

## America's Oil and Natural Gas Industry



## Energizing America: Facts for Addressing Energy Policy







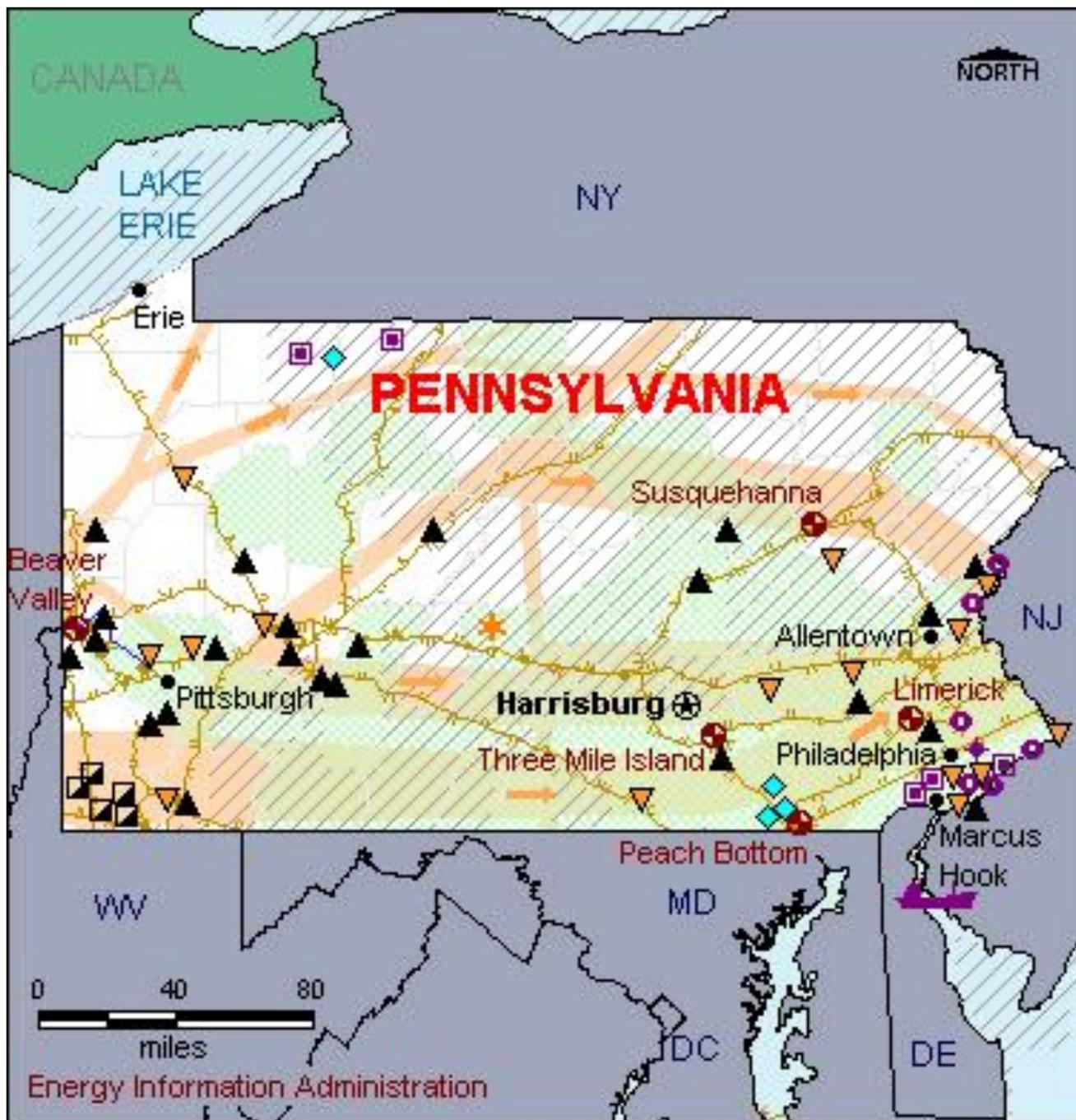




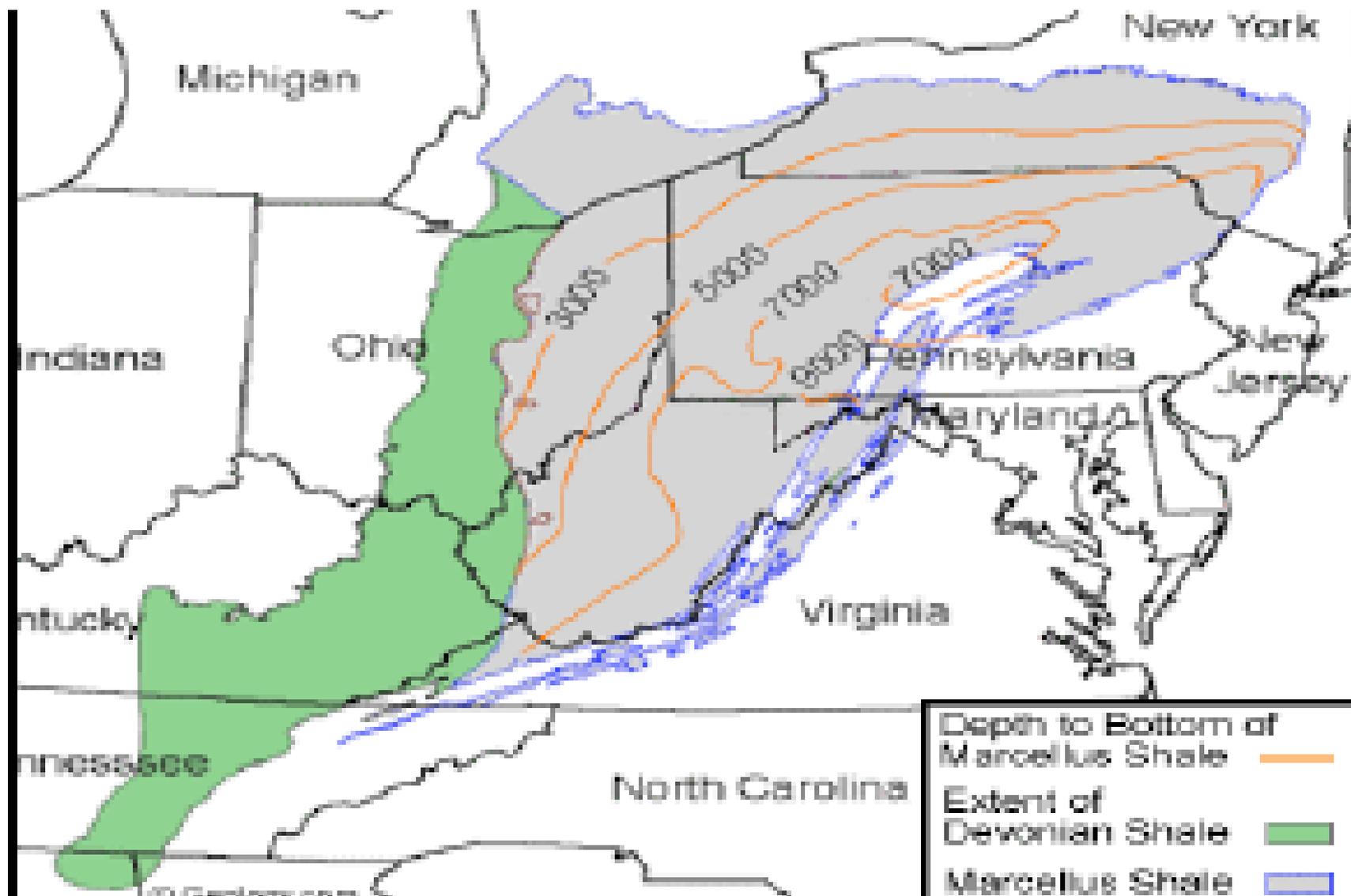




