



Oil and Gas Management



*Environmental Protection and
Unconventional Shale Well Development*

Shale Gas Plays, Lower 48 States



Source: Energy Information Administration based on data from various published studies.
 Updated: March 10, 2010



Depth, Thickness & Extent

Marcellus

Depth

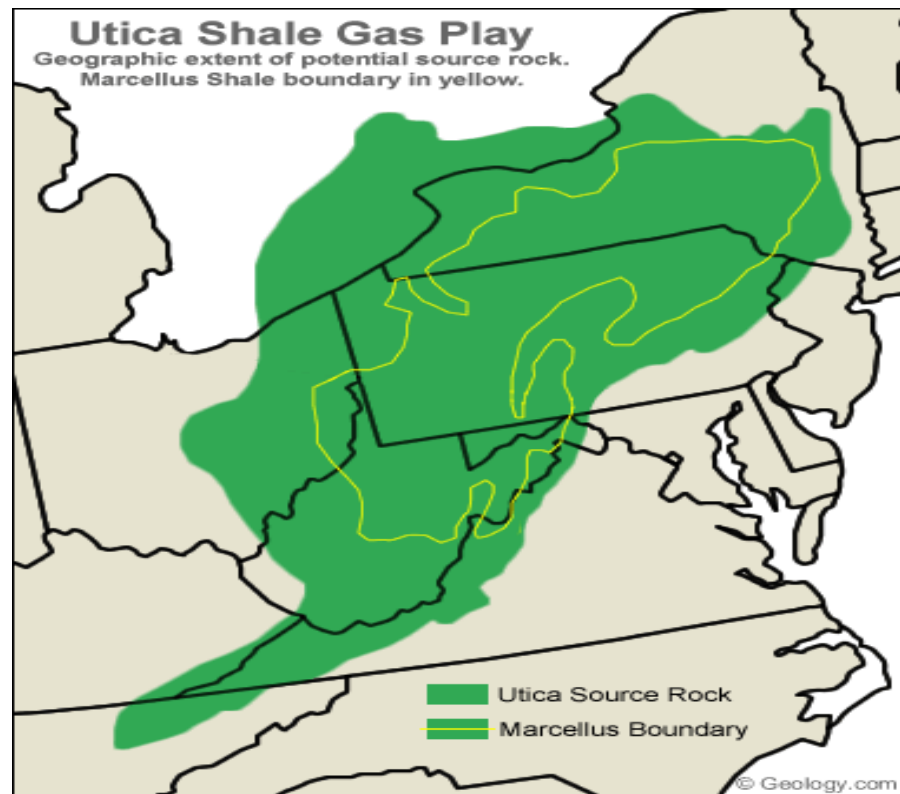
Thickness

Extent of Marcellus & Utica

Utica

Depth

Thickness



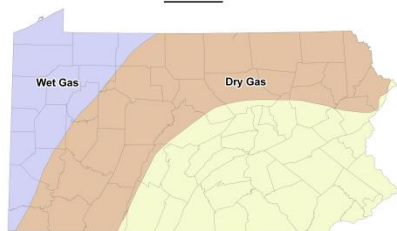


Black Shale Formations

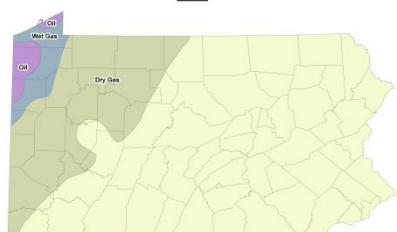
Generalized Stratigraphic Section for Oil and Gas Region

- Marcellus
- Utica
- Rhinestreet
- Huron
- Upper Devonian
 - Dunkirk
 - Pipe Creek
 - Middlesex
 - Geneseo
 - Burket

