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## Impacts of Gas Drilling in Wetzel County

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Wetzel County is a rural county located in north central West Virginia. It is a relatively small and older county, with a population of roughly 16,000, with over 16 percent of the population over the age of 65. There is little racial diversity in Wetzel County, with the county's racial makeup 99 percent white. Wetzel County is a relatively poor. Its median household income of \$37,673 is below the state's median income of \$39,550, while its poverty rate of 15.6% is below West Virginia's rate of 17.5%.<sup>1</sup>

### Introductions

Wetzel County has been at the center of West Virginia's recent oil and natural gas development. Wetzel County had 997 natural gas producing wells in 2012, accounting for 12 percent of all natural gas production in the state.<sup>2</sup> Of those wells, 87 were drilled into the Marcellus Shale, producing 17% of West Virginia's shale gas.

To date, most of Wetzel County's drilling activity is occurring with "conventional" wells. Of the 916 active wells in Wetzel County in 2011, only 80 were unconventional wells, either vertical wells drilled into a shale formation or horizontal wells.<sup>3</sup>

While total natural gas production has increased by 237 percent in West Virginia since 2000, it has increased by more than 6,000 percent in Wetzel County. Wetzel County's natural gas production grew from a little over 900,000 mcf in 2000 to more than 63 million mcf in 2012, with much of the increase occurring in the past four years (**Figure 1**). Since 2000, Wetzel County has grown from the state's 29th biggest gas producing county, to its 2nd.

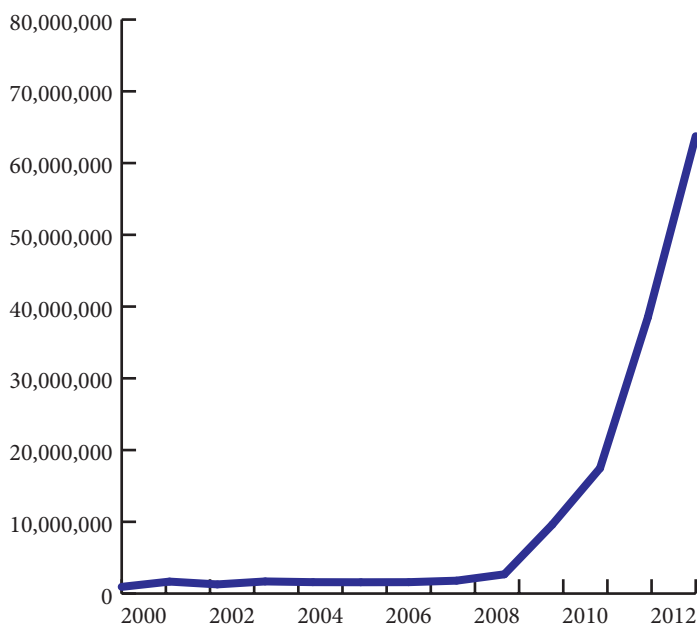
This report is a part of a larger effort to document human and social service impacts and costs associated with increased drilling. This Wetzel County case study is one performed by the Marcellus Shale Research Collaborative. It takes an in-depth look at the social costs of gas drilling on small, rural communities and is meant to help local government officials and community members understand what to expect if they anticipate a similar boom in natural gas industry development. Its main findings include:

- *A small number of landowners own the land where a significant amount of the drilling activity is taking place.* Over a quarter of the active oil and gas wells permitted since 2000 are on land owned by a handful of landowners. This concentration of landownership could be reducing the economic impact of gas royalty payments. Also, it is common for the mineral rights to have been severed from the land rights decades to hundreds of years ago.
- *Wetzel County has outperformed the state in job growth in recent years.* While there was some increase in economic activity due to the increase in the oil and gas industry activity, there are complaints that most of the drilling jobs have gone to out-of-state workers. Despite its growth, the oil and gas industry accounts for less than two percent of all jobs in Wetzel County, and the county's unemployment rate remains high.

- *Wetzel County has not experienced a boom in population growth with the drilling activity.* Wetzel County’s population was in decline before the gas boom, and has continued to fall, although at a slower rate. With the lack of population growth, Wetzel County has also not seen the increase in permanent housing costs associated with drilling booms in other parts of the country, although there are reports of higher rents and full hotels.
- *Traffic has increased due to gas-related truck traffic on the roads, increasing costs and creating safety concerns.* Traffic and roads were the primary concern of local officials. Heavy truck permits, maintenance costs, and vehicle accidents have all increased in Wetzel County with the increase in drilling activity.
- *Wetzel County has not experienced any increase in crime or social service costs.* Wetzel County’s crime rate has remained low, with little impact other than traffic violations attributed to drilling activity.
- *The drilling activity has led to a boom in local government revenue.* Wetzel County’s total property tax revenue has nearly tripled since 2005, and there were increases in the county’s share of severance tax revenue, as well as local hotel occupancy tax revenue.

Figure 1

### Natural Gas Production, Wetzel County 2000-2012 (mcf)



Source: West Virginia Geological and Economic Survey.

### The Timeline of Drilling in Wetzel County

In West Virginia as a whole, unconventional drilling began to increase in 2004 and 2005, earlier than in Pennsylvania and Ohio, and peaked in 2008.<sup>4</sup> In Wetzel County, however, horizontal drilling activity began later, in 2007 and 2008, and only peaked (based on “permits”) in 2012 and 2013 (**Table 1**). Drilling itself may have fallen off in 2013 based on the drop in the number of operating rigs. This timeline means that the impacts of drilling are also recent. A further complication is that some employment, human service, and infrastructure impacts result from pipeline construction, which can often lag behind the first well drilling. These considerations mean that this report may not be the final word on the human service, infrastructure, and other impacts of fracking. Additional data collected over the next several years should allow a more complete assessment.

Table 1

**The Timeline of Horizontal Drilling in Wetzel County**

	Unconventional Well Permits	Spud (drilling started)	Average Operating Drill Rigs
2007	8	6	
2008	31	13	
2009	31	34	
2010	36	33	
2011	67	44	2.0
2012	87	34*	5.5
2013	93	NA	3.7

\*Spud data is only reported when wells are completed.

Source: Preliminary estimates by the Multi-state Shale Collaborative based on the West Virginia Geological and Economic Survey and Baker-Hughes data.