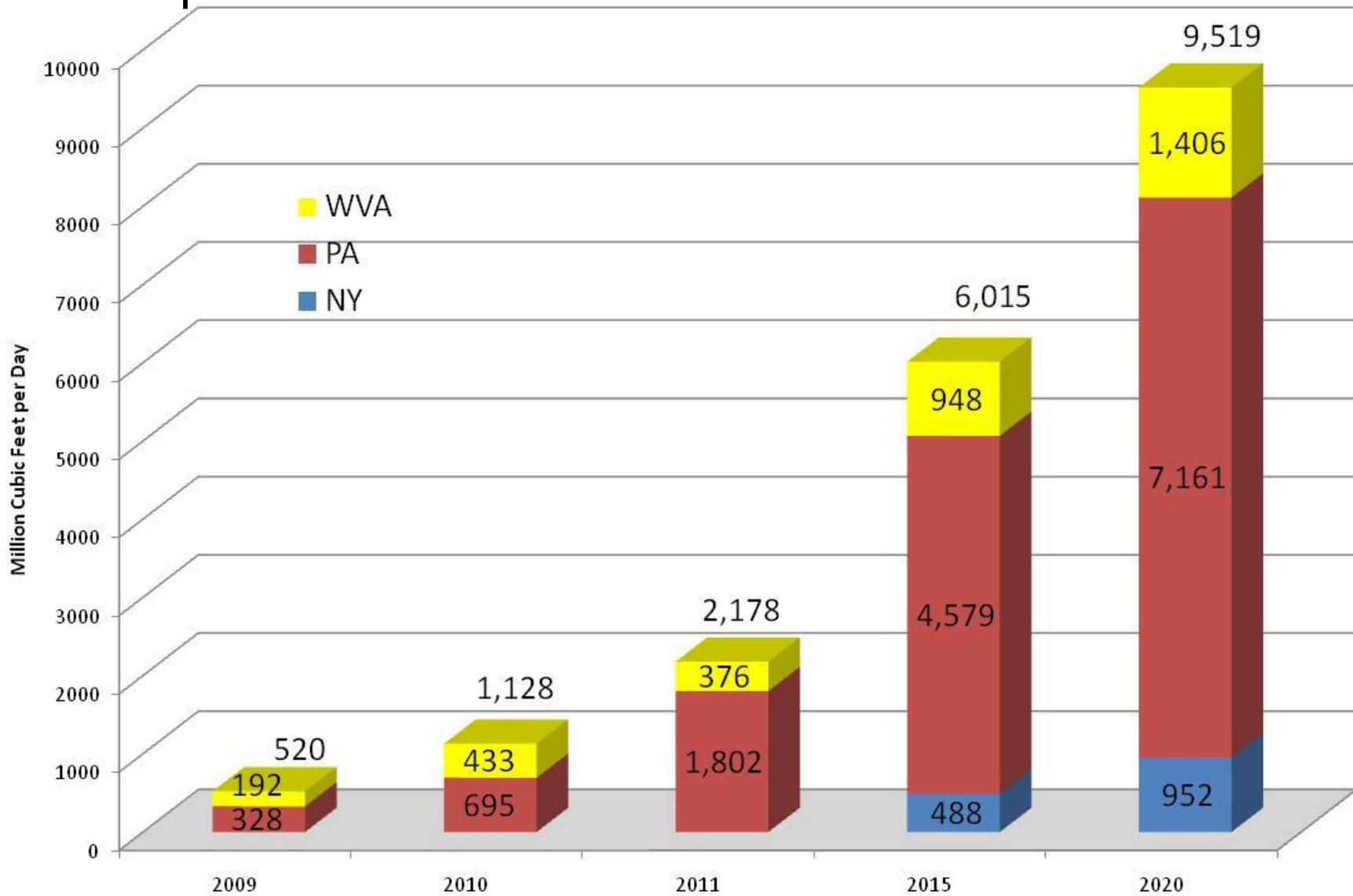




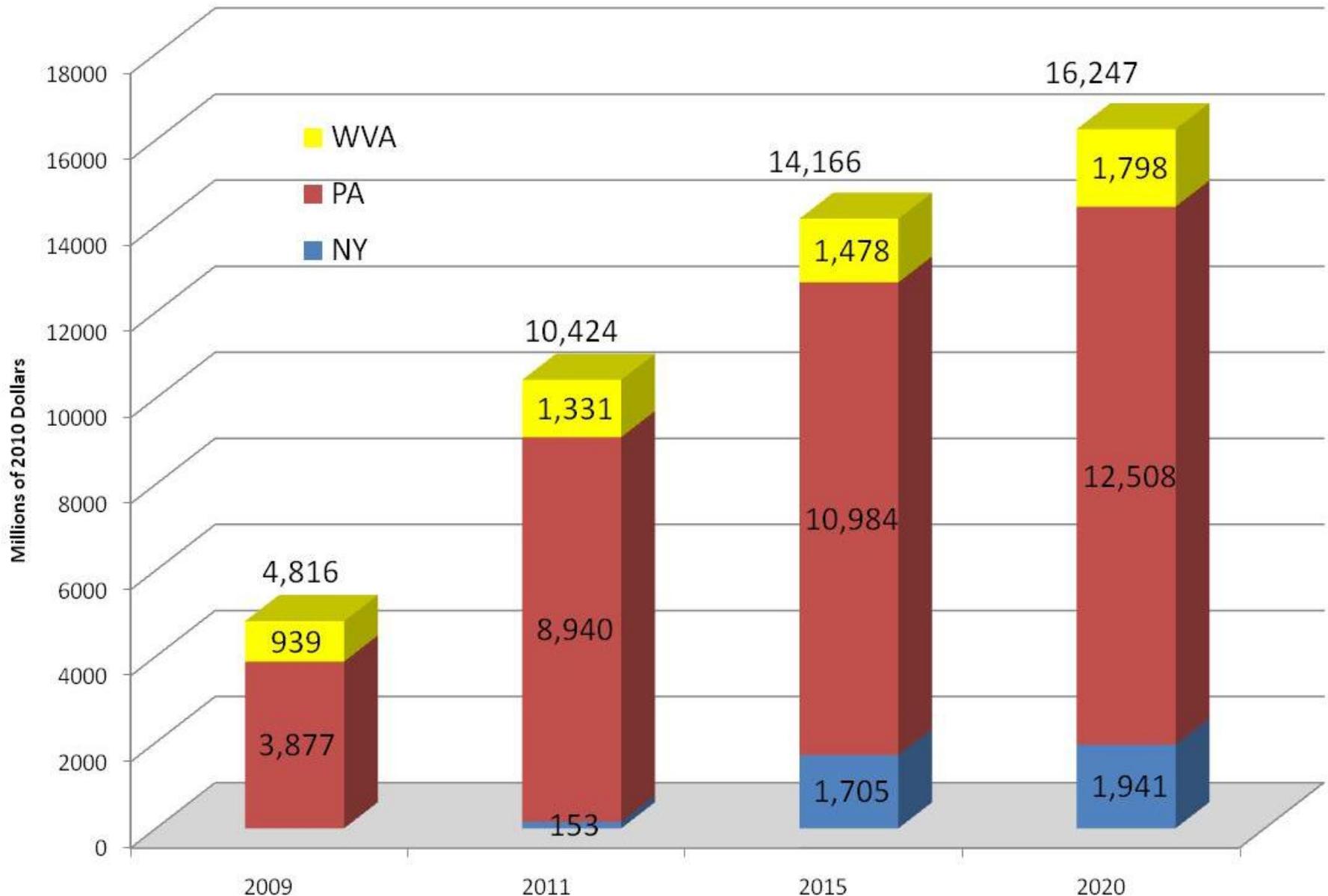




# Estimated natural gas production from Marcellus development

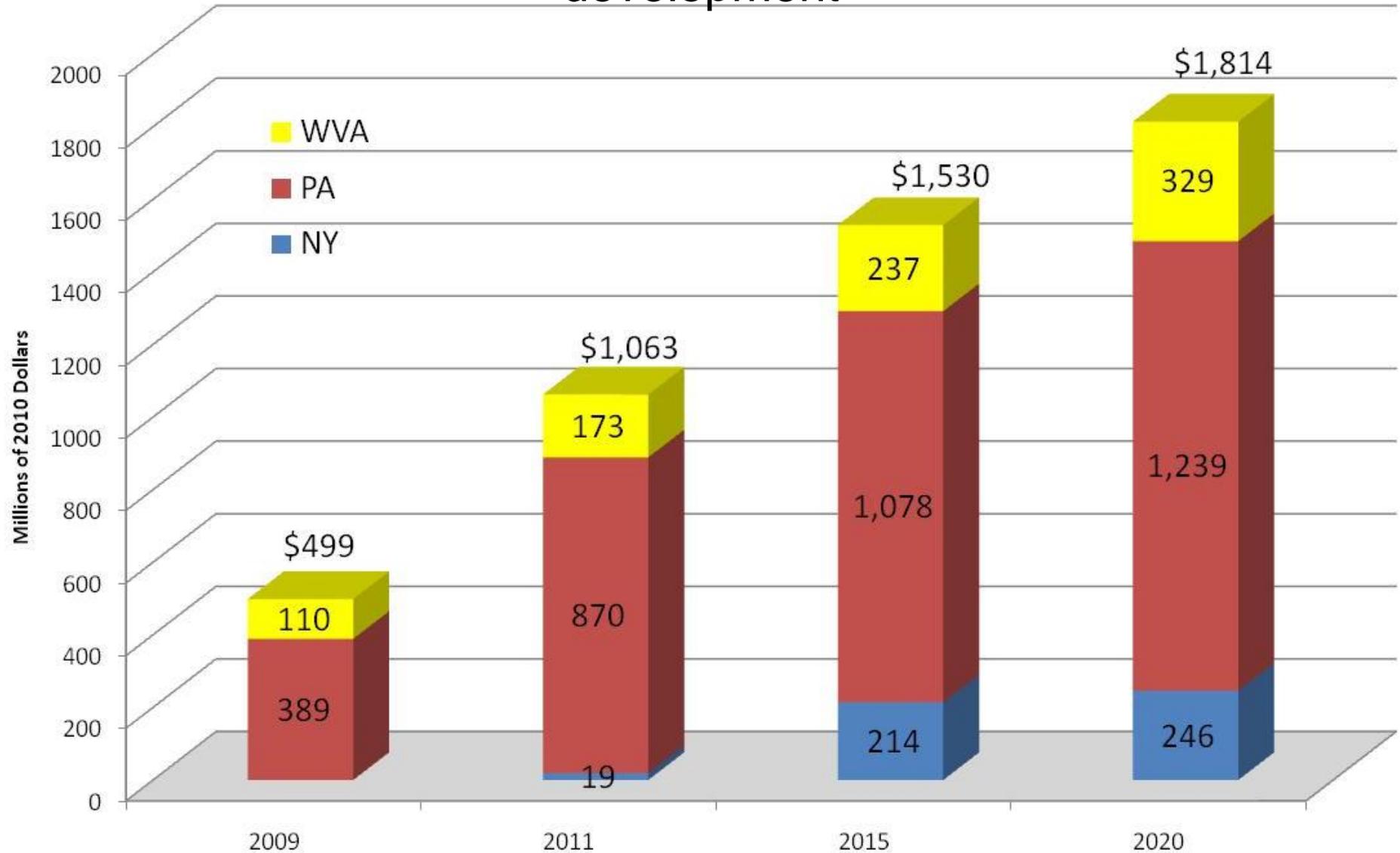