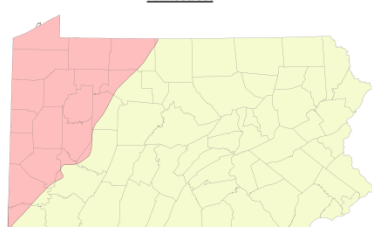
Marcellus



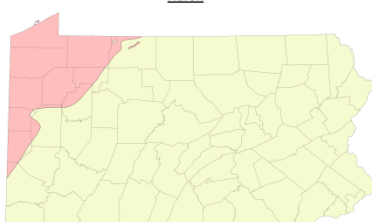
Utica



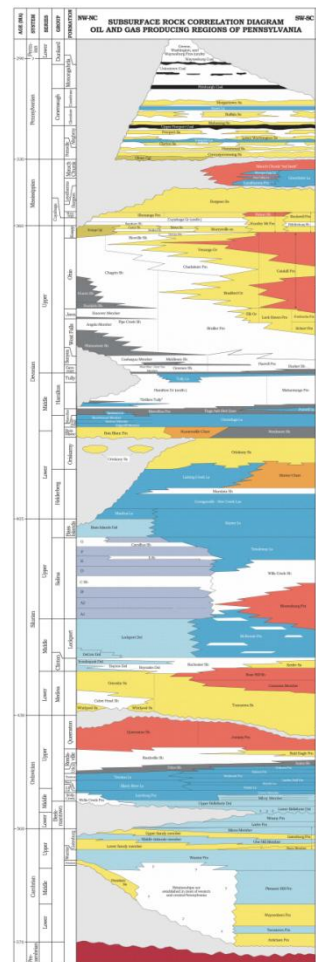
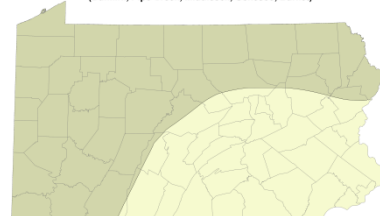
Rhinestreet



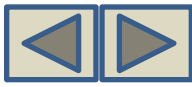
Huron



Miscellaneous Upper Devonian Formations
(Dunkirk, Pipe Creek, Middlesex, Geneseo, Burket)

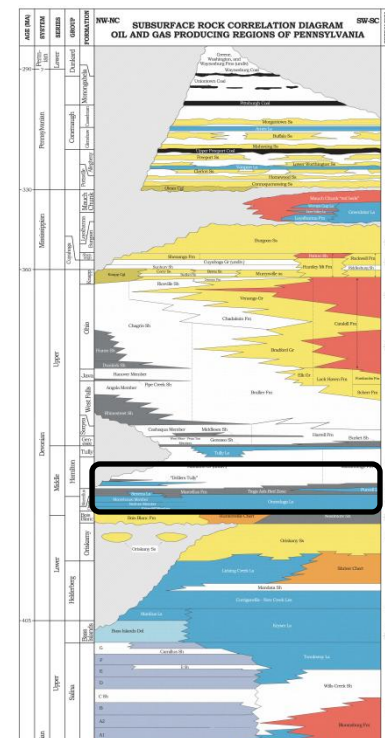
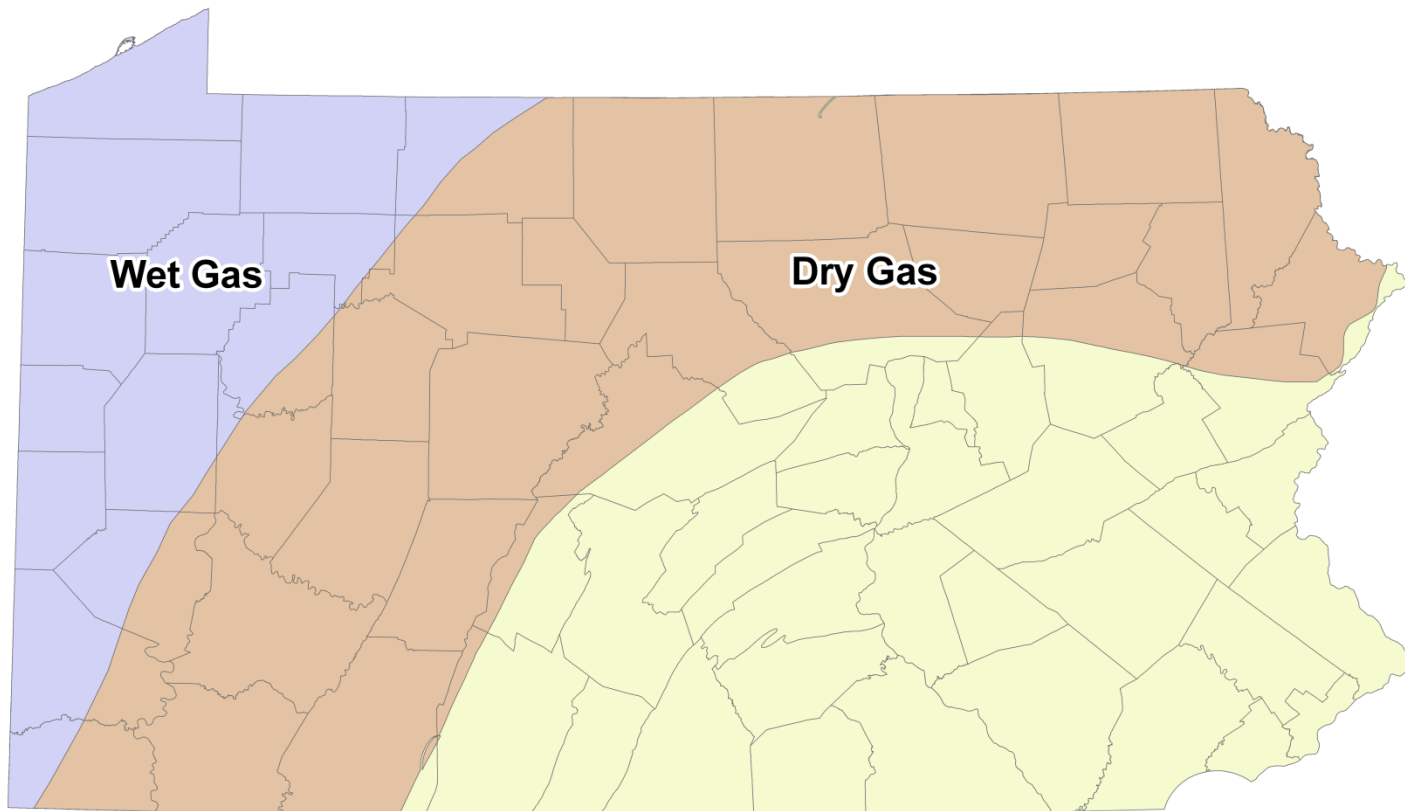


