

# Source Water/Water Quality Emerging Issues & Updates

## Hydraulic Fracturing

Presentation to WRTC

November 7, 2013



Metropolitan Washington  
Council of Governments

# OVERVIEW

- Part of Water/Energy nexus
- Preliminary investigation/information only
- Recognize/need for perspective:
  - Balance environmental concerns with energy demands
  - Only one of many environmental challenges to Potomac
  - Much is still unknown/uncertain

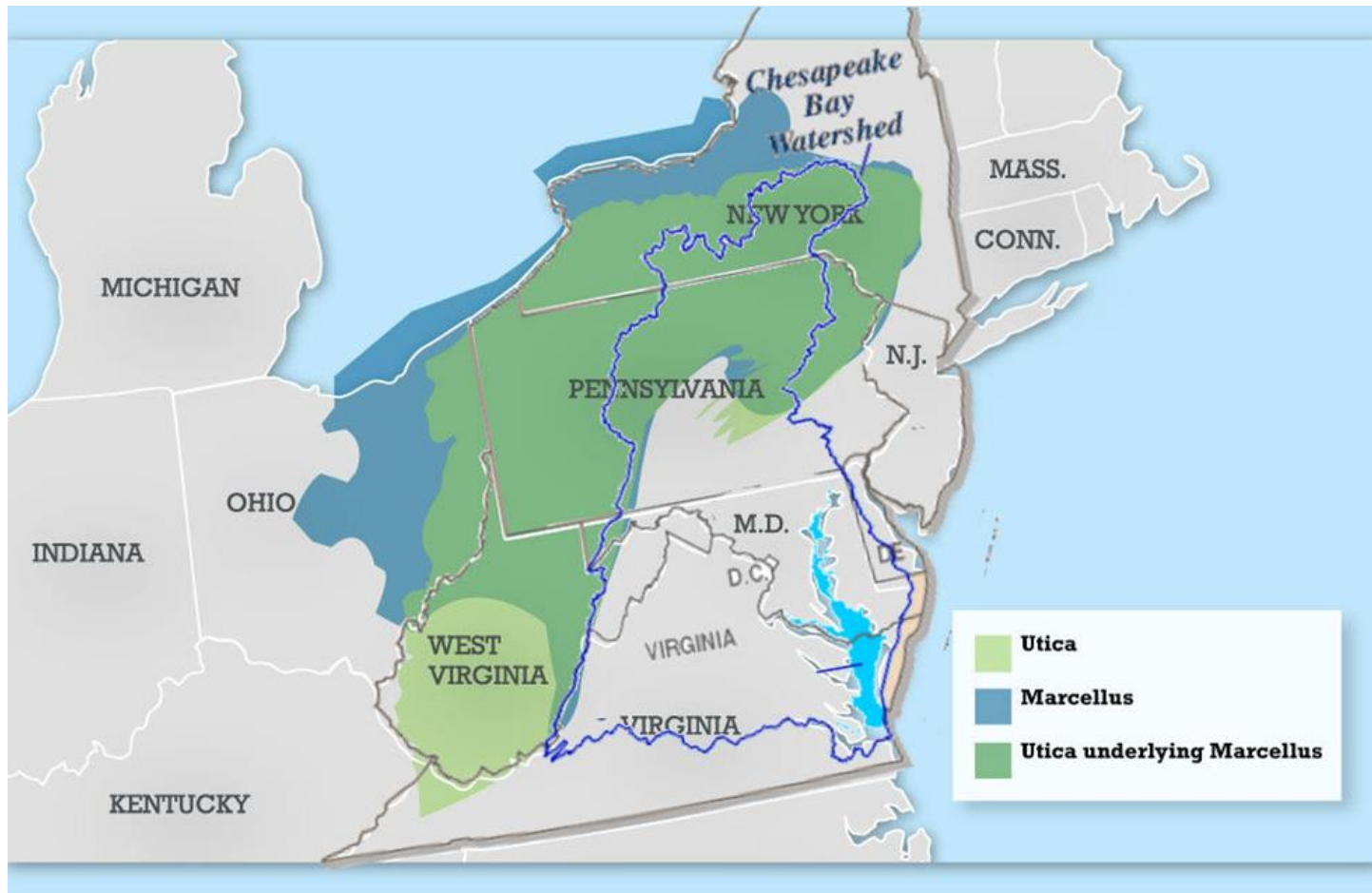
# Questions?

1. What is hydraulic fracturing (i.e., fracking)?
2. Why is this an issue now?
3. What are potential environmental concerns?
4. Why is this a potential issue for the COG region?
5. What activities/studies are underway?
6. What questions/issues should be brought to the attention of the CBPC (& potentially CEEPC)?

