Ohio Gas Association

Marcellus and Utica Shales Asset Overview

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NiSource Gas Distribution
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Marcellus and Utica Shales

Discussion Topics

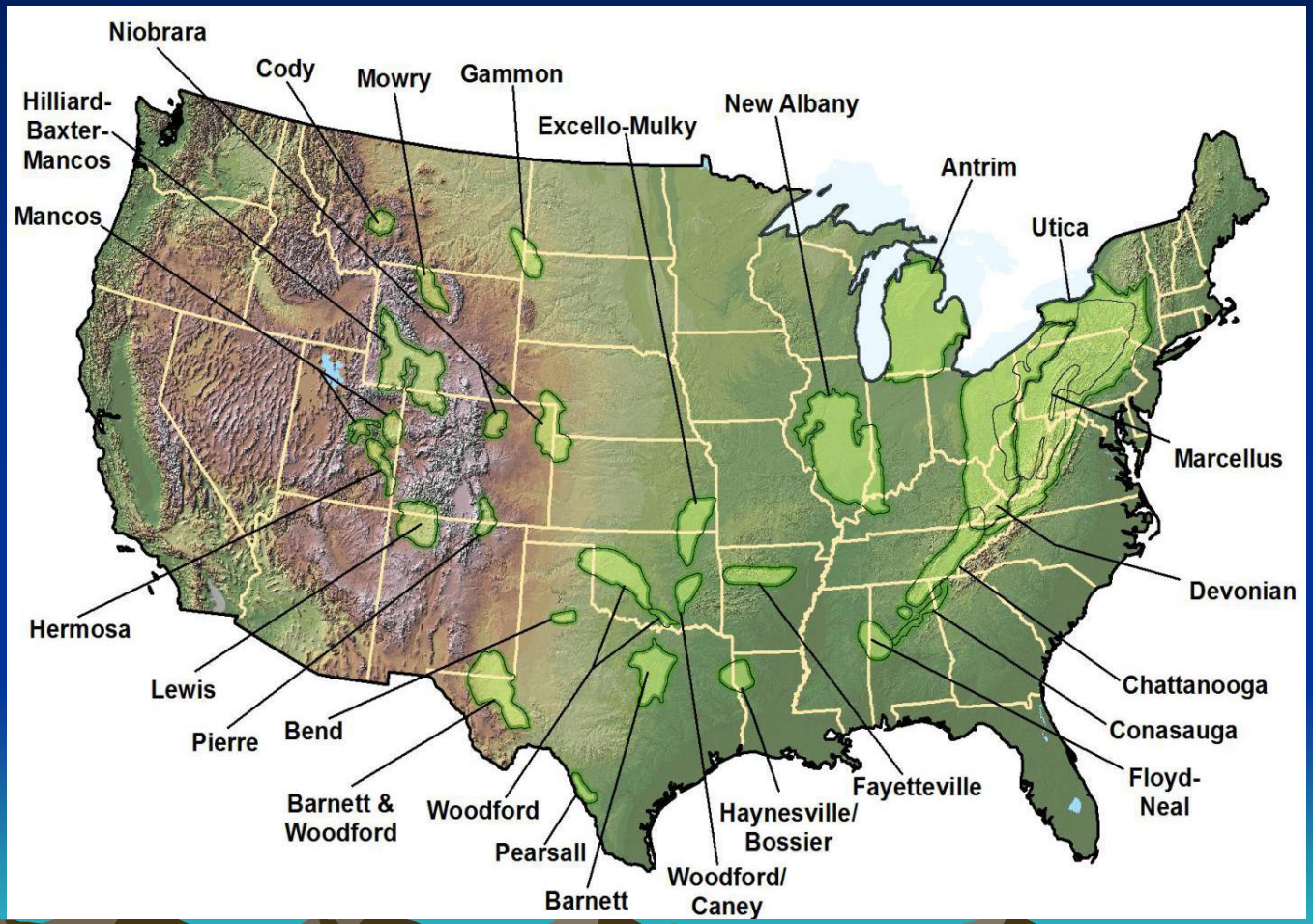
- General
  - Location
  - Geographic Extent
  - Wet vs. Dry Gas
- Infrastructure
  - Transmission Pipelines
  - Gathering/Processing
  - NGL
  - Distribution Implications
- Producer Activities
- Infrastructure Challenges
  - Local Distribution Company
  - Pipelines

Marcellus and Utica Shales

What are the Marcellus and Utica Shales?

