The Quinnipiac poll does not discuss revenue distribution.

Gauging the public’s interest in this issue, specifically on how revenue should be distributed, would help policymakers and candidates make more informed decisions. The Pennsylvania Democratic Party should hire a polling firm to conduct a poll that would better understand where Democratic, Republican and Independent voters stand on the enactment and distribution of a severance tax on natural gas in Pennsylvania. This information can then be used to help candidates craft policy that is politically feasible given the current political mood. Ideally, a poll would be conducted prior to the May Democratic primary (to help candidates distinguish their policies from one another) and then prior to the November general election (to help candidates distinguish their policies from Republican candidate policies). Given time constraints, a more likely scenario is to only conduct one poll, prior to the general election. This poll’s questions should be focused on distinguishing overlap and difference between registered Democrats’ and registered Independents’ responses. Designing the questions in this manner will help Democratic candidates in their quest to win the support of moderate, Independent voters.

**Recommendation 3: Gather more information from the natural gas industry**

If it is the case that a severance tax is a politically viable option within the next year or two, the natural gas industry should have a voice at the discussion. For example, if the industry concedes that methane leakage is a serious problem within their operations, perhaps
they would be more willing to support a tax for which the revenue would be used to offset GHG methane emissions. Or perhaps they would consider working to eliminate or reduce the methane leaks. Alternatively, if (industry and the public) agree that distributing a large part of severance tax revenue to the General Fund is unethical, legislators should change their severance tax revenue distribution breakdowns. Policy makers and candidates should be aware of the positions of industry members (in terms of preferred severance tax revenue distribution) so that meaningful dialogue and collaboration can occur.
Appendix A
Pennsylvania's Marcellus Shale Formation Wells

Marcellus Shale Gas Drilling Wells in Pennsylvania

Source: Kerri Oddenino, Dickinson College Class of 2010

This map shows the areas of Pennsylvania in which the Marcellus wells were drilled in 2008-2010.
28 other states that have a natural gas severance tax:

<table>
<thead>
<tr>
<th>State</th>
<th>Highest Marginal Rate on Natural Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>4-8% of gross value</td>
</tr>
<tr>
<td>Alaska</td>
<td>22.5% plus 0.25% of net value</td>
</tr>
<tr>
<td>Arkansas</td>
<td>5%</td>
</tr>
<tr>
<td>Colorado</td>
<td>Up to $10,750 and 5% of gross income above $299,999</td>
</tr>
<tr>
<td>Florida</td>
<td>$0.563 per thousand cubic feet (MCF)</td>
</tr>
<tr>
<td>Idaho</td>
<td>No more than $0.005 per 50,000 cubic feet of gas</td>
</tr>
<tr>
<td>Illinois</td>
<td>0.10%</td>
</tr>
<tr>
<td>Indiana</td>
<td>The greater of 1% or $0.03 per MCF</td>
</tr>
<tr>
<td>Kansas</td>
<td>8%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>4.5% of gross value</td>
</tr>
<tr>
<td>Louisiana</td>
<td>$0.03 - 0.13 per MCF</td>
</tr>
<tr>
<td>Michigan</td>
<td>5%</td>
</tr>
<tr>
<td>Mississippi</td>
<td>6%</td>
</tr>
<tr>
<td>Montana</td>
<td>0.76% - 15.06%</td>
</tr>
<tr>
<td>Nebraska</td>
<td>3%</td>
</tr>
<tr>
<td>Nevada</td>
<td>2-5%</td>
</tr>
<tr>
<td>New Mexico</td>
<td>3.75%</td>
</tr>
<tr>
<td>North Dakota</td>
<td>$0.1476 per MCF as of June 30, 2009</td>
</tr>
<tr>
<td>Ohio</td>
<td>$0.025 per MCF</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>7%</td>
</tr>
<tr>
<td>Oregon</td>
<td>6%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>4.5% of taxable value</td>
</tr>
<tr>
<td>Texas</td>
<td>7.5% of market value</td>
</tr>
<tr>
<td>Utah</td>
<td>3% - 5%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>3%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>7%</td>
</tr>
<tr>
<td>West Virginia</td>
<td>5% plus $0.047 per MCF</td>
</tr>
<tr>
<td>Wyoming</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: Governor Rendell’s 2010-2011 Executive Budget Facts

This chart shows the states that have natural gas severance taxes. The percentage shown is the percentage of the tax (Governor Rendell has proposed a 5% tax for PA). As this chart shows, some states just tax extraction, some tax gross value, some tax market value, and some tax net value.
### Appendix C