**Leases, Royalties and Bonuses**

When drilling activity began to take off in Wetzel County, local officials were overrun by abstractors researching mineral rights. Wetzel County's courthouse was unable to handle all of the traffic and activity, and the abstractors were described as disruptive. County officials were forced to set up strict guidelines governing access to the county records, and an aggressive preservation program was started to prevent damage to the paper records. Today, activity has slowed down at the courthouse, and some records have been converted to an electronic format.<sup>5</sup>

Drilling companies offer leases, bonus payments, and an annual royalty in exchange for the right to drill for natural gas and other resources. The value of the leases vary. In nearby Ohio County, Chesapeake Energy paid \$3,600 per acre to the Ohio County Commission for drilling rights in various parts of the county, while it outright bought 22,000 acres of land in Wetzel County for \$22 million, or \$1,000 per acre.<sup>6</sup> Other lease values have been reported at \$750 to \$2,900 per acre in neighboring counties.<sup>7</sup>

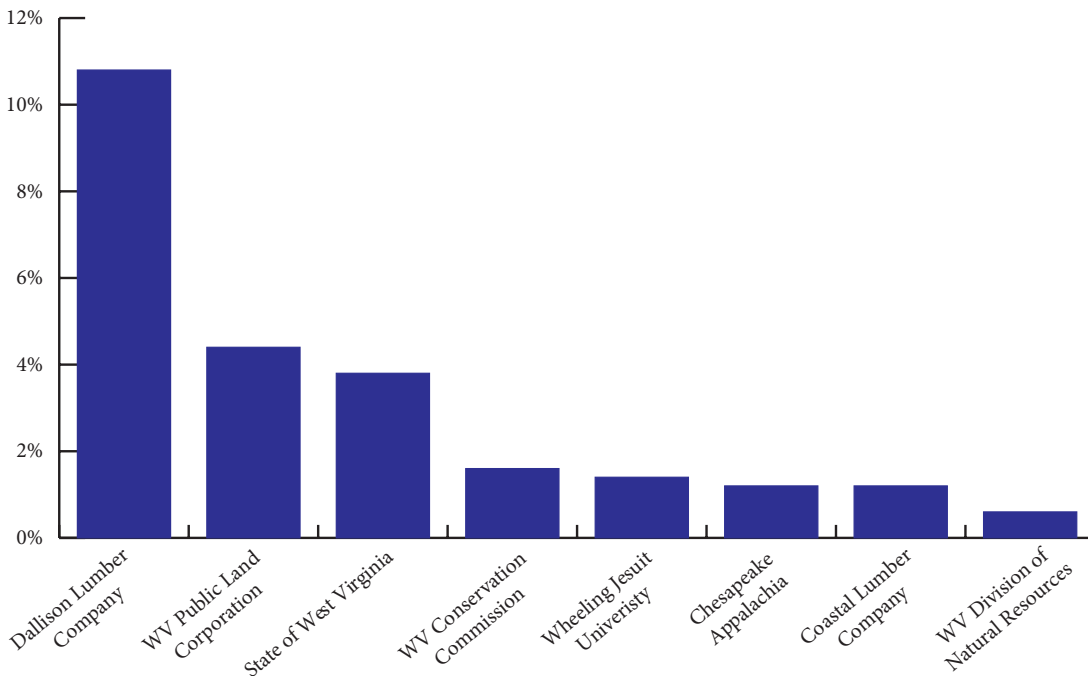
The natural gas produced in the Marcellus Shale region is considered either dry or wet. Dry gas consists primarily of methane, while wet gas may also contain "natural gas liquids," including ethane, butane, propane, and pentane. The natural gas liquids need to be separated from the methane, but since the liquids have value of their own, wet natural gas is more valuable than dry natural gas. Most of Wetzel County lies in the Marcellus Shale region where wet gas can be found.<sup>8</sup>

Royalty rates, which are based on production value, range from the state's statutory minimum of 12.5 percent to 19 percent.<sup>9</sup> The value of these payments, however, varies greatly with production levels and the price of natural gas. For example, a single well in Wetzel County produced 1.05 billion cubic feet of natural gas and 349 barrels of oil in 2011, while a well in neighboring Marshall County, owned by the same company, produced only 310 million cubic feet of gas, but 1,137 barrels of oil. Drilling in wet gas areas produces much more value than in dry gas regions. According to Chesapeake Energy, a typical dry gas well earns about \$13,000 in revenue per day, while a wet well can earn up to \$38,000 in revenue per day.<sup>10</sup> While initial revenue is high, average shale wells typically experience a rapid decline in production, usually of 40 percent after the first year, 35 percent after the second year, and 30 percent after the third year. This rapid decline, along with high production costs, can result in diminishing royalties for landowners.

The overall economic impact of these lease and royalty payments from both conventional and unconventional wells is unclear in Wetzel County, as well as statewide, due to a lack of sufficient data.<sup>11</sup> A small number of landowners, however,

own the land in Wetzel County where a significant amount of drilling has taken place. More than 10 percent of all of the active oil and gas wells permitted since 2000 are on land owned by one company, Dallison Lumber. Another 10 percent are on land owned by various state agencies. Overall, more than 25 percent are on land controlled by two lumber companies, the state of West Virginia, a private university, and an energy company (**Figure 2**).

Figure 2  
Major Land Owners for Active Oil and Gas Wells, Wetzel County, 2000-2012



Source: West Virginia Department of Environmental Protection, Office of Oil and Gas.

In the United States, land ownership of mineral rights can be transferred to another owner separately from the rest of the land rights. In West Virginia, mineral rights were frequently severed from surface rights decades to hundreds of years ago. This can exclude surface owners from the economic gains of lease and royalty payments.<sup>12</sup>

A survey of West Virginia landowners who own property with at least one completed well found that perceptions of the impact of drilling and leasing was split between those who owned both the land and the mineral rights and those who only owned the land. Of landowners who own the surface land and the mineral rights, 64.6 percent reported that they were overall satisfied with the leasing and drilling on their property. For landowners who only owned the surface land, and not the mineral rights, only 28.9 percent responded that they were satisfied overall.<sup>13</sup>

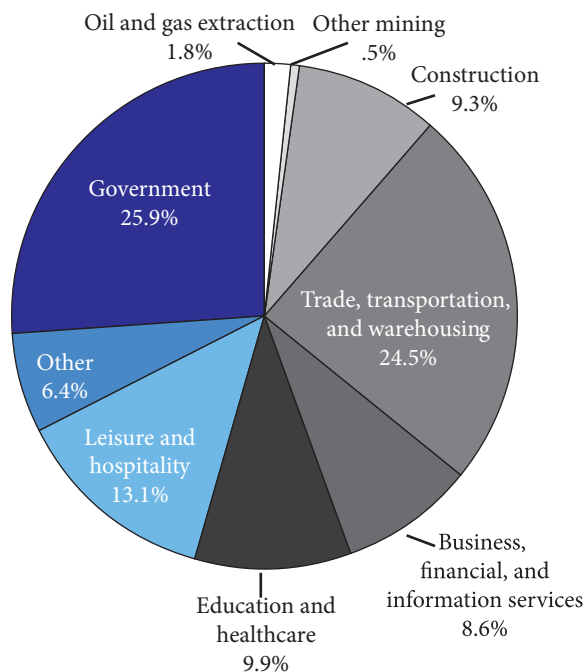
In the survey, those with split mineral and land rights reported twice as many problems than those with ownership of both. The most common problem cited by landowners with split rights was land-surface damages, while the most common for those with mineral and land rights was not enough money included in the lease. Those without both land and mineral rights were also more likely to respond that their quality of life had declined and their stress levels had increased since drilling and leasing began.<sup>14</sup>

Other problems that the survey found among landowners included the decline of property values, lack of cooperation with the drilling company, and road damage.<sup>15</sup>

## Economic Activity and Jobs

In 2012 there were roughly 4,600 jobs in Wetzel County. The public sector was the county's largest employer, accounting for nearly 26 percent of its jobs. The largest private industry was the retail trade sector, accounting for nearly 22.7 percent of the county's jobs. Less than two percent of the jobs in Wetzel County were in the oil and gas extraction industry (**Figure 3**).