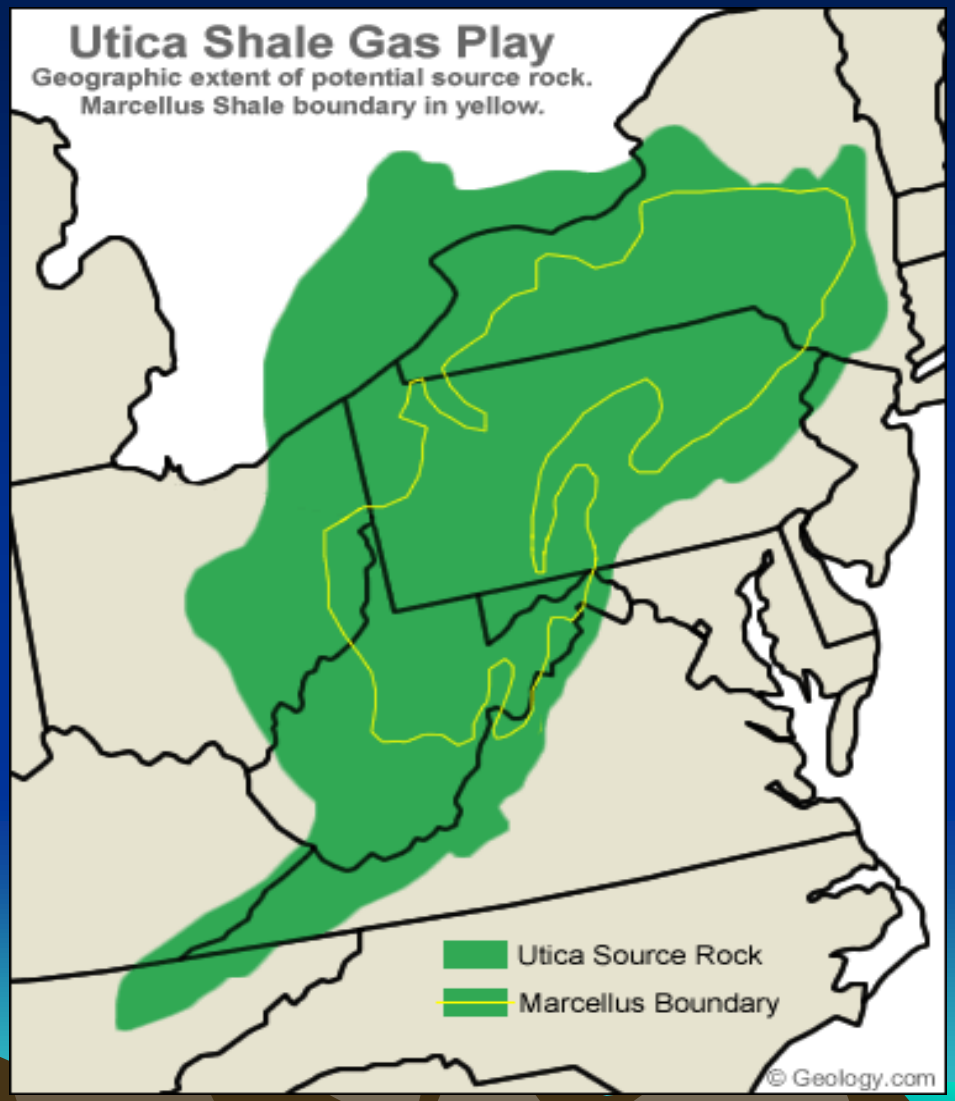
- Location
- Potential
- Gas Quality

Marcellus and Utica Shales

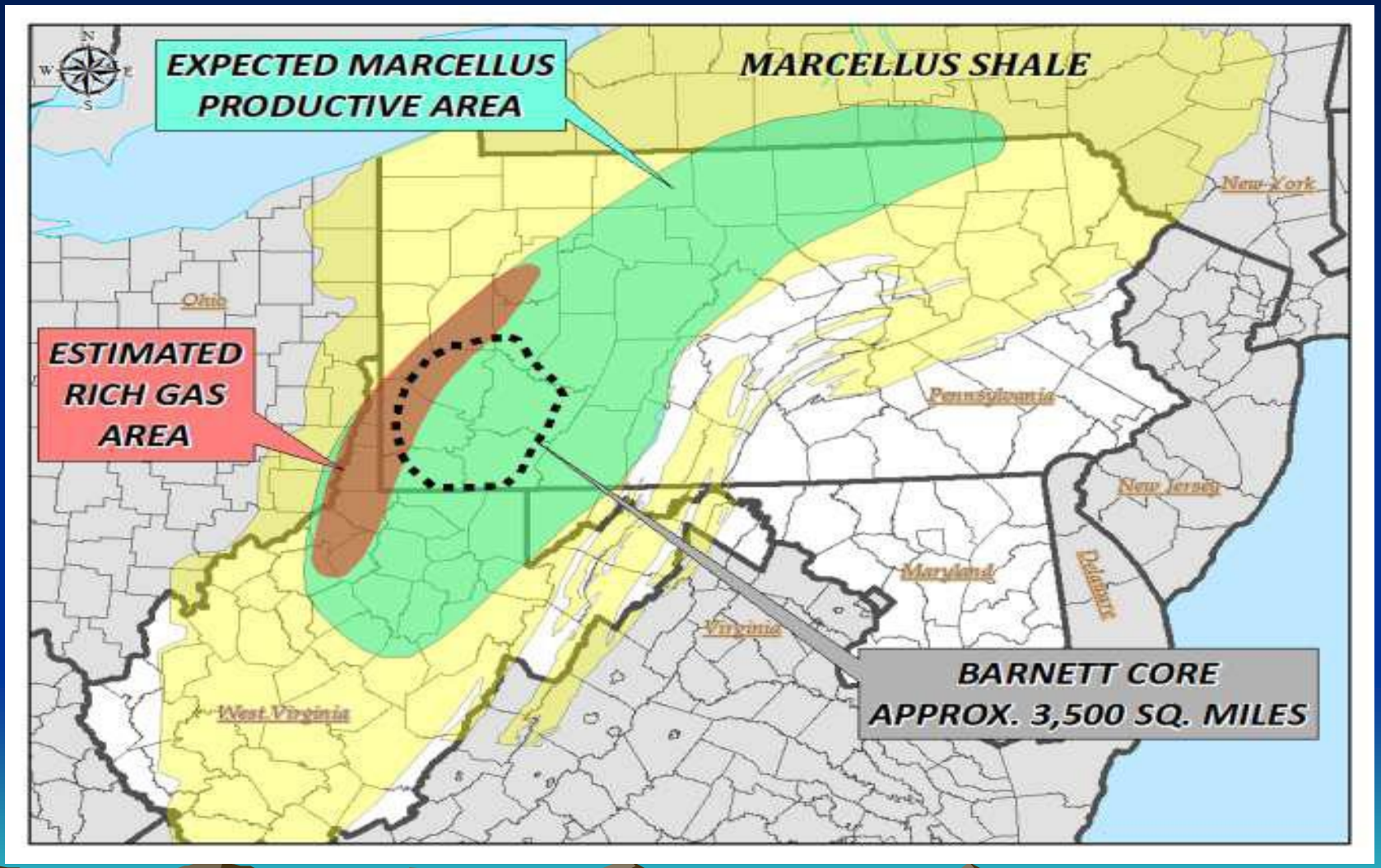


Source: US EIA

Marcellus and Utica Shales



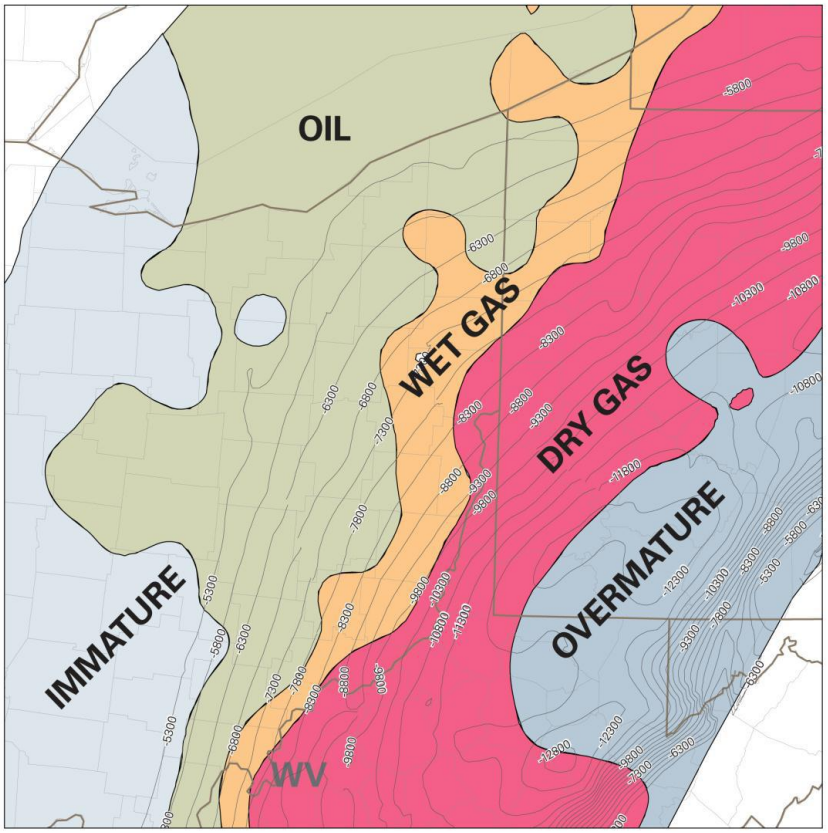
Marcellus and Utica Shales



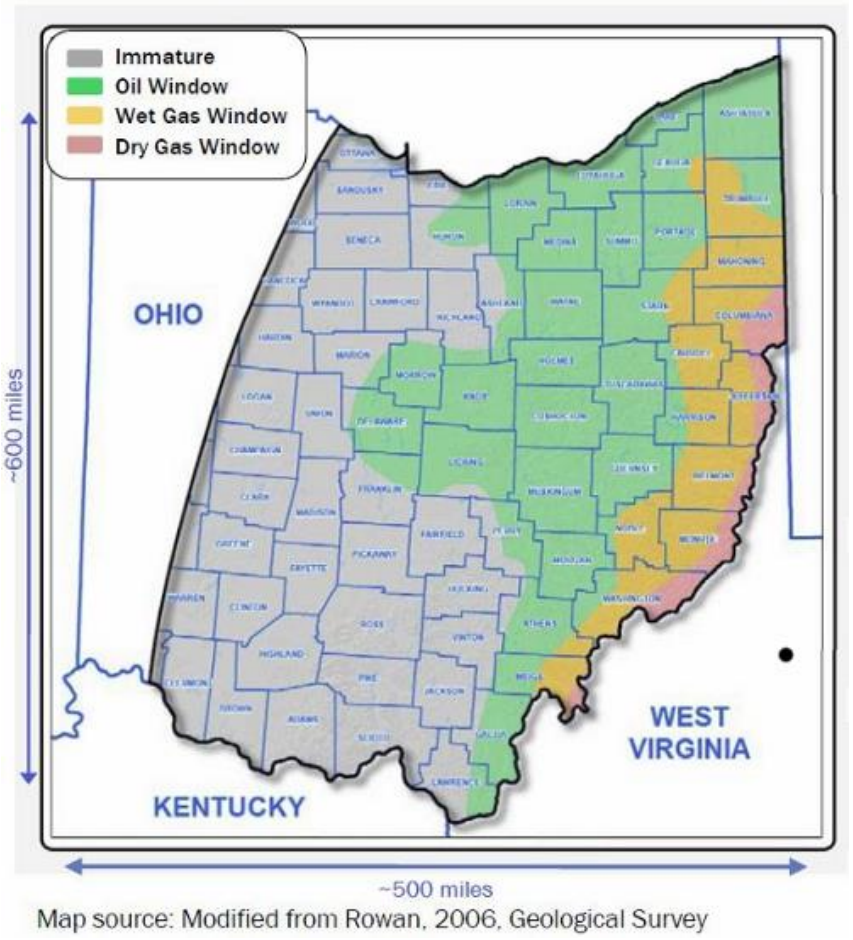
Source: Range Resources

Marcellus and Utica Shales

Initial Perspective on Potential Utica Production



Source: Ohio Geological Society Survey, as modified by Ross Smith Energy Group