Natural Gas Companies who are members of the PA Marcellus Shale Coalition

<table>
<thead>
<tr>
<th>Alta Resources, LLC</th>
<th>Marathon Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anadarko Petroleum Corp.</td>
<td>MarkWest Energy Partners, L.P.</td>
</tr>
<tr>
<td>Burnett Oil Company</td>
<td>Petroleum Development Corp.</td>
</tr>
<tr>
<td>Cabot Oil and Gas Corp.</td>
<td>Phillips Production Company</td>
</tr>
<tr>
<td>Carrizo Oil &amp; Gas, Inc.</td>
<td>Quest Resource Corporation</td>
</tr>
<tr>
<td>Chesapeake Energy Corporation</td>
<td>Range Resources</td>
</tr>
<tr>
<td>Chief Oil and Gas LLC</td>
<td>Rex Energy Corporation</td>
</tr>
<tr>
<td>CNX Gas Corp.</td>
<td>Samson Resources Company</td>
</tr>
<tr>
<td>Dominion Exploration &amp; Production, Inc.</td>
<td>Seneca Resources Corp.</td>
</tr>
<tr>
<td>East Resources, Inc.</td>
<td>Southwestern Energy Company</td>
</tr>
<tr>
<td>Energy Corporation of America</td>
<td>StatoilHydro</td>
</tr>
<tr>
<td>EOG Resources, Inc.</td>
<td>Turn Oil, Inc.</td>
</tr>
<tr>
<td>EQT Production Company</td>
<td>Ultra Resources Inc.</td>
</tr>
<tr>
<td>EXCO- North Coast Energy, Inc.</td>
<td>Williams Production Company</td>
</tr>
<tr>
<td>Fortuna Energy Inc.</td>
<td>XTO Energy, Inc.</td>
</tr>
<tr>
<td>J-W Operating Company</td>
<td></td>
</tr>
</tbody>
</table>

*Source: PA Marcellus Shale Coalition*
Appendix D

PA Legislative Severance Tax Proposals

<table>
<thead>
<tr>
<th>HB 1489 Rep. George (or SB 905 Sen. Musto)</th>
<th>SB 997</th>
</tr>
</thead>
<tbody>
<tr>
<td>60% to General Fund</td>
<td>50% to General Fund</td>
</tr>
<tr>
<td>15% to Environmental Stewardship Fund</td>
<td>22% to Environmental Stewardship Fund</td>
</tr>
<tr>
<td>5% to the Liquid Fuels Tax Fund</td>
<td>2% to Commonwealth Financing Authority</td>
</tr>
<tr>
<td>4.5% to Municipalities where natural gas is severed</td>
<td>3% to PA Fish and Boat Commission</td>
</tr>
<tr>
<td>4.5% to counties where natural gas has been severed</td>
<td>3% to PA Game Commission</td>
</tr>
<tr>
<td>4% to Hazardous Sites Cleanup Fund</td>
<td></td>
</tr>
<tr>
<td>3% to Dept. Public Welfare (LIHEAP)</td>
<td></td>
</tr>
<tr>
<td>2% to PA Game Commission</td>
<td></td>
</tr>
<tr>
<td>2% to PA Fish and Boat Commission</td>
<td></td>
</tr>
</tbody>
</table>

This chart compares the two main legislative severance tax proposals in terms of revenue distribution.

Source: Pennsylvania Legislative Services
## Appendix E

Governor Rendell’s Severance Tax Proposal Revenue Breakdown

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>State Revenue in Millions of Dollars</th>
<th>Local Revenue Share in Millions of Dollars</th>
<th>Total State and Local Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>$160.7 <strong>Held in Stimulus Transition Reserve Fund</strong></td>
<td>$17.9</td>
<td>$178.6</td>
</tr>
<tr>
<td>2011-12</td>
<td>$260.0</td>
<td>$28.9</td>
<td>$288.9</td>
</tr>
<tr>
<td>2012-13</td>
<td>$320.0</td>
<td>$35.6</td>
<td>$355.6</td>
</tr>
<tr>
<td>2013-14</td>
<td>$396.2</td>
<td>$44.0</td>
<td>$440.2</td>
</tr>
<tr>
<td>2014-15</td>
<td>$475.6</td>
<td>$52.8</td>
<td>$528.4</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$1.6 billion</strong></td>
<td><strong>$180 million</strong></td>
<td><strong>$1.8 billion</strong></td>
</tr>
</tbody>
</table>

Source: Office of the Governor

This chart shows Governor Rendell’s proposed severance tax revenue distribution over five years.