# Estimated value added from Marcellus development

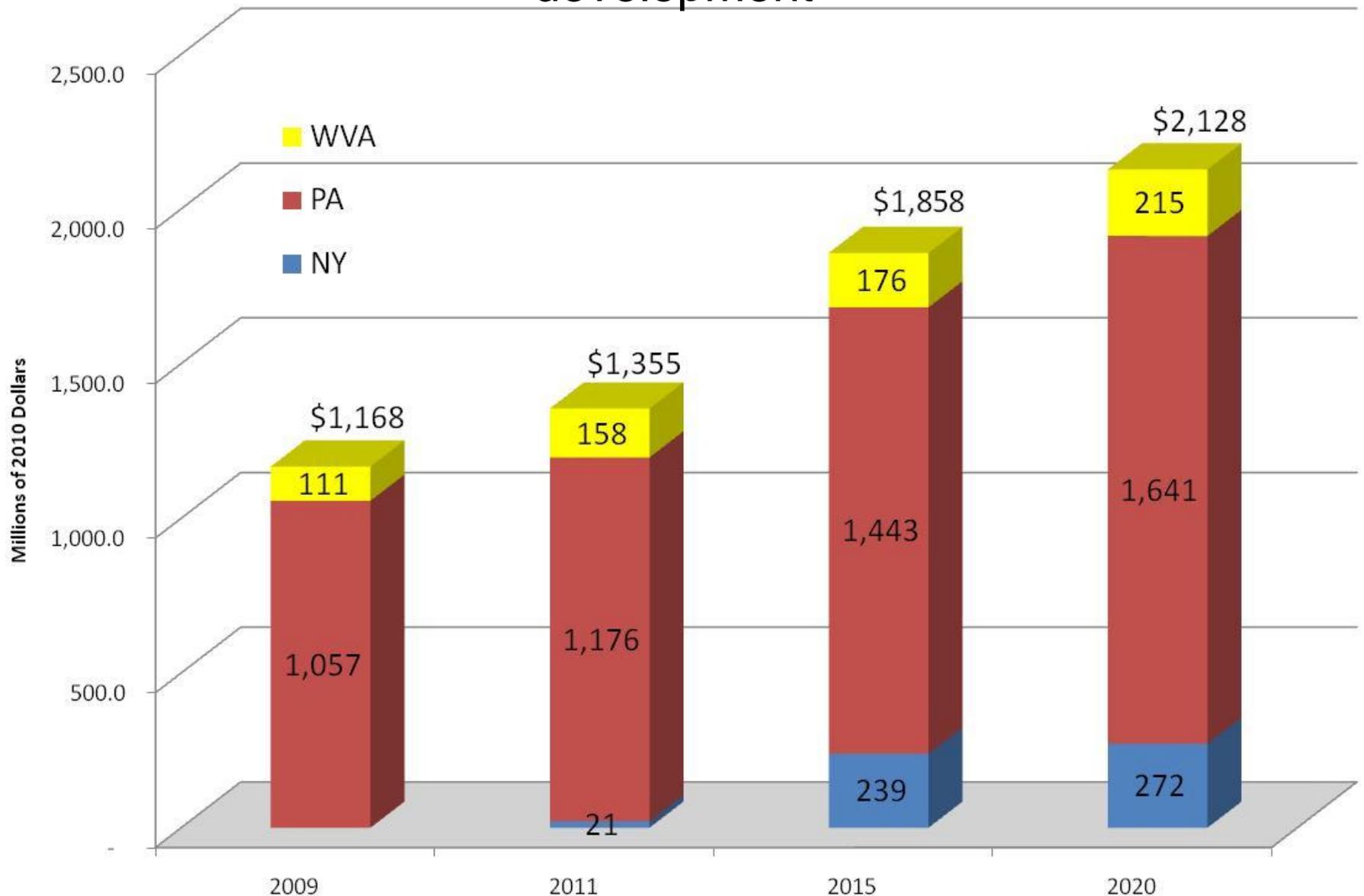


Source: Medium development case from Timothy Considine, "Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania, and West Virginia," July 14, 2010