Map source: Modified from Rowan, 2006, Geological Survey

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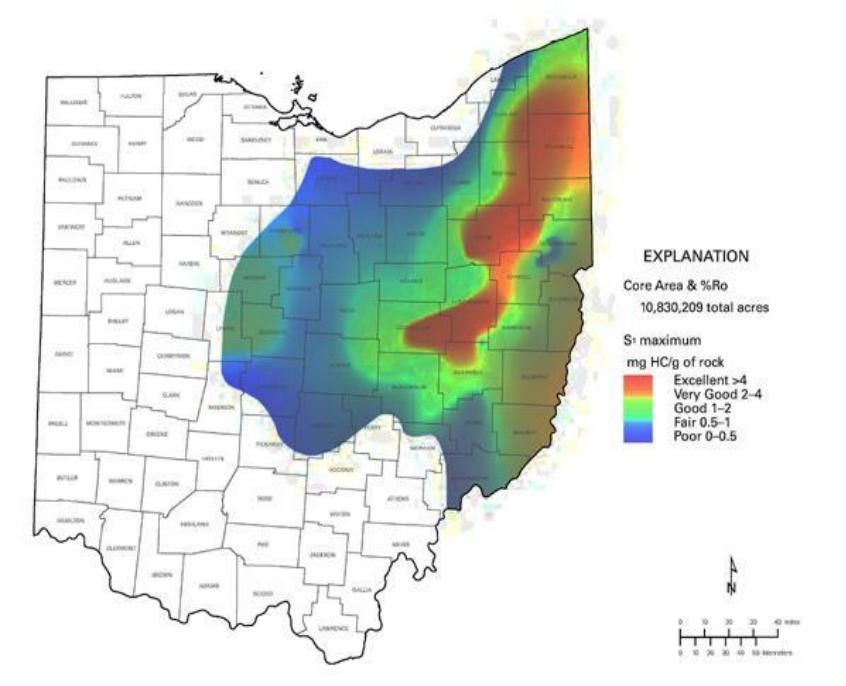
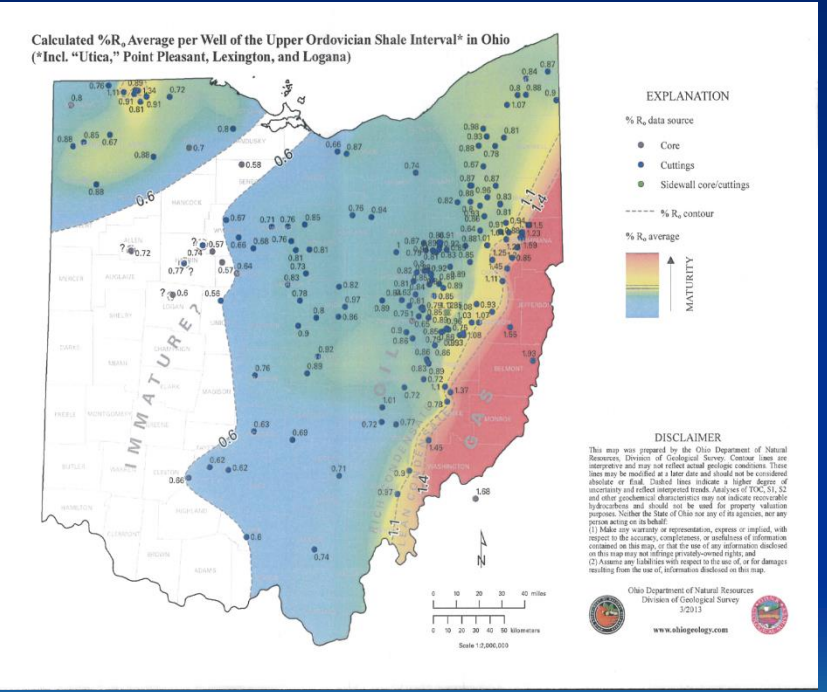
Updated Perspective on Potential Utica Production in Ohio





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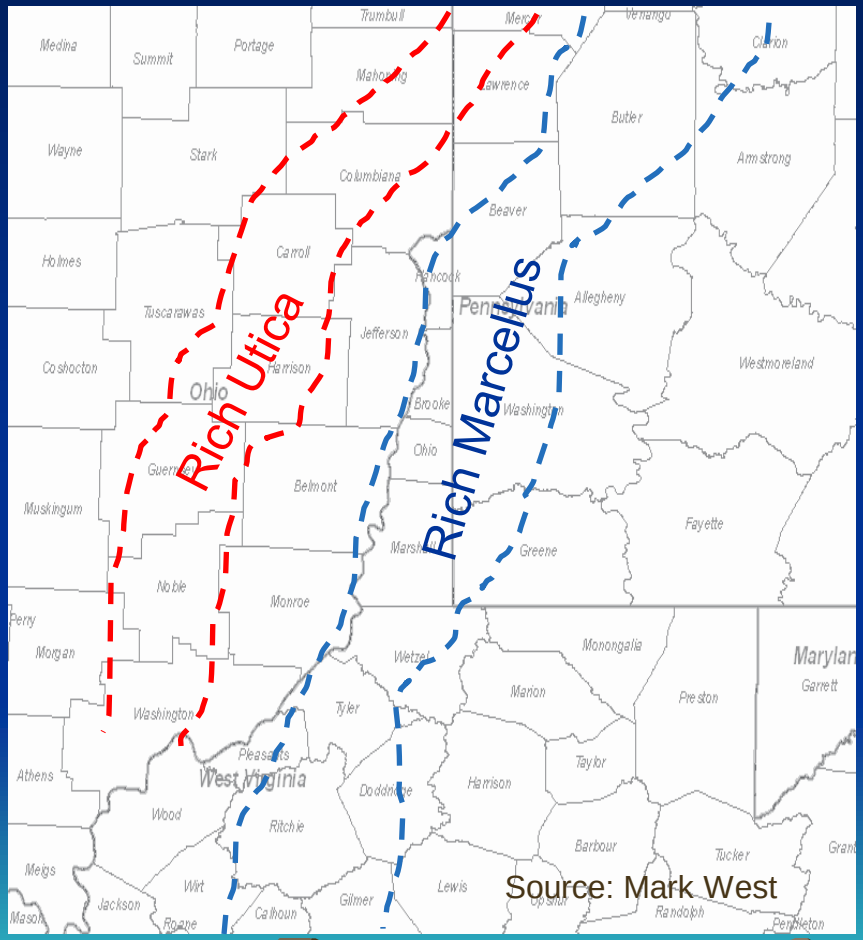
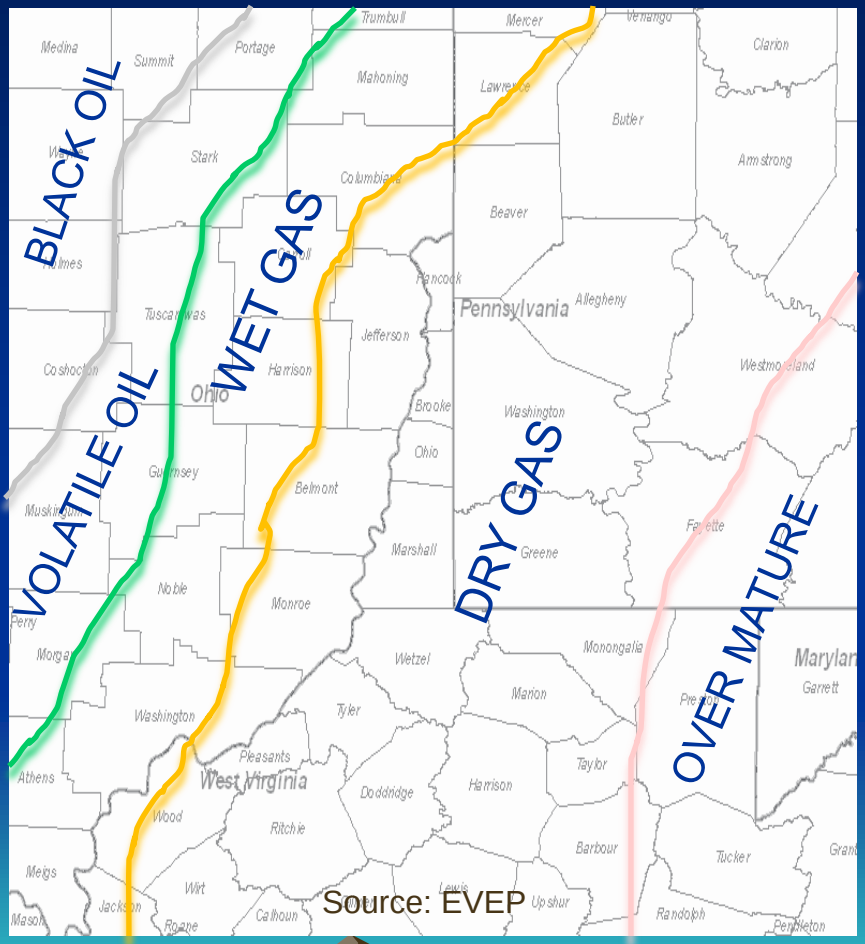
Modifying Views on Production





