

Emerging Market Impacts on Dominion East Ohio

Presented to the Northern Ohio Chapter of the
Association of Energy Engineers

January 22, 2014



Topics to be Covered

- Dominion East Ohio System and Market
- Merchant Function Exit
- Increased Focus on Pipeline Safety
- Utica Shale Development



Dominion East Ohio System and Market



DEO's market and assets are unique

Market Size

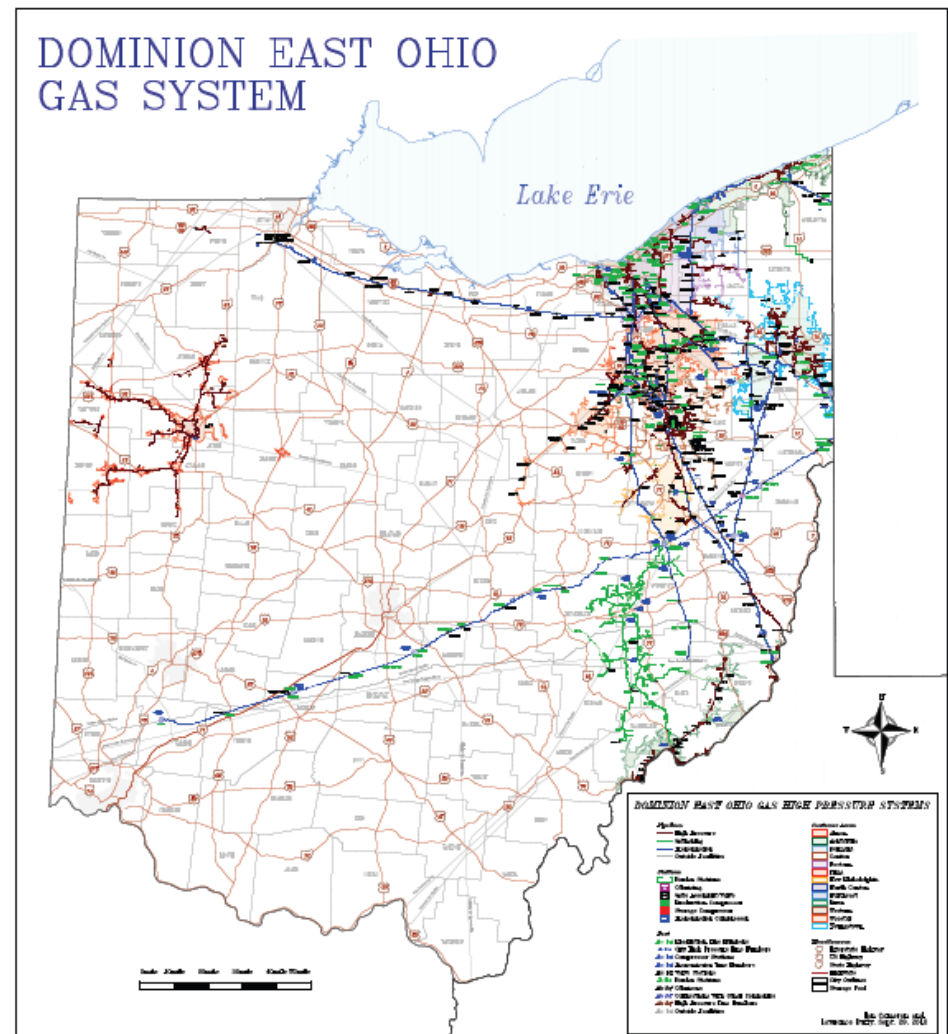
- 1.2 million customers
- > 300 Bcf annual consumption

Extent of Pipeline Assets

- 20,000 miles – Distribution
- 1,100 miles – Trans/Storage
- 1,000 miles – Gathering

Unique Operations

- > 50 Bcf of working storage
- Gather 80% of Ohio gas
- Interconnects with seven major interstate pipelines



DEO's market by the numbers...

Customer Class	# of Customers	
Residential	1,108,000	
Commercial	84,000	
Industrial	1,500	
Total	1,193,000	