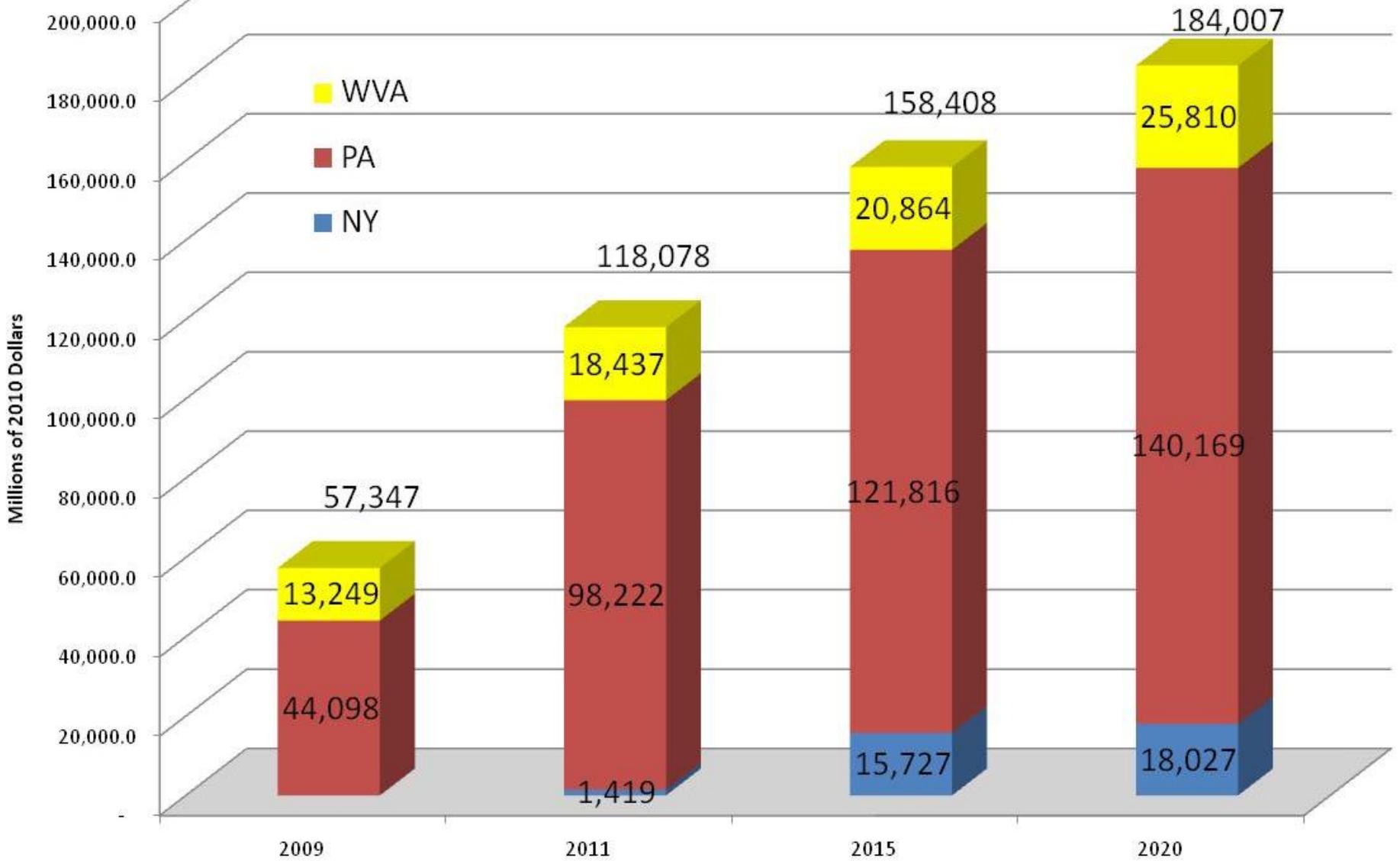
# Estimated state and local taxes generated from Marcellus development



# Estimated federal taxes generated from Marcellus development



# Estimated number of jobs created from Marcellus development



Source: Medium development case from Timothy Considine, "Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania, and West Virginia," July 14, 2010

## Economic Impact of Marcellus Shale on New York\*

	2009	2011	2015	2020
Employment	0	1,419 - 1,598	15,727 - 20,803	18,027 - 27,060
Value Added (millions)	0	\$153 - \$171	\$1,705 - \$2,250	\$1,941 - \$2,910
State & Local Taxes (millions)	0	\$19 - \$22	\$214 - \$283	\$246 - \$369
Federal Taxes (millions)	0	\$21- \$24	\$239 - \$316	\$272 - \$407

*\*Medium to High Development Scenarios*

Source: Timothy J. Consideine, "The Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania and West Virginia," July 2010

## Economic Impact of Marcellus Shale on Pennsylvania

	2009	2011	2015	2020
Employment	44,098	60,755 - 111,413	77,788 – 160,205	87,119 – 211,909
Value Added (millions)	\$3,877	\$5,510 - \$10,219	\$6,957 - \$14,415	\$7,744 - \$18,853
State & Local Taxes (millions)	\$389	\$538 - \$987	\$688 - \$1,417	\$770 - \$1,872
Federal Taxes (millions)	\$1,057	\$724 – \$1,332	\$913 - \$1,893	\$1,016 - \$2,473

Source: Timothy J. Considine, “The Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania and West Virginia,” July 2010

## Economic Impact of Marcellus Shale on West Virginia

	2009	2011	2015	2020
Employment	13,249	11,405 – 22,298	12,332 - 30,675	14,856 – 43,746
Value Added (millions)	\$939	\$819 - \$1,652	\$877 - \$2,168	\$1,044 - \$3,035
State & Local Taxes (millions)	\$110	\$114 - \$221	\$134 - \$377	\$176 - \$600
Federal Taxes (millions)	\$111	\$97 - \$196	\$104 - \$259	\$125 - \$364