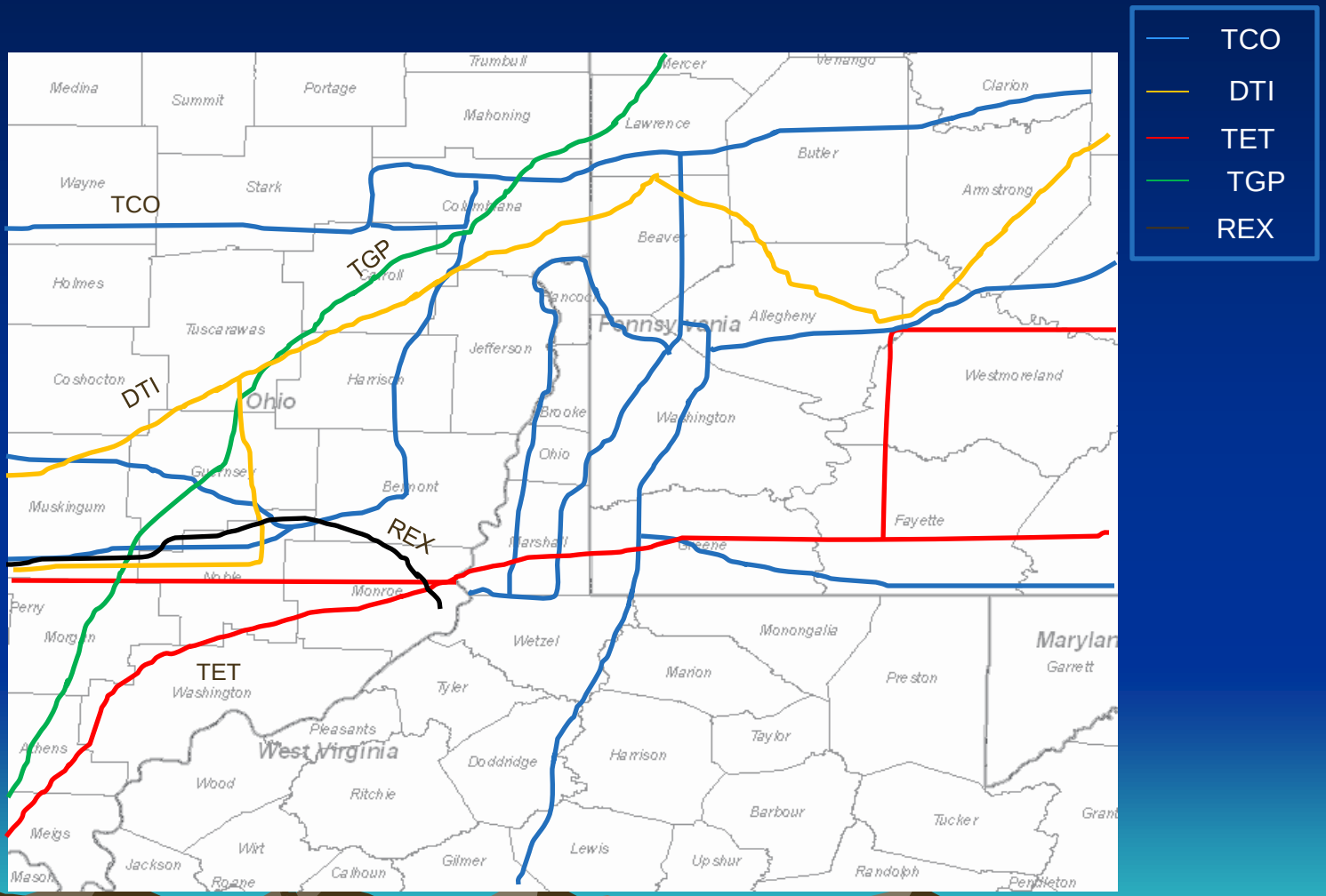
Marcellus and Utica Shales

Infrastructure

- Transmission Pipelines
- Gathering/Processing
- NGL
- Distribution Implications

Marcellus and Utica Shales

Major Interstate Pipeline Systems



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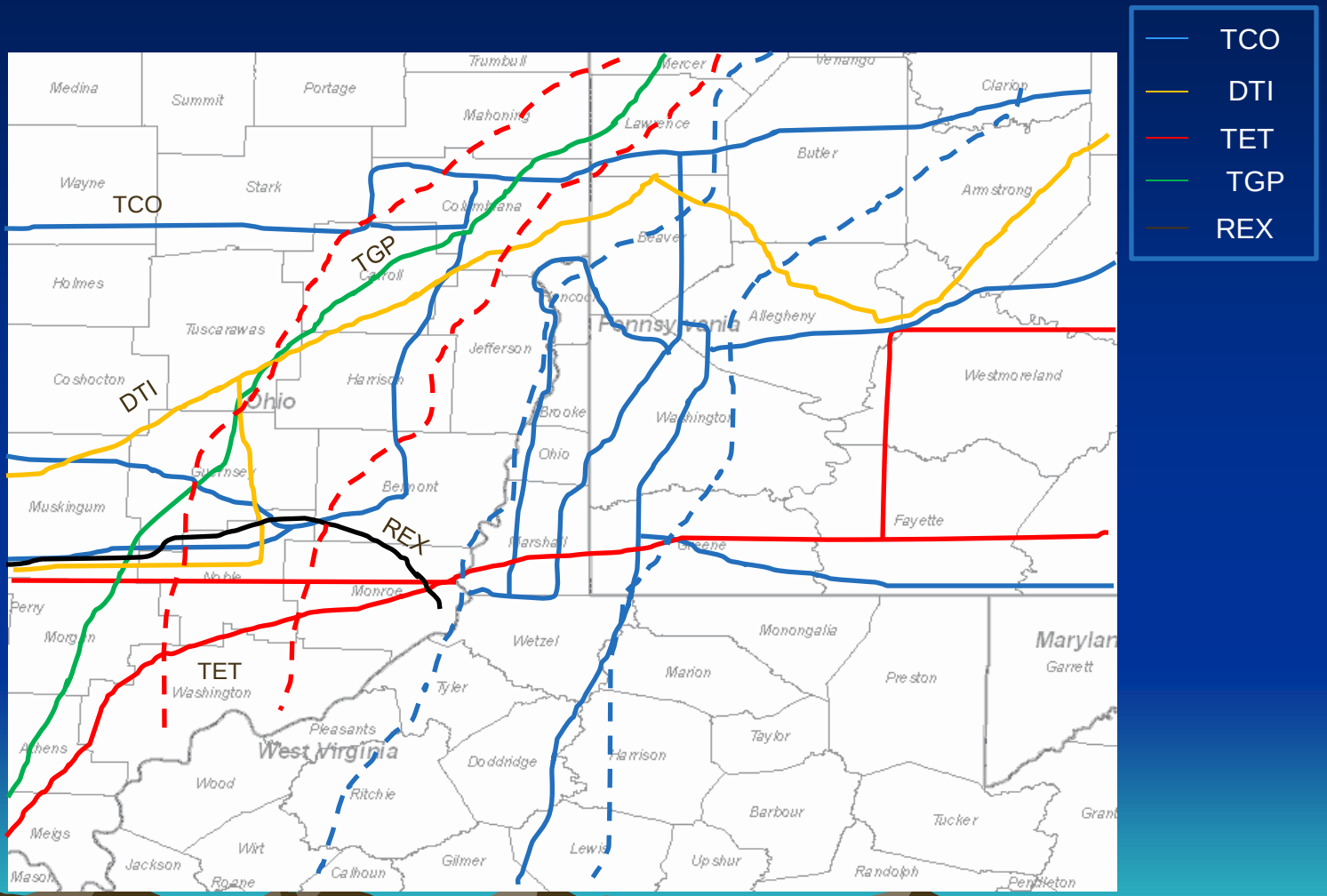
Major Interstate Pipeline Systems



