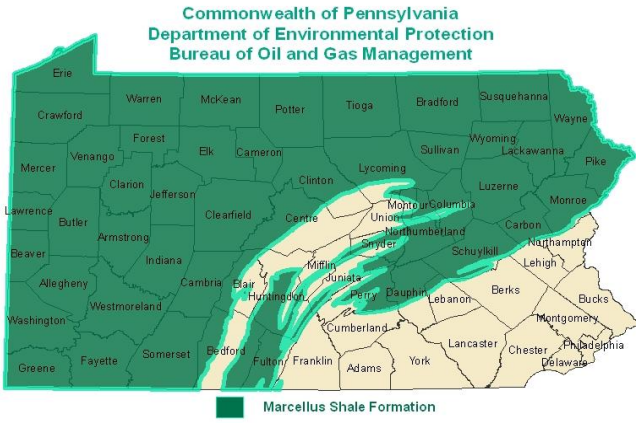
Tri-County

Pennsylvania's Marcellus Shale Formation

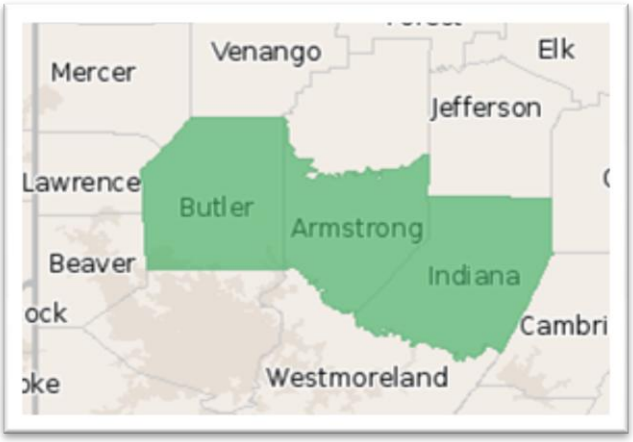
The Marcellus Shale is a rock formation that underlies much of Pennsylvania and portions of New York, Ohio and West Virginia at a depth of 5,000 to 8,000 feet. It is believed to hold trillions of cubic feet of natural gas. This formation has long been considered prohibitively expensive to access but recent advances in drilling technology and rising natural gas prices have attracted new interest in this previously untapped formation.



The Center for Workforce Information & Analysis (CWIA) used the North American Industry Classification System (NAICS) to define the Marcellus Shale industry sector. Much of the information included in this document reflects data on a group of six industries identified as "core," and a group of 30 identified as "ancillary" to the processes involved in accessing the resources in the Marcellus Shale formation. The six Workforce Investment Areas (WIAs) most closely involved in Marcellus Shale activities are Central, North Central, Northern Tier, Southwest Corner, Tri-County, West Central, and Westmoreland-Fayette.

Population Demographics

The Tri-County WIA encompasses Butler, Armstrong, and Indiana Counties. In September, the region's unemployment rate was 7.2%, which was over a percentage point lower than the state unemployment rate. Within the WIA, Butler County had the lowest rate at 6.7% and Armstrong County the high at 8.9%.



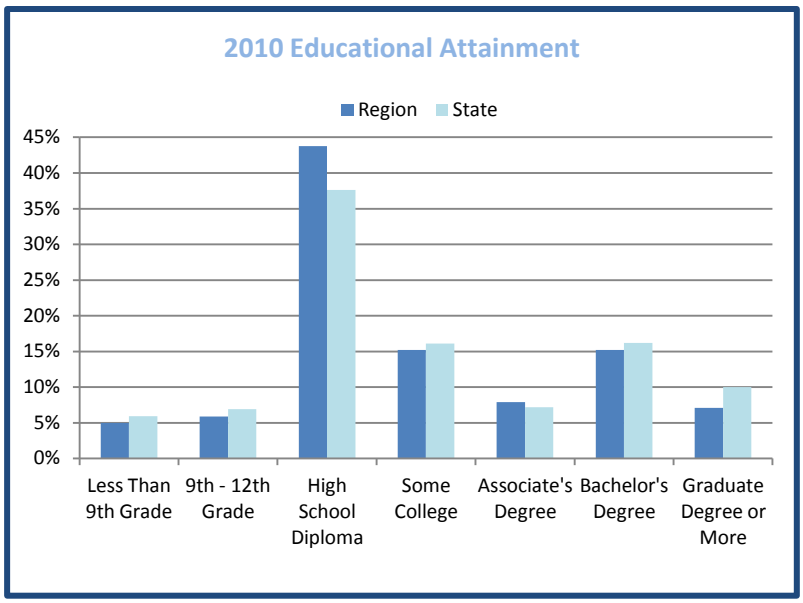
Unemployment Rates

Area	September 2011 Preliminary Seasonally Adjusted Unemployment Rate
Armstrong County	8.9%
Butler County	6.7%
Indiana County	7.4%
Tri-County WIA	7.2%
Pennsylvania	8.3%
United States	9.1%