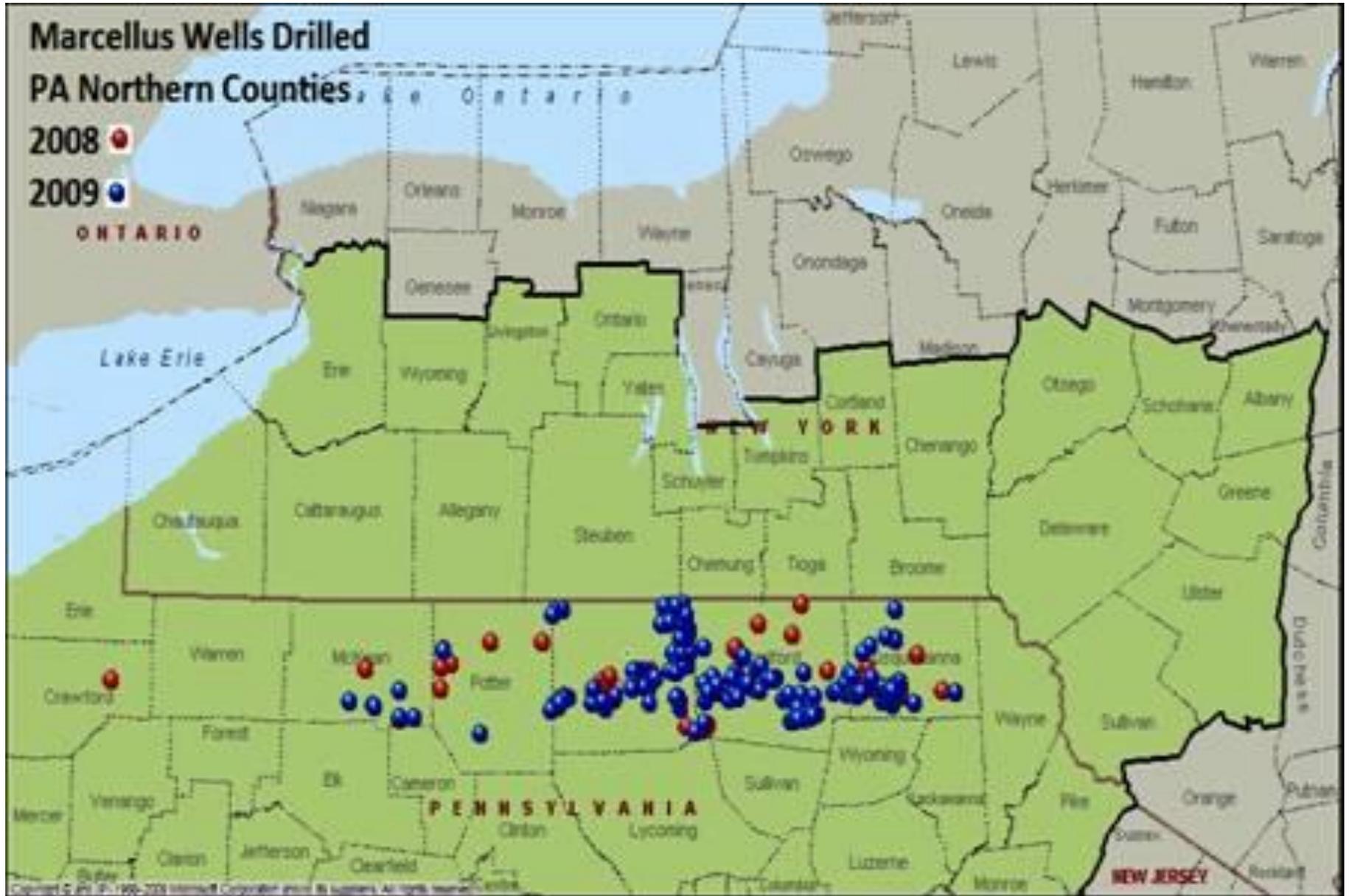
Source: Timothy J. Considine, “The Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania and West Virginia,” July 2010

## Economic Impact of Marcellus Shale on New York, Pennsylvania and West Virginia

	2009 PA & WV	2011	2015	2020
Employment	57,347	72,160 – 135,939	90,120 – 211,683	101,975- 282,716
Value Added (millions)	\$4,816	\$6,329 - \$11,952	\$7,835 - \$18,833	\$8,788 - \$24,798
State & Local Taxes (millions)	\$499	\$652 - \$1,243	\$822 - \$2,134	\$945 - \$2,991
Federal Taxes (millions)	\$1,168	\$821 - \$1,551	\$1,017 - \$2,467	\$1,140 - \$3,245

Source: Timothy J. Considine, “The Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania and West Virginia,” July 2010

# Northern Pennsylvania Marcellus drilling and New York State



**Table 4: Estimated Employment Impacts in Pennsylvania during 2009**

Sector	Number of Jobs			
	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	103	130	79	311
Mining	2,878	51	8	2,937
Utilities	73	45	41	159
Construction	4,989	161	122	5,272
Manufacturing	239	374	222	1,034
Wholesale Trade	2,266	308	421	3,195
Retail trade	2,938	225	2,771	5,934
Transportation & Warehousing	613	617	303	1,533
Information	61	322	239	621
Finance & Insurance	164	700	847	1,711
Real estate & rental	446	386	396	1,629
Professional- scientific & tech services	738	1,938	543	3,219
Management of companies	0	302	70	372
Administrative & waste services	326	1,340	600	2,266
Educational services	1,070	23	574	1,667
Health & social services	1,984	22	2,938	4,943
Arts- entertainment & recreation	401	113	403	917
Hotel & food services	1,368	445	1,393	3,206
Other services	968	427	1,238	2,633
Government & Misc.	154	203	180	538
<b>Total</b>	<b>21,778</b>	<b>8,732</b>	<b>13,587</b>	<b>44,098</b>

**Table 14: Estimated Future Economic Impacts under Three Development Scenarios**

<i>Assumptions</i>	<i>Low Development*</i>			<i>Medium Development</i>			<i>High Development**</i>		
	<i>(E = 0.5, R/W = 1.5 bcf)</i>			<i>(E = 1.0, R/W = 2.0 bcf)</i>			<i>(E = 2.7, R/W = 2.8 bcf)</i>		
	<u>2011</u>	<u>2015</u>	<u>2020</u>	<u>2011</u>	<u>2015</u>	<u>2020</u>	<u>2011</u>	<u>2015</u>	<u>2020</u>
<b>Wells Drilled</b>	<i>Number of Wells</i>								
NY	0	0	0	42	314	340	52	406	502
PA	1,220	1,353	1,465	2,019	2,239	2,434	2,211	2,903	3,587
WVA	227	252	273	376	417	452	464	609	752
Total	1,447	1,605	1,738	2,436	2,970	3,216	2,727	3,918	4,842
<b>NC Output</b>	<i>Million cubic feet per day</i>								
NY	0	0	0	0	488	952	0	853	1,839
PA	1,353	2,246	3,360	1,802	4,579	7,161	2,522	7,607	13,457
WVA	227	488	677	376	948	1,406	464	1,713	2,916
Total	1,581	2,734	4,036	2,178	6,015	9,519	2,986	10,173	18,212
<b>Value Added</b>	<i>Millions of 2010 dollars</i>								
NY	0	0	0	153	1,705	1,941	171	2,250	2,910
PA	5,510	6,957	7,744	8,940	10,984	12,508	10,129	14,415	18,853
WVA	819	877	1,044	1,331	1,478	1,798	1,652	2,168	3,035
Total	6,329	7,835	8,788	10,424	14,166	16,247	11,952	18,833	24,798
<b>S&amp;E Taxes</b>	<i>Millions of 2010 dollars</i>								
NY	0	0	0	19	214	246	22	283	369
PA	538	688	770	870	1,078	1,239	987	1,417	1,872
WVA	114	134	176	173	237	329	221	377	600
Total	652	822	945	1,063	1,530	1,814	1,243	2,134	2,991
<b>Fed. Taxes</b>	<i>Millions of 2010 dollars</i>								
NY	0	0	0	21	239	272	24	316	407
PA	724	913	1,016	1,176	1,443	1,641	1,332	1,893	2,473
WVA	97	104	125	158	176	215	196	259	364
Total	821	1,017	1,140	1,355	1,858	2,128	1,551	2,467	3,245
<b>Employment</b>	<i>Number of Jobs</i>								
NY	0	0	0	1,419	15,727	18,027	1,598	20,803	27,060
PA	60,755	77,788	87,119	98,222	121,816	140,160	111,413	160,205	211,909
WVA	11,405	12,332	14,856	18,437	20,864	25,810	22,928	30,675	43,746
Total	72,160	90,120	101,975	118,078	158,408	184,007	135,939	211,683	282,716

E = price elasticity of drilling, R/W = reserves per well,

\* Assumes 30% reductions in Pennsylvania and West Virginia drilling during 2011 from 2010 levels.