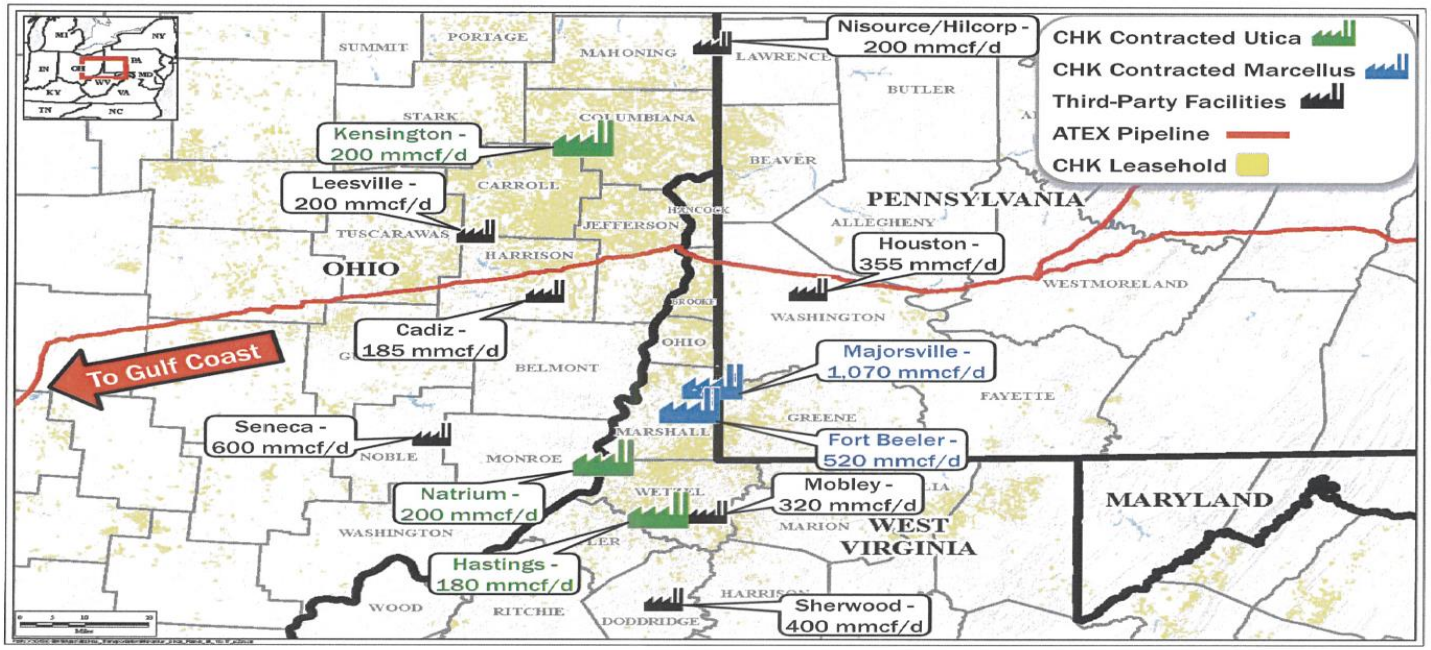
Marcellus and Utica Shales

Proposed Interstate Pipeline Expansions - Utica

- Texas Eastern – Ohio Pipeline Energy Network (OPEN)
  - Transport up to 1 Bcf/d to TETCO's mainline in Monroe Co., OH
  - In service date targeted for 2015
- NEXUS Gas Transmission – JV between Spectra/DTE/Enbridge
  - Transport up to 1 Bcf/d to upper Midwest and eastern Canadian markets
  - In service date: November 2016
- Columbia Transmission – QuickLink Project
  - Transport up to 500 MMcf/d to interconnections with TCO, DTI, REX, TET
  - In service date: November 2015
- Tennessee – Negotiating backhaul arrangements from eastern Ohio to Zone 1.
  - 350 – 500 MMcf/d possible to interconnect with Midwest Gas Transmission
- Rockies Express

Marcellus and Utica Shales

UTICA AND MARCELLUS SOUTH PROCESSING PLANTS(1)



(1) CHK contracted plants reflect plant capacity, not CHK's contract volumes. Note: Natrium's phase one projected to be online in 2Q'13 with future system to reach ~2.0 bcf/d. Kensington phase one of ~200 mmcf/d projected to be online in mid-year 2013 with future system to reach 600 mmcf/d.
Source: Company records

Marcellus and Utica Shales

Natural Gas Processing Facilities - Marcellus

Separation

- Mark West – Houston, Majorsville, Mobley, Sherwood, Bluestone
  - Existing capacity : 1.1 Bcf/d; 2013 additions: 1.1 Bcf/d; 2014 additions: 700 MMcf/d
- Williams – Fort Beeler, Oak Grove, Stewart, Robin Hill
  - Existing capacity: 520 MMcf/d; future additions: up to 600 MMcf/d
- Blue Racer (formerly DTI) – Natrium, Hastings
  - Existing capacity: 380 MMcf/d; future additions: up to 200 MMcf/d

Fractionation (Bbl/day)

- Mark West – Houston
  - Existing capacity: 60,000 C_{3+}; 2013 additions: 76,000 C_2; 2014: 38,000 C_2
- Williams – Fort Beeler
  - Existing capacity: 13,000 C_{3+}; future additions: 60,000 C_{3+} and 40,000 C_2
- Blue Racer – Natrium
  - 36,000 C_{3+}

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Natural Gas Processing Facilities - Utica

Separation

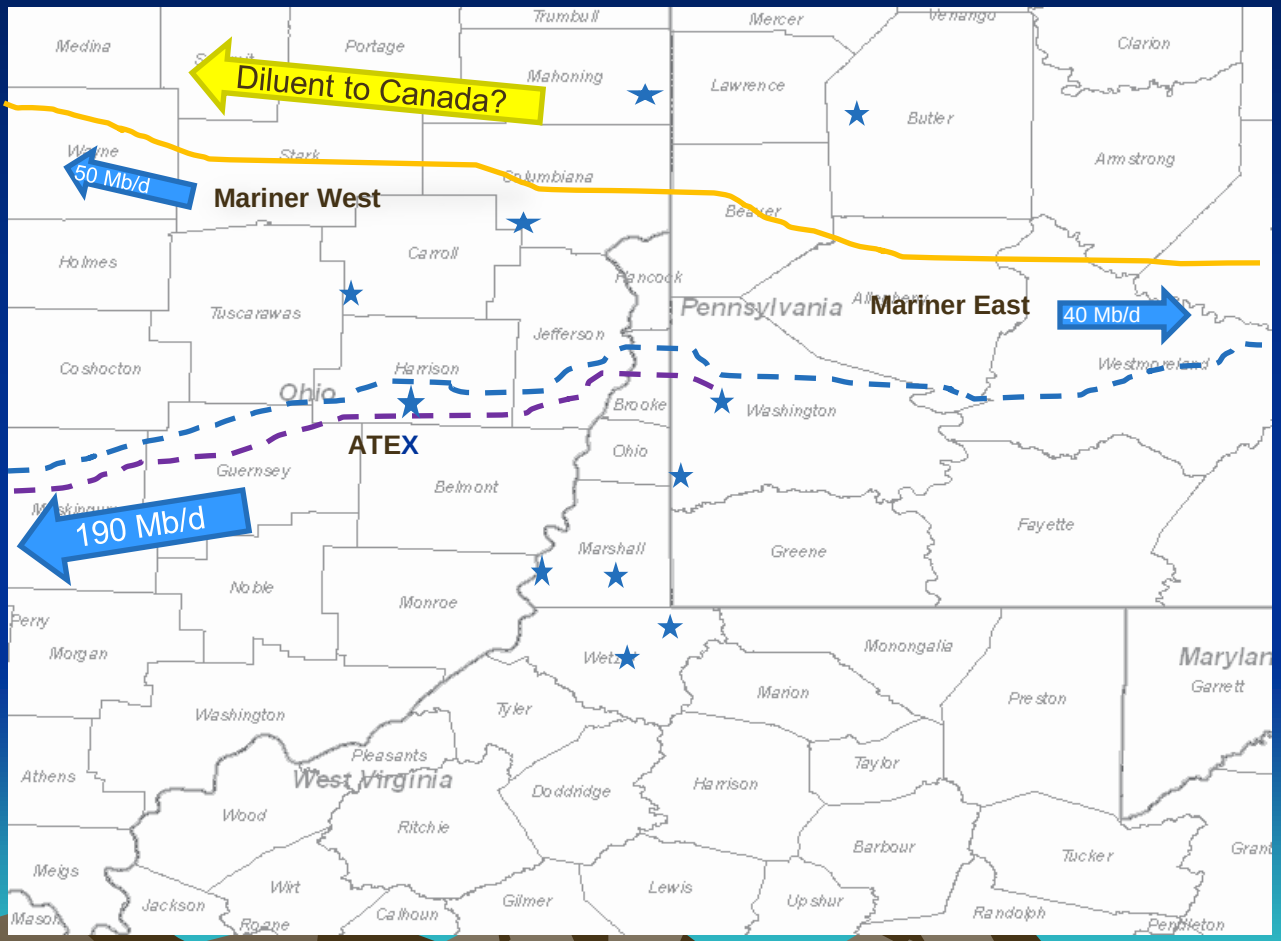
- Mark West – Cadiz; Seneca
  - 785 MMcf/d by year end 2013
- M3/Access/EVEP – Kensington, Leesville, Harrison
  - 600 MMcf/d by year end 2013; 200 MMcf/d by year end 2014
- Pennant Midstream (Nisource/Hillcorp)
  - 200 MMcf/d mid-2013
- Blue Racer – Petersburg, Berne, Lewis
  - 200 MMcf/d in 2014