Modified From Hepner, J.A., 1975. Subsurface rock correlation diagram, Allegheny Plateau, Pennsylvania. Pennsylvania Geological Survey, 48 p. Open-File Report 75-1.





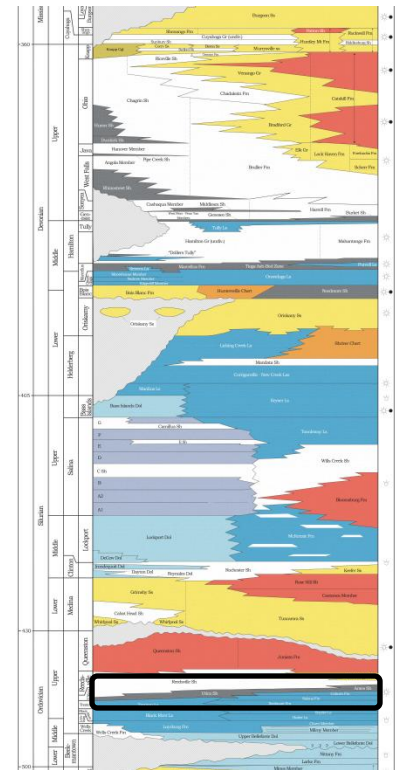
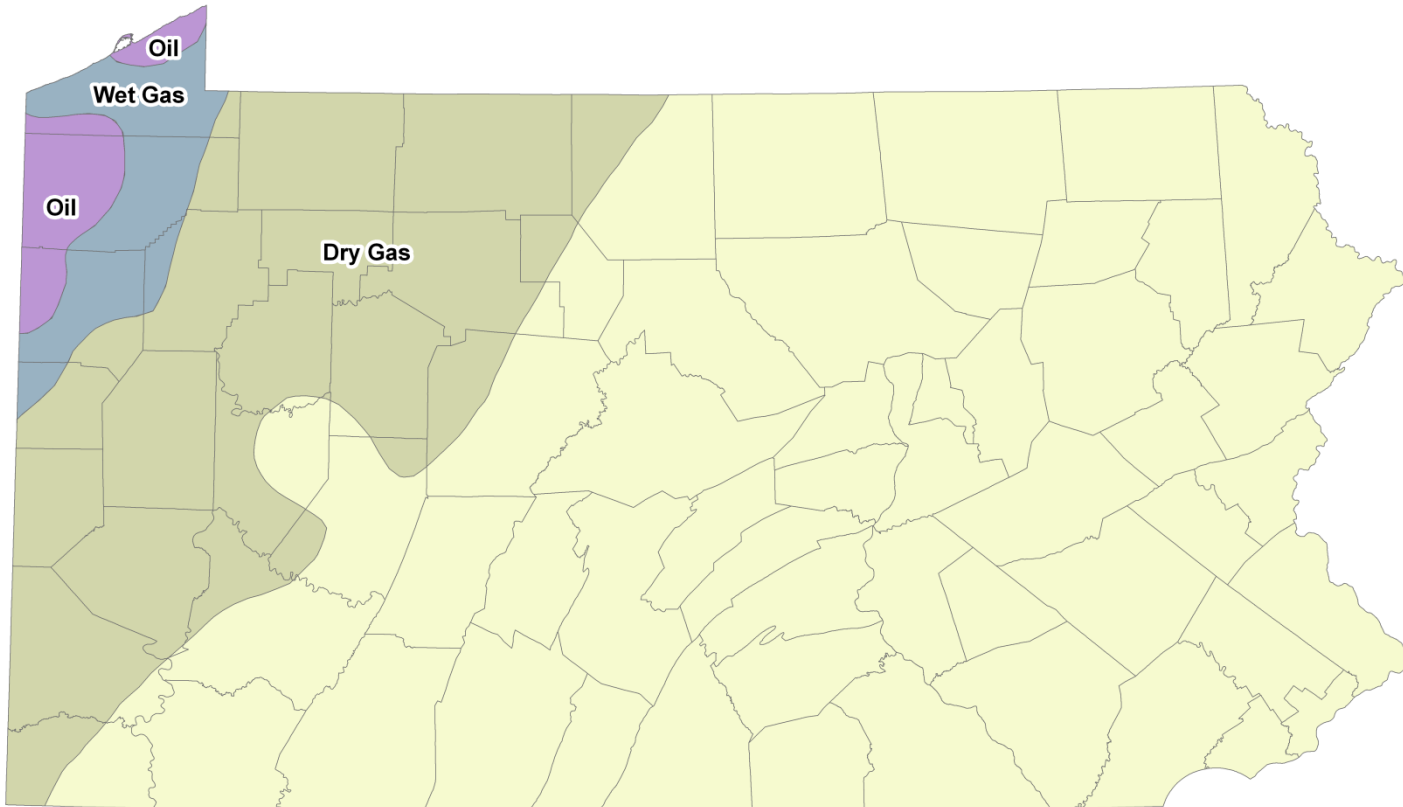
Marcellus