2014 data



Ohio's major LDCs are quite different

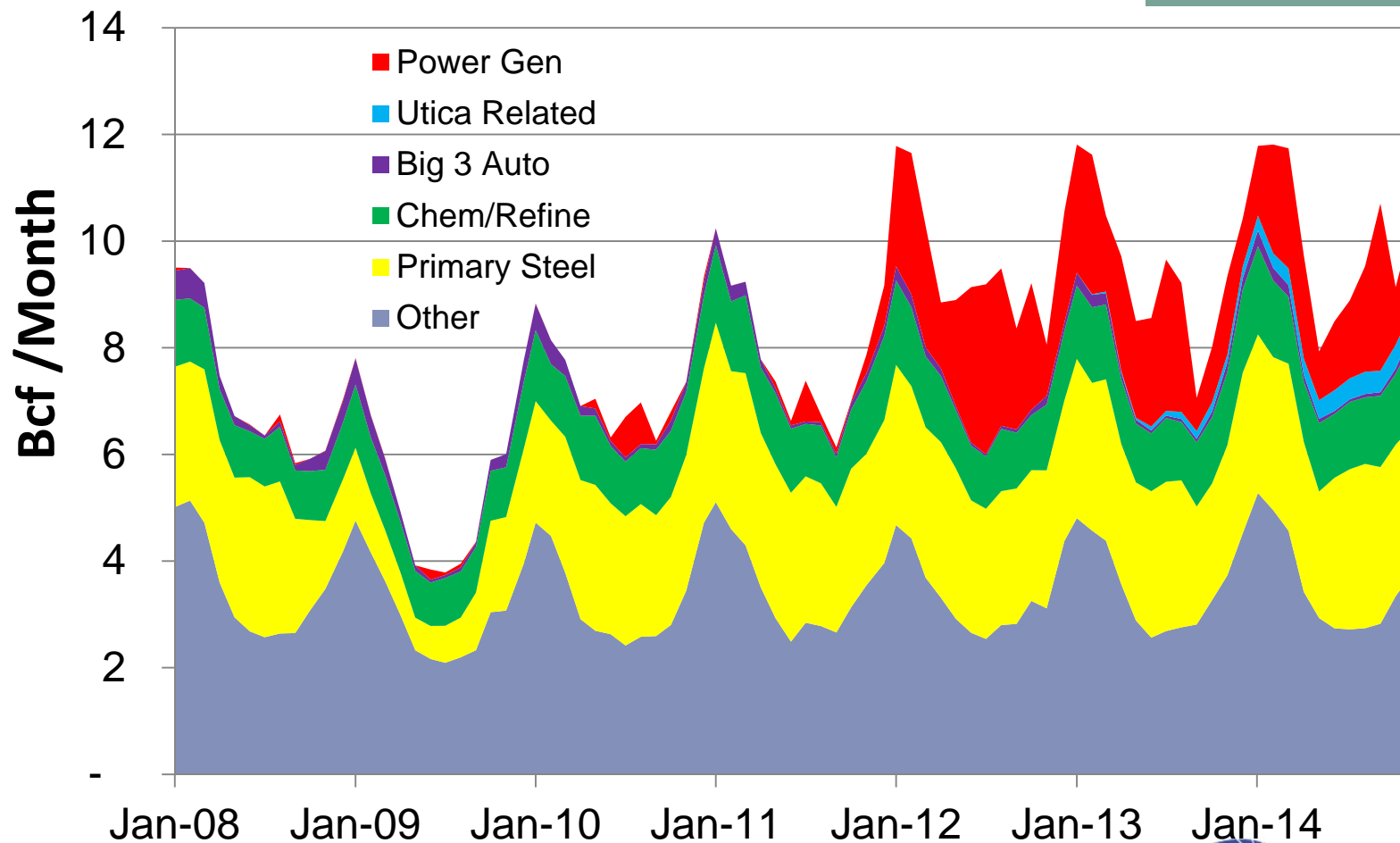
Ohio LDCs' Pipeline System Mileage

	Dominion East Ohio	Columbia Gas of Ohio	Duke Energy Ohio	Vectren Energy Delivery
Distribution	19,679	20,002	5,536	5,256
Transmission	1,104	135	210	269
Gathering	957	0	0	0
Total Miles	21,740	20,137	5,746	5,525

Source: 2011 DOT Annual Report of Pipeline Mileage



DEO's industrial segment is changing

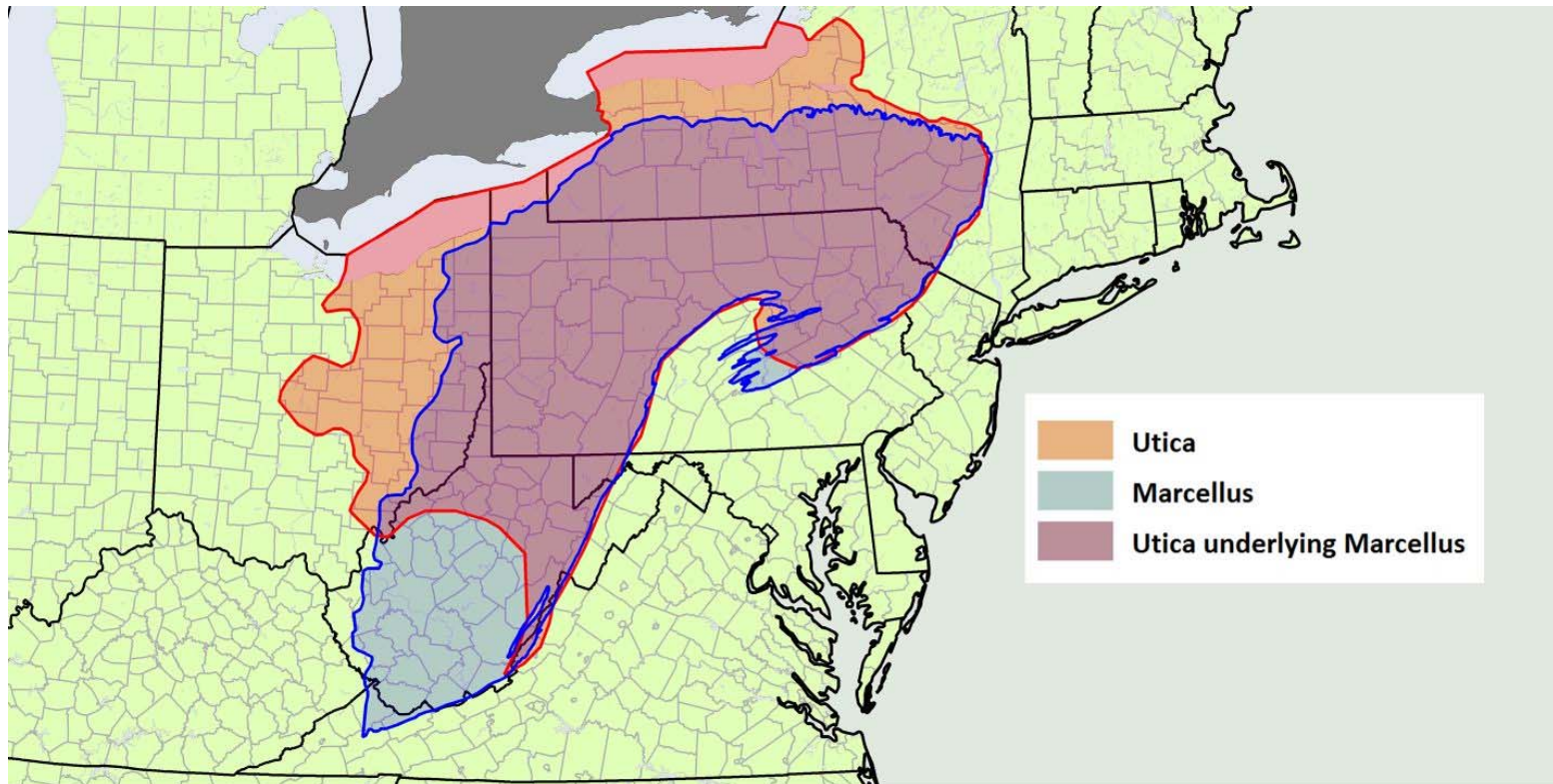


DEO serves a range of power generators

- Kent State University
12 MW Cogeneration Plant
- Millennium Inorganic Chemicals
25 MW Cogeneration Plant
- Troy Energy
600 MW Peaking Plant
- AMP/Fremont Energy Center
700 MW Combined Cycle Plant



DEO assets overlay the Utica Shale



The Utica underlies the Marcellus in many areas, coming closer to the surface in eastern Ohio. (Source for Marcellus and Utica outlines: Energy Information Administration.)

Merchant Function Exit



All of DEO's customers now get their gas supply from an Energy Marketer

1970s

Transportation of Ohio Production

1980s

*Interstate Transportation
Basic Gas Pooling Service*



1990s

*Expanded Gas Pooling Service Options
Energy Choice Pilot Program*

DEO's role is to deliver the gas supplied by the marketer to the end user !

