

Overview of Current Studies on the Economic Impacts of Mountaintop Removal Coal Mining

I. Introduction

Much of the discussion regarding the future of mountaintop removal coal mining has centered on the role of surface mining in the Appalachian economy, and the impacts to both the local economy and regional electricity prices should the mining practice be ended. Until recently, much of this economic discussion has been anecdotal or speculative. Several recent studies, however, shed new light on these questions. These studies indicate that mountaintop removal coal mining has a net negative impact on the Appalachian economy; that the increase in mountaintop removal mining over the last decade has contributed to a decrease in mining jobs; that ending mountaintop removal coal mining could benefit Appalachia through a shift to forms of mining that employ more workers and a transition to new industries including those associated with renewable energy; and that ending mountaintop removal mining would not lead to a significant increase in electricity prices for the region. Additional research is needed to address remaining economic questions, but these studies should provide the basis for a new conversation centered on how best to transition the region away from this destructive and costly mining practice.

II. Appalachia is an economically distressed region.

The Appalachian region continues to lag behind the rest of the country economically. Within Appalachia, the poorest communities tend to be those areas where coal mining is most predominant. “Compared to other parts of Appalachia, coal mining areas are also characterized by poor socioeconomic conditions including higher levels of poverty and lower education rates.”¹ A recent study on the economics of coal in Kentucky found that “Kentucky’s coal-producing counties are among the poorest in the United States.”² This report further noted that “[t]he poverty rate in Appalachian

¹ Hendryx, M., Mortality Rates in Appalachian Coal Mining Counties: 24 Years Behind the Nation, *Environmental Justice*, Vol. 1, Num. 1, 2008, pp. 5-11 at 5.

² Mountain Association for Community Economic Development report, *The Economics of Coal in Kentucky: Current Impacts and Future Prospects*, June 2009, at p. 1.

Kentucky was nearly double that of the nation in 2000”³ and “[o]f the top eight coal-producing counties in eastern Kentucky, all but one . . . have a higher poverty rate than Appalachian Kentucky as a whole.”⁴

III. Mountaintop removal coal mining has a net negative impact on the economy of Appalachia.

The coal industry claims that coal mining has a positive impact on the economy of the Appalachian region, primarily through the creation of jobs and the generation of tax revenue. Recent studies, however, have found that coal mining has an overall negative impact on state and local economies.

A. The rise of mountaintop removal coal mining has led to a decrease in mining jobs in Appalachia.

A recent economic report found that “[h]istory shows that the transition from deep to surface mining devastated the [Appalachian] region economically, and that the prosperity of mining companies has not gone hand in hand with the economic welfare of coal mine workers.”⁵ Surface mining in general, and mountaintop removal mining in particular, employs far fewer workers than deep mining because “per ton of production, deep mining employs more miners than surface mining.”⁶ The decreased coal mining employment levels associated with surface mining are “primarily the result of technological innovations that enabled more coal to be mined with fewer workers.”⁷ Indeed, data from the federal Energy Information Administration demonstrate that the decline in the number of miners employed in Central Appalachia since the passage of the Clean Air Act amendments in 1990 and the corresponding expansion of mountaintop removal mining are not directly proportional to the decline in coal production over the same time period. While annual coal production in Central Appalachia dropped by approximately 19% between 1990 and 2008, coal mining employment fell by

³ Id. at 5.

⁴ Id. at 6.

⁵ Napoleon, A. and Schlissel, D. Economic Impacts of Restricting Mountaintop/Valley Fill Coal Mining in Central Appalachia, report by Synapse Energy Economics, Inc., August 2009, at 21.

⁶ Id. at 20.

⁷ Mountain Association for Community Economic Development report, The Economics of Coal in Kentucky: Current Impacts and Future Prospects, June 2009, at p. 2.

approximately 38%.⁸ This disproportionate decline in coal mining employment relative to coal production can be largely attributed to the approximately 18% increase in surface mining as a portion of annual coal production during this time period.