# What is Hydraulic Fracturing?

- Process has been used to extract gas and oil since 1949
- Process injects fluids under pressure to crack underlying rock in order to access and extract gas/oil
- Shale rock is composed of fine grains/is highly permeable so gas/oil is more easily/less expensive to extract
  - Marcellus shale is named for location of that particular formation (i.e., Marcellus, New York)
- Potential supply of shale oil and in particular shale gas viewed as very significant

*Reference: USDOE presentation for Environment Virginia Symposium (4/4/11)*

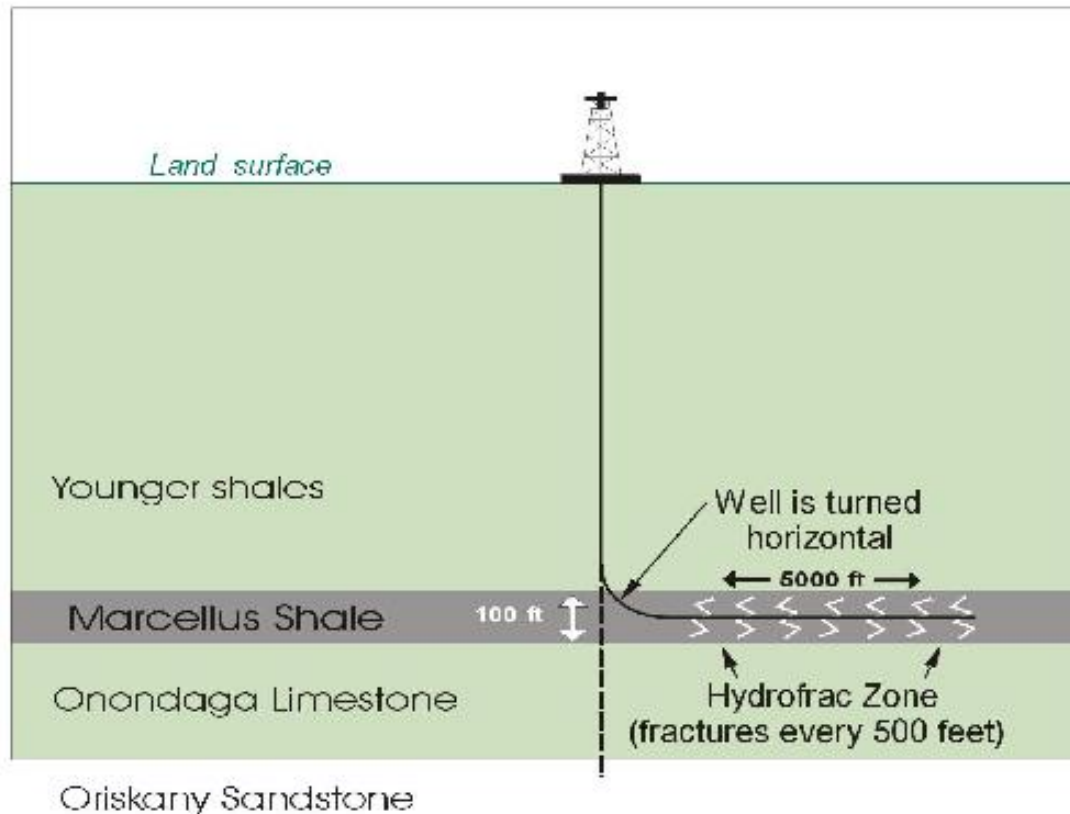


Source information:

[http://marcelluscoalition.org/wp-content/uploads/2010/05/NJI\\_Marcellus\\_ShaleMapInfo\\_Utica\\_20120517\\_v41.jpg](http://marcelluscoalition.org/wp-content/uploads/2010/05/NJI_Marcellus_ShaleMapInfo_Utica_20120517_v41.jpg)

[http://www.behrend.psu.edu/seagrant/ais/images/figure1\\_big.gif](http://www.behrend.psu.edu/seagrant/ais/images/figure1_big.gif)

# Vertical versus Horizontal Wells



Vertical wells only intersect the thickness of the formation. Horizontal wells can penetrate many times the thickness of the formation, placing much more wellbore area in contact with gas-bearing rock. Combined with staged hydraulic fracturing, this allows high permeability pathways to reach a much larger volume of reservoir rock.

# Why is this an issue now?

- Growing number of operations in upper reaches of the Potomac watershed
- Growing concerns raised about various environmental impacts
- Continued need for additional energy resources, especially domestic sources
- Natural gas has many advantages over other fossil fuels
- George Washington Forest management plan has been reopened for routine review, so access to underlying oil/gas reserves is being considered.

