



Drilling Deeper into Job Claims

The Actual Contribution of Marcellus Shale to Pennsylvania Job Growth

By Stephen Herzenberg • June 20, 2011

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Overview

A May 29 article in *The Patriot News* reported that natural gas drilling in the Marcellus Shale has created 48,000 jobs. Since then, other Pennsylvania media outlets and industry supporters have circulated this claim widely.

Actual jobs data tell a different story. This briefing paper demonstrates that Marcellus Shale drilling has created no more than 10,000 jobs.

- The 48,000 figure refers to “New Hires” — additions to employment. New hires are not the same as jobs created because many new hires replace workers who have quit, been fired or retired. Over the same period that Marcellus industries reported 48,000 new hires (the fourth quarter of 2009 to the first quarter of 2011), there were 2.8 million “new hires” in all Pennsylvania industries but only 85,467 jobs were created. This dramatic difference makes clear that the number of new hires by itself is not a meaningful indicator of job creation.
- Since the fourth quarter of 2009, Marcellus “Core” and “Ancillary” industries — as defined by the Center for Workforce Information and Analysis (CWIA) of the Pennsylvania Department of Labor and Industry — created 1.7% of all new hires in Pennsylvania, one out of every 59.
- An accurate picture of the contribution of the Marcellus Shale to recent growth of jobs in Pennsylvania requires the use of a data base that directly measures “employment” and “jobs.” Using such a jobs data base, CWIA finds that Marcellus Core industries in Pennsylvania created 9,288 jobs between the fourth quarter of 2007 and the fourth quarter of 2010. (Note: we use a different time period for the jobs data base than the new hires data base because CWIA does.) Marcellus Ancillary industries actually lost 3,619 jobs in this period so that, taken together, Marcellus Core and Ancillary industries created 5,669.
- The number of jobs created by Marcellus industries is small — less than 10% — compared to the 111,400 increase in jobs in all state industries since Pennsylvania’s recent employment trough in February 2010.

“...an increase in new hires does not directly equate to an increase in the total employment count. The new hires count is simply an indication of hiring activity in an industry. Separations, in the form of initial claims (layoffs) or quits, are linked to job destruction and account for the other half of the employment change equation. The balance of hires and separations result in the employment change.”

– Pennsylvania Department of Labor and Industry, Center for Workforce Information and Analysis, *Marcellus Shale Fast Facts*, June 2011

The Marcellus Shale has made a positive contribution to recent job growth in Pennsylvania, but the size of that contribution has been significantly overstated in recent statements and news reports. Policymakers and the public need to look to other policies that predate the Marcellus boom — such as, investments in education, economic development, renewable energy, workforce skills, and unemployment benefits — to explain Pennsylvania’s relatively strong recent job growth.

Confusing New Hires with Job Creation

The May 29 *Patriot-News* story, headlined “Marcellus Shale Drilling Creates 48,000 Jobs,”¹ cites *Marcellus Shale Fast Facts*, an April publication by the CWIA. That report states on page 3 that between the fourth quarter of 2009 and the first quarter of 2010, there were “48,000 new hires within the Marcellus Shale core and ancillary industries.”²

The April *Marcellus Shale Fast Facts* does not confuse “new hires” with job creation. The June 2011 *Marcellus Shale Fast Facts*³ goes a step further, explaining carefully the difference between new hires and job creation. It states: “In every economy there is job creation and job destruction every month and the result is employment change. New hires are linked to job creation, however, an increase in new hires does not directly equate to an increase in the total employment count. The new hires count is simply an indication of hiring activity in an industry. Separations, in the form of initial claims (layoffs) or quits, are linked to job destruction and account for the other half of the employment change equation. The balance of hires and separations result in the employment change.”

After the May 29 *Patriot-News* report, the 48,000 new hires figure was circulated widely. For example, just two days later, on May 31, the Marcellus Shale Coalition issued a press release⁴ titled “By the Numbers: The Mighty Marcellus Continues to Fuel Job Creation.”⁵

On June 3, the *Pittsburgh Tribune-Review* had a story titled “Drilling generates 48,000 jobs.” The first sentence of the story stated: “The boom in Marcellus shale natural-gas exploration and production created 48,000 jobs in Pennsylvania during the past 18 months, says a new state report.”⁶

¹ Donald Gilliland, “Marcellus Shale drilling creates 48,000 jobs, report says,” *The Patriot-News*, May 29, 2011, http://www.pennlive.com/midstate/index.ssf/2011/05/marcellus_shale_drilling_creat.html.

