

A West Virginia Policy Perspective

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Background

- State has been aggressive in the issuance of drilling permits
- Somewhat limited oversight and management of drilling operations
- Governor issued an executive order for the DEP to improve regulation
- “Natural Gas Horizontal Well Control Act” (HB 401)



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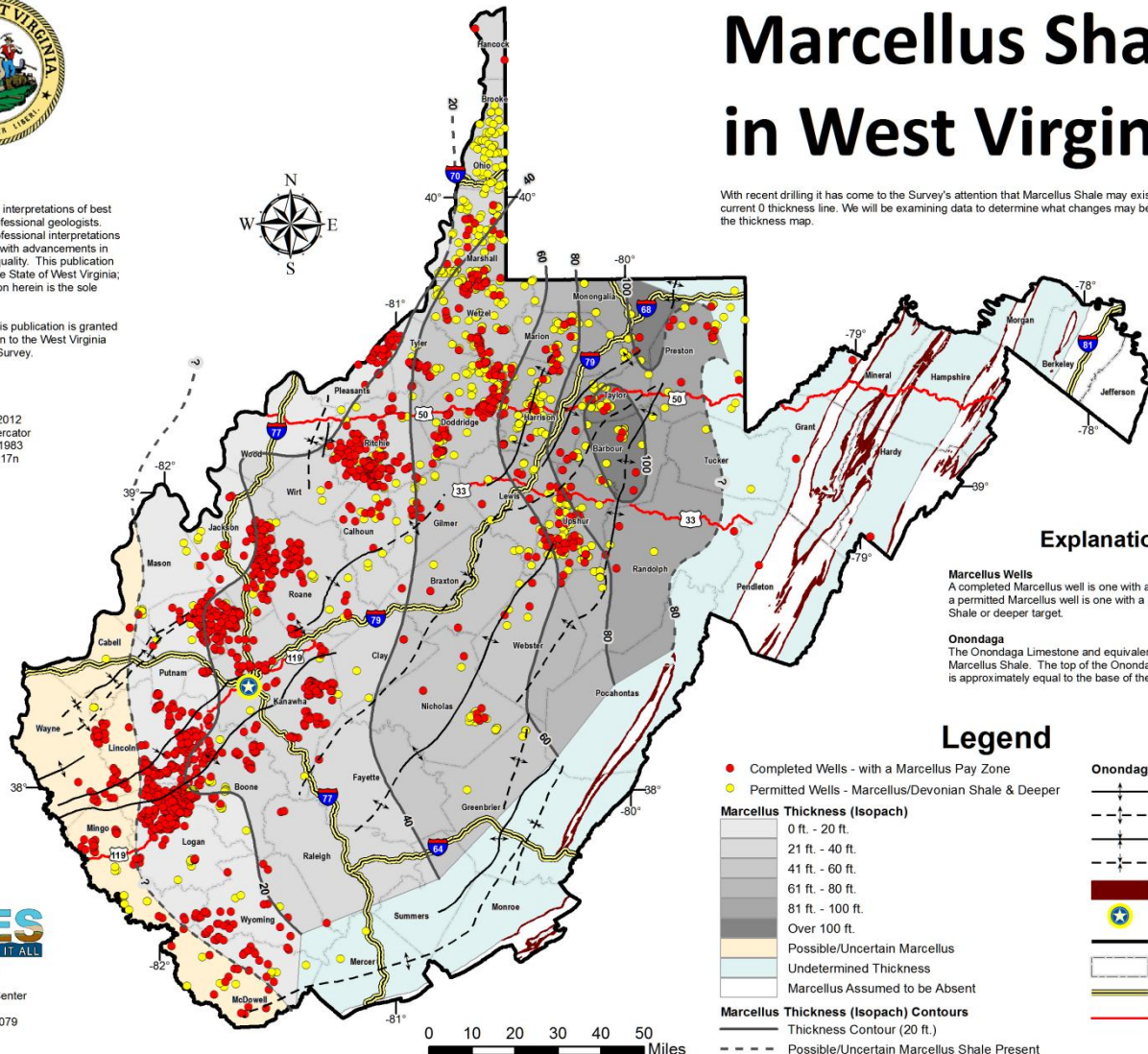
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Map Date: February 29, 2012
 Projection: Transverse Mercator
 Horizontal Datum: NAD 1983
 Coordinate System: UTMz17n
 Map Scale: 1:2,000,000
 (for full 8.5" x 11" display)



Marcellus Shale in West Virginia

With recent drilling it has come to the Survey's attention that Marcellus Shale may exist west of the current 0 thickness line. We will be examining data to determine what changes may be needed to the thickness map.



Explanations

Marcellus Wells
 A completed Marcellus well is one with a Marcellus pay zone; a permitted Marcellus well is one with a Marcellus/Devonian Shale or deeper target.

Onondaga
 The Onondaga Limestone and equivalent units underlie the Marcellus Shale. The top of the Onondaga and equivalents is approximately equal to the base of the Marcellus.

Legend

- Completed Wells - with a Marcellus Pay Zone
 - Permitted Wells - Marcellus/Devonian Shale & Deeper
- Marcellus Thickness (Isopach)**
- 0 ft. - 20 ft.
 - 21 ft. - 40 ft.
 - 41 ft. - 60 ft.
 - 61 ft. - 80 ft.
 - 81 ft. - 100 ft.
 - Over 100 ft.
 - Possible/Uncertain Marcellus
 - Undetermined Thickness
 - Marcellus Assumed to be Absent
- Marcellus Thickness (Isopach) Contours**
- Thickness Contour (20 ft.)
 - Possible/Uncertain Marcellus Shale Present
- Onondaga Fold Axis**
- Anticline
 - Inferred Anticline
 - Syncline
 - Inferred Syncline
 - Marcellus Outcrop
 - Charleston, WV
 - State Boundary
 - County Boundaries
 - Interstate Highways
 - U.S. Highways



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State Policy Considerations

- Legal, Regulatory, and Administrative Analysis
 - Liability, mineral rights, and severance payments
 - Public engagement
 - Policies to stimulate demand

State Policy Considerations

- Economic, commercialization, and market analysis
 - Downstream gas manufacturing
 - Cogeneration facilities
 - Economic and regional impacts

State Policy Considerations

- Environmental and Technological Analysis
 - Improved exploration and completion technologies
 - Air pollution and alternative fuels
 - Chemical engineering and green completion technologies
 - Water use, reuse, and disposal
 - Best management practices

State Policy Considerations

- Sustainability
 - Ensure financial investments offer sustainable long-term benefits
 - Attract development activities to reverse population trends in the State
 - Short and long-term workforce needs
 - Maximize personal wealth

Next Steps

- Identify peer regions for comparative policy assessment
- Identify and interview key stakeholders
- Integrative public engagement

What's Needed

- Better electronic recordkeeping of land/mineral ownership records, and well permitting activity
- Public dissemination of well and production data
- Robust management and data structure of industry activities

Future Research

- Transparent best practice demonstration pad
- Regional studies
- Improved technical approaches
- Enhanced demand

Thanks