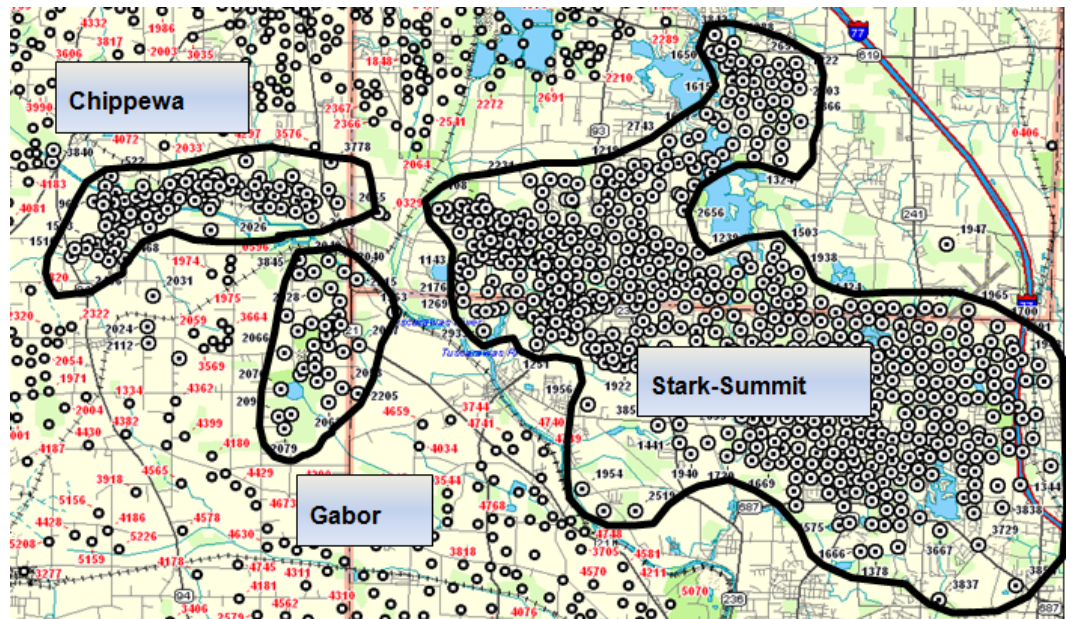
2000s

*Energy Choice System-Wide Expansion
Merchant Function Exit*



DEO's storage plays a vital role

- Storage is used for several purposes:
 1. Storage service sold to marketers and end users
 2. Operational balancing capacity (on-system and contracted)
- Operational balancing is used to accommodate differences between forecasted and actual usage by customers
- On a peak day, approximately half of DEO's daily customer demand can be met by withdrawing gas from storage



DEO Residential Rate Structure Changed in 2008

- DEO's cost to serve a residential end user is largely independent of the gas volume consumed
- DEO adopted "Straight Fixed-Variable" Rate Structure for residential customers in 2008 rate case
- DEO charges residential customers a flat fee per month regardless of gas used
- For end users – Marketer fees are still based on volumes so your gas bill is still impacted by how much gas you use !

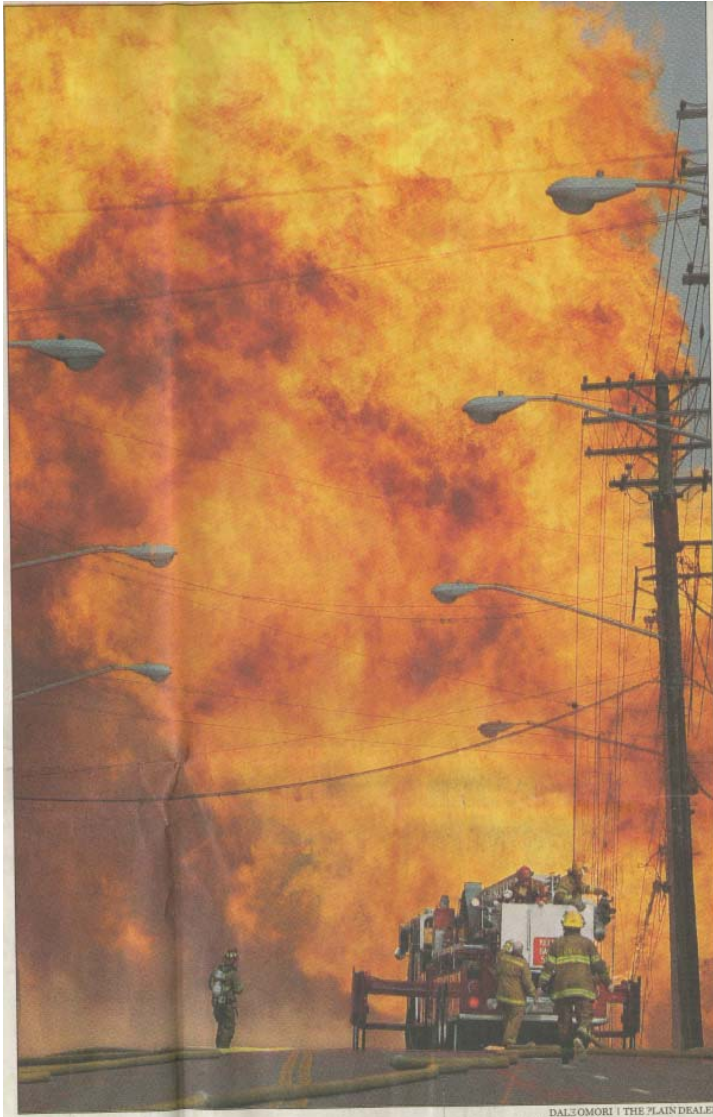




Increased Focus On Pipeline Safety



High Profile Pipeline Safety Events Help Shape Federal Regulations



- Bellingham
- Carlsbad
- San Bruno
- Allentown
- Sissonville
- Harlem

Maple Heights, Ohio
2002



Olympic Pipeline

Bellingham, Washington - June 10, 1999

- 16" liquids pipeline ruptured
- 277,200 gallons of gasoline spilled into nearby waterways
- Three fatalities ages 10, 10, and 18
- Relief valve failed to open during pressure surge resulting in rupture of pipeline
- Investigation also identified training and latent damage to the pipeline as causes



El Paso Pipeline

Carlsbad, New Mexico – August 19, 2000

- 30 inch natural gas pipeline ruptured near the Pecos river
- 12 fatalities – nearby campers
- Pipeline failed due to internal corrosion
- Over \$300 million in system improvements resulted



Incidents Lead to New Federal Pipeline Safety Regulations

- Subpart “O” was added to 49CFR part 192 in 2003
- Goal: Prevent Transmission Pipe Failure
- Requires operators to risk rank pipelines and identify “High Consequence Areas” (HCA)
- List of potential integrity threats must be identified for each pipeline
- Based on identified threats “Integrity Assessment” must be periodically conducted within all HCA’s