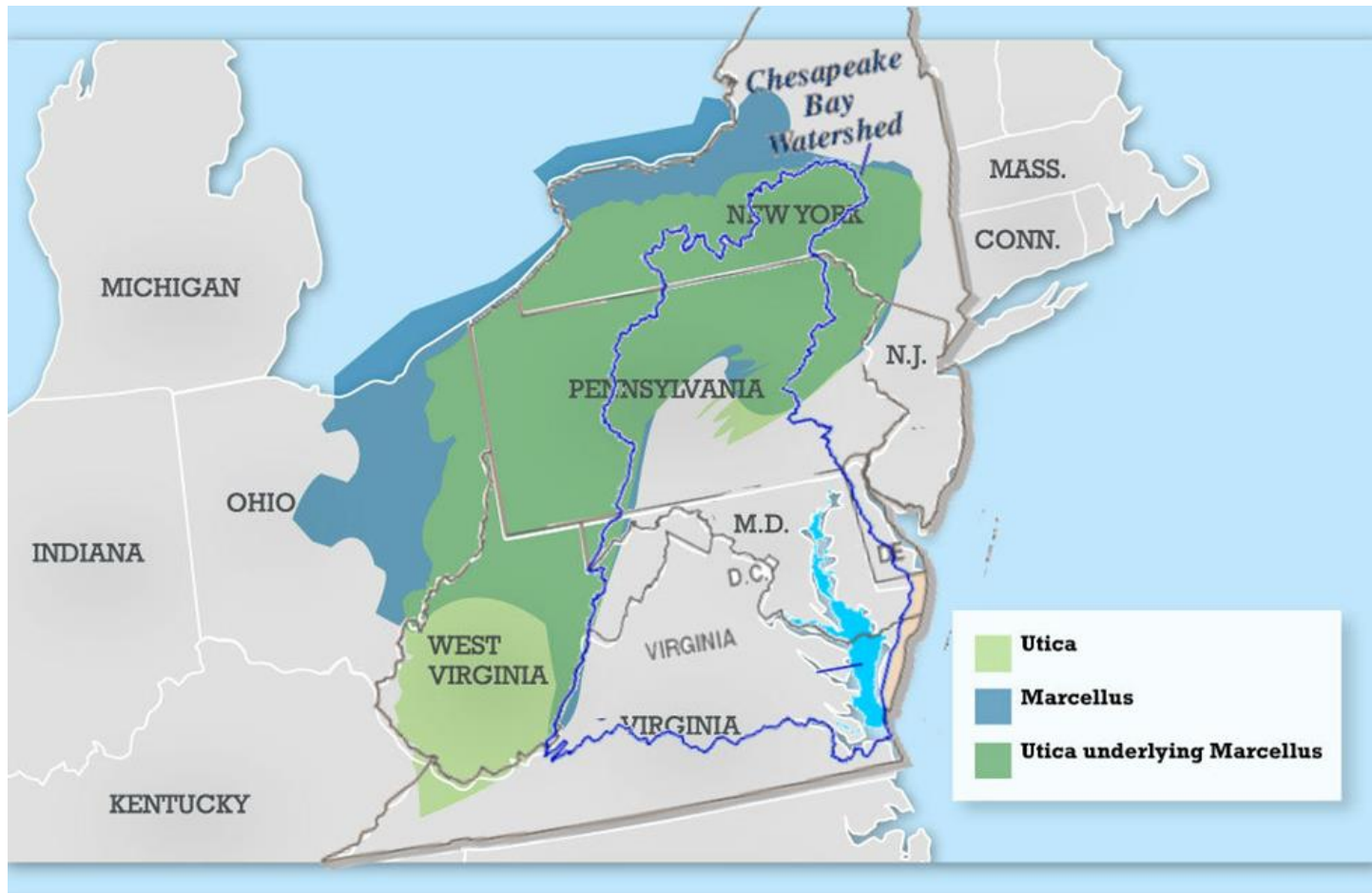
# What are potential environmental concerns?

- Water Quantity
  - Process requires large quantities of water (e.g., 1 Mil Gal/site)
- Water Quality – Local and Downstream
  - Runoff from roads, well pad, plus containment ponds
  - Chemicals used in fracking do not need to be disclosed, exempt from Safe Drinking Water Act
  - Spill potential
  - Ground water contamination
  - Radioactive material & metal (i.e., debris from rock cuttings)
- Wastewater
  - Ability of plants to effectively treat the liquid wastes
- Others - Air Quality, habitat impacts, solids disposal, seismic activity
- Challenge – Cumulative vs. Acute Impacts and Managing Risk