Figure 3  
Employment by Industry, Wetzel County, 2012



Source: Workforce West Virginia.

Employment has been growing in Wetzel County in recent years. After lagging behind the rest of the state in job growth in the past decade, Wetzel County has outperformed the state in the past three years (**Figure 4**). Overall, total nonfarm employment has increased by 470 jobs between 2009 and 2012, while employment in the mining industry has increased from 28 jobs to 107 jobs. For 2012, 84 of the 107 mining industry jobs were in the oil and gas extraction sector.

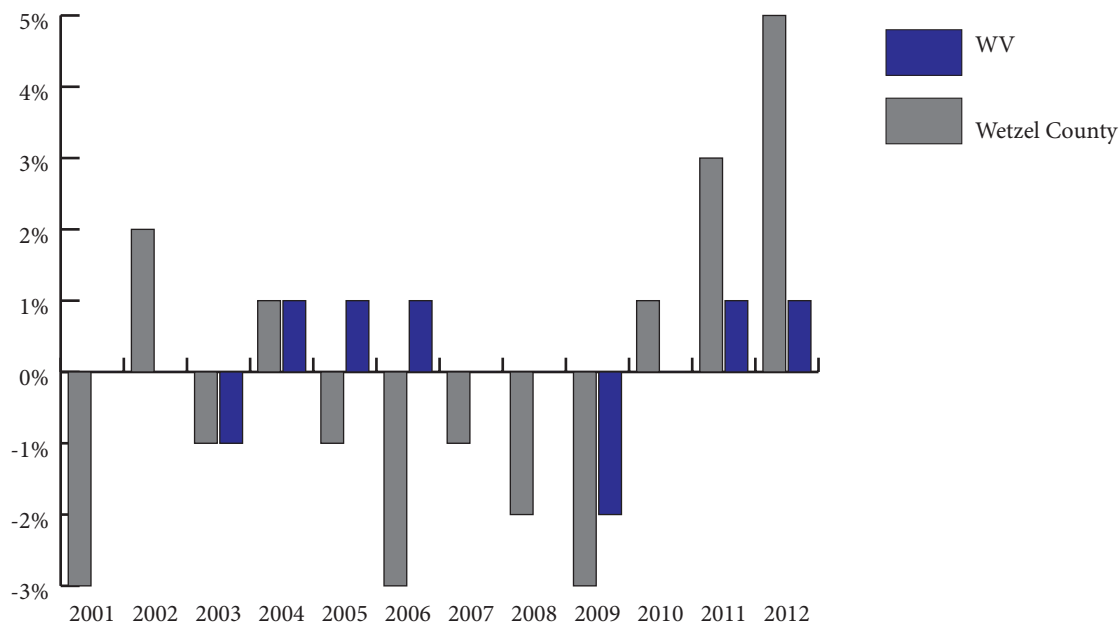
Wetzel County has had a consistently higher unemployment rate than the state average although the gap has narrowed. In 2012, Wetzel County's unemployment rate was 10.4 percent compared to the state average of 7.3 percent (**Figure 5**).

According to interviews with local officials, there has been some increase in economic activity due to the increase in the oil and gas industry activity. Small local businesses, like gas stations, small construction firms, and motels have seen an increase in business. Local contractors, restaurants and grocery stores have seen increases in employment. Interviewees noted however, that there have been no major employment increases.

According to the interviewees, many of the oil and gas jobs are going to out-of-state workers from areas of the country where the industry is more developed, and the workers more experienced. This is consistent with the experiences of past drilling booms in the western United States. A study in Sublette County, Wyoming found that 60 percent of the oil and gas workers were non local.<sup>16</sup> These "transient workers" are often based out of state and are transported onto the work site for a period of one or two weeks before returning to their home for an equal length of time. These workers typically do not maintain permanent residence. This has kept the employment and economic gains limited to service industries, and there has yet to be a permanent increase in population or workforce due to drilling activity.

Figure 4

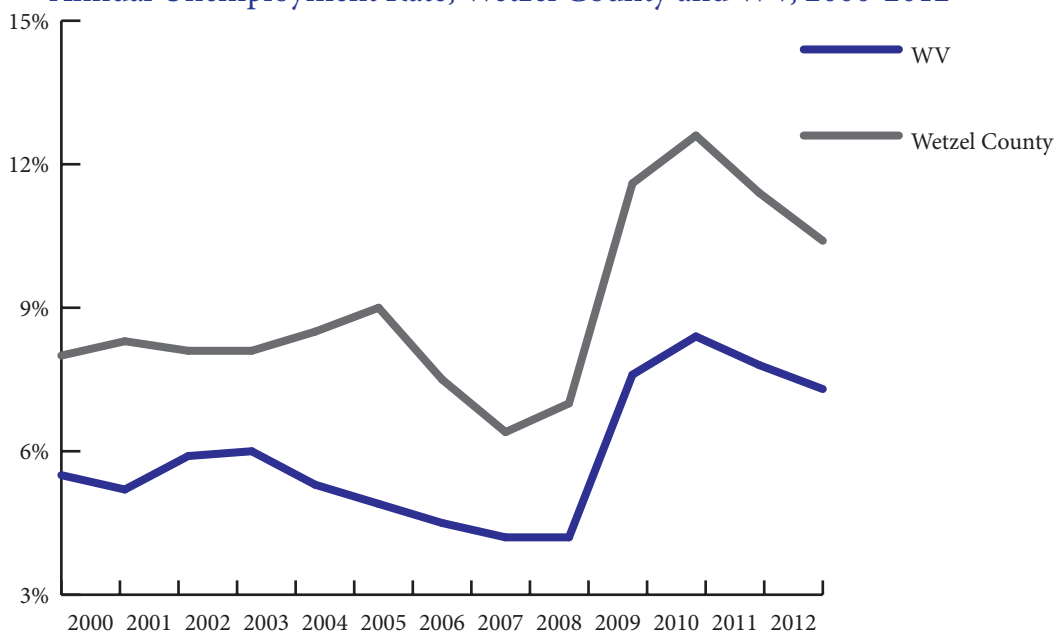
### Average Annual Nonfarm Employment Growth, Wetzel County and WV, 2001-2012



Source: Workforce West Virginia.

Figure 5

### Annual Unemployment Rate, Wetzel County and WV, 2000-2012



Source: Workforce West Virginia.

Local community colleges have begun to offer training programs for local workers in the oil and gas industry. Workers can enroll in a program through West Virginia Northern Community College to receive an International Association of Drilling Contractors rig pass, which allows for entry-level employment at a drill site.<sup>17</sup> When asked about the lack of local workers, gas companies claim that it is difficult to find local workers who can pass a drug test.<sup>18</sup> This claim is not unique to Wetzel County as similar claims have been made by gas companies in Pennsylvania. Research to corroborate the claims, however, is not available.