New Federal Pipeline Safety Regulations for Distribution Pipe

- Subpart “P” was added to 49CFR part 192 in December 2009
- Goal: Reduce leaks and incidents on Distribution pipe – lower pressure systems
- Requires operators to risk rank pipe types
- Apply preventive and mitigative measures to reduce risk, leaks, and incidents
- Emphasizes “System Knowledge” – close gaps in pipeline asset data

New Federal Pipeline Safety Regulations for Control Rooms

- Section 631 was added to 49CFR part 192 in February 2010
- Fatigue Mitigation for Controllers
- Operator Qualifications for Controllers
- React appropriately to Abnormal Conditions
- Alarm Management requirements
- Incorporate lessons learned into operating procedures

Pacific Gas & Electric

San Bruno, California - September 9, 2010

- 30 inch natural gas pipeline ruptured in residential neighborhood
- 8 fatalities – 38 homes destroyed
- Defective welds found near failure point of pipeline
- Integrity assessment had not found bad welds



Resultant NTSB Bulletin – Strength Testing Of Pipe

UGI Utilities

Allentown, Pennsylvania – February 9, 2011

- 1928 Cast Iron main line ruptured while operating at low pressure
- 5 fatalities
- UGI to replace all cast iron main over 14 years
- UGI to replace bare steel main over 30 years



Resultant PHMSA Emphasis on Replacement of Cast Iron Main

Columbia Gas Transmission

Sissonville, West Virginia – December 11, 2012

- 20" pipeline rupture due to undetected external corrosion
- Not in a HCA and therefore no integrity assessment
- No fatalities, no serious injuries, 3 homes destroyed



NTSB Recommends: Redefine HCA's to include pipelines near highways, more remotely operated valves



Consolidated Edison

Harlem, New York – March 2014

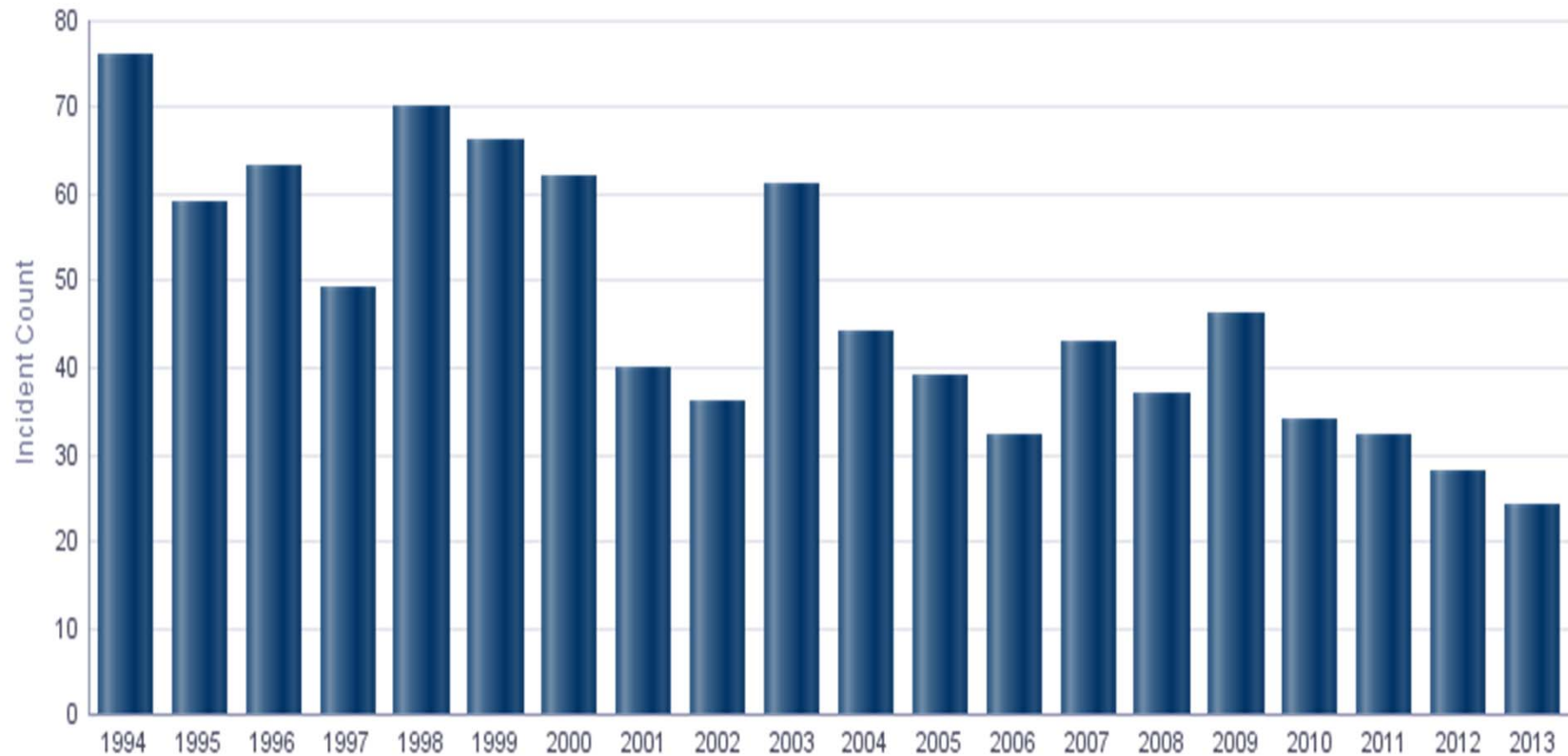
- 8 fatalities – two 5 story apartment buildings destroyed
- 8 inch cast iron gas main installed 1887
- Water main leak found nearby
- Con Ed increasing leak patrol frequency
- NYFD now responds to all gas odor calls