B. Mountaintop removal coal mining costs local economies more than it generates.

A study on the impact of coal on the Kentucky state budget concluded that “the industry actually costs more than it brings to the state.”⁹ The report found that:

While coal generates significant revenues, its costs are considerable. Major public expenditures go into maintaining the coal haul road system; operating the health, safety and environmental protection systems necessary for coal; supporting training and research and development for the industry; and providing various tax breaks and subsidies. Without including harder-to-quantify costs of negative externalities from the industry, the net cost to the state is over \$100 million annually.¹⁰

The externalized costs recognized, but not directly considered, by the study include:

healthcare, lost productivity resulting from injury and health impacts, water treatment from siltation caused by surface mining, water infrastructure to replace damaged wells, limited development potential due to poor air quality, and social spending associated with declines in coal employment and related economic hardships of coalfield communities.¹¹

Another study on the economic impacts of mountaintop removal mining in Central Appalachia also recognized that “[t]he practice of mountaintop/ valley fill mining has economic costs to society, such as increased mortality and morbidity of miners and surrounding communities, reduced property values associated with mining activities, and extensive damage to natural resources.”¹² A statistical analysis of the value of lives lost due to the elevated mortality rates experienced

⁸ See DOE/EIA Annual Coal Report 0584 (1998) Tables 3, 40-42 (<http://tonto.eia.doe.gov/FTP/ROOT/coal/058498.pdf>); DOE/EIA Annual Coal Report 0584 (2008) Tables 1, 18 (http://www.eia.doe.gov/cneaf/coal/page/acr/acr_sum.html).

⁹ Konty, M.F., and J. Bailey, *The Impact of Coal on the Kentucky State Budget*, report prepared for the Mountain Association for Community Economic Development, June 2009, at p. 2.

¹⁰ *Id.* at 7.

¹¹ *Id.* at 2.

¹² Napoleon, A. and Schlissel, D. *Economic Impacts of Restricting Mountaintop/Valley Fill Coal Mining in Central Appalachia*, report by Synapse Energy Economics, Inc., August 2009, at 20.

in Appalachian coal mining areas concluded that coal mining costs the region over 50 billion dollars in the value of statistical lives lost.¹³

Additional economic impacts come from the lost potential for jobs and other economic benefits from industries that are incompatible with mountaintop removal coal mining both in the short and the long term. The dramatic effects of mountaintop removal mining on the landscape and ecosystems render the land unusable for certain industries that could otherwise employ residents of Appalachia in an ongoing basis. These lost opportunities include jobs related to the installation and maintenance of wind farms for electric power generation, as well as sustainable timber operations. By removing the tops of mountains and ridges – the areas most suitable for wind farms – mountaintop removal mining permanently limits the opportunities for new jobs in renewable energy.¹⁴ Similarly, by burying native hardwood forests and replacing top soil with fill incompatible with tree growth, mountaintop removal coal mining permanently precludes the use of this land for sustainable harvesting of timber from one of the most productive hardwood forests in the world.

Other commentators have noted the bitter irony that an area renowned for its natural resources continues to be so poor, observing that “[a]fter a century of mining in the ‘billion dollar coalfields,’ local communities lack funds to upgrade aging schools; tens of thousands live below the federal ‘poverty line’; and public services such as fire, police, sewage treatment, and libraries struggle to survive on ‘bare-bones’ budgets.”¹⁵ This is because “[w]hile billions of dollars of coal have been extracted from [the region’s] mountains, the coal industry’s power has enabled it to funnel much of the wealth generated by mining to out-of-state interests, leaving little for the people whose labors produced that wealth.”¹⁶

Indeed, coal companies exploit the fact that the communities already so heavily impacted by mining have few resources with which to combat the most destructive

¹³ Hendryx, M. and M. Ahern, *Mortality in Appalachian Coal Mining Regions: The Value of Statistical Life Lost*, Public Health Reports, vol. 124, Jul-Aug 2009, pp. 541-550 at 541, 546.

¹⁴ See, e.g., Downstream Strategies report, *The Long-Term Economic Benefits of Wind Versus Mountaintop Removal Coal on Coal River Mountain, West Virginia* (Dec. 2008).

¹⁵ McGinley, P.C., *From Pick and Shovel to Mountaintop Removal: Environmental Injustice in the Appalachian Coalfields*, Environmental Law, 34 Env'tl. L. 21, 23-24 (2004).

¹⁶ *Id.* at 79.

mining practices. As one commentator has described, “the corporate expectation, or at least the hope, is that communities will suffer in silence the infringements of private property rights that would never be tolerated in the upscale suburbs where most politicians, regulators, and coal company managers live.”¹⁷ Rather than represent the best economic hope for the region, the coal mining industry instead continues to serve as a stone around the region’s neck.

IV. Ending mountaintop removal coal mining would benefit the Appalachian economy through reduced costs and increased jobs.

Recent studies suggest that restricting or ending mountaintop removal mining will not undermine the economy of Central Appalachia and, in fact, would lead to a net benefit for local economies in both the short and the long term.