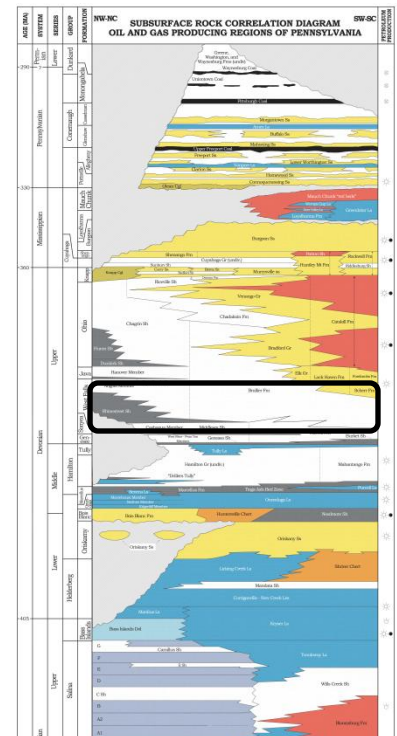
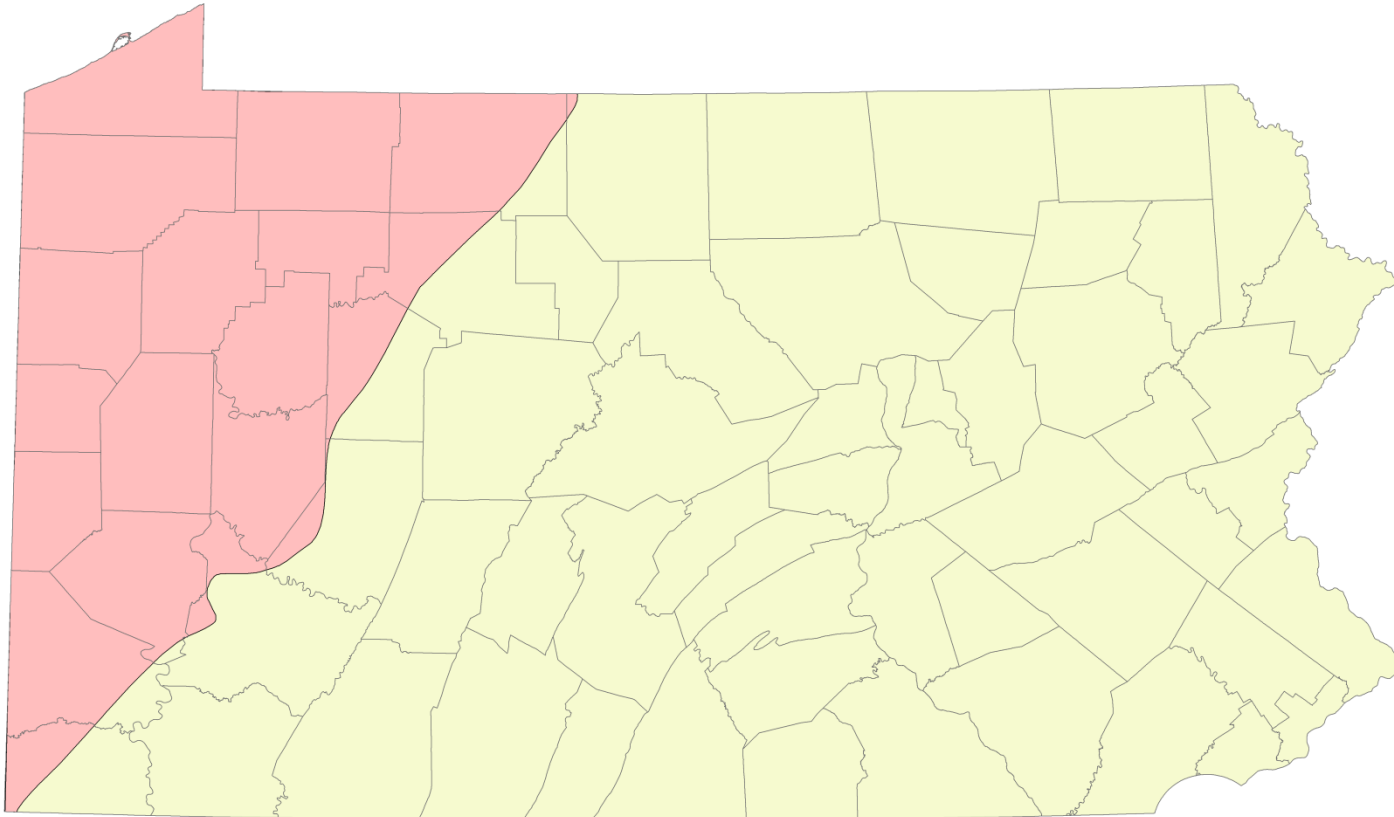
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Utica