ConEd now shows locations of active gas leaks on the internet



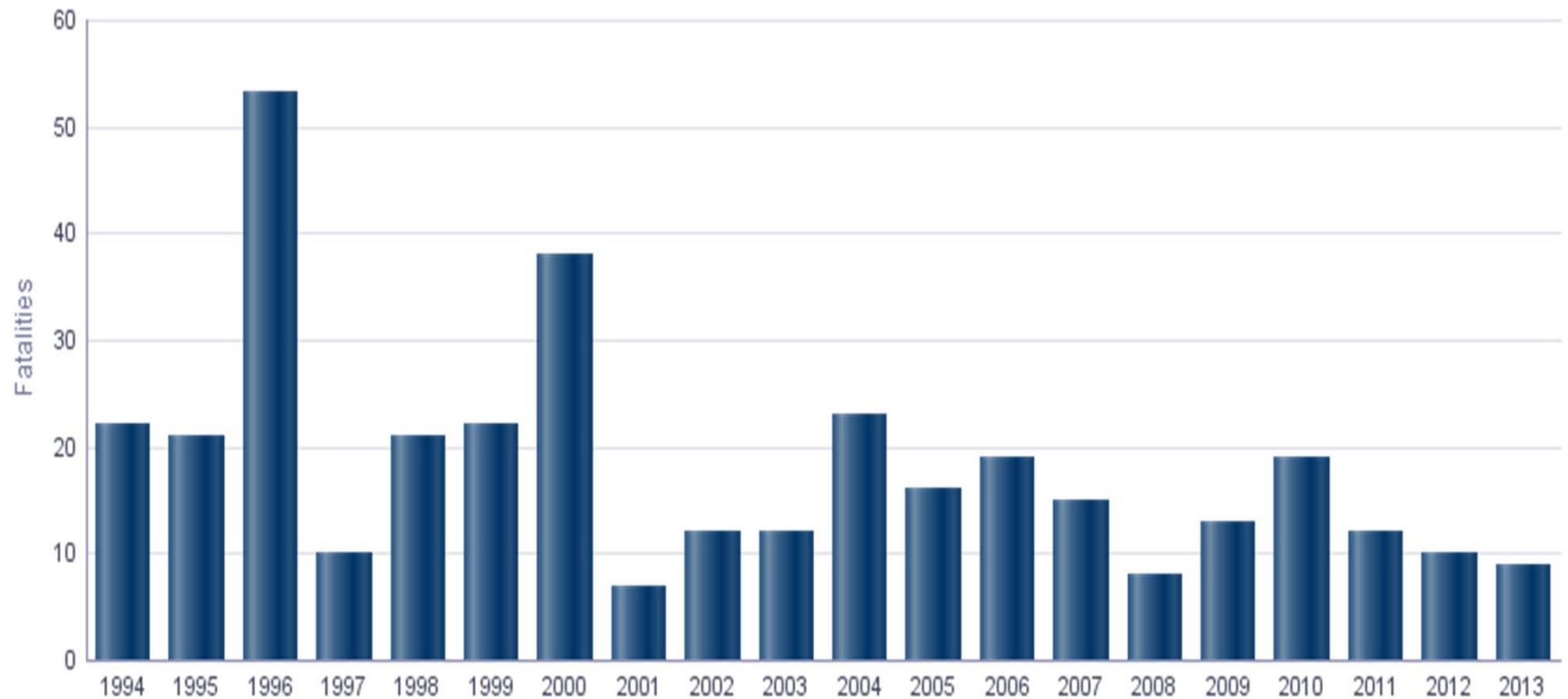
The Pipeline Safety Trend is Improving



Source: PHMSA Serious Pipeline Incident Data



Fatalities From Pipeline Incidents Are Declining



Source: PHMSA



Even More New Federal Regulations Are Expected

- MAOP verification and strength testing
- Possible modifications to High Consequence Area Definition – more lines to be “assessed”
- Increased use of automated shut off valves to reduce time for gas shut down after Transmission line failure
- Increased use of automated shut off valves on service lines to buildings
- Increased Gathering line regulations ?

In 2008, DEO began its Pipeline Infrastructure Replacement (PIR) program

- In DEO's 2008 Rate Case the PUCO approved a program to support the replacement of older, more maintenance prone, pipelines
 - 25 + years, \$2.7 billion^(*) program to replace over 5000 miles of bare steel, cast and wrought iron, and copper pipeline
 - DEO will replace about 25% of its pipeline through this program

	Pre-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969
Decade Installed	7%	5%	17%	8%	24%	39%	1%

^(*) 2007 dollars



PIR Program Status

Mileage and Service Lines Replaced

	Cumulative Through 2013	Remaining*
Miles Replaced	835	4585
Transmission	35	0
High Pressure Distribution	54	102
Other Distribution	746	4483
Bare Steel	622	4159
Ineffectively Coated Steel	179	354
Cast Iron	7	25
Wrought Iron	26	47
Copper	1	0
Customer Service Lines Replaced	92,687	

*June 30, 2014



Program Status (Continued)

PIR Investments and Cost Recovery Rates

	2013	Cumulative
Gross Investments	\$163.6 million	\$674.3 million ^(*)
Property Taxes Generated		➤ \$41.8 million
<u>Rate Schedule</u>	<u>Effective 5/6/2014</u>	
General Sales Service and Energy Choice Transportation Service	\$5.44 per Month	
Large Volume General Sales Service and Large Volumes Energy Choice Transportation Service	\$42.39 per Month	
General Transportation Service and Transportation Service for Schools	\$186.31 per Month	
Daily Transportation Service	\$0.0469 per MCF, Up to \$1,000 per Month	

^(*) Equals 63% of Net Plant in DEO's last rate case



The PIR program is improving pipeline safety at Dominion East Ohio

- DEO finds 45% fewer underground gas leaks since the PIR program began late in 2008
- The trend in gas leaks found has been reversed and is now decreasing instead of increasing