Fractionation (Bbl/day)

- Mark West – Hopedale
  - 60,000 C_{3+} and 40,000 C_2 by year end 2014
- M3/Access/EVEP - Harrison
  - 90,000 C_{3+} and 45,000 C_2

Marcellus and Utica Shales

LPG Transmission Options



Mariner Pipelines

TEPPCO C_{3+}

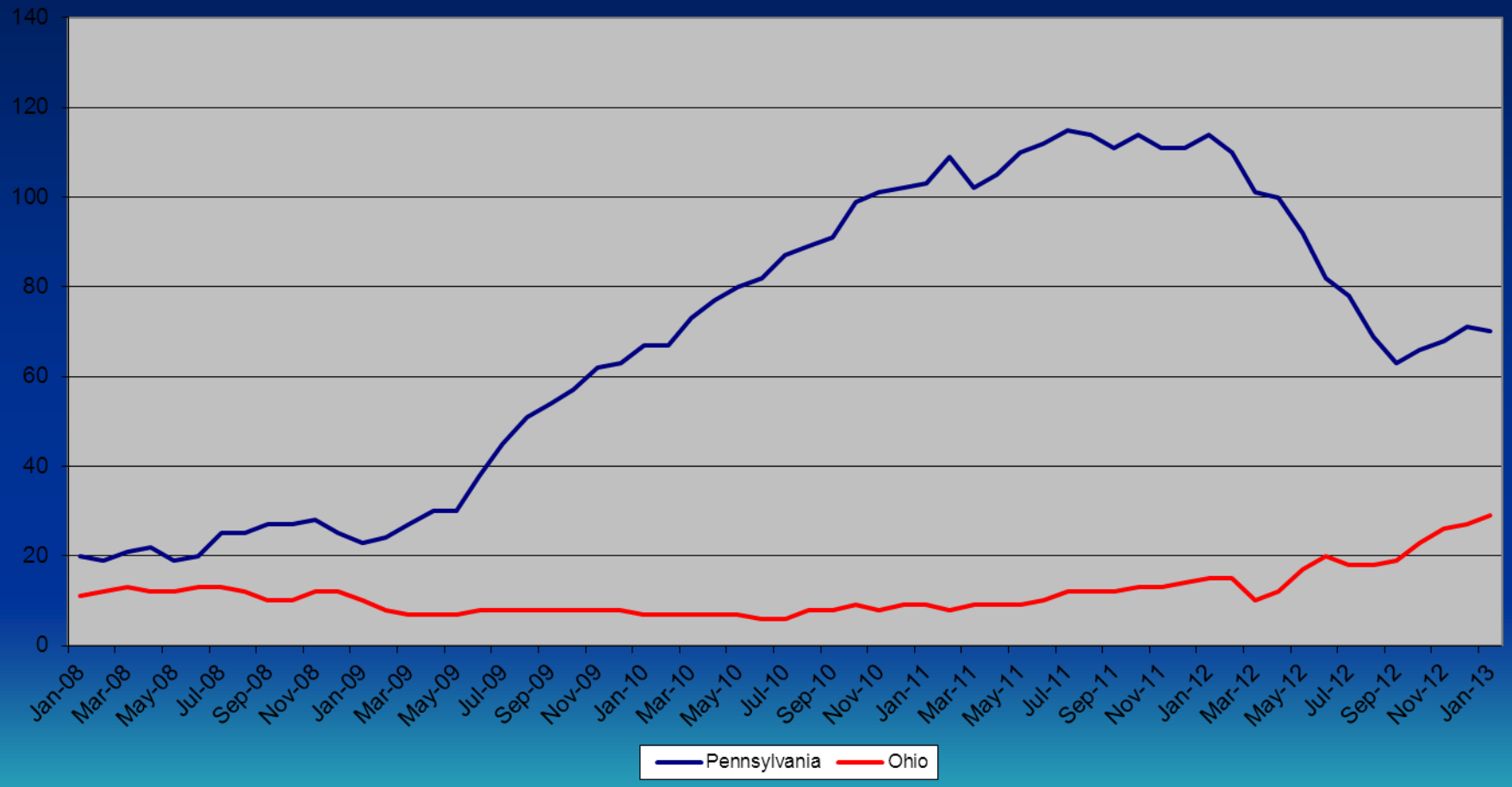
ATEX C_2

Marcellus and Utica Shales

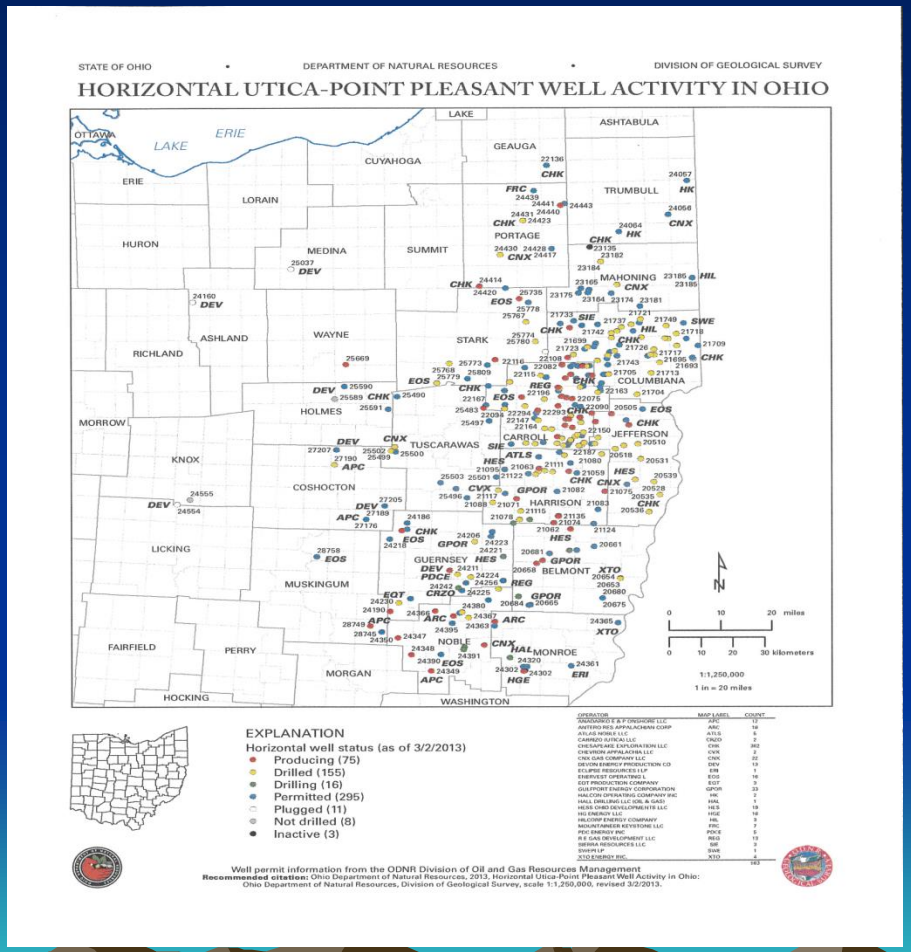
- Producer Activities
  - Rig Count
  - Utica Permitting Activity
  - Horizontal Drilling/Facing Operations
  - Marcellus (Pa.) Production History