# Why is this a potential issue for the COG region?

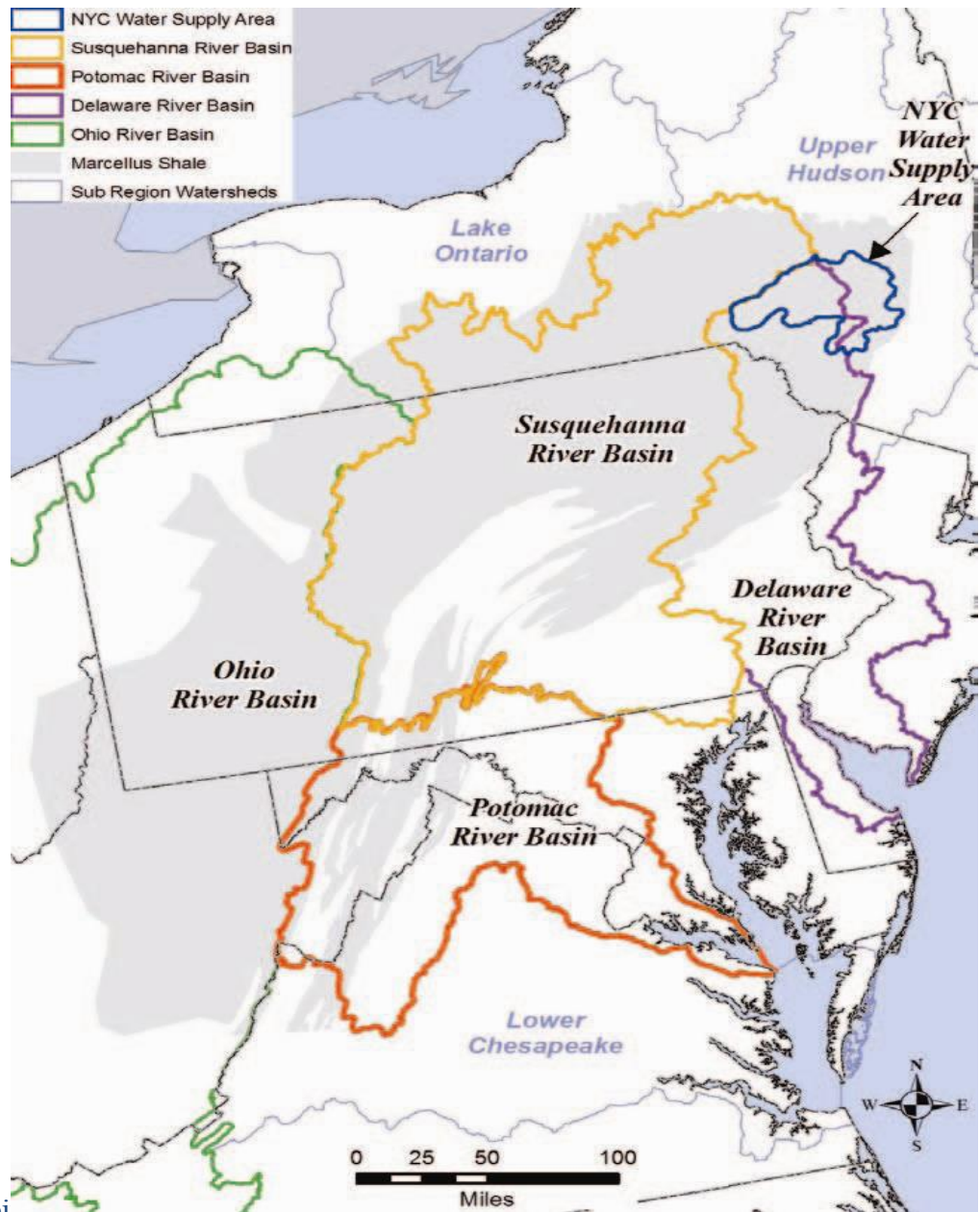
- George Washington Forest impacts headwaters of the Potomac River (provides drinking water to 4.5 million people), and James, Shenandoah Rivers
- Recognition of:
  - Potomac water quality/source water protection issues
  - Region's energy demands and need for options
  - Region's goals re: greenhouse gas and air quality links



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Map from U.S. Department of Energy, E&P Focus Newsletter, Summer 2010

# What activities/studies are underway?

- EPA's Study re: Fracking
  - Due out 2014?
- EPA's Science & Advisory Board (SAB)
  - Next briefing scheduled (November 20<sup>th</sup>)
- George Washington Forest Plan open (public comment period closed)
  - Letters were submitted from WAD, Fairfax Water & DC Water
- Recent activity to allow an gas export facility in Maryland

# What questions/issues should be brought to the attention of the CBPC (& potentially CEEPC)?

- Acknowledge
  - Water/energy tradeoffs
  - Manage risks
- Note potential environmental impacts
  - Focus for COG region is on potential for upstream, primarily drinking water impacts
- Recommend speakers:
  - EPA
  - Trade organization
  - Others?
- Other issues/information?