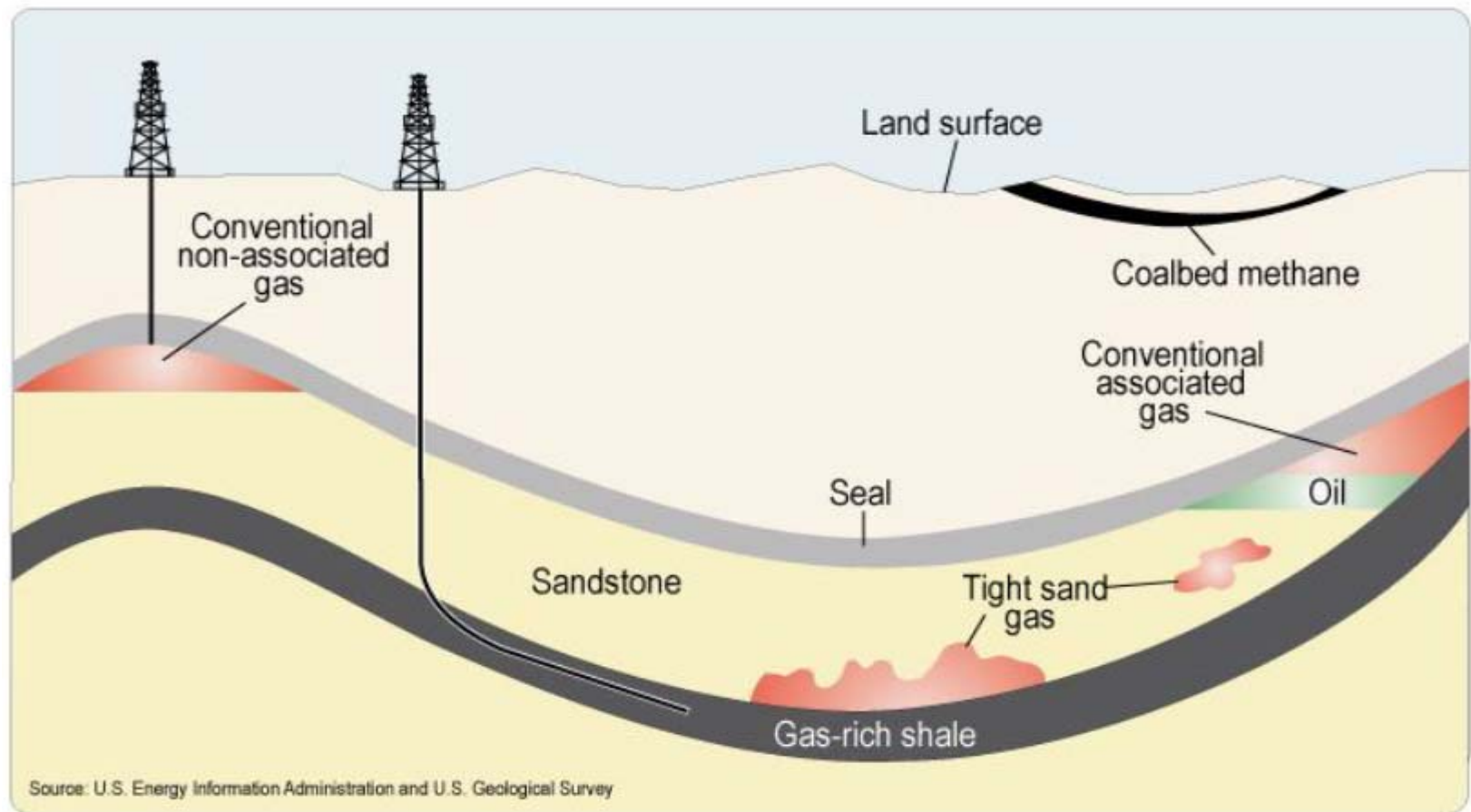


Utica Shale Development



Shale gas production has reshaped the U.S. natural gas market

Underground sources of natural gas

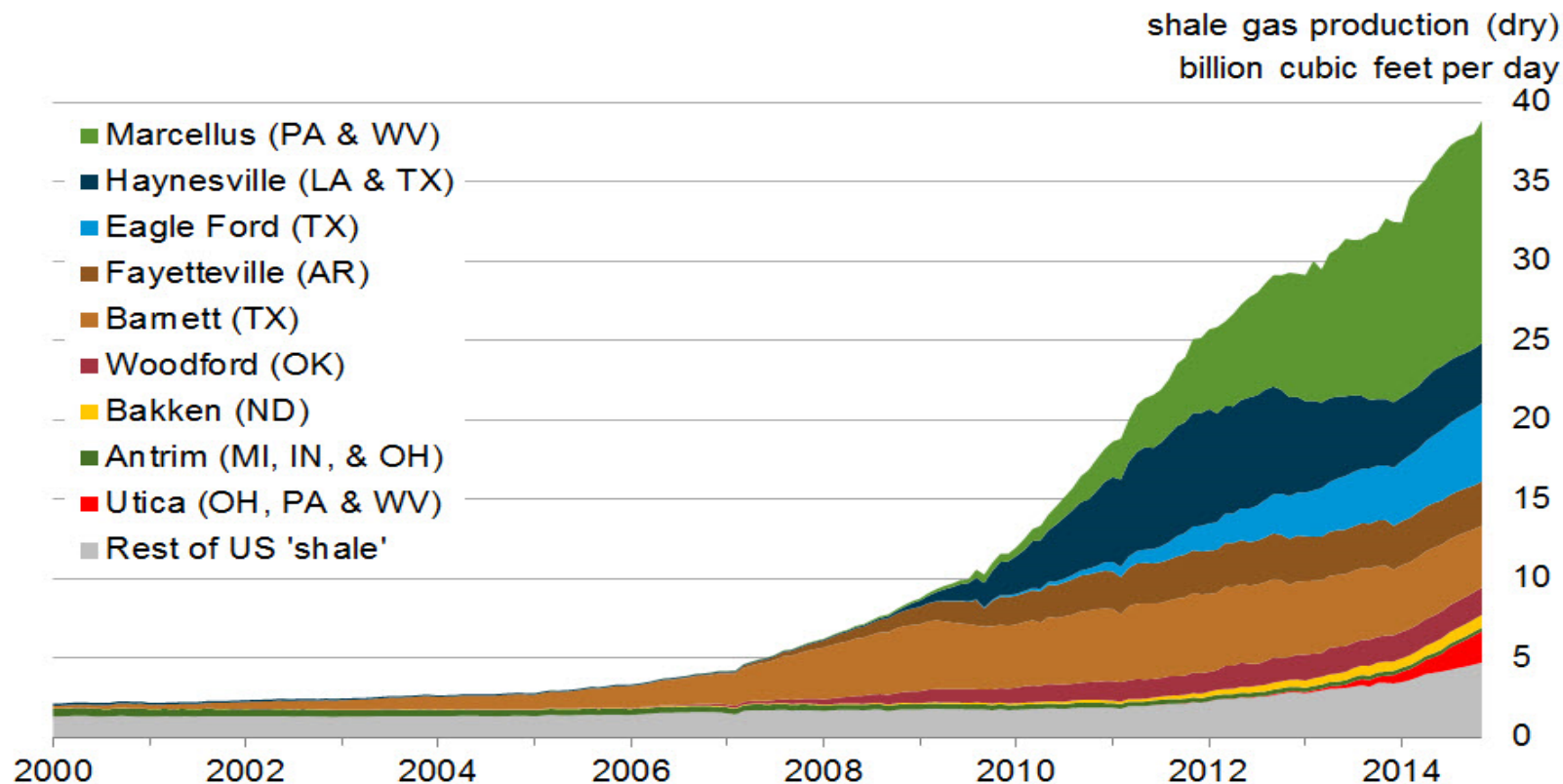


Source: modified from U.S. Geological Survey Fact Sheet 0113-01

What makes shale gas so attractive?