\*\* Uses survey estimates for planned spending in Pennsylvania in 2011.



**County Business Patterns  
Pennsylvania**

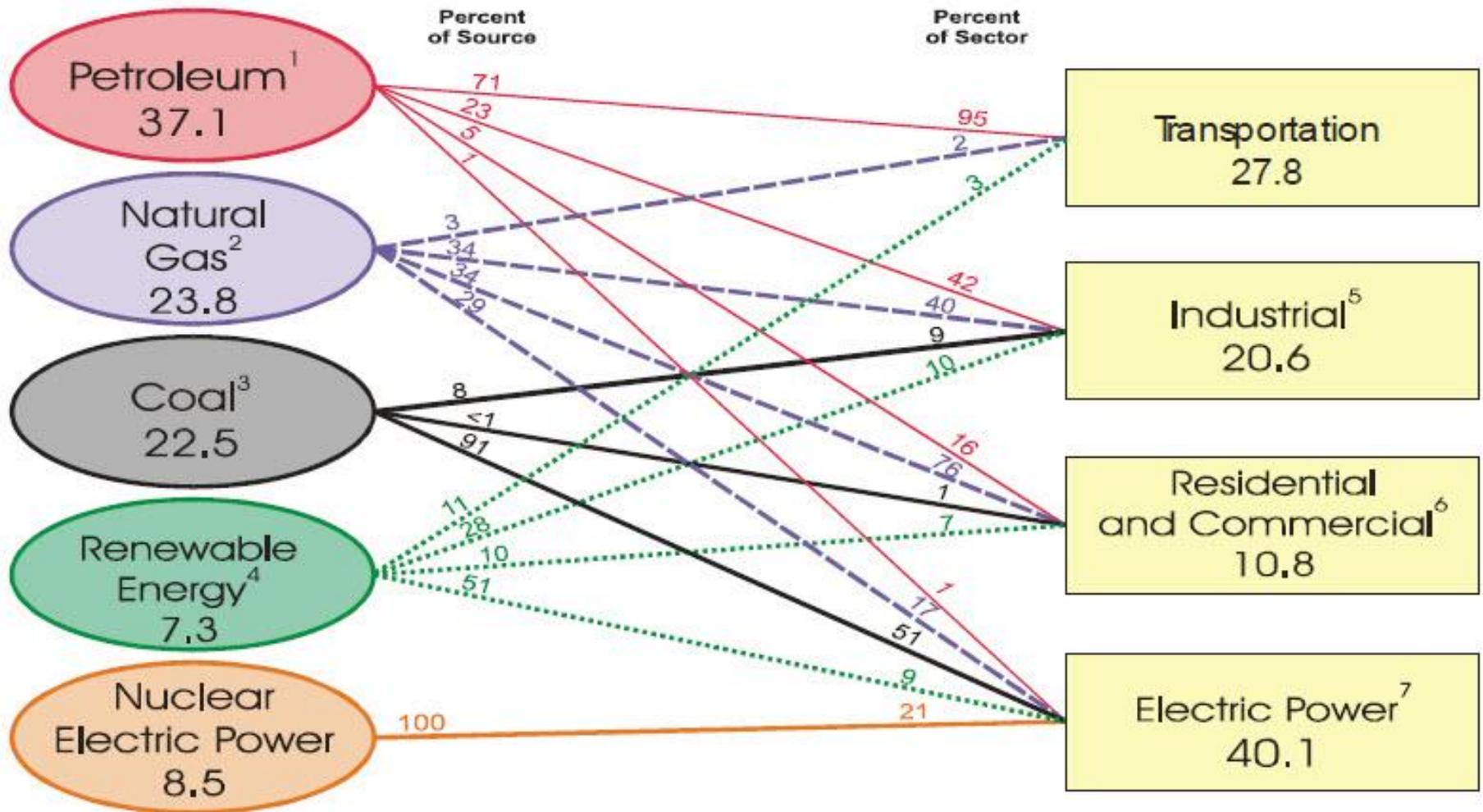
<b>Industry code description</b>	<b>Paid employees 1998</b>	<b>2008</b>	<b>2008-1998</b>	<b>percent</b>
<b>Total</b>	<b>4,906,190</b>	<b>5,231,026</b>	<b>324,836</b>	<b>6.62</b>
<b>Forestry, fishing, hunting, and agriculture support</b>	<b>2,508</b>	<b>2,893</b>	<b>385</b>	<b>15.35</b>
<b>Mining</b>	<b>17,820</b>	<b>21,052</b>	<b>3,232</b>	<b>18.14</b>
<b>Utilities</b>	<b>37,333</b>	<b>30,941</b>	<b>-6,392</b>	<b>-17.12</b>
<b>Construction</b>	<b>225,797</b>	<b>257,229</b>	<b>31,432</b>	<b>13.92</b>
<b>Manufacturing</b>	<b>818,215</b>	<b>638,681</b>	<b>-179,534</b>	<b>-21.94</b>
<b>Wholesale trade</b>	<b>234,940</b>	<b>247,957</b>	<b>13,017</b>	<b>5.54</b>
<b>Retail trade</b>	<b>645,472</b>	<b>676,811</b>	<b>31,339</b>	<b>4.86</b>
<b>Transportation &amp; warehousing</b>	<b>149,640</b>	<b>209,328</b>	<b>59,688</b>	<b>39.89</b>
<b>Information</b>	<b>122,065</b>	<b>128,262</b>	<b>6,197</b>	<b>5.08</b>
<b>Finance &amp; insurance</b>	<b>272,427</b>	<b>276,899</b>	<b>4,472</b>	<b>1.64</b>
<b>Real estate &amp; rental &amp; leasing</b>	<b>60,852</b>	<b>68,505</b>	<b>7,653</b>	<b>12.58</b>
<b>Professional, scientific &amp; technical services</b>	<b>266,917</b>	<b>313,614</b>	<b>46,697</b>	<b>17.49</b>
<b>Management of companies &amp; enterprises</b>	<b>135,655</b>	<b>146,770</b>	<b>11,115</b>	<b>8.19</b>
<b>Admin, support, waste mgt, remediation services</b>	<b>278,403</b>	<b>307,181</b>	<b>28,778</b>	<b>10.34</b>
<b>Educational services</b>	<b>179,134</b>	<b>235,908</b>	<b>56,774</b>	<b>31.69</b>
<b>Health care and social assistance</b>	<b>740,333</b>	<b>905,622</b>	<b>165,289</b>	<b>22.33</b>
<b>Arts, entertainment &amp; recreation</b>	<b>60,183</b>	<b>85,211</b>	<b>25,028</b>	<b>41.59</b>
<b>Accommodation &amp; food services</b>	<b>364,480</b>	<b>432,215</b>	<b>67,735</b>	<b>18.58</b>
<b>Other services (except public administration)</b>	<b>239,673</b>	<b>245,690</b>	<b>6,017</b>	<b>2.51</b>