Few of the out-of-state workers bringing their families and children to Wetzel County. According to an interview with an elementary school teacher, Paden City Elementary has seen only six new students, three of whom are from McDowell County, West Virginia. Enrollment in Wetzel County schools has declined every year since 2001.<sup>19</sup>

Long-term, county officials are hopeful for downstream operations to be located in the area, bringing more jobs and economic development. One company is developing plans to build a cracker facility in Marshall County, and there is hope for other plastics and petrochemical industries to locate there.<sup>20</sup> Interviewees also believe that natural gas production may lead to power plants switching to natural gas, in turn leading to lower energy costs.

Population and Housing

Natural resource booms are associated with increases in population, and in turn housing prices and rents.<sup>21</sup> The increase in population that accompanied the drilling boom in Sublette County, Wyoming boosted housing prices and rents relative to the rest of the state.<sup>22</sup> Housing shortages were also reported in Sweetwater County Wyoming, as well as counties in Colorado in conjunction with their increase in natural resource extraction.<sup>23</sup>

Wetzel County experienced a decline in population before heavy drilling activity began. Between 1998 and 2005, its population fell by 4.5 percent, from 17,230 to 16,422. As natural gas drilling activity began to take off, its population continued to fall, but a slower pace (**Table 1**). In comparison, rural West Virginia counties with no drilling activity have seen an increase in population since 2005 of 2.6%. The drilling experience in Wetzel County has not resulted in a rapid growth in population, but instead has slowed the loss of the area’s already declining population.

Table 1  
Wetzel County and Rural West Virginia Population

	1998	2005	2012	Percent Change 1998-200	Percent Change 2005-2012
Rural WV Counties*	70,668	75,125	77,072	6.3%	2.6%
Wetzel County	17,909	17,101	16,422	-4.5%	-4.0%

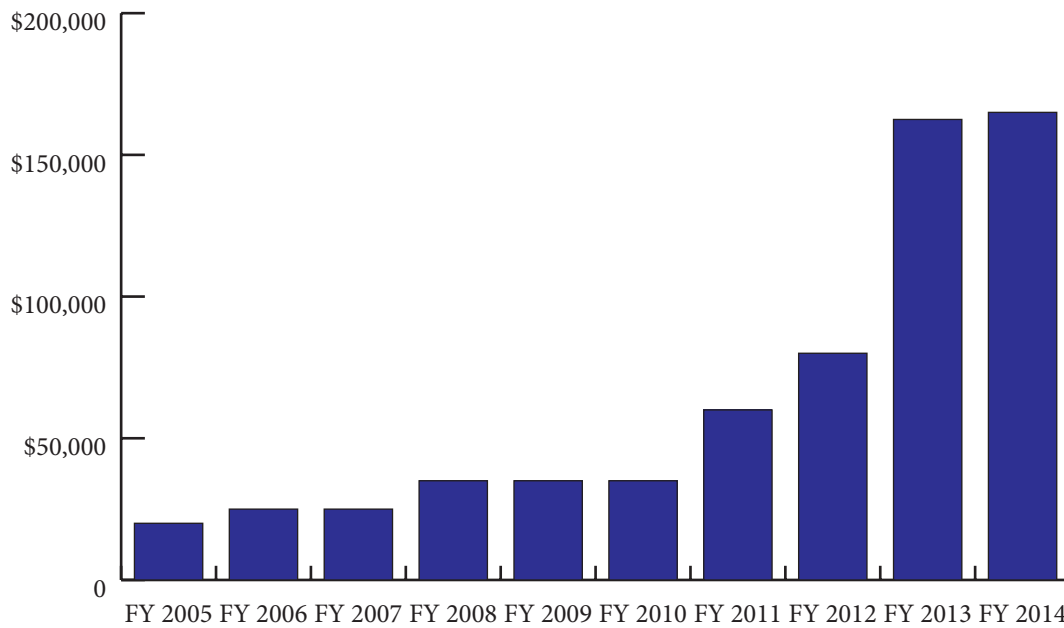
Source: \*The data presented here is for rural West Virginia counties that had zero natural gas wells drilled between 2002 and 2011.  
Source: Multi-State Shale Collaborative analysis based on Bureau of Economic Analysis data.

Despite the lack of population growth, the influx of out-of-state workers into Wetzel County has created an increase in demand for temporary housing. Locals report that hotels and campgrounds are constantly full, and rents and camping fees are increasing.

One sign of the increase in demand for temporary housing is in hotel occupancy tax revenue. The municipality of New Martinsville in Wetzel County levies a tax on hotel room occupancy within its city limits. The revenue from the city’s tax has increased by more than 700 percent since 2005, growing along with drilling activity, with most of the growth occurring since 2011 (**Figure 6**).

The increase in demand for rental property has not translated into the permanent housing market. According to the Wetzel County Assessor, there was no increase in the real estate transfer tax, indicating a lack of home sales, and while assessments for business property have increased, assessed value of residential property has declined.

Figure 6  
Hotel Occupancy Tax Revenue, New Martinsville



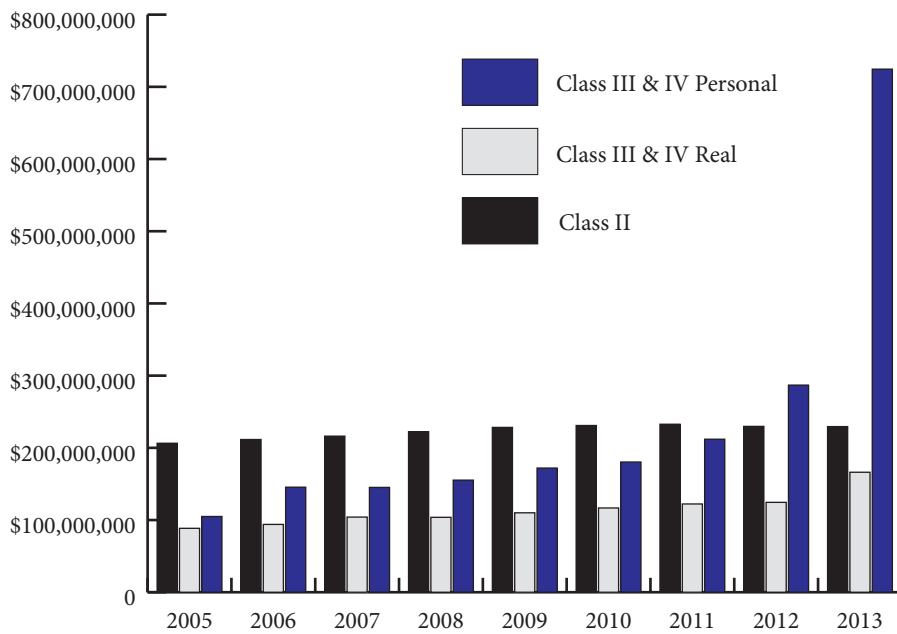
Source: West Virginia Auditor's Office.