Source: Pennsylvania Department of Labor & Industry, Local Area Unemployment Statistics

While 89.1% of the population had a high school degree or above, only 22.3% had achieved a four-year degree or higher. The state had a similar percentage of those with a high school degree and higher - 87.1% - but a larger percentage of people who have achieved a more advanced degree.

In the 1990s, the Tri-County region had a smaller increase in population than the nation, but almost twice that of the state. However, growth slowed significantly in the 2000s. In 2010, the region was 95.5% white, non-Hispanic, and 49.4% male.



Source: Economic Modeling Specialists, Inc.

Population

Area	1990 Population	2000 Population	2010 Population	1990-2000 % Change	2000-2010 % Change
Tri-County WIA	315,485	336,080	341,683	6.5%	1.7%
Pennsylvania	11,881,643	12,281,054	12,702,379	3.4%	3.4%
United States	248,709,873	281,421,906	308,745,538	13.2%	9.7%

Source: U.S. Census Bureau

Industry Demographics

Across the Tri-County WIA and the state as a whole, the industries making up the Marcellus Shale sector had a predominantly male workforce. Across the state, most industries had a higher percentage of employment in the 45 to 54 year old age range than any other age group. The industry groups in the tables below encompass, but are not limited to, all of the industries defined by the CWIA as core and ancillary to the Marcellus Shale industry sector.

Industry Gender Demographics, 4th Quarter 2010

NAICS Code	NAICS Title	Pennsylvania	
		Male	Female
2111	Oil and Gas Extraction	81.1%	18.9%
2131	Support Activities for Mining	92.3%	7.7%
2211	Electric Power Generation, Transmission and Distribution	83.1%	16.9%
2212	Natural Gas Distribution	74.2%	25.8%
2213	Water, Sewage and Other Systems	73.4%	26.6%
2371	Utility System Construction	88.9%	11.1%
2373	Highway, Street, and Bridge Construction	85.8%	14.2%

2389	Other Specialty Trade Contractors	89.0%	11.0%
3251	Basic Chemical Manufacturing	77.9%	22.0%
3311	Iron and Steel Mills and Ferroalloy Manufacturing	89.6%	10.4%
3312	Steel Product Manufacturing from Purchased Steel	87.3%	12.7%
3331	Agriculture, Construction, and Mining Machinery Manufacturing	86.0%	14.0%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	75.6%	24.4%
4841	General Freight Trucking	88.9%	11.1%
4842	Specialized Freight Trucking	87.4%	12.6%
4862	Pipeline Transportation of Natural Gas	88.6%	11.4%
5311	Lessors of Real Estate	56.3%	43.7%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	76.5%	23.5%
5413	Architectural, Engineering, and Related Services	74.8%	25.2%
5416	Management, Scientific, and Technical Consulting Services	54.0%	46.0%
5629	Remediation and Other Waste Management Services	81.7%	18.3%
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	85.5%	14.5%
9241	Administration of Environmental Quality Programs	71.4%	28.6%
9261	Administration of Economic Programs	61.0%	39.0%
All Industry Groups		49.4%	50.6%