---

According to PR Newswire, The Governor said all the revenues would be put into a special Stimulus Transition Reserve Fund that could not be touched until July 2011. This money would help cover the estimated $2.3 billion budget gap that will result from the loss in federal stimulus dollars.
Appendix F:

"Governor Rendell has proposed that energy companies drilling for natural gas in Pennsylvania's Marcellus Shale pay a new tax based on the value of the energy they produce. Do you support or oppose this new tax?"

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Total</th>
<th>Republican</th>
<th>Democrat</th>
<th>Independent</th>
<th>Men</th>
<th>Women</th>
<th>Union Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support</td>
<td>49%</td>
<td>38%</td>
<td>60%</td>
<td>52%</td>
<td>53%</td>
<td>45%</td>
<td>57%</td>
</tr>
<tr>
<td>Oppose</td>
<td>41</td>
<td>51</td>
<td>29</td>
<td>40</td>
<td>40</td>
<td>41</td>
<td>34</td>
</tr>
<tr>
<td>Don't Know/NA</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>6</td>
<td>14</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Allegheny</th>
<th>Philly</th>
<th>Northeast</th>
<th>Southeast</th>
<th>Northwest</th>
<th>Southwest</th>
<th>Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support</td>
<td>50%</td>
<td>54%</td>
<td>45%</td>
<td>58%</td>
<td>33%</td>
<td>42%</td>
<td>50%</td>
</tr>
<tr>
<td>Oppose</td>
<td>42</td>
<td>32</td>
<td>44</td>
<td>31</td>
<td>56</td>
<td>49</td>
<td>41</td>
</tr>
<tr>
<td>Don't Know/NA</td>
<td>7</td>
<td>14</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

*Source: March 2010 Quinnipiac University Poll*
Appendix G

Fossil Fuel Emissions Levels-
Pounds per Billion Btu of Energy Input

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Natural Gas</th>
<th>Oil</th>
<th>Coal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide</td>
<td>117,000</td>
<td>164,000</td>
<td>208,000</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>40</td>
<td>33</td>
<td>208</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>92</td>
<td>448</td>
<td>457</td>
</tr>
<tr>
<td>Sulfur Dioxide²</td>
<td>1</td>
<td>1,122</td>
<td>2,591</td>
</tr>
<tr>
<td>Particulates</td>
<td>7</td>
<td>84</td>
<td>2,744</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.000</td>
<td>0.007</td>
<td>0.016</td>
</tr>
</tbody>
</table>

Source: American Clean Skies Foundation & Energy Information Administration

² The decrease in Sulfur Dioxide offered by use of natural gas is significantly important in terms of human health impacts. According to the Center for Disease Control, exposure to high levels of Sulfur Dioxide can be “life threatening.”
Appendix H

The following information was taken directly from Dan Onorato’s campaign website. It outlines his policies related to Marcellus Shale extraction.

Pursue the Marcellus shale’s economic growth and environmental stewardship. The Marcellus shale can be a powerful economic engine for the Commonwealth – creating hundreds of thousands of jobs, providing affordable clean energy and spurring new business creation to support the industry. But it must be done right or we will lose out on this once-in-a-lifetime opportunity. Onorato knows that businesses need certainty in the tax structure and regulatory environment to maximize their growth, and that the public demands confidence that the environment – especially water – will be protected. To achieve these goals, Onorato supports:

- **An Impact Tax on the natural gas that companies extract, which will bring Pennsylvania in line with other gas-producing states.** Pennsylvania should consult with industry, environmental and local government leaders to establish a severance tax that:
  - is carefully structured to encourage capital investment and employment of Pennsylvania workers;
  - is competitive with other states; and
  - provides incentives for the local use of natural gas – such as by allowing gas companies to pay a portion of their tax bill through “resource-in-lieu of-payment” agreements with local governments.

- **Prudent investment of the revenues from this Impact Tax.** Onorato’s priority for the revenue from the severance tax is:
  - to reverse the cuts to the Department of Environmental Protection’s operations and to ensure that the agency has adequate resources to effectively and efficiently regulate Marcellus shale development;
  - to provide resources to the local communities that are impacted by Marcellus shale extraction, including to address the wear-and-tear on local infrastructure; and
  - to fund Growing Greener 3 – an extension of the state’s essential environmental conservation and preservation programs.

- **Ensure appropriate permitting, monitoring and enforcement.** Onorato believes that state agencies should provide timely responses to permitting and other requests from businesses, and he will ensure that they have adequate resources to do the job well and within an appropriate timeframe.
• **Balance state-level and local decision-making.** Onorato will respect local communities’ rights to make zoning decisions, while having uniform statewide regulations and implementation with regard to the industry’s operations.