² By the June 2011 *Fast Facts Marcellus* report, the estimated number of new hires in Marcellus Shale core and ancillary industries from 2009Q4 to 2011Q1 had grown to 72,000. The June report explains: “The increase from the 48,000 new hires reported in the last edition of the Marcellus Shale Fast Facts is entirely due to the addition of nine industries in the ancillary group and the inclusion of government employment.”

³ Available online at <http://www.paworkstats.state.pa.us/gsipub/index.asp?docid=775>

⁴ Available online at <http://marcelluscoalition.org/2011/05/by-the-numbers-the-mighty-marcellus-continues-to-fuel-job-creation/>

⁵ The original *Patriot News* article states that Kathryn Klaber, the President and Executive Director of the Marcellus Shale Coalition, did not know about the 48,000 figure until she was called by the reporter. However, in a May 20 presentation to the Marcellus Advisory Commission, Klaber’s PowerPoint presentation refers to the 48,000 new hires (http://www.portal.state.pa.us/portal/server.pt/community/marcellus_shale_advisory_commission/20074/meetings/940531).

⁶ Available online at http://www.pittsburghlive.com/x/pittsburghtrib/business/s_740188.html#

In a June 10 op-ed in *The Patriot News*, economist Bernard Weinstein wrote that “one study found that nearly 48,000 jobs related to Marcellus Shale activity have been created in Pennsylvania during the last year.”⁷

As explained in the next section, Marcellus Shale activity in Pennsylvania has not created 48,000 jobs — not during the past year, 18 months, or ever.

New Hires Tell Only Half the Story

The 48,000 figure is based on a data base that tracks “new hires,” which is maintained by the Office of Child Support Enforcement at the U.S. Department of Health and Human Services. The data base is designed to track when non-custodial parents obligated to pay child support payments obtain new jobs. While the “New Hires” data base tracks additions to employment, it is not an employment data base. It does not track subtractions from employment or “employment separations” due to resignations, firings, or retirements.

Just as the CWIA explained in its June *Marcellus Shale Fast Facts*, the number of new hires does not directly equate to an increase in total employment.⁸

Over the same period in which Marcellus industries reported 48,000 new hires (the fourth quarter of 2009 to the first quarter of 2011), there were 2.8 million “new hires” in all Pennsylvania industries. Marcellus Shale “core” and “ancillary” industries — as defined by the Pennsylvania Department of Labor and Industry — accounted for 1.7% of all new hires in Pennsylvania, one out of every 59.

It is not news to Pennsylvanians that there were not 2.8 million jobs created in the state between late 2009 and early 2011. In fact, the state created only 85,467 jobs over this period — about 3% as many jobs as the number of new hires. This comparison makes unambiguously clear that the number of new hires in an industry, by itself, provides no meaningful information on the contributions of an industry to job creation.

Data on Marcellus Industries

This brief relies on data from four reports issued by the Center for Workforce Information and Analysis of the Pennsylvania Department of Labor and Industry. (Recent press and internet reports that erroneously claim there were 48,000 jobs created by Marcellus industries in 2010 rely on the third of these four sources, the April *Fast Facts* report.)

- “A Marcellus Shale Industry Snapshot” published in April 2010.
- “A Marcellus Shale Industry Snapshot Update” published in October 2010.
- “Marcellus Shale Fast Facts” published in April 2011.
- “Marcellus Shale Fast Facts” published in June 2011.

⁷ Available online at

http://www.pennlive.com/editorials/index.ssf/2011/06/what_we_can_learn_from_texas_b.html

⁸ One additional change we would recommend to be incorporated in PDLI/CWIA’s reporting of new hire data in the *Marcellus Shale Fast Facts* is a listing of total new hires in all industries. This additional data would help put the new hire data in the proper context by allowing readers to judge the relative importance of new hires to the statewide total.

(All four reports are available at www.keystoneresearch.org.) In our analysis, we also supplement the four CWIA reports with data since 1990 from the employment data base that CWIA uses.

In its analyses, CWIA defines two groups of Marcellus industries within which Marcellus Shale employment is most prominently found: a group of six industries identified as Core Industries⁹ and a larger group of industries identified as Ancillary Industries.¹⁰ The Ancillary list includes broad industries—such as “highway, street, and bridge construction,” “sewage treatment facilities,” “general freight trucking,” and “industrial machinery and equipment wholesalers.” Only a small part of employment in these industries relates to drilling activity.