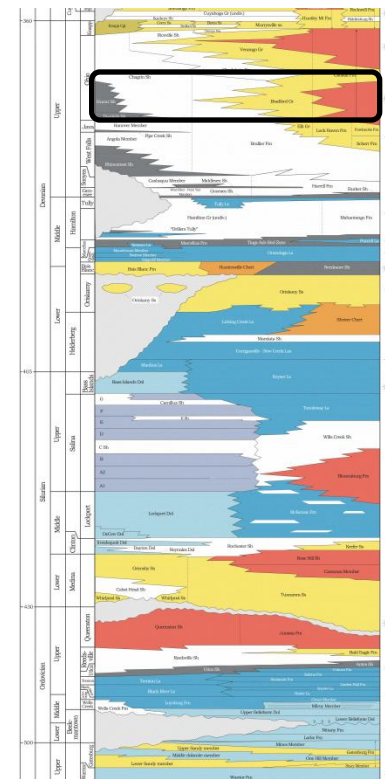
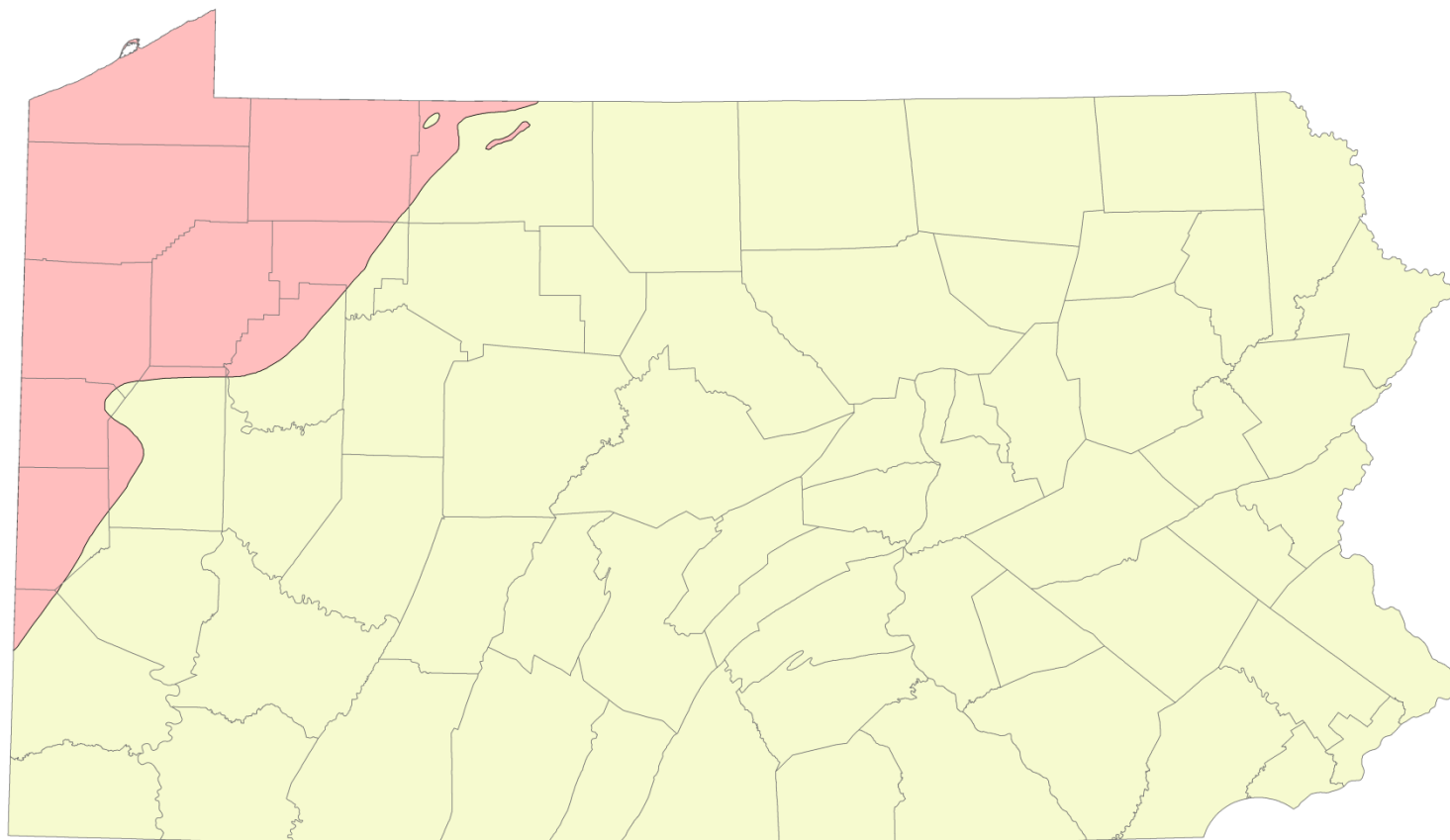