- “Dry” natural gas is mostly comprised of
 - Methane or C1 ($\geq 88\%$)
 - Ethane or C2 ($\leq 12\%$)
- “Wet” natural gas replaces some of the methane with
 - Propane (C3)
 - Butane (C4)
 - Natural gasoline (C5)
- By processing the gas, the C2 – C5 byproducts can be removed and sold separately at a value greater than the value of the dry gas by itself

Dry shale gas production has grown dramatically over the past few years



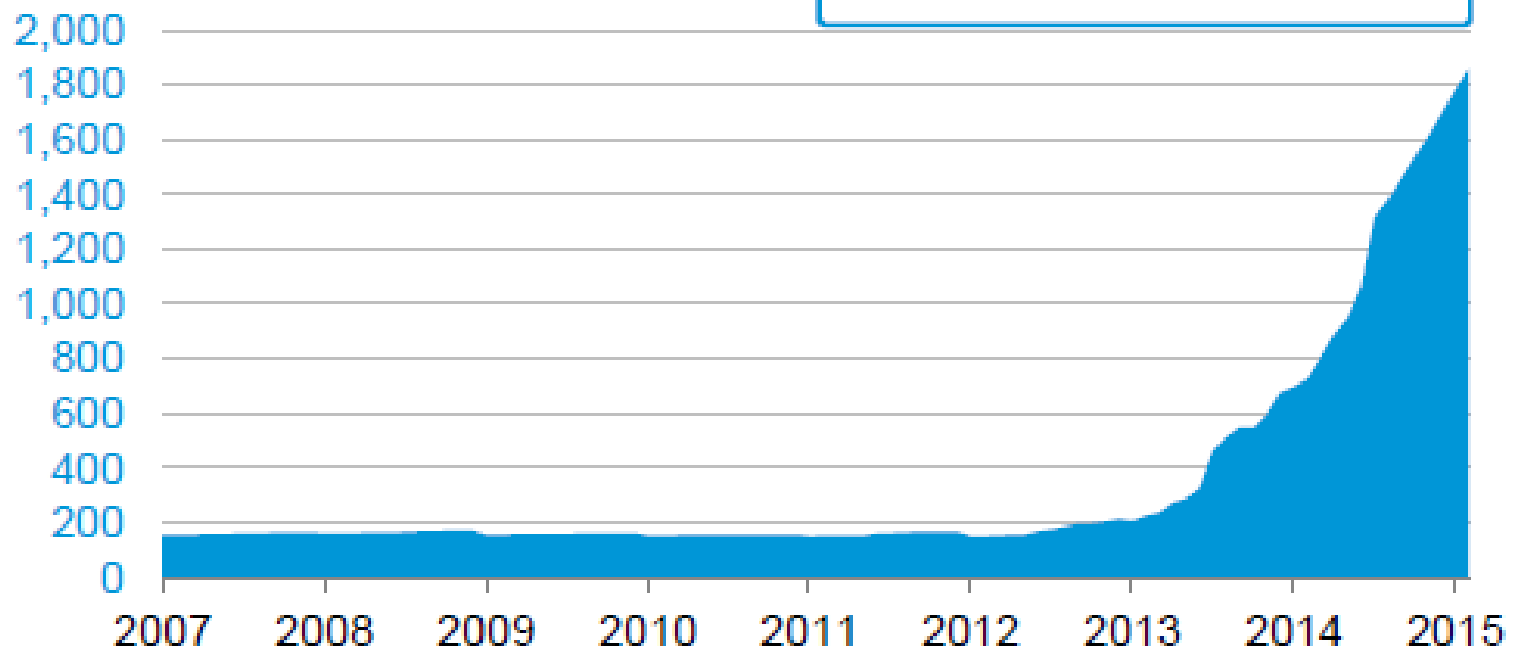
Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through November 2014 and represent EIA's official shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).

Utica Gas Production

Projected through February 2015

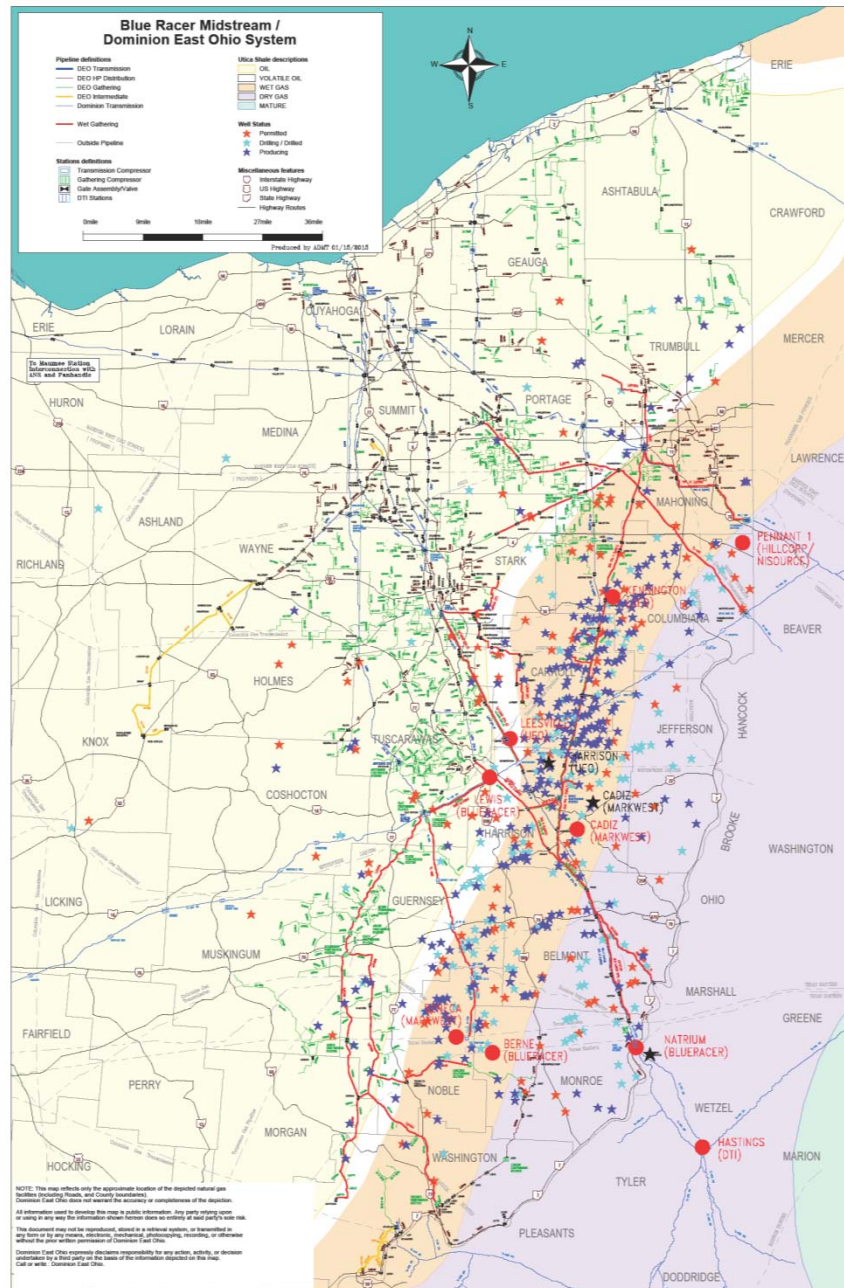
Utica Region
Natural gas production
million cubic feet/day