In the June *Marcellus Shale Fast Facts*, nine more industries were added to the previous list of 21 CWIA Ancillary Industries list, bringing the new total in this group to 30 industries. Adding more industries to the Marcellus Ancillary group increases total employment within that group and also increases the total number of New Hires (although not necessarily the growth of employment). While there are about 200,000 jobs are in the expanded list of “Marcellus Ancillary” industries, most of those jobs are not a result of drilling activity. The figure later in this brief shows that total employment in the Marcellus Ancillary group has not increased during a period in which employment in the Marcellus Core has doubled. This contrast illustrates that trends in activity in Marcellus Core industries do not have a major impact on trends in Marcellus Ancillary industries.

What Is the Actual Contribution of the Marcellus Shale to Pennsylvania Jobs?

Recent CWIA reports (see Box 1) provide the data we need to paint an accurate picture of the contributions made by the Marcellus Shale to recent job growth in Pennsylvania. The most recent report, the June *Marcellus Shale Fast Facts*, presents data on employment in Marcellus Core and Marcellus Ancillary industries from the fourth quarter of 2007 to the fourth quarter of 2010. This source shows that:

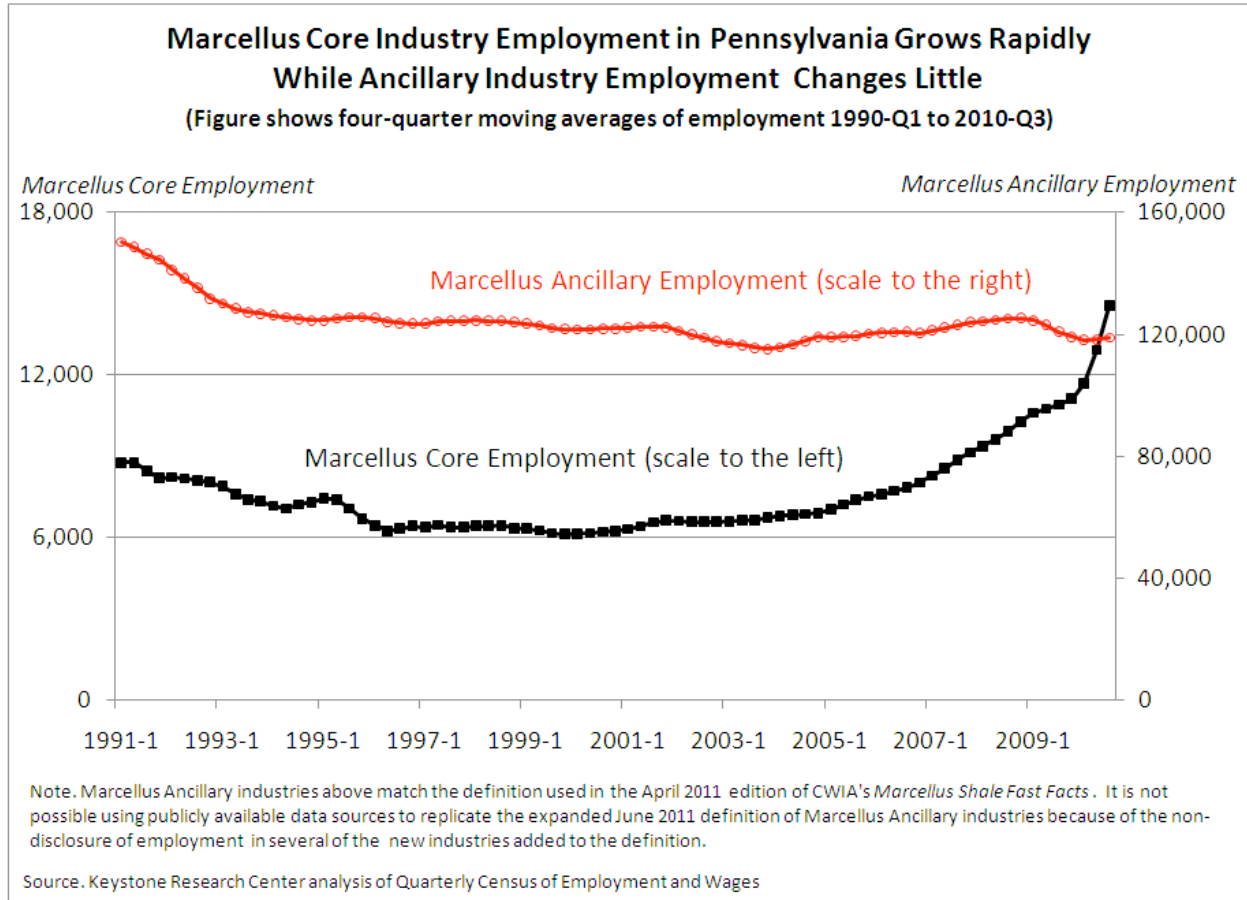
- 9,288 jobs were created in Marcellus Core industries during this three-year period;