**County Business Patterns****Lycoming****Paid employees**

<b>Industry code description</b>	<b>1998</b>	<b>2008</b>	<b>2008-1998</b>	<b>Percent</b>
<b>Total</b>	<b>47148</b>	<b>46554</b>	<b>-594</b>	<b>-1.26</b>
<b>Forestry, fishing, hunting, and agriculture support</b>	<b>20B</b>			
<b>Mining</b>	<b>170</b>	<b>121</b>	<b>-49</b>	<b>-28.82</b>
<b>Utilities</b>	<b>E</b>	<b>C</b>		
<b>Construction</b>	<b>1824</b>	<b>2275</b>	<b>451</b>	<b>24.73</b>
<b>Manufacturing</b>	<b>12625</b>	<b>9419</b>	<b>-3206</b>	<b>-25.39</b>
<b>Wholesale trade</b>	<b>2300</b>	<b>2939</b>	<b>639</b>	<b>27.78</b>
<b>Retail trade</b>	<b>7407</b>	<b>7344</b>	<b>-63</b>	<b>-0.85</b>
<b>Transportation &amp; warehousing</b>	<b>866</b>	<b>1260</b>	<b>394</b>	<b>45.50</b>
<b>Information</b>	<b>1154</b>	<b>918</b>	<b>-236</b>	<b>-20.45</b>
<b>Finance &amp; insurance</b>	<b>2000</b>	<b>1470</b>	<b>-530</b>	<b>-26.50</b>
<b>Real estate &amp; rental &amp; leasing</b>	<b>312</b>	<b>451</b>	<b>139</b>	<b>44.55</b>
<b>Professional, scientific &amp; technical services</b>	<b>1252</b>	<b>1482</b>	<b>230</b>	<b>18.37</b>
<b>Management of companies &amp; enterprises</b>	<b>87</b>	<b>299</b>	<b>212</b>	<b>243.68</b>
<b>Admin, support, waste mgt, remediation services</b>	<b>1985</b>	<b>2331</b>	<b>346</b>	<b>17.43</b>
<b>Educational services</b>	<b>968</b>	<b>876</b>	<b>-92</b>	<b>-9.50</b>
<b>Health care and social assistance</b>	<b>7935</b>	<b>8328</b>	<b>393</b>	<b>4.95</b>
<b>Arts, entertainment &amp; recreation</b>	<b>455</b>	<b>510</b>	<b>55</b>	<b>12.09</b>
<b>Accommodation &amp; food services</b>	<b>3293</b>	<b>3991</b>	<b>698</b>	<b>21.20</b>
<b>Other services (except public administration)</b>	<b>2036</b>	<b>2366</b>	<b>330</b>	<b>16.21</b>

## Supply Sources

## Demand Sectors



Energy Information Administration

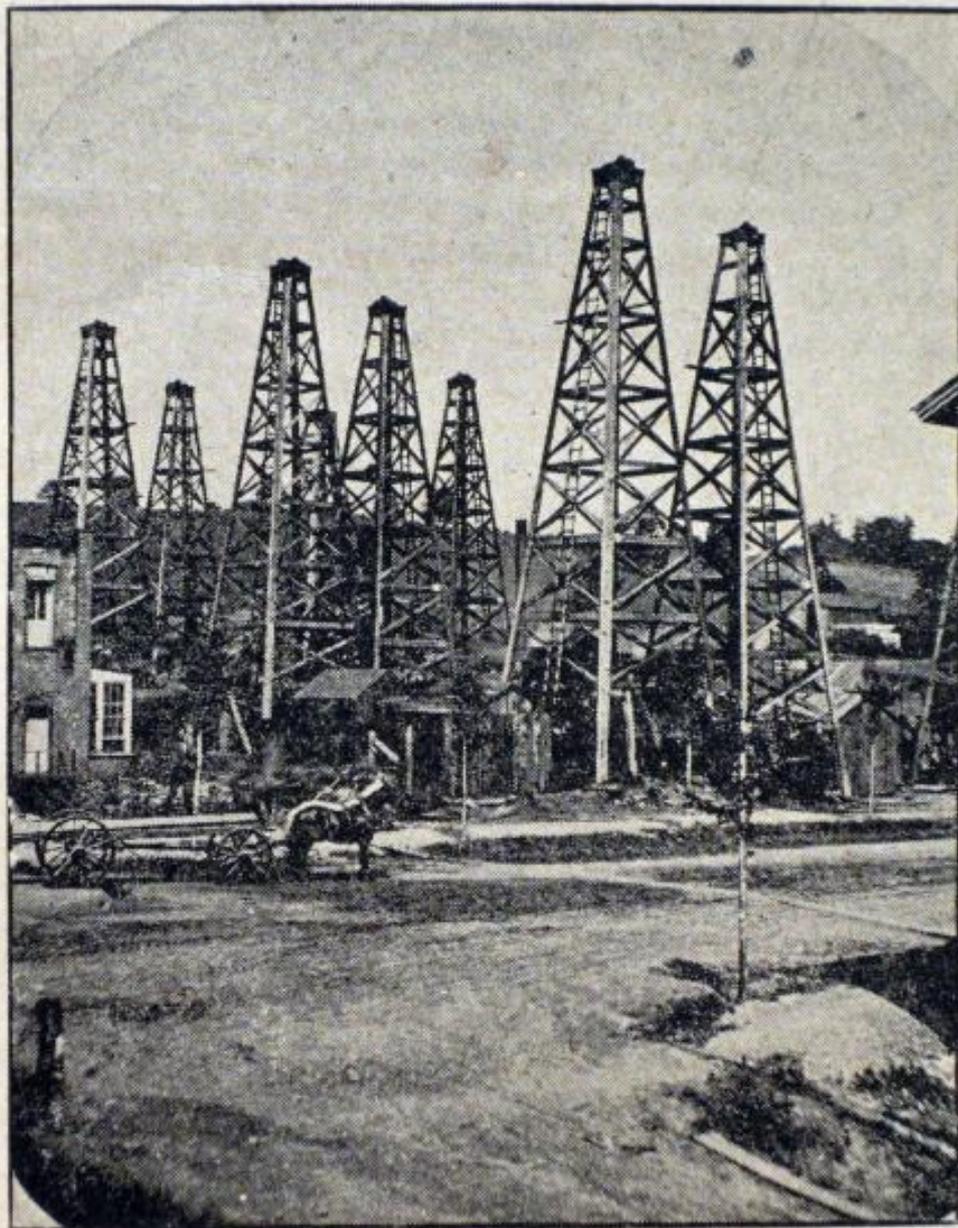
Official Energy Statistics from the U.S. Government