In the short term, a shift from surface mining to deep mining would lead to a net increase in jobs. “[D]eep mining will continue to be a source of employment in the region and may expand, to the extent that Central Appalachian deep mined coal remains competitive (given its lower transportation costs and higher quality). Indeed, a shift to deep mining has the potential to bring an increase in employment, because, per ton of production, deep mining employs more miners than surface mining.”¹⁸

In the longer term, “[e]conomic diversification, fostered by regional and national policy, can alleviate the boom-bust cycles associated with heavy dependence on employment in extractive industries and help prepare the region for the reality of a carbon constrained economy.”¹⁹ Some of this economic diversification may come from increased employment opportunities in those industries discussed above that are incompatible with mountaintop removal mining.

All of these benefits come on top of significant savings for governments and communities in the region. State and local economies will no longer be forced to finance all of the public expenditures discussed above that are required to support the coal industry, including extra maintenance for the public roads that form the coal haul road system; operation of health, safety, and environmental protection systems; training and

¹⁷ Id. at 77.

¹⁸ Napoleon, A. and Schlissel, D. Economic Impacts of Restricting Mountaintop/Valley Fill Coal Mining in Central Appalachia, report by Synapse Energy Economics, Inc., August 2009, at 20.

¹⁹ Id. at 23.

research development for the industry; and various tax breaks and subsidies. Perhaps most significantly, communities will no longer have to bear the health, environment, and quality of life costs that come with mountaintop removal mining.

V. Ending or restricting mountaintop removal coal mining would not have a significant impact on the price of electricity.

Although significantly restricting or ending mountaintop removal mining would have a clear benefit for the Appalachian region, some fear that this improvement would come at the cost of higher electricity costs across the eastern United States. Fortunately, recent studies have indicated that ending mountaintop removal would have a relatively minor impact on the cost of electricity. The insignificance of this impact can be traced to two factors: a predicted decrease in the overall demand for coal, and the availability of alternative sources of energy.

A. The overall demand for coal is likely to decrease.

Several factors – including the anticipated regulation of CO₂, the low price of natural gas, and decreasing investment in new coal fired power plants – are likely to contribute to an overall reduction in the demand for new coal.

It appears increasingly likely that regulations will be passed in the near future aimed at reducing overall CO₂ emissions in the United States. These regulations are expected to impact the coal mining industry. “It is reasonable to expect that recent legislative and executive branch moves to reduce CO₂ emissions will lead to reduced burning of coal, the most carbon intensive fuel, absent development of carbon capture and sequestration technology as a ‘silver bullet’ that could allow the continued burning of coal at or near current levels.”²⁰ The most substantive legislative proposal to date is the Waxman-Markey bill that was recently approved by the House of Representatives. This bill would mandate reductions in greenhouse gas emissions to 83 percent of 2005 levels by 2020 and to 17 percent of 2005 levels by 2050.²¹ “The Obama Administration indicated in its recently released Federal budget that it would seek to establish a cap-and-trade system to reduce greenhouse gas emissions to 14 percent below 2005 levels by

²⁰ Napoleon, A. and Schlissel, D. Economic Impacts of Restricting Mountaintop/Valley Fill Coal Mining in Central Appalachia, report by Synapse Energy Economics, Inc., August 2009, at 5.

²¹ Id. at 4.

2020 and to 83 percent below 2005 levels by 2050.”²² Whatever the ultimate form of regulation, one effect will be to reduce the amount of coal burned to produce electricity, which in turn will reduce the demand for coal.

In addition, the low price of natural gas has led to increased use of gas-fired electricity generating units and decreased use of coal-fired plants. “This displacement of coal plants by gas-fired units is likely to continue as gas prices are projected to remain reasonably low for the foreseeable future.”²³ At the same time, new coal plants are increasingly seen as risky investments, with more than 90 proposed coal plants canceled, extensively delayed, or rejected by state regulatory commissions since 2002.²⁴ Finally, while investments in new coal plants have become more risky, investments for energy efficiency and renewable resources continue to expand.²⁵

A detailed simulation model is needed to quantify the impact of prohibiting mountaintop/valley fill mining in Central Appalachia on the price of coal.²⁶ However, a preliminary analysis in the 2003 Programmatic EIS for mountaintop removal coal mining in Appalachia found that coal prices in Appalachia would increase by only 5% by the end of the 10 year period of analysis.²⁷ Many independent forces contribute to setting the market price for coal. Multiple forces have, and will continue, to reduce overall demand for coal. Given these ongoing forces on the demand side, any decrease in the supply of coal that would come from ending mountaintop removal mining would have a comparatively minor impact.