⁹ The six Marcellus Core industries (NAICS) are: Liquid Extraction (211112); Drilling Oil & Gas Wells (213111); Support Activities for Oil & Gas Operations (213112); Oil & Gas Pipeline & Related Structures Construction (237120); and Pipeline Transportation of Natural Gas (486210).

¹⁰ The current list of 30 Marcellus Shale Ancillary Industries (NAICS) are as follows (asterisks indicate industries added to the list in the June 2011 *Marcellus Shale Fast Facts*): Fossil Fuel Electric Power Generation (221112); Natural Gas Distribution (221210); Water Supply & Irrigation Systems (221310); Sewage Treatment Facilities (221320); Water & Sewer Line & Related Structures Construction (237110); Highway, Street, and Bridge Construction (237310)*; Nonresidential Site Preparation Contractors (238912); Petrochemical Manufacturing (325110)*; Industrial Gas Manufacturing (325120); Iron & Steel Mills (331111); Iron & Steel Pipe & Tube Manufacturing from Purchased Steel (331210); Mining Machinery & Equipment Manufacturing (333131); Oil & Gas Field Machinery & Equipment Manufacturing (333132); Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers (423810)*; Industrial Machinery and Equipment Merchant Wholesalers (423830)*; Industrial Supplies Merchant Wholesalers (423840)*; General Freight Trucking, Local (484110)*; Specialized Freight Trucking, Local (484220); Specialized Freight Trucking, Long-Distance (484230); Lessors of Other Real Property (531190); Construction, Mining & Forestry Machinery & Equipment Rental & Leasing (532412); Engineering Services (541330); Geophysical Surveying & Mapping Services (541360); Testing Laboratories (541380); Environmental Consulting Services (541620); Remediation Services (562910); Commercial & Industrial Machinery & Equipment Repair & Maintenance (811310); Administration of Air and Water Resource and Solid Waste Management Programs (924110)*; Administration of Conservation Programs (924120)*; Regulation and Administration of Communications, Electric, Gas, and Other Utilities (926130)*.

- Marcellus Ancillary industries *lost* 3,619 jobs during the same period; and
- Marcellus Core plus Ancillary industries gained 5,669 jobs during this period.

The figure below shows Pennsylvania employment in Marcellus Core and Ancillary industries over a 20-year period. (For technical reasons explained in the figure note, we revert here to the April *Marcellus Shale Fast Facts* definition of Ancillary industries.) The figure illustrates two simple points. First, Marcellus Core industry employment has risen rapidly, more than doubling over the past four years. Second, Marcellus Ancillary industry employment has hovered around 120,000 for the past 15 years and has not risen during the recent rapid rise of Core Industry employment.



The table on the next page presents Marcellus Shale-related employment in six regions of Pennsylvania. (Since this table is taken directly from the June *Fast Facts Marcellus Shale*, we are limited to presenting the regions included in that report.) The table shows that Marcellus Shale Core industries employment has grown much more rapidly in some areas than in others. The table also shows that, within regions, changes in Marcellus Shale Ancillary industry employment are not closely correlated with changes in Core industry employment. For example, the “other” region of the state (outside the six named regions) had faster Marcellus Core industry employment growth than did the six regions as a group. Despite this, the other region had negative Marcellus Ancillary industry employment growth.