Rhinestreet



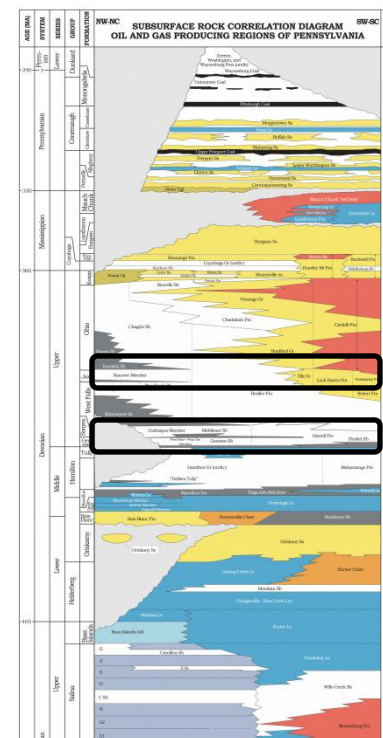
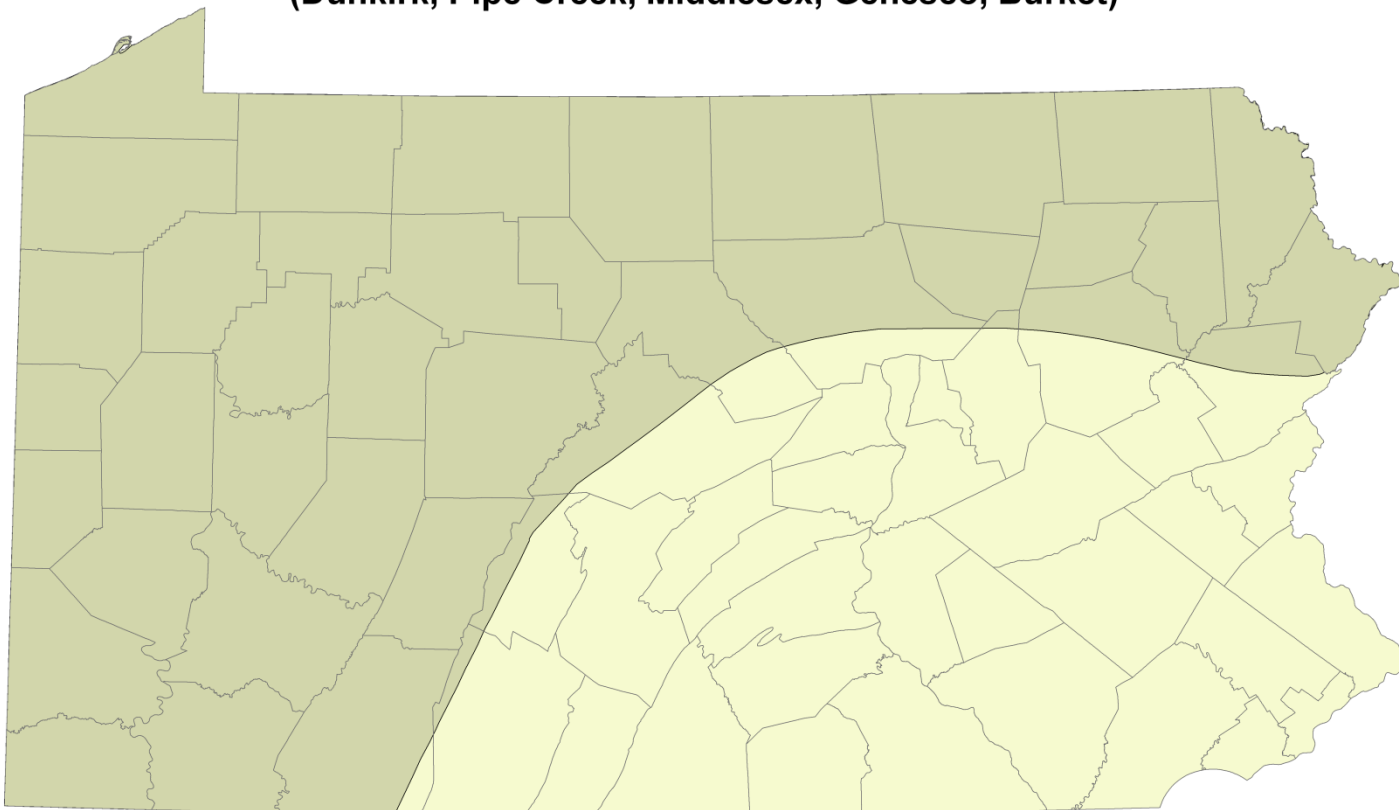


