Northern Tier

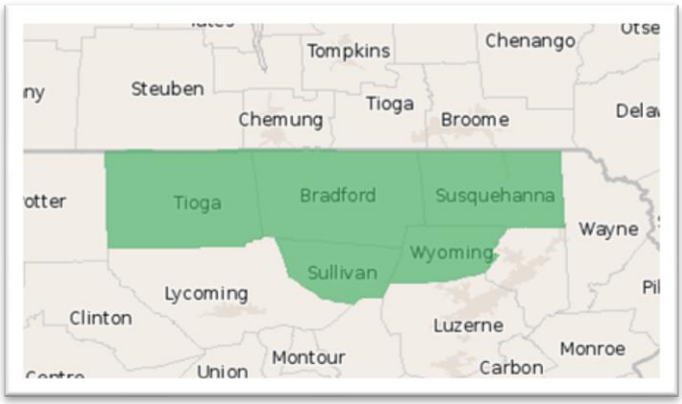
Pennsylvania's Marcellus Shale Formation

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 Northern Tier WIA encompasses Bradford, Sullivan, Susquehanna, Tioga, and Wyoming Counties. The regional unemployment rate was 7.4% in September, which was nine-tenths of a percentage point lower than the state rate. Bradford County had the lowest rate at 6.4% and Wyoming County the high at 9.3%.



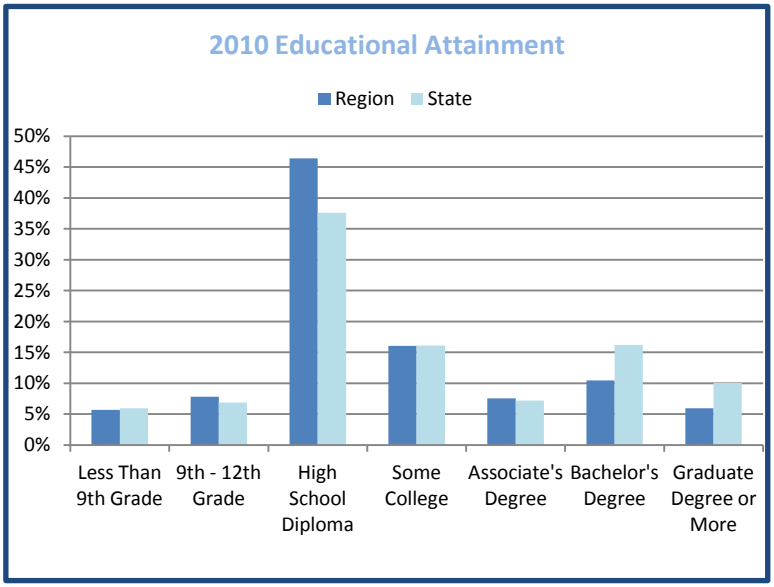
Unemployment Rates

Area	September 2011 Preliminary Seasonally Adjusted Unemployment Rate
Bradford County	6.4%
Sullivan County	6.8%
Susquehanna County	8.1%
Tioga County	7.6%
Wyoming County	9.3%
Northern Tier WIA	7.4%
Pennsylvania	8.3%
United States	9.1%

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

While 86.5% of the region's population had a high school degree or above, only 16.4% 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.

The Northern Tier region had a smaller increase in population than both the state and the nation in the 1990s as well as the 2000s. In 2010, the region was 96.3% white, non-Hispanic, and 49.6% male.



Source: Economic Modeling Specialists, Inc.

Population

Area	1990 Population	2000 Population	2010 Population	1990-2000 % Change	2000-2010 % Change
Northern Tier WIA	176,653	181,008	182,663	2.5%	0.9%
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 state as a whole as well as in the Northern Tier WIA, the industries making up the Marcellus Shale sector had a predominantly male workforce despite the fact that the overall workforce was divided evenly between males and females. 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%

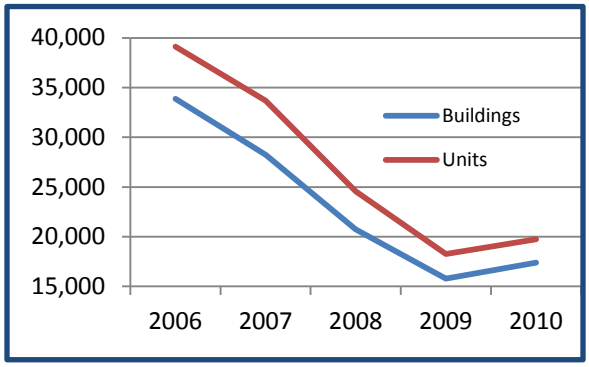
5629	Remediation and Other Waste Management Services	8.6%	21.5%	24.8%	28.4%	16.7%
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	9.0%	18.4%	22.4%	29.1%	21.1%
9241	Administration of Environmental Quality Programs	2.7%	15.4%	21.8%	31.8%	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