Marcellus Shale-Related Employment In Six Regions

Region	2007 Q4	2010 Q4	Employment Change	% Change in Employment
Northern Tier (Tioga, Bradford, Susquehanna, Sullivan, and Wyoming counties)	87	1,422	1,335	1534%
Southwest Corner (Beaver, Washington, and Greene counties)	627	1,425	798	127%
Central (Centre, Clinton, Lycoming, Union, Montour, Columbia, Northumberland, Union, Snyder, and Mifflin counties)	117	1,283	1,166	997%
North Central (McKean, Potter, Elk, Cameron, Jefferson, and Clearfield counties)	1,988	2,321	333	17%
Tri County (Butler, Armstrong, and Indiana counties)	2,190	2,835	645	29%
Westmoreland and Fayette Counties	415	1,059	644	155%
Total of Regions Shown	5,424	10,345	4,921	91%
Other Regions	4,125	8,492	4,367	106%
Pennsylvania Total	9,549	18,837	9,288	97%

Marcellus Ancillary* Employment Numbers

Region	2007 Q4	2010 Q4	Employment Change	% Change in Employment
Northern Tier (Tioga, Bradford, Susquehanna, Sullivan, and Wyoming counties)	1,728	2,668	940	54%
Southwest Corner (Beaver, Washington, and Greene counties)	10,372	10,633	261	3%
Central (Centre, Clinton, Lycoming, Union, Montour, Columbia, Northumberland, Union, Snyder, and Mifflin counties)	9,602	10,476	874	9%
North Central (McKean, Potter, Elk, Cameron, Jefferson, and Clearfield counties)	4,039	4,198	159	4%
Tri County (Butler, Armstrong, and Indiana counties)	8,530	8,761	231	3%
Westmoreland and Fayette Counties	10,262	10,352	90	1%
Total of Regions Shown	44,533	47,088	2,555	6%
Other Regions	158,433	152,289	-6,144	-4%
Pennsylvania Total	202,966	199,377	-3,589	-2%

*The definition of Marcellus Ancillary industries used here is the expanded definition presented in the June *Marcellus Shale Fast Facts*.

Source: CWIA, *Marcellus Shale Fast Facts*, June 2011, page 7, table 2

How Important Is the Marcellus Shale in the Overall Pennsylvania Jobs Picture?

Now that we have a revised and accurate estimate of recent jobs growth in Marcellus Shale Core and Ancillary industries, an important question is how significant that growth is in the overall Pennsylvania jobs picture.

From one perspective, in an economy with a job shortage, any positive job growth is welcome. Thus, even though the Marcellus Core has created one-fifth of 48,000 jobs, the jobs that have been created remain important.

Another way to gauge the growth in Marcellus jobs is to compare it to the current jobs shortfall in Pennsylvania. We call that shortfall the “jobs deficit” and include in the jobs deficit two components: jobs lost since the recession began in December 2007 and the additional jobs needed to keep pace with population growth since December 2007 (and to provide employment for the increase in the number of workers). The jobs deficit in Pennsylvania as of May equaled 235,200 — 130,900 jobs lost and 104,300 additional jobs needed to keep pace with the growth of the population. Thus, the Marcellus Core has generated only a few percent of the jobs needed to plug the jobs deficit, a meaningful share but not big enough to drive the overall recovery.

A third way to gauge the growth in Marcellus jobs is to compare it to overall Pennsylvania job growth since the state started creating jobs again. Job growth in Pennsylvania following the Great Recession finally turned positive in February 2010. Since that date, Pennsylvania has created an additional 111,400 jobs. By this measure, too, the 9,288 jobs created in Marcellus Core industries since the shale boom took off is small relative to total job growth in the state since jobs began growing again.

In sum, the Marcellus boom is not the primary reason for Pennsylvania’s recent strong overall job performance. In calendar year 2010, for example, Pennsylvania ranked third among all states for job growth.¹¹ Pennsylvania still ranks third for job growth nationally in 2010 if you subtract from total job growth the 2010 increase in Marcellus Core jobs.

The Marcellus Shale in Perspective

The Marcellus Shale is making a small positive contribution to recent job growth in Pennsylvania. The size of that contribution, however, has been substantially inflated based on a basic misunderstanding of the difference between “new hires” and job creation.

The modest contribution of the Marcellus Shale to job growth must also be balanced against the impact of drilling on other industries, such as tourism and the Pennsylvania hardwoods industry.¹² It is also important to balance the contribution of the Marcellus Shale to job growth against the so-far unfunded environmental liability of the industry.

¹¹ For a more detailed analysis of Pennsylvania job-growth performance in 2010, see Stephen Herzenberg, *Recent Job Growth in Pennsylvania is Healthier than in Most States*, online at <http://keystoneresearch.org/publications/research/recent-job-growth-pennsylvania-healthier-most-states>.

¹² Marcellusprotest.org, an online clearinghouse for information related to Marcellus drilling, says that “...other businesses, dependent on quiet and idyllic scenery for tourism, hunting and fishing, and other forms of recreation, lose business” because of the Marcellus boom; online at <http://www.marcellusprotest.org/asking-tough-questions>.