The assessed value for business personal property, which would include drilling rigs, equipment, and pipelines, as well as the value of the production of gas,<sup>24</sup> has skyrocketed in Wetzel County. Since 2005, the assessed value for Class III and IV personal property, which would include business personal property and personal vehicles, has grown by nearly 600 percent. Much of that growth has come in the past year, as assessed values for Class II and IV personal property tripled from 2012 to 2013.

There has been much slower growth in the assessed values of other type of property unrelated to natural gas production. Class III and IV real property, which mainly includes business real estate, has increased by 88 percent since 2005. The assessed values of residential property have grown even more slowly. Class II property, or residential property, has increased by only 11 percent since 2005, and actually declined between 2012 and 2013 (**Figure 7**).



Figure 7  
Assessed Property Values, Wetzel County



Source: West Virginia Tax Department.

The slow growth of residential property values has been attributed by some to drilling activity. A survey of West Virginia landowners with at least one completed well drilled into a shale formation on their property found that 43.4 percent of the respondents reported a decline in property values since drilling began, and 46.7 percent reported land surface damages due to drilling.<sup>25</sup> A decline in property values due to drilling activity has been found in other areas. A study in Washington County, Pennsylvania found that property values were negatively impacted by proximity to shale gas activity, but the negative effect was often short term and limited to areas close to the actual drilling activity.<sup>26</sup>

## Traffic and Roads

Many states with booming natural gas and oil extraction activities have seen a significant impact on roads, particularly in rural counties. In western states, the development of the natural gas industry was accompanied by large increases in heavy truck traffic and vehicle accidents.<sup>27</sup> Much of the activity occurred on rural roads not designed to carry large vehicles, resulting in significant road damage. Many reports indicate that local officials and community members regard road damage as one of their biggest concerns regarding energy development in their area.

The cost of the road damage resulting from energy development in other states has been significant. Notably, the Texas Department of Transportation estimated that the cost to renovate state-maintained rural routes to accommodate drilling traffic would cost \$1 billion per year, while fixing county-maintained roads would cost another \$1 billion. While revenues have increased due to drilling activity, the costs of the damage have outpaced the revenue. For example, in Arkansas, the Highway and Transportation Department found that the damage caused to state highways by drilling-related traffic will cost \$218.7 million to repair, but the Department has only received one-seventh of that amount from the increase in severance tax revenue.<sup>28</sup>

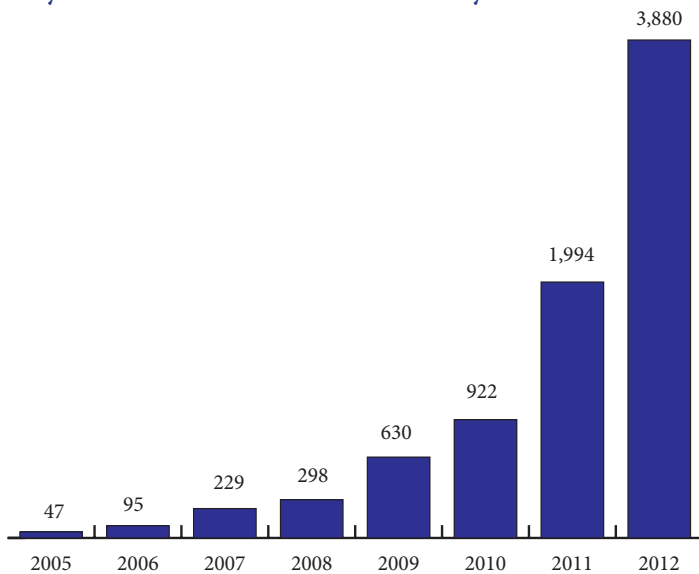
Interviews with Wetzel County officials confirm the traffic and road issues are the primary concern regarding the increase in industry activity. County commissioners cite road safety as their biggest concern, and that most citizen complaints are regarding traffic and hazardous driving. According to the commissioners, many of the subcontractors and trucking

companies violate traffic laws, including speeding and driving left-of-center. The sheriff's office also reports an increase in traffic citations for those violations.

According to the Department of Transportation division in Wetzel County, trucks do a great deal of damage to secondary roads that were not designed for heavy truck traffic. While the drilling companies often resurface and repair the roads they damage, they do so after they leave, and the roads are in bad condition while the drilling is taking place. The Department of Transportation also experienced an increase in the number of court claims relating to county road conditions.

West Virginia Department of Transportation data show some of the impact in Wetzel County. The number of heavy truck permits issued in Wetzel County has dramatically increased, from 45 in 2005 to, 3,880 in 2012 (**Figure 8**). Along with the increase in heavy truck permits, repair and maintenance costs have also grown. After staying flat for most of the decade, state and local repair and maintenance costs increased by 36 percent between 2007 and 2012 (**Figure 9**).

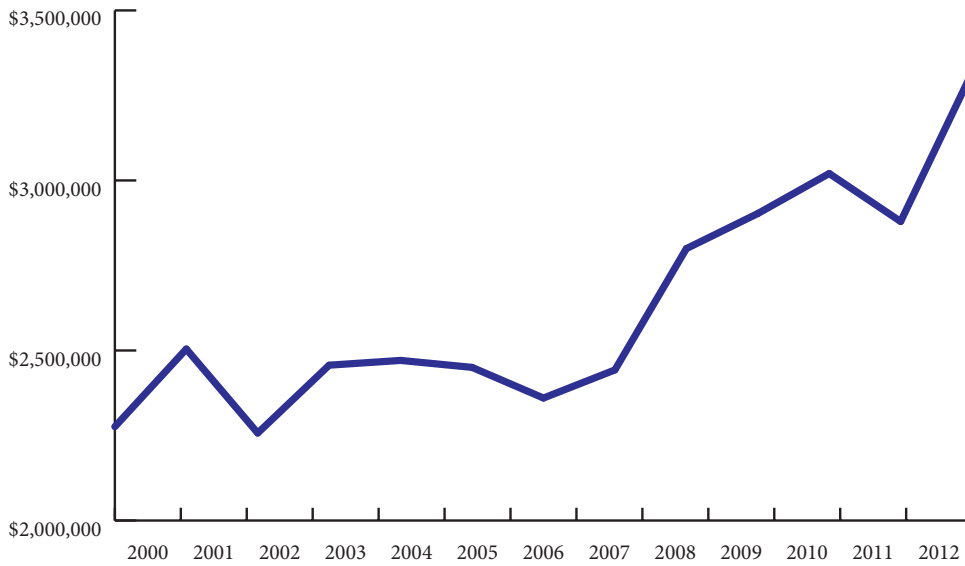
Figure 8  
Heavy Truck Permits, Wetzel County



Source: West Virginia Department of Transportation.