Marcellus and Utica Shales

Active Drilling Rigs by Month

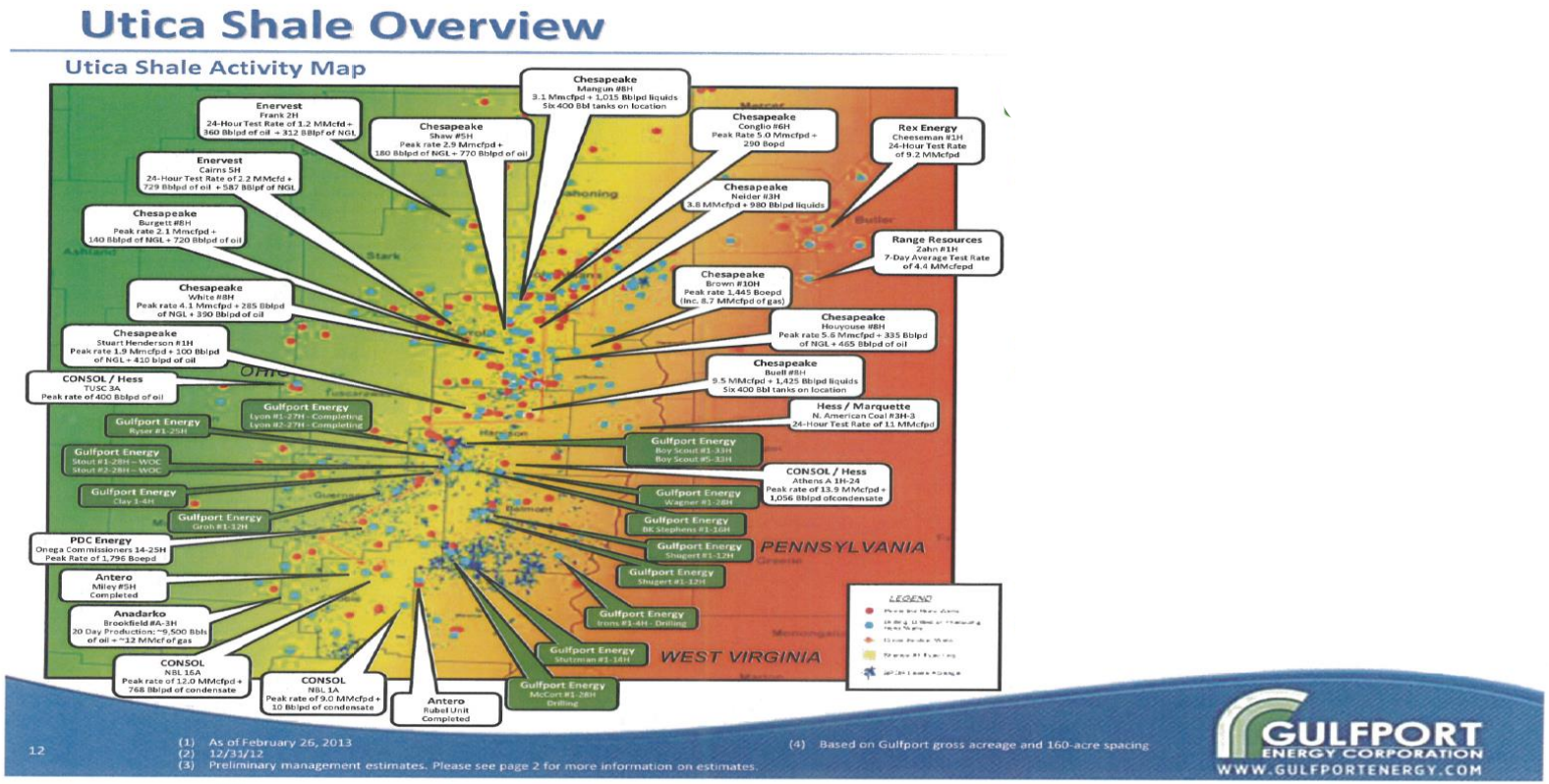


Marcellus and Utica Shales



- Through 3-9-12 567 Permits have been Issued – 268 wells have been drilled
- 75 wells presently producing
- Producer statements seem to indicate that productive window does not go as far westward as mapped by DNR
- Producer statements generally positive on Utica potential

Marcellus and Utica Shales



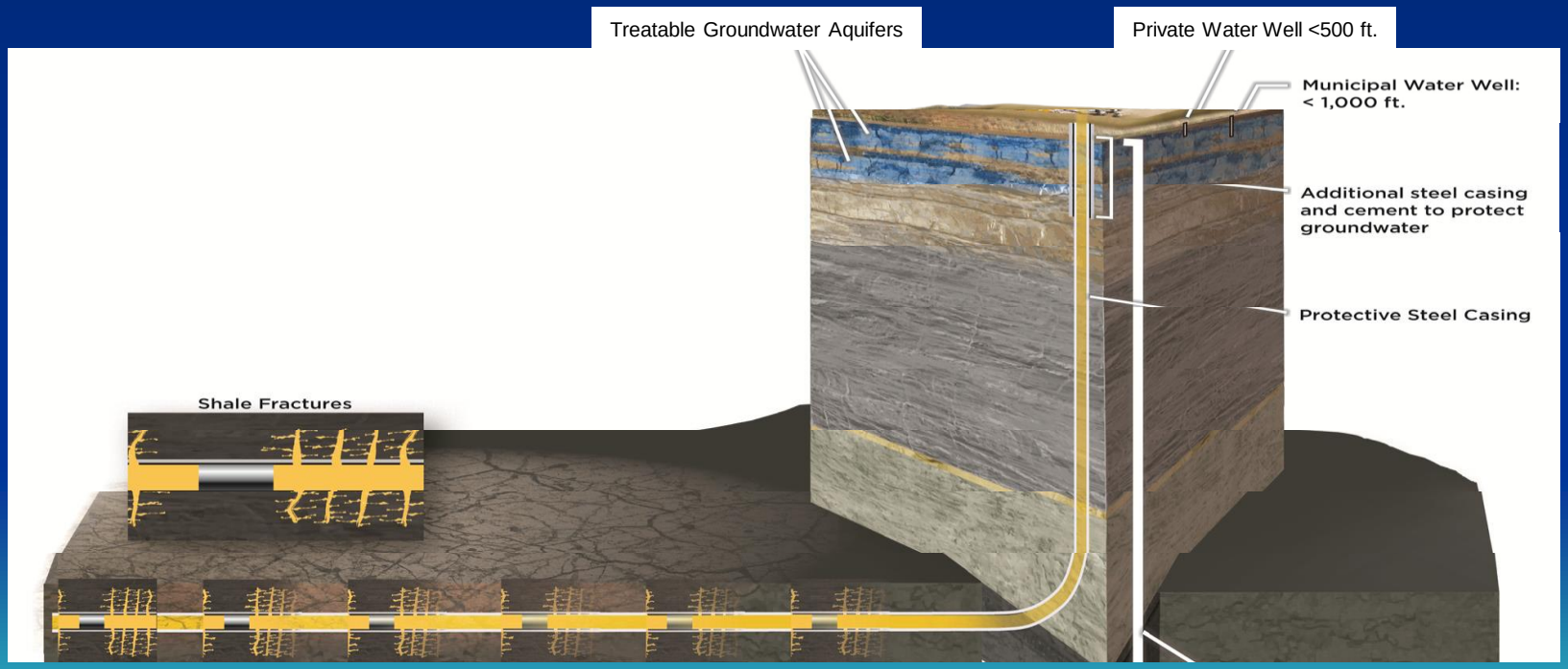
Marcellus and Utica Shales

Recent Completion Highlights

- Rex Energy: 3 wells IP average 3000+ Boepd
- Chesapeake: 3 wells IP average 1830 Boepd
- Gulfport: 4 wells IP average 2560 Boepd
- Antero: 1 well IP at 2230 Boepd
- Consol/Hess: 2 wells IP average 912 Bcpd and 12.5 MMcf/d