Source: U.S. Census Bureau, Local Employment Dynamics

Industry Age Demographics, 4th Quarter 2010

NAICS Code	NAICS Title	Pennsylvania				
		14-24	25-34	35-44	45-54	55+
2111	Oil and Gas Extraction	7.8%	28.0%	21.0%	26.5%	16.7%
2131	Support Activities for Mining	15.4%	32.8%	22.2%	19.4%	10.1%
2211	Electric Power Generation, Transmission and Distribution	3.0%	14.3%	18.4%	37.7%	26.5%
2212	Natural Gas Distribution	------	------	------	------	------
2213	Water, Sewage and Other Systems	3.1%	12.0%	20.2%	33.2%	31.4%
2371	Utility System Construction	8.2%	21.3%	22.5%	28.2%	19.9%
2373	Highway, Street, and Bridge Construction	5.5%	17.5%	23.3%	32.0%	21.8%
2389	Other Specialty Trade Contractors	10.6%	21.2%	23.3%	26.4%	18.6%
3251	Basic Chemical Manufacturing	2.6%	14.8%	23.2%	33.0%	26.4%
3311	Iron and Steel Mills and Ferroalloy Manufacturing	2.3%	10.2%	20.6%	33.5%	33.4%
3312	Steel Product Manufacturing from Purchased Steel	3.9%	12.2%	21.2%	31.9%	30.9%
3331	Agriculture, Construction, and Mining Machinery Manufacturing	5.3%	17.4%	22.7%	29.3%	25.3%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	7.0%	16.3%	21.5%	28.7%	26.5%
4841	General Freight Trucking	4.2%	13.0%	24.4%	32.5%	25.9%
4842	Specialized Freight Trucking	6.5%	16.1%	22.6%	30.0%	24.8%
4862	Pipeline Transportation of Natural Gas	2.3%	14.8%	21.1%	40.4%	21.4%
5311	Lessors of Real Estate	7.7%	16.3%	18.8%	27.0%	30.2%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	7.6%	26.2%	27.4%	25.2%	13.5%
5413	Architectural, Engineering, and Related Services	5.6%	22.6%	21.9%	25.7%	24.2%
5416	Management, Scientific, and Technical Consulting Services	6.6%	26.8%	24.8%	23.4%	18.4%
5629	Remediation and Other Waste Management Services	8.6%	21.5%	24.8%	28.4%	16.7%

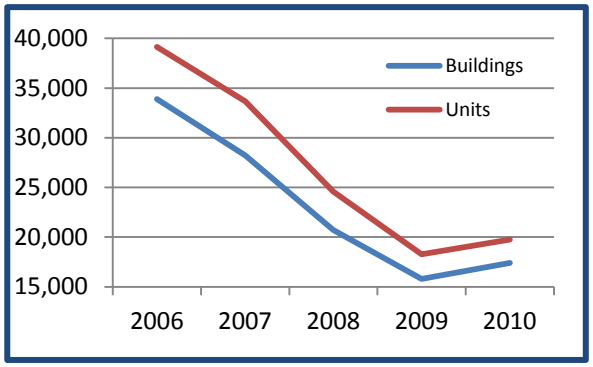
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	9.0%	18.4%	22.4%	29.1%	21.1%
9241	Administration of Environmental Quality Programs	2.7%	15.4%	21.8%	31.8%	28.3%
9261	Administration of Economic Programs	------	------	------	------	------
All Industry Groups		13.0%	20.0%	20.9%	24.6%	21.5%

Source: U.S. Census Bureau, Local Employment Dynamics

Building Permits

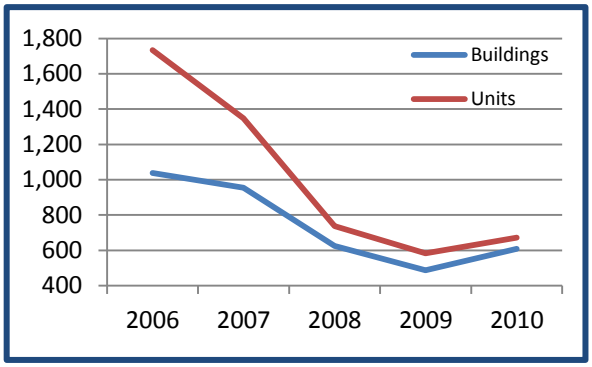
Both the state and the region have seen a decline in building permits since 2006. But while the state saw a 10% increase between 2009 and 2010, the Tri-County region had a 25% increase.

Statewide Building Permits



Source: U.S. Census Bureau

Tri-County Building Permits



Source: U.S. Census Bureau

Employment

Marcellus Shale industries have added almost 500 jobs to the regional economy since early 2008. Both core and ancillary industry groups were already well established in the region in the first quarter of 2008, with over 11,000 employees together. Core industries expanded by over 25% from first quarter 2008 to first quarter 2011.

Average Employment, 1st Quarter 2008 – 1st Quarter 2011

Industry Group	2008 Q1	2011 Q1	Change	% Change
Core	2,219	2,804	585	26.4%
Ancillary	8,876	8,788	-88	-1.0%

Source: Pennsylvania Department of Labor & Industry, Quarterly Census of Employment and Wages

Wages

In 2010, the core industries had an average annual wage of $58,414 in the Tri-County region, which was well above the state average for all industries of $45,747 and 1.5 times higher than the regional average of $39,736. The ancillary industries had an even higher average wage at $61,289. The state's average wage for core industries was $73,150 and for ancillary was $61,871.