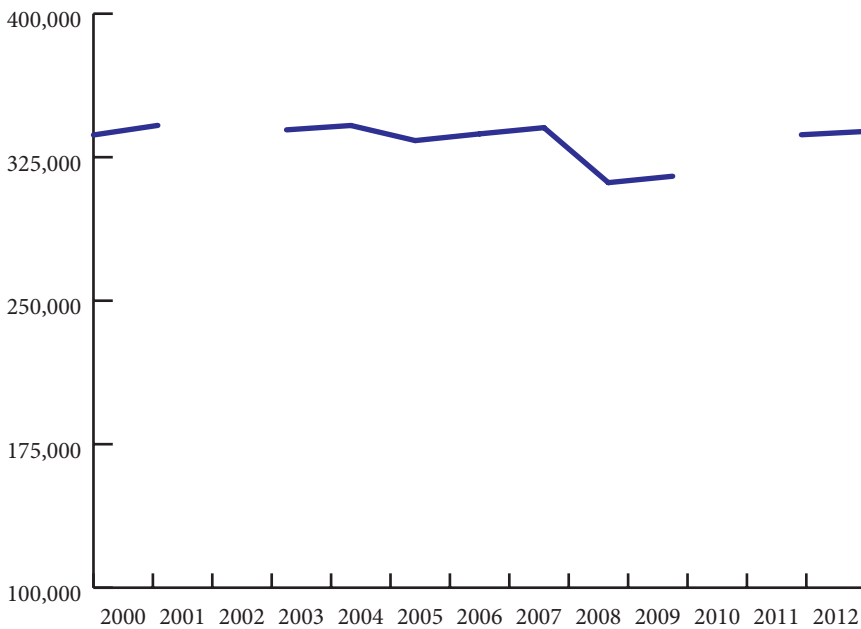
While truck permits and maintenance costs have gone up, overall vehicle miles driven in Wetzel County have remained relatively stable. Vehicle miles driven in 2012 totaled 338,470,000 miles, slightly above the annual average since 2000 of 333,850,000 miles (**Figure 10**). Traffic accidents, however, are on the rise, after declining for much of the decade. Vehicle-related accidents increased from 194 in 2007 to 310 in 2012 (**Figure 11**). And after an initial spike of heavy truck citations, from only 11 between 2003 and 2008 to 75 in 2009 alone, citations have fallen back down (**Figure 12**).

Figure 9  
State and Local Repair Maintenance Costs, Wetzel County



Source: West Virginia Department of Transportation.

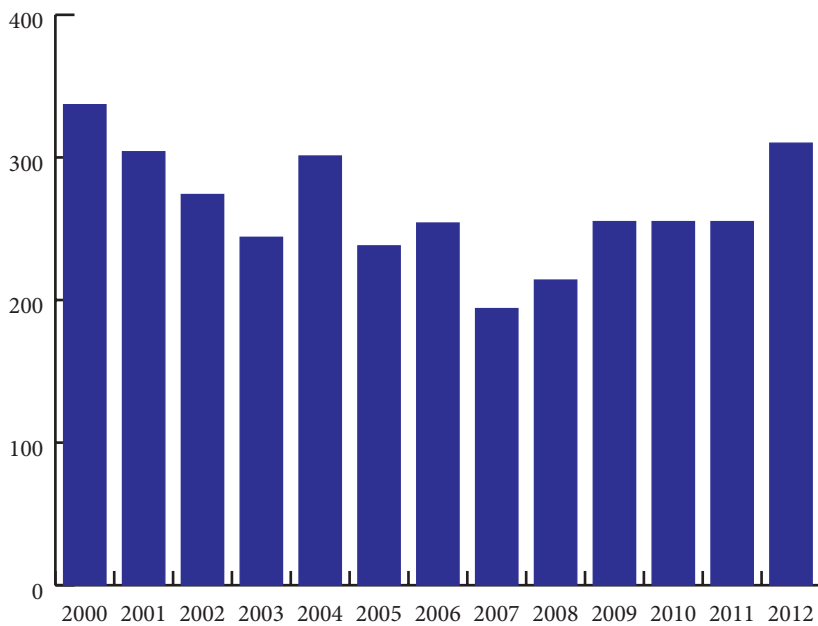
Figure 10  
Annual Vehicle Miles Driven, Wetzel County (thousands of miles)



Source: West Virginia Department of Transportation.

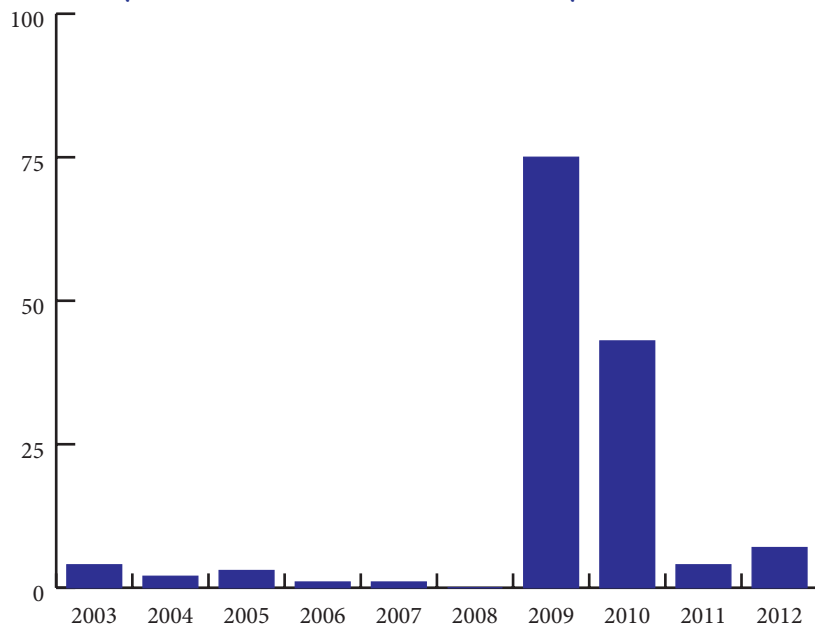
Note: Data unavailable for years 2002 and 2010.

Figure 11  
Vehicle-Related Accidents, Wetzel County



Source: West Virginia Department of Transportation.

Figure 12  
Heavy Truck Citations, Wetzel County



Source: West Virginia Department of Transportation.

## Health and Environment

Horizontal drilling and hydraulic fracturing techniques have raised many environmental and health concerns from citizens and the state agencies charged with regulating the practices in West Virginia. One area of concern is air quality at drilling sites located near homes or other buildings. Currently, drilling sites are prohibited within 625 feet of occupied dwellings in West Virginia. Recently the West Virginia Legislature ordered the Department of Environmental Protection to study the adequacy of the 625 ft. well location restriction with regard to the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells.<sup>29</sup>

The Department of Environmental Protection commissioned the study from researchers at the West Virginia University School of Public Health. The study collected data at seven drilling sites, including five in Wetzel County.<sup>30</sup>

The report found that there were detectable levels of dust and volatile organic compounds in the air at the present set-back distance of 625 feet from the center of the drilling pad. The compounds detected included benzene, which was found at concentrations above the Center for Disease Control's "minimum risk level for no health effects." The study noted that the levels of benzene found created a concern for potential health effects, and that a lengthier study would be necessary to determine any negative health effects.