			2008		2035		% Change
Consumption			Quads	% Share	Quads	% Share	
<b>Liquid Fuels and Other Petroleum</b>			<b>38.35</b>	<b>38.3%</b>	<b>42.02</b>	<b>36.7%</b>	<b>9.6%</b>
Oil			37.40	37.4%	38.10	33.3%	1.9%
Ethanol, Biodiesel and Green Liquids			0.95	0.9%	3.92	3.4%	312.6%
Natural Gas			<b>23.91</b>	<b>23.9%</b>	<b>25.56</b>	<b>22.3%</b>	<b>6.9%</b>
Coal			<b>22.41</b>	<b>22.4%</b>	<b>25.11</b>	<b>21.9%</b>	<b>12.0%</b>
Nuclear Power			<b>8.46</b>	<b>8.5%</b>	<b>9.41</b>	<b>8.2%</b>	<b>11.2%</b>
Hydropower			<b>2.46</b>	<b>2.5%</b>	<b>2.99</b>	<b>2.6%</b>	<b>21.5%</b>
Biomass & Renewables			<b>4.27</b>	<b>4.3%</b>	<b>9.19</b>	<b>8.0%</b>	<b>115.2%</b>
Other*			0.24	0.2%	0.22	0.2%	
<b>Total</b>			<b>100.09</b>	<b>100.0%</b>	<b>114.51</b>	<b>100.0%</b>	<b>14.4%</b>
<b>Oil and Natural Gas</b>			<b>61.31</b>	<b>61.3%</b>	<b>63.66</b>	<b>55.6%</b>	<b>3.8%</b>
<b>Oil, Natural Gas and Coal</b>			<b>83.72</b>	<b>83.6%</b>	<b>88.77</b>	<b>77.5%</b>	<b>6.0%</b>



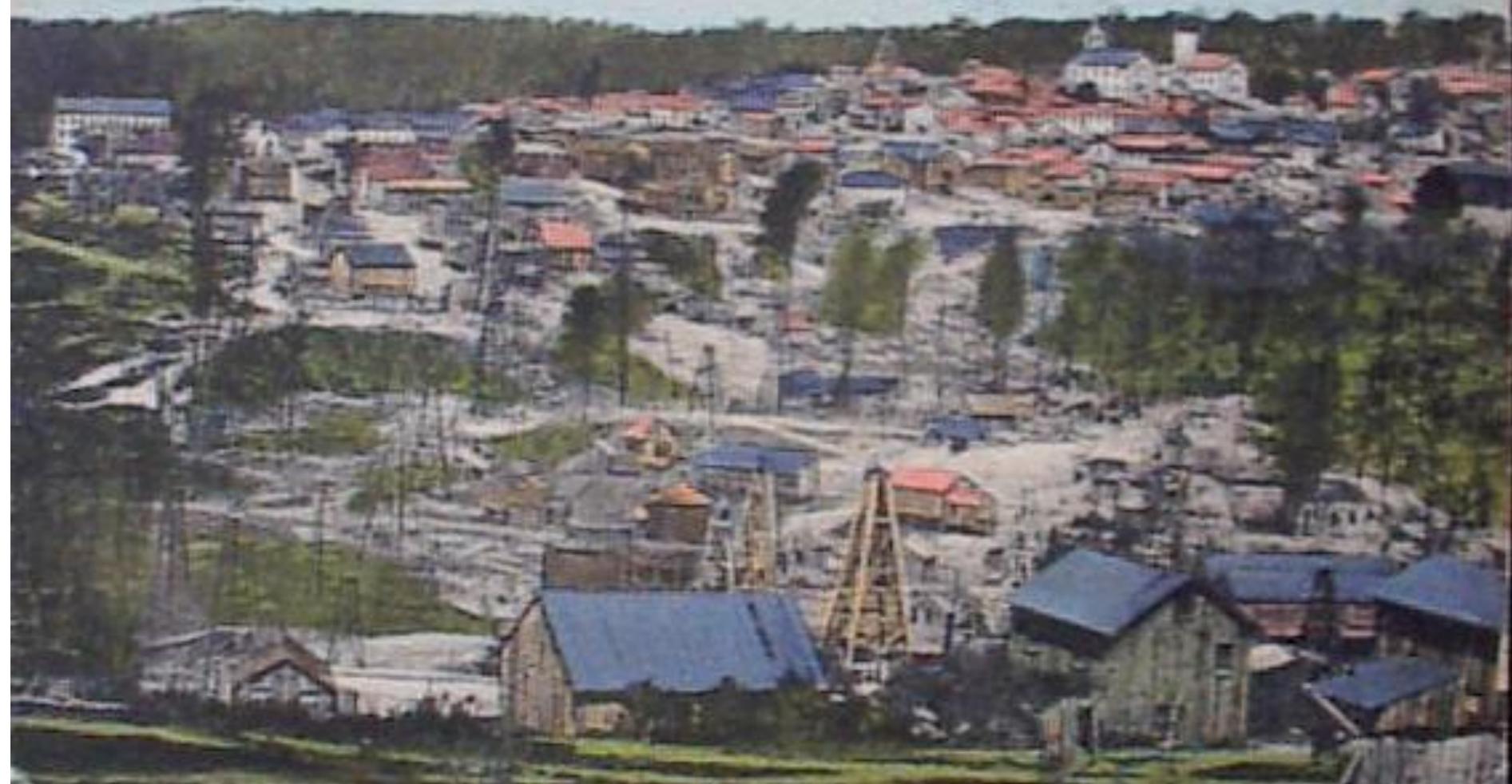


THE FIRST OIL WELL.



RENO OIL CO.'S WELLS.

Pitohole City in 1865.















**Final Reclamation**





# Protective measures are in place



- Fracture stimulation is closely regulated
- States began regulating fracture stimulation nearly 15 years prior to the enactment of the SDWA. (API)
- Comprehensive set of federal, state, and local laws that address *every* aspect of exploration and operation.
  - Well design, location, spacing, operation, water management and disposal, waste management and disposal (includes flow-back fluid), air emissions, wildlife protection, surface use, health & safety, etc.

# Industry Best Practices

- RP51R, Environmental Protection for Onshore Oil and Gas production Operations and Leases
- API HF1, Hydraulic Fracturing Operations—Well Construction and Integrity
- API HF2, Water Management Associated with Hydraulic Fracturing Guidance
- Surface Impacts and Environmental Considerations
- RP65-Part2, Isolating Potential Flow Zones During Well Construction

# What EPA, DOE and PA DEP Have to Say About the Safety of Hydrofracking

Steve Heare, director of EPA's Drinking Water Protection Division said he hadn't seen any documented cases that the hydro-fracking process was contaminating water supplies.

Dow Jones Newswires, February 16, 2010

Energy Secretary Stephen Chu said hydraulic fracturing is safe and lawmakers should be cautious in their efforts to restrict it.

Platts, January 19, 2010

John Hanger, secretary of Pennsylvania's Department of Environmental Protection said "PA has not had one case in which the fluids used to break off the gas from 5,000 to 8,000 feet underground have returned to contaminate ground water."

Reuters, October 1, 2010

# Studies demonstrate effectiveness of current regulations

No instance of groundwater contamination from hydraulic fracturing was identified by

- ❖ Ground Water Protection Council, “State Oil and Gas Regulations Designed to Protect Water Resources, May 2009
- ❖ EPA, “Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs,” 2004.



Joe Heller Green Bay Press-Gazette, Heller Syndication

## Policy Choices Needed to Ensure Future Energy Security

- ❖ Increase, not decrease energy production by promoting all sources.
- ❖ Encourage energy efficiency as a core American principle.
- ❖ Encourage investment in advanced technologies and long-term energy initiatives.
- ❖ Allow market forces to allocate products and adjust to changing conditions.
- ❖ Refrain from new taxes that make it more expensive to develop our domestic supplies.
- ❖ Support the need to participate actively in global energy markets rather than isolate the U.S.

# Thank You!

**John Felmy**

**[felmyj@api.org](mailto:felmyj@api.org)**

**[www.api.org](http://www.api.org)**

**202-682-8530**