B. Increases in coal prices do not necessarily translate to increases in electricity prices

Even if reducing or ending mountaintop removal coal mining were to result in an increase in the market price of some of the coal mined in Appalachia, this increase would not necessarily lead to an increase in the price of electricity for consumers. Many factors contribute to the cost of electricity, with coal prices playing just one small part. The actual impact of an increase in the price of some of the coal coming out of Appalachia

²² Id. at 5.

²³ Id. at 6.

²⁴ Id. at 7.

²⁵ Id. at 9.

²⁶ Id.

²⁷ Id.

would vary in different regions depending on whether the wholesale electricity markets have been deregulated, but the impact would not be significant in any case.²⁸

In regions where wholesale electricity markets have not been deregulated, “any coal price increases will be blended in with increases and decreases in the prices of other fuels and/or other operating expenses and capital expenditures.”²⁹ In addition, any increased cost of electricity production at coal fired power plants burning central Appalachia coal will be diluted by the cost of power generation from facilities burning coal from other regions and by facilities that generate electricity through means other than the burning of coal. This is because “the plant at which the higher cost coal is being burned will be only one of the plants in the region being used to generate power.”³⁰

For deregulated markets, “[t]ranslating any increase in the price of coal into an impact on the price of power . . . is more complicated than in a regulated environment.”³¹ It is, however, “very unlikely that the entire increase in the cost of power from coal plants will flow through to electricity consumers via wholesale electricity prices.”³² In a deregulated market, the price of electricity for all units providing power to loads in the market in a given time interval is based on the highest accepted bid for that time interval. Therefore, “[i]n a deregulated wholesale electricity market, the impact of an increase in the cost of power from coal plants depends on how often these units have the highest accepted bid.”³³ An increase in the cost of central Appalachia coal (resulting from restrictions on mountaintop removal mining) may increase the bid of a particular coal-fired power plant, but the price of electricity for that market for that time period may actually be set by a non-coal-fired unit, limiting the impact to the market of the increase in the coal-fired plant’s bid.³⁴

²⁸ Id. at 9.

²⁹ Id.

³⁰ Id.

³¹ Id. at 10.

³² Id.

³³ Id.

³⁴ See id.

C. Alternatives to burning Appalachian mountaintop removal mined coal are readily available.

America's energy needs will continue to be met even if mountaintop removal mining no longer serves as a source for coal. "There are a number of economically attractive alternatives to combusting Central Appalachian mountaintop/valley fill-mined coal for electricity generation, including energy efficiency, renewable energy, Central Appalachian coal mined using underground methods, and coal from other regions."³⁵

Alternatives to coal combustion as a means of generating power already exist, and will continue to expand. "Energy efficiency has significant potential to help meet energy needs both inside and outside of Central Appalachia."³⁶ In addition, coal is not the only locally available source of energy for the Appalachian region. "Renewable resources, including wind along the eastern mountain ridges, low-impact small hydroelectric and biomass, are likewise underdeveloped."³⁷

Ending mountaintop removal mining will not mean that existing coal combustion power plants will be idled. Coal will still be produced in Appalachia even if mountaintop removal mining is ended because "there are considerable economic deep coal reserves in the region."³⁸

VI. Additional information is needed

Although these studies paint a clear picture of the economic impacts of mountaintop removal coal mining, and of the possible economic effects of ending mountaintop removal, there is an ongoing need for additional information and analysis. Additional research needs include:

- Analysis of the net impact of coal mining on the state economies of West Virginia, Virginia, and Tennessee, including all public expenditures and externalized costs;

³⁵ Id. at 12.

³⁶ Id.

³⁷ Id. at 13.

³⁸ Id. at 14.

- Analysis of alternative industries that could bring additional jobs to the coalfield areas, including an analysis of any barriers posed by mountaintop removal mining to the introduction of these industries;
- A detailed simulation model quantifying the impact of prohibiting mountaintop/valley fill mining in Central Appalachia on the price of coal;
- A study of the potential to develop renewable energy resources in Appalachia, including wind along mountain ridges and small-scale hydroelectric projects.

VII. Conclusion

Mountaintop removal coal mining takes more from the already troubled economy of Appalachia than it contributes. Ending mountaintop removal mining would benefit the economy of Appalachia by reducing costs to state and local governments and by opening the door to a diverse economy and more jobs in sustainable industries. Putting an end to mountaintop removal mining would have a minimal economic impact outside of the region, and would not have a significant impact on the price of electricity.