Marcellus and Utica Shales

Horizontal Drilling and Fracturing



Utica – 7,000 to 8,000' Below Surface

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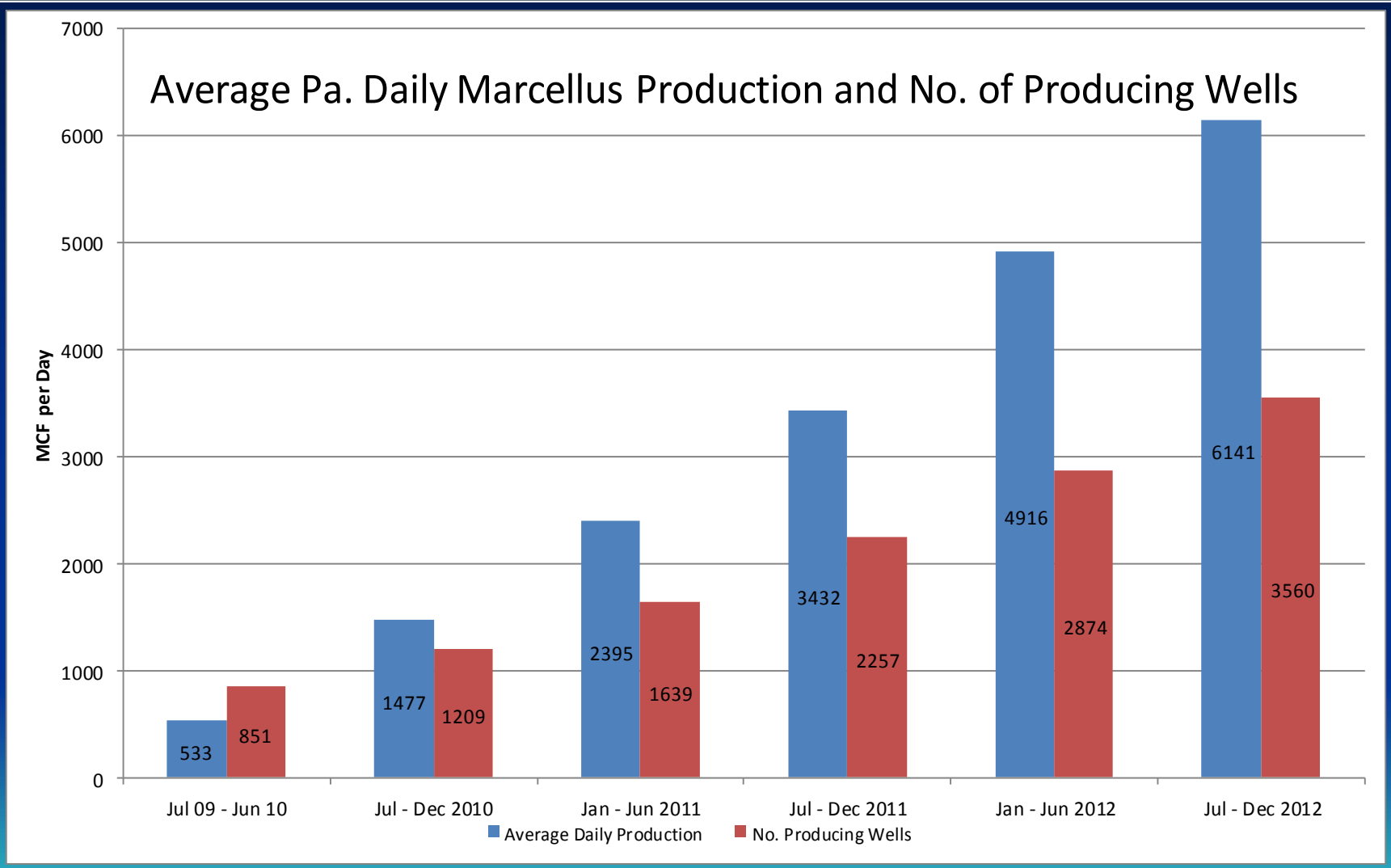

Marcellus and Utica Shales

Infrastructure Challenges

- High BTU values and large flow rates Challenge COH Utilization
  - High BTU Values Create Operational and Safety Concerns
    - Isolated, small temperature-sensitive markets unable to accept large volumes
    - Liquid drop-out from untreated High BTU gas can plug low pressure lines and create significant safety issues if liquids reach burner tips
  - High BTU Values Create Earnings/Revenue Challenges
    - Residential and small Commercial customers billed on volume not energy content
  - Industrial Customer Impacts
    - Fluctuating BTU values can cause havoc with industrial processes.

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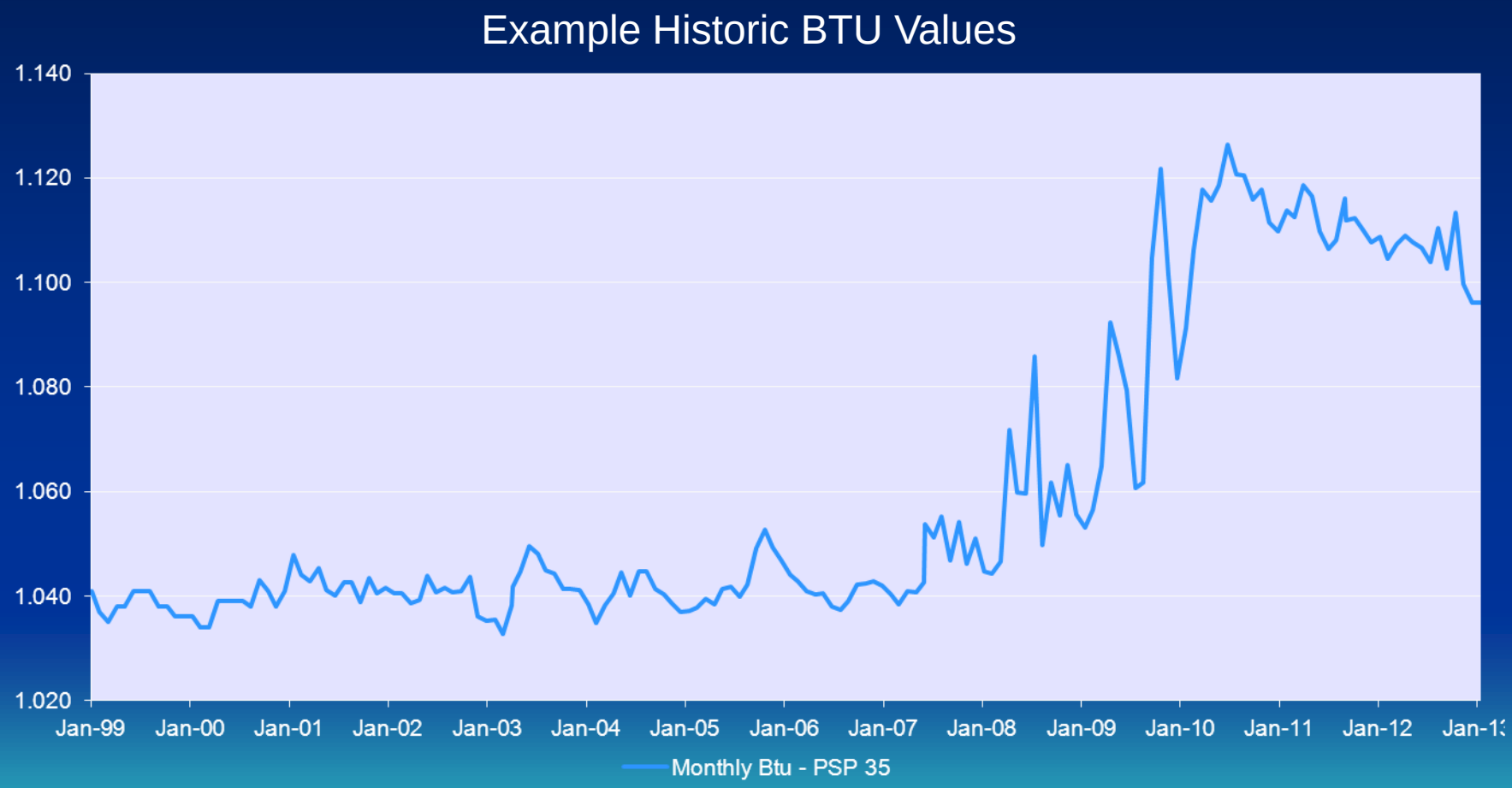

Marcellus and Utica Shales

Infrastructure Challenges

- Widespread Geographic Footprint Sets Requirement for Large Level of New Infrastructure
  - High Initial Well Flow Rates
  - New Production in Areas that Don't Have History of Wet Gas Production
    - Gathering/Processing/Fractionation Facility Requirements
  - Interstate Pipeline Facilities
    - Where does Utica Gas go?
  - Treatment Facilities
    - New Natural Gas Processing Capability for Marcellus and Utica Exceeds 3.5 Bcf/d
    - LPG Markets
      - Pipelines: Sarnia, Ontario; Gulf Coast; Philadelphia => Export
      - Ethane Cracker
      - Diluent

Marcellus and Utica Shales

QUESTIONS?