Huron





Miscellaneous Upper Devonian Formations (Dunkirk, Pipe Creek, Middlesex, Geneseo, Burket)





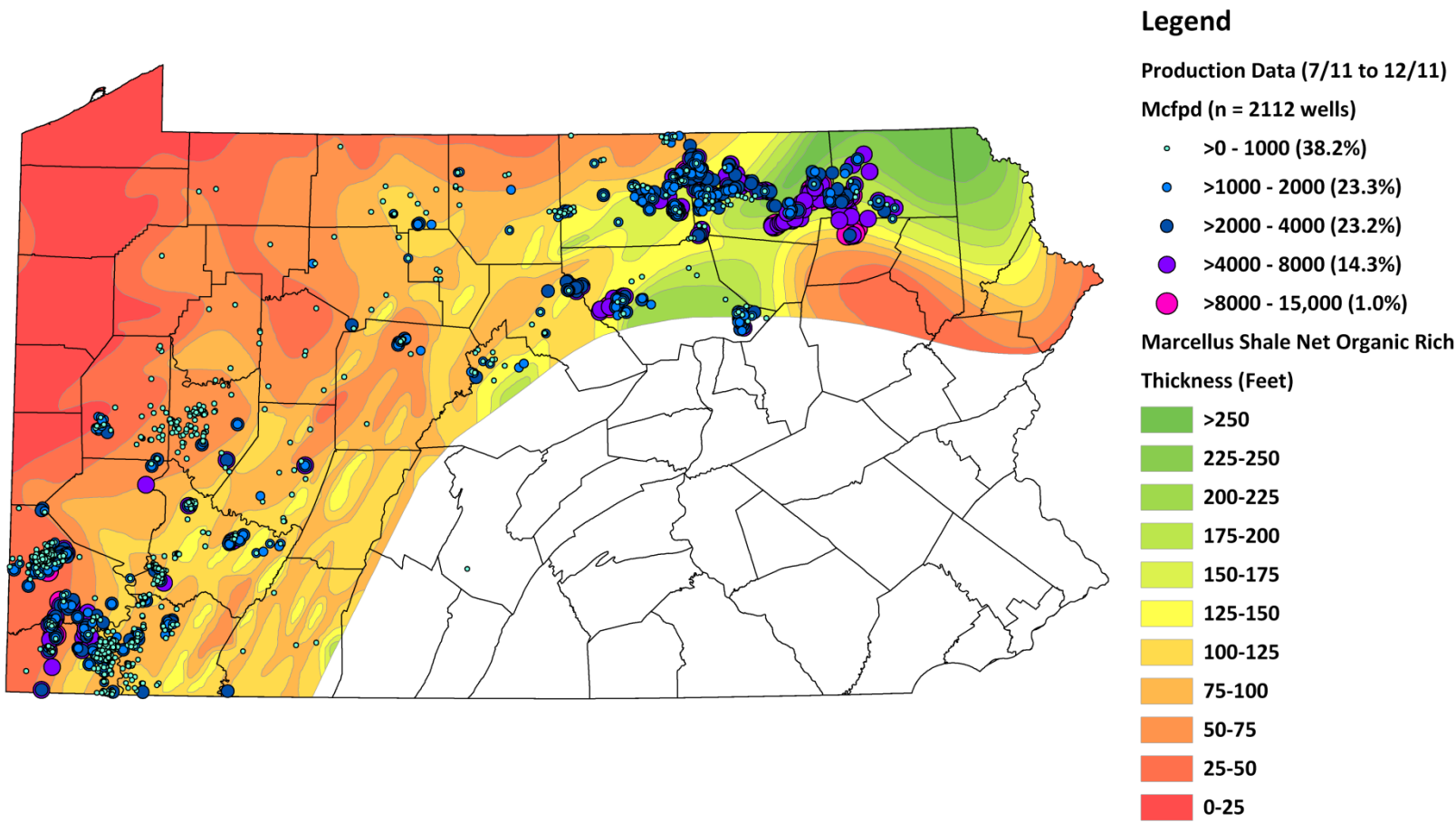
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2011 Wells Drilled by County

COUNTY	NON-MARCELLUS	MARCELLUS	GRAND TOTAL	COUNTY	NON-MARCELLUS	MARCELLUS	GRAND TOTAL
Allegheny	27	5	32	Greene	19	119	138
Armstrong	29	35	64	Indiana	60	22	82
Beaver	7	0	7	Jefferson	7	14	21
Blair	0	1	1	Lackawanna	0	1	1
Bradford	0	425	425	Lawrence	0	2	2
Butler	13	38	51	Lycoming	0	299	299
Cambria	9	3	12	McKean	241	17	258
Cameron	0	5	5	Mercer	36	0	36
Centre	0	8	8	Potter	4	16	20
Clarion	50	9	59	Somerset	0	8	8
Clearfield	1	60	61	Sullivan	0	19	19
Clinton	0	35	35	Susquehanna	1	221	222
Columbia	0	1	1	Tioga	8	262	270
Crawford	14	0	14	Venango	59	1	60
Elk	32	21	53	Warren	160	0	160
Erie	9	0	9	Washington	8	160	168
Fayette	3	53	56	Westmoreland	29	64	93
Forest	133	0	133	Wyoming	0	73	73
GRAND TOTAL	959	1,997	2,956	GRAND TOTAL	959	1,997	2,956