New Hires

Marcellus shale related industries have consistently added new hires in the Tri-County WIA. In three of the past four years, there have been at least 750 new hires in shale related industries.

New Hires

Tri County	2008 Q2	2009 Q2	2010 Q2	2011 Q2	Volume Change 2008Q2 – 2011Q2	Percent Change 2008Q2 – 2011Q2
Core	214	74	209	179	-35	-16.4%
Ancillary	536	381	552	591	55	10.3%

Source: The Pennsylvania Department of Labor & Industry, New Hires Program

Workforce Compatibility

These data provide an understanding of how well the skills of a region's labor force meet the workforce needs of an industry. The first number is the proportion of industry jobs that require higher levels of experience, training, and education. The second number is the proportion of the region's workforce that has the higher skills the industry seeks. For example, in water supply and irrigation systems (NAICS 221310) almost 60% of the occupations within the industry require significant levels of on-the-job training and/or post-secondary education, indicating that the industry is very skilled. Furthermore, over 25%-- 1 in 4—of the region's workers has the skill sets required to meet the occupational needs of the industry sector. Given this information, an analyst can conceivably conclude that the industry is a good fit for the capabilities of the regional workforce.

In the Tri-County region, most industries are reasonably compatible with the local workforce. However, potential workforce skill gaps can be found in fossil fuel electric power generation; petrochemical manufacturing; industrial gas manufacturing; engineering services; geophysical surveying and mapping services; testing laboratories; and natural gas distribution.

Industry and Workforce Compatibility

NAICS Code (Core)	NAICS Title	% Skilled Workforce in Industry	% of Region's Workforce Compatible
211111	Crude Petroleum and Natural Gas Extraction	27.1%	23.7%
211112	Natural Gas Liquid Extraction	26.1%	21.5%
213111	Drilling Oil and Gas Wells	16.7%	25.0%
213112	Support Activities for Oil and Gas Operations	16.8%	25.0%
237120	Oil and Gas Pipeline and Related Structures Construction	39.3%	20.6%
486210	Pipeline Transportation of Natural Gas	46.4%	18.0%
NAICS	NAICS Title	% Skilled	% of Region's

Code (Ancillary)		Workforce in Industry	Workforce Compatible
221112	Fossil Fuel Electric Power Generation	60.4%	13.4%
221210	Natural Gas Distribution	36.7%	14.9%
221310	Water Supply and Irrigation Systems	59.8%	25.7%
221320	Sewage Treatment Facilities	63.2%	26.0%
237110	Water and Sewer Line and Related Structures Construction	38.9%	20.6%
237310	Highway, Street, and Bridge Construction	42.7%	19.9%
238912	Nonresidential site preparation contractors	42.2%	19.8%
325110	Petrochemical Manufacturing	29.1%	14.5%
325120	Industrial Gas Manufacturing	29.1%	14.5%
331111	Iron and Steel Mills	32.3%	19.8%
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	24.0%	20.2%
333131	Mining Machinery and Equipment Manufacturing	25.8%	22.8%
333132	Oil and Gas Field Machinery and Equipment Manufacturing	25.6%	24.2%
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	47.0%	25.4%
423830	Industrial Machinery and Equipment Merchant Wholesalers	47.0%	25.4%
423840	Industrial Supplies Merchant Wholesalers	47.0%	25.4%
484110	General Freight Trucking, Local	10.1%	27.7%
484220	Specialized Freight (except Used Goods) Trucking, Local	11.4%	29.6%
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	11.4%	29.6%
531190	Lessors of Other Real Estate Property	37.6%	27.3%
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	34.5%	22.3%
541330	Engineering Services	52.8%	4.3%
541360	Geophysical Surveying and Mapping Services	51.4%	4.6%
541380	Testing Laboratories	35.8%	4.2%
541620	Environmental Consulting Services	31.2%	22.3%
562910	Remediation Services	18.8%	19.0%
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	50.3%	21.0%
924110	Admin. Of Air & Water Resources & Solid Waste Management Programs	--	--
924120	Admin. Of Conservation Programs	--	--
926130	Regulation & Admin. Of Communications, Electric, Gas, & Other Utilities	--	--

Source: Economic Modeling Specialists, Inc.