While the Department of Environmental Protection concluded that no new rules were needed, it did recommend that the Legislature reconsider the center reference point.<sup>31</sup> The report showed that not all of the contaminants emanated from the center of the drilling pad and author of the study, Michael McCawley, claims that the current provision wrongly assumes that all emission come from that point.<sup>32</sup> Some of the highest pollutant levels were found at the current set-back point, and McCawley stated that levels of benzene at one site were high enough to recommend respiratory protection.<sup>33</sup>

Other environmental concerns raised by drilling activity include drilling waste disposal. The Wetzel County Landfill is legally limited to accept 9,999 tons of waste per month, but the Natural Gas Horizontal Well Control Act allows for landfills to accept an unlimited amount of Marcellus Shale waste. As a result, the Wetzel County Landfill accepted 25,000 tons of drill waste in one month in 2013, prompting concerns that the landfill would fill up at a greater rate than anticipated.<sup>34</sup>

In addition to the increase in the amount of waste brought to the landfill, the Wetzel County Solid Waste Authority has also raised concerns over the drilling waste's potential radioactivity and its effect on landfill workers. Currently West Virginia does not require radioactivity monitors at landfills, while they are required in Pennsylvania.<sup>35</sup>

## Crime and Emergency Services

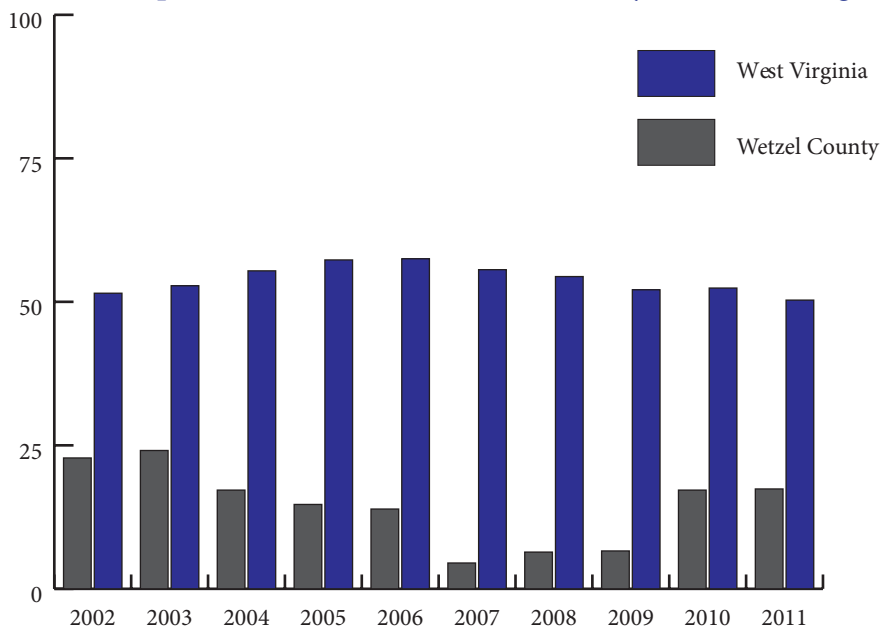
The increase in workforce and population associated with natural resource extraction booms can also lead to increases in crime and greater demand on emergency services. Research done in Sublette County, Wyoming found crime rates increased as energy extraction lead to population increases,<sup>36</sup> and further statistical analysis found that changes in reported crimes and crimes rate could be predicted by drilling activity.<sup>37</sup> Similar results were found for Sweetwater County, Wyoming<sup>38</sup> as well as counties in Texas and Arkansas.<sup>39</sup>

Overall, Wetzel County has a much lower crime rate than the state as a whole, with 17 crimes reported per 1,000 residents in 2011, compared to 50 crimes reported per 1,000 residents statewide.<sup>40</sup> Crime rates in Wetzel County were on the decline between 2002 and 2007, before gas production began to take off. Since then crime rates have risen through 2011, but the crime rate in 2011 was still below its level a decade prior. In contrast, crime rates statewide rose between 2002 and 2006, before declining through 2011 (**Figure 13**).

Local officials in Wetzel County have not noted any substantial increase in crime attributed to drilling activity. The county prosecutor stated that there has been little impact other than traffic violations, while allegations of increases in prostitution and drug activity are unsubstantiated. Members of the Office of Emergency Management say there has been no increase in the number of 911 calls, while the Sheriff's office noted that while there has been a slight increase in DUI arrests, there has been no other substantial activity.

Figure 13

### Crimes per 1,000 Residents, Wetzel County and West Virginia



Source: West Virginia State Police. Population estimates from the Bureau of Economic Analysis.

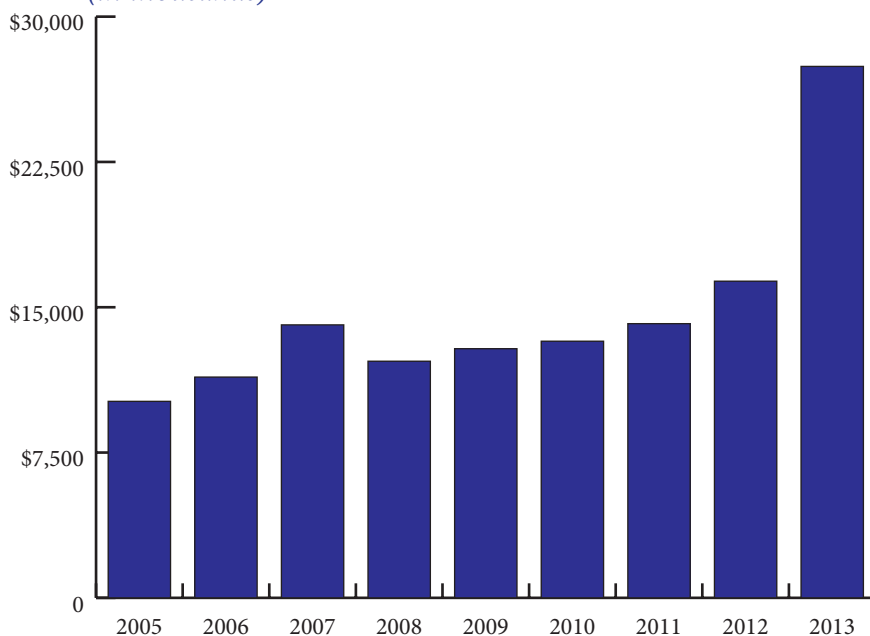
### Local Government Revenue

Local governments in West Virginia rely on property taxes as their main revenue source.<sup>41</sup> The increase in drilling activity in Wetzel County has grown the property tax base, as drilling equipment, pipelines, and gas production have increased property assessments as was shown in **Figure 5**. With the increased assessments, property tax revenue has also grown.