Marcellus Shale Production Data (Base Map Depicts Thickness of Organic Rich Material in Target Formation)





Chesapeake
Omniac



Statutory Overview

Laws and Regulations

- Oil and Gas Act and now Act 13
 - 25 Pa. Code Chapter 78 (relating to Oil and Gas Wells)
- Oil and Gas Conservation Law
- Coal and Gas Resource Coordination Act
- Clean Streams Law
 - 25 Pa. Code Chapter 91 (relating to General Provisions)
 - 25 Pa. Code Chapter 93 (relating to Water Quality Standards)
 - 25 Pa. Code Chapter 95 (relating to Wastewater Treatment Requirements)
 - 25 Pa. Code Chapter 102 (relating to Erosion and Sediment Control)

Laws and Regulations (continued)

- Dam Safety and Encroachments Act
 - 25 Pa. Code Chapter 105 (relating to Dam Safety and Waterway Management)
- Waterway Resources Planning Act
 - 25 Pa. Code 110 (relating to Water Resources Planning)
- Solid Waste Management Act
- Storage Tank and Spill Prevention Act
- Air Pollution Control Act
- Environmental Laboratory Accreditation Act

Overview of Recent Regulatory Changes

- Well Permit Fee Increase
- Act 15 of 2010
- Chapter 78 Well Construction Standards
- Chapter 95 Regulation Revisions
- DEP's Call to Operators

Genesis of Act 13

Marcellus Shale Advisory Commission

- Executive Order 2011-01 Created the Marcellus Shale Advisory Commission
- March 8 – July 22, 2011
- Goal: outline a comprehensive plan with recommendations on the safe and responsible development of unconventional natural gas resources within Pennsylvania

A Comprehensive, Strategic Plan

- 96 Recommendations outlining a comprehensive, strategic plan for the responsible development of natural gas drilling in the Commonwealth.
- Unanimously approved by the commission on Friday, July 15, 2011.
- Outlines first major update of Oil and Gas Act in nearly three decades.
- Culmination of four months of work by commission.
 - 21 public meetings.
 - 60 expert presentations.
 - 100 citizens offered public presentations.
 - 650 emails and letters from public.
 - On-site visit to well sites and local businesses in Lycoming and Clinton counties.

ACT 13 of 2012 - Overview

- Consolidates the Oil and Gas Act (Act 223 of 1984) into 58 Pa.C.S. (Oil and Gas)
- Creates six chapters within 58 Pa.C.S.
 - Ch 23 – Unconventional Gas Well Fee
 - Ch 25 – Oil and Gas Lease Fund
 - Ch 27 – Natural Gas Energy Development Program
 - Ch 32 – Development
 - Ch 33 – Local Ordinances Relating to Oil and Gas Operation
 - Ch 35 – Responsibility for Fee

Chapter 32 – Development

- Codifies and enhances Oil and Gas Act
- Distinguishes standards between conventional and unconventional oil and gas wells
- Provides enhanced permitting, resources protection and enforcement standards

Permitting

- Permit notice extended from 1,000 feet to **3,000 feet**
- Notice provided to host municipality and all adjacent municipalities
- Orphan well adoption permit
- Increased well permit denial authority
 - Evaluate parent and subsidiary compliance history
 - Failure to pay impact fee

Bonding

- Current \$2,500/well or \$25,000 blanket bond
- New: two bond schedules:
 - < 6,000 feet
 - > 6,000 feet
- Based on number of operating wells
- Maximum blanket bond increase to \$850,000

Resource Protection

- Well setbacks extended:
 - From buildings and water wells: 200 feet to **500 feet**
 - From streams and water bodies: 100 feet to **300 feet**
 - From public water supplies: **1,000 feet**
- Expands rebuttable presumption distance from 1,000 feet to **2,500 feet** and duration from six months to **12 months** after well completion
- Enhanced floodplain protection
- Establishes standards for containment on well sites
- Requires annual inventory of air emissions

Inspection and Transparency

- Requires on-site inspection after erosion and sediment controls in place but prior to drilling
- Enhances hydraulic fracturing chemical disclosure, including use of FracFocus.org
- Requires 24 hour notice to DEP prior to commencing critical drilling stages
- Requires DEP to post site inspections, violations and remedial actions taken online

Enhanced Enforcement

- Increases civil penalties from \$25,000 to **\$75,000**
- Permits DEP to assess civil penalties (currently Environmental Hearing Board)
- Requires DEP to post site inspections, violations and remedial actions taken online





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For more information, visit:

www.depweb.state.pa.us

click on the  graphic.





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Questions?
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