Other factors besides the Marcellus boom must explain Pennsylvania's relatively strong job growth and unemployment performance over the past year. These factors include the state's investments in renewable energy, education and workforce skills, and unemployment insurance benefits.

To sustain Pennsylvania's strong economic performance, the state should establish a drilling tax or fee that helps finance job-creating investments in education and the economy, as well as providing resources to protect the environment and address infrastructure needs.

Pennsylvania should also develop an explicit Marcellus economic development policy that includes four components:

- *More Marcellus Jobs for Pennsylvanians.* License plates in the Marcellus Shale region and some more systematic research indicate that some Marcellus jobs currently go to out-of-state workers.¹³ Since laid-off construction workers and other Pennsylvanians possess many of the skills needed to perform Marcellus jobs, the state should establish a program to match unemployed Pennsylvanians with high-paid Marcellus jobs, including providing upgrade training to Pennsylvania workers when necessary.¹⁴
- *Invest in Marcellus Supply Chain Development.* In light of the lack of recent growth in Marcellus Ancillary industries, a second component should explore the potential to increase the multiplier effects of the drilling boom by developing more Pennsylvania suppliers of equipment, parts, and services to the industry.
- *Technical Assistance to Help Manufacturers Access Low-Cost Natural Gas and Ride a New Wave of Manufacturing Employment Growth.* After 10 years of virtually uninterrupted job loss which eliminated over 300,000 manufacturing jobs, Pennsylvania manufacturing jobs have increased by about 15,000 since the beginning of 2010. Cornell Economist Susan Christopherson recommends that states rich in low-cost natural gas collaborate with the federal government to help manufacturers "ride the wave" of employment growth by accessing this cheap new energy source and developing new industrial uses for natural gas by-products. Pennsylvania should join West Virginia and Ohio in exploring these options.¹⁵ Both this and the previous option could be integrated with an overall Pennsylvania manufacturing job creation initiative that emphasizes opportunities linked with but not limited to the Marcellus Shale.

¹³ Quantitative evidence on the number and share of new jobs going to Pennsylvanians and out-of-state workers vary. According to Sue Mukherjee, Director of CWIA, 71% of New Hires in 2010 were from Pennsylvania; see slide 11 in "Presentation to the Economic & Workforce Development Workgroup, Governor's Marcellus Shale Advisory Commission, April 14, 2010," online at <http://files.dep.state.pa.us/PublicParticipation/MarcellusShaleAdvisoryCommission/MarcellusShaleAdvisoryPortalFiles/Workgroups/Marcellus%20Shale%20Sue%20Mukherjee.pdf>. *The Centre Daily Times* says that "More than 70 percent of the people working at Marcellus Shale drilling sites come from out of state, according to a November report by Tracy Brundage, managing director of Workforce Development and Continuing Education at Pennsylvania College of Technology in Williamsport." See Ed Mahon, "Marcellus Shale: Workers Finding a Future in Gas Drilling—New Industry Opening Doors for Some," *Centre Daily Times*, February 6, 2011, online at <http://www.centredaily.com/2011/02/06/2501454/workers-finding-a-future.html>.

¹⁴ Department of Environmental Protection Secretary Michael Krancer made a similar suggestion at the May meeting of the Marcellus Shale Advisory Commission.

¹⁵ See Susan Christopherson, "Riding the Small Wave in Manufacturing to a More Diverse Economy and More Good Jobs," Cornell University, draft paper prepared for conference on "Big Ideas for Job Creation in a Jobless Recovery," the Institute for Labor and Employment, University of California, Berkeley, June 16-17, 2011.

- *A Permanent Trust Fund.* A fourth component should set aside funds for economic diversification and to develop industries that can prosper in the drilling region after the Marcellus boom.¹⁶

While the gist of this paper has sounded a cautionary note about the current reality of job growth linked with Marcellus Shale, we end on a more optimistic note. Greater job creation opportunities exist if the state capitalizes more strategically on potential spin-offs from Marcellus Shale and captures some of the resources from Marcellus development to the benefit of the state's overall economy and the middle class.

¹⁶ On this concept, see Sean O'Leary, Ted Boettner, and Rory McIlmoil, "Marcellus Shale Gas Drilling: What Does it Mean for Economic Development?" West Virginia Center on Budget and Policy, online at www.wvpolicy.org/downloads/marcellus_pres021311.pdf.