Total property tax revenue in Wetzel County has nearly tripled since 2005. The growth in property tax revenue has followed the same trend as the growth in natural gas production, with most of the growth occurring during the past two years. Total property tax revenue, including taxes collected by the county, schools, and municipalities, in tax year 2013 totaled \$27.4 million, a 68 percent increase from the previous year (**Figure 14**).

Figure 14

### Total Property Tax Revenue, Wetzel County (County, School and Municipal) (in thousands)



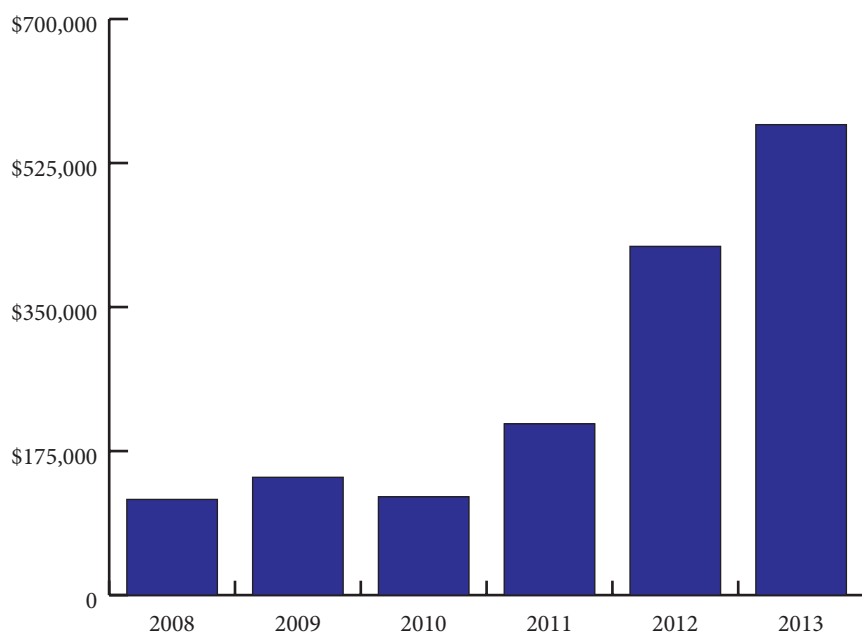
Source: West Virginia Tax Department.

West Virginia collects a severance tax on the production of natural gas. Ten percent of that revenue is distributed to local governments, with 75 percent of the local distribution going to the areas where the gas was produced, and the remaining 25 percent distributed to all local governments.<sup>42</sup>

The amount of severance tax revenue distributed to local governments in Wetzel County has more than quintupled in the past few years, with the county's booming natural gas production. Wetzel County and its municipalities received \$107,255 in severance tax revenue in 2008, and their severance tax revenue reached \$563,984 in 2013 (**Figure 15**).

Figure 15

### Total Local Government Severance Tax Distribution, Wetzel County



Source: West Virginia Treasurer's Office.

While overall severance tax revenues have increased, the portion going to the municipalities has declined. This is because of how the local share of the severance tax is allocated. 75 percent of the revenue is distributed to counties based on their share of total production. The remaining 25 percent is distributed to counties and municipalities based on population. With municipalities within Wetzel County experiencing minor declines in population, their share has declined. Overall the total amount of severance revenue distributed to Wetzel County's five municipal governments has fallen from \$9,009 in 2009 to \$7,669 in 2013.

According to interviews with Wetzel County Commissioners, the county has been able to use the increase in tax revenue to offset losses in federal funding. The county has been able to assist outside agencies like the county library, food pantries, and housing agencies that have seen their federal funding cut. It has also used the additional revenue to boost tourism, though investments in the county Regatta.

## Conclusion and Recommendations

Marcellus Shale development in Wetzel County has been a mixed bag for the county so far. The increase in drilling activity has brought new jobs, but how many are going to local workers remains a subject of debate; and the county still lags behind the state economically.

Hotels, restaurants, and retailers are doing well, but their success has not translated into many new well-paying jobs, and while the county's unemployment rate has fallen, it remains above the state average.

The rise in population that has followed drilling booms in other areas of the country has not yet materialized in Wetzel County. New homes have not been built or bought, school enrollment is unchanged, and Wetzel County's population has actually declined in recent years. Instead of settling in the county, the transient workforce of the industry is only staying temporarily, filling up hotels and campsites.

As Wetzel County's population has not boomed along with the development of the natural gas industry, some of the other side effects that have appeared alongside the industry in other areas of the country have not appeared in Wetzel County. Crime rates have been steady and emergency services have been unaffected. The county courthouse, where property records are searched by the industry's representatives, has been the only local service dramatically affected.

The one area where there has been a major impact, one that local officials and the citizens of Wetzel County were unprepared for, is traffic. The increase in traffic, particularly heavy trucks, due to the increase in drilling activity, was the biggest concern cited by local officials. Trucks are damaging the roads, creating safety concerns, traffic congestion, and resentment in the community.

Outside of traffic concerns, the most obvious impact of the industry has been in local tax revenue. Property tax and severance tax revenue have grown substantially with the industry's development, allowing the expansion of some local services, from increased sheriff patrols to funding libraries.

Wetzel County was not quite sure what to expect with the development of the natural gas industry. The community was unprepared for some aspects, like the increase in traffic, and it is still adjusting to the changes. But not all of the impacts that typically come along with the industry have been felt yet in Wetzel County. Unconventional wells, and their impact on communities, are still a small fraction of the drilling activity in the community. The consequences of noise and air pollution and waste disposal are just beginning to be felt, and the capacity of the local government to handle these issues is unclear.

What the future holds for Wetzel County with regard to the natural gas industry is also unclear. While the industry has created a few jobs in the community, officials are hopeful for downstream activities to create development and revitalize the area. So far, increases in local revenue have been enough to offset some of the negative impacts, but as more unconventional drilling occurs, work will need to be done to ensure that remains the case.

There are several lessons from Wetzel County that can be applied to other areas undergoing similar development in the natural gas industry. The most important is for local officials to get as much information as possible up front about what is going to happen. They should meet early with the companies coming to the area in order to inform the citizens of what to expect. Wetzel County did not anticipate the traffic, dust, and fume problems, and the community was taken by surprise. Local governments need to be proactive, and ensure that those who are responsible for roads, housing, and social services plan ahead.



Another lesson from Wetzel County is its creation of the Wetzel County Gas and Oil Task force, a citizen advisory panel that meets monthly, and includes state and local officials, including police, EMS, school, highway, and environmental officials, landowners, citizens, and company representatives. The task force allows the company and government officials to inform the community what will be happening, where, and what to expect. It also provides a forum for concerns and problems, and allows feedback on how those problems are addressed.

And while Wetzel County has enjoyed a boost in revenue, much of that revenue has gone to addressing current needs. Areas anticipating an increase in natural gas activity will also likely see substantial increases in revenue, but those increases can be temporary. With an eye to the future, communities should consider enacting local drilling fees, and setting aside the revenue the fee produces for future use, ensuring that something is left behind once the industry has moved on.

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