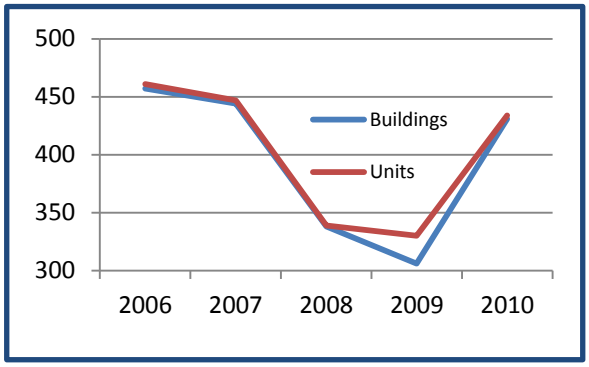
Both the state and the region have seen a decline in building permits since 2006. But while the state saw a 10% increase between 2009 and 2010, the Northern Tier region had a 41% increase. In fact, the region has almost returned to 2006 numbers. This correlates with the large increase in jobs in the Marcellus Shale industries in 2009-2010.

Statewide Building Permits



Source: U.S. Census Bureau

Northern Tier Building Permits



Source: U.S. Census Bureau

Employment

Marcellus Shale industries have added over 3,200 jobs to the regional economy since the first quarter of 2008. The core industries have gone from practically non-existent to almost 1,900 employees in three years, a change of over 2,000 percent, while employment in ancillary industries has nearly doubled.

Average Employment, 4th Quarter 2007 – 4th Quarter 2010

Industry Group	2008 Q1	2011 Q1	Change	% Change
Core	87	1,893	1,806	2075.9%
Ancillary	1,621	3,044	1,423	87.8%

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

Wages

In 2010, the core industries had an average annual wage of $84,309 in the Northern Tier region, which was well above the state average for all industries of $45,747 and almost 2.5 times higher than the regional average of $35,010. The Northern Tier region's ancillary industries had an average wage of $41,967 in 2010. The state's average wage for core industries was $73,150 and for ancillary was $61,871.

New Hires

The Northern Tier region saw an increased number of new hires in second quarter of 2011 compared to second quarter 2008 in both the core and ancillary industries

New Hires

Northern Tier	2008 Q2	2009 Q2	2010 Q2	2011 Q2	Volume Change 2008Q2 – 2011Q2	Percent Change 2008Q2 – 2011Q2
Core	0	1	82	170	170	N/A
Ancillary	41	38	147	184	143	348.8%

Source: 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) over 63% 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 23%--almost 1 in 4—of the region's workers have 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 Northern Tier region, most industries are reasonably compatible with the local workforce. However, potential workforce skill gaps can be found in engineering services; geophysical surveying and mapping services; testing laboratories; industrial gas manufacturing; commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance; 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	23.8%	21.6%
211112	Natural Gas Liquid Extraction	--	--
213111	Drilling Oil and Gas Wells	16.7%	21.6%
213112	Support Activities for Oil and Gas Operations	16.7%	22.1%
237120	Oil and Gas Pipeline and Related Structures Construction	39.8%	19.4%

486210	Pipeline Transportation of Natural Gas	43.8%	15.9%

NAICS Code (Ancillary)	NAICS Title	% Skilled Workforce in Industry	% of Region's Workforce Compatible
221112	Fossil Fuel Electric Power Generation	--	--
221210	Natural Gas Distribution	35.7%	13.7%
221310	Water Supply and Irrigation Systems	63.1%	23.4%
221320	Sewage Treatment Facilities	62.0%	24.1%
237110	Water and Sewer Line and Related Structures Construction	39.8%	19.4%
237310	Highway, Street, and Bridge Construction	--	--
238912	Nonresidential site preparation contractors	43.6%	21.0%
325110	Petrochemical Manufacturing	--	--
325120	Industrial Gas Manufacturing	31.9%	13.6%
331111	Iron & Steel Mills	--	--
331210	Iron & Steel Pipe & Tube Manufacturing from Purchased Steel	--	--
333131	Mining Machinery & Equipment Manufacturing	--	--
333132	Oil & Gas Field Machinery Manufacturing	--	--
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	44.5%	17.8%
423830	Industrial Machinery and Equipment Merchant Wholesalers	--	--
423840	Industrial Supplies Merchant Wholesalers	44.1%	21.6%
484110	General Freight Trucking, Local	45.0%	21.6%
484220	Specialized Freight (except Used Goods) Trucking, Local	9.8%	25.9%
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	9.9%	25.9%
531190	Lessors of Other Real Estate Property	39.7%	24.0%
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	31.5%	19.9%
541330	Engineering Services	46.0%	2.8%
541360	Geophysical Surveying and Mapping Services	46.4%	2.9%
541380	Testing Laboratories	38.3%	6.2%
541620	Environmental Consulting Services	29.6%	24.2%
562910	Remediation Services	21.6%	17.1%
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	51.6%	14.1%
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.