• **Address water levels and contamination.** Onorato recognizes that significant regulations are already in place and that modernization is needed. At the same time, he will ensure that Pennsylvania’s regulations adequately address the level and quality of water, as well as other natural resources. Onorato will work with all stakeholders to develop appropriate laws and regulations where needed. At its best, this can spur innovation and the invention of new technologies that improve profitability and the environment, including maximizing the recycling of water.

• **Promote transparency and accountability.** Onorato will ensure that the public has easily and electronically accessible information on chemical use, water withdrawal and wastewater.

• **Develop a Marcellus Shale Workforce Development Blueprint.** Onorato will convene industry, labor, environmental and community leaders to ensure that Pennsylvanians have access to and are well-positioned for job creation that results from the Marcellus shale. Onorato will ensure that workforce development funds and other resources are deployed to implement the Blueprint and that community colleges and other education and training providers are engaged in this work.

• **Use natural gas production to create and retain Pennsylvania jobs.** Onorato will launch a strategic initiative to use reliable and affordable access to natural gas as an economic development advantage. Plastic, chemicals and a range of other industries rely heavily on natural gas and have found Pennsylvania a less attractive place to do business as other states and countries have offered plentiful natural gas. Onorato will use available natural gas infrastructure to attract businesses to shovel-ready sites and to keep existing companies in-state.
Appendix I

Below is a press release that explains Joe Hoeffel’s position on severance tax policy.

For Immediate Release:
March 4, 2010

Hoeffel Calls for Responsible Drilling: Double Proposed Revenue from Severance Taxes & Moratorium on new Marcellus Shale Permits

Joe Hoeffel, Democratic candidate for governor of Pennsylvania, announced today his position on the Marcellus Shale

“As governor, I will seek a severance tax which will double the projected revenue from Governor Rendell’s currently proposed tax to provide Pennsylvania with $300 million in its first year,” said Hoeffel.

"The extraction of Marcellus Shale natural gas represents an entirely new economy and has the potential to create thousands of jobs. But drilling in the Shale also opens up new environmental concerns with extremely serious consequences for all Pennsylvanians."

"Our commonwealth is getting a lousy deal," continued Hoeffel. "The gas will be there for a long time - We need to get it right. We must cover the immediate costs of the industry and make sure Pennsylvania communities thrive long after all the natural gas has been mined. The silver lining is that we can learn from other states and create a fair tax with maximum benefits."

"The tax must be used wisely. A severance tax won't last forever: once the gas is gone, the tax revenue ends. Pennsylvania must devote some of the severance tax money to protecting the towns experiencing a boom economy during the gas rush from experiencing a bust economy later."

Hoeffel will dedicate portions of the severance tax to fund:

* DEP’s inspection and enforcement operations;
* new wastewater treatment facilities;
* the renewal of Growing Greener;
* communities affected by drilling in their efforts to meet the infrastructure and housing costs the industry has brought them; AND
* our community colleges, expanding programs and educational sites to build a strong, adaptable workforce throughout the state.
Bolstering our community colleges will help prepare Pennsylvanians for thousands of skilled jobs in the natural gas industry and environmental protection. Community colleges will also prepare our workforce for jobs in green energy, manufacturing, infrastructure, technology, health care, and other fields which will long outlast the Marcellus Shale natural gas.

"Because our regulations are not adequately protecting our drinking water, it's time to slow down and do the right things in the right order," said Hoeffel. "That's why I support a moratorium on issuing new drilling permits until new wastewater regulations are in place and enforceable."

Hoeffel also supports a moratorium on the leasing of additional state lands for drilling until a comprehensive study of all state land is performed to prioritize which land is most critical to protect.

"With environmental regulations that protect our water, a severance tax which allows our towns to adapt to their new industry and a plan in place to protect our state land, Pennsylvania can take pride in its natural gas industry. Landowners, towns, and the commonwealth will prosper. Many Pennsylvanians will be employed working on gas wells and in treatment facilities. And most importantly, Pennsylvania will be prepared for the day the drilling ends. If we prepare, the boom won't turn into a bust."

"The Marcellus Shale needs a traffic cop." concluded Hoeffel. "It's time for Tom Corbett and my opponents in the Democratic Primary to join me in calling for responsible drilling, safe drinking water and overall environmental protection."

To learn more about Joe Hoeffel's campaign for governor, go to: www.joehoeffel2010.com
Works Cited


<http://www.dos.state.pa.us/campaignfinance/site/default.asp>.


"PA DCNR Announces Balanced, Responsible Plan to Lease Additional State Forest."

*PR Newswire: press release distribution, targeting, monitoring and marketing.*


Rathbun, Tom. Phone interview. 29 Oct. 2009.