Gas +74
million cubic feet/day
month over month



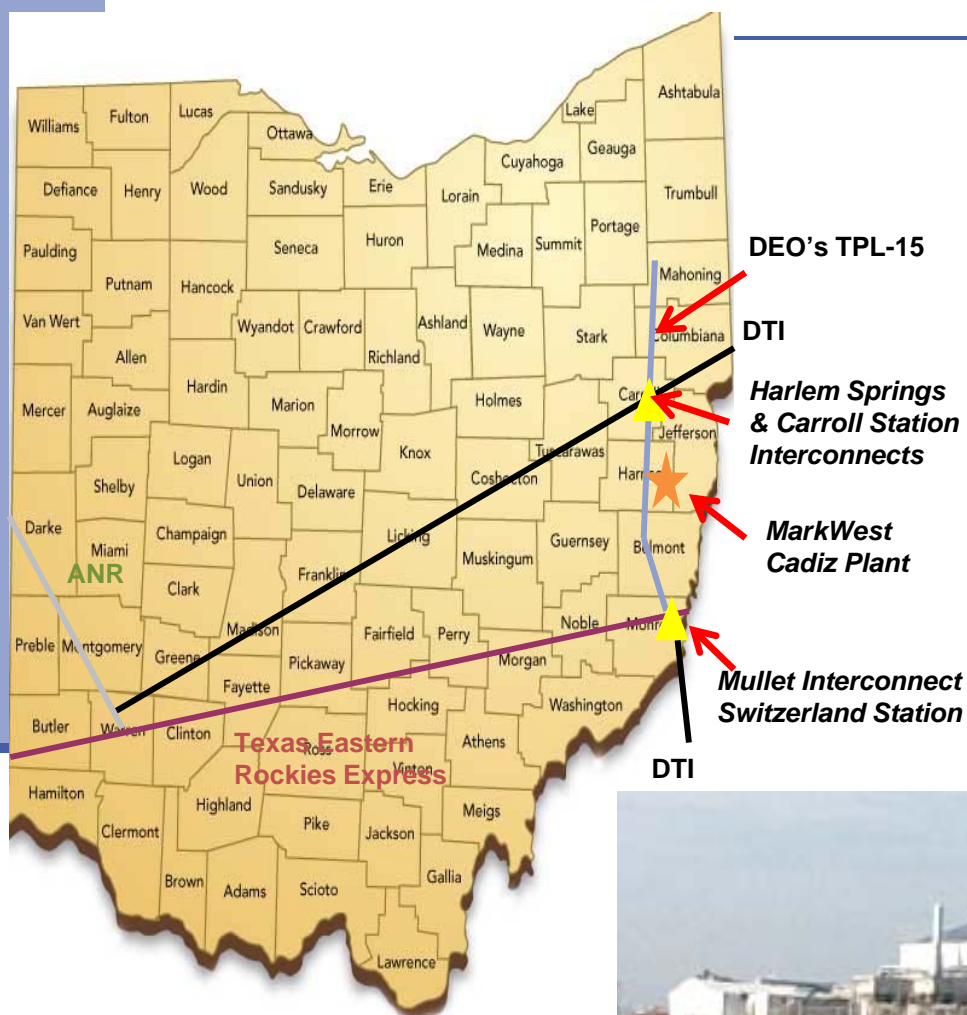
Source : EIA Utica Drilling Productivity Report January 2015





DEO Assets Overlay the Utica Shale Play In Ohio

Western Access I



Project Overview:

- Helping get Ohio Utica Shale production to market
- 320,000 dth/d volume
- 10,650 HP compression at new Switzerland station
- 6 miles of 24-inch pipeline near Harlem Springs

Safety:

- Zero Dominion injuries, 1 Contractor Injury

On Time, On Budget:

- Switzerland – In Service October 1, 2014
- Carroll Station Plan In-Service November 1, 2014
- Board Approved: \$91 MM

Construction Overview:

- Construction was on time and on budget

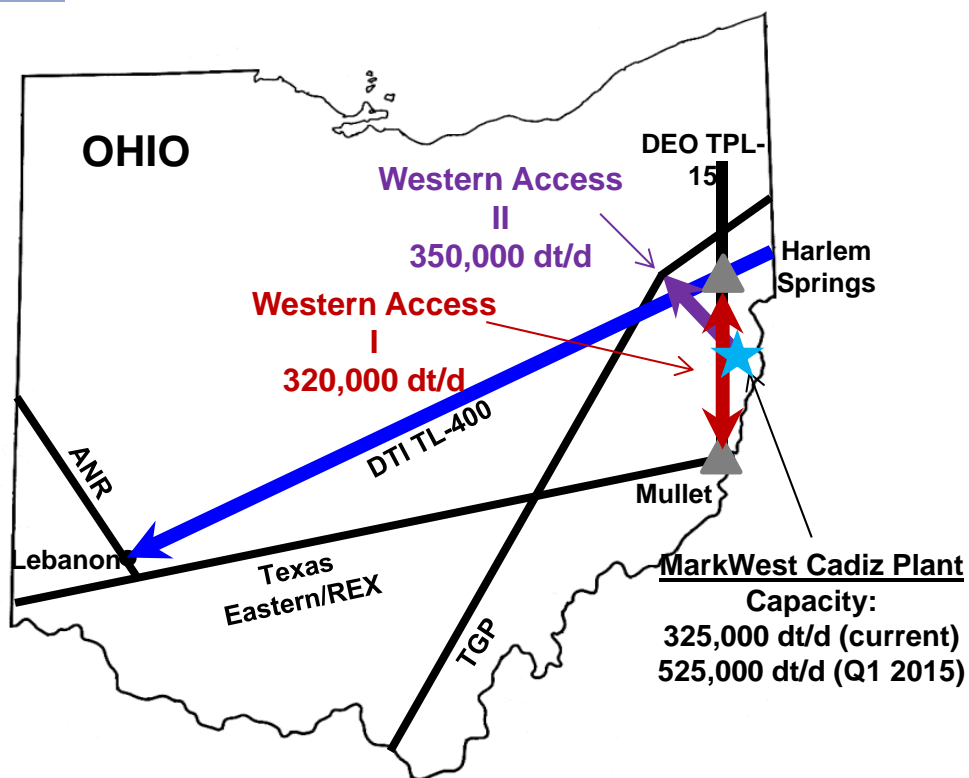


Switzerland Compressor Station



Western Access II

Project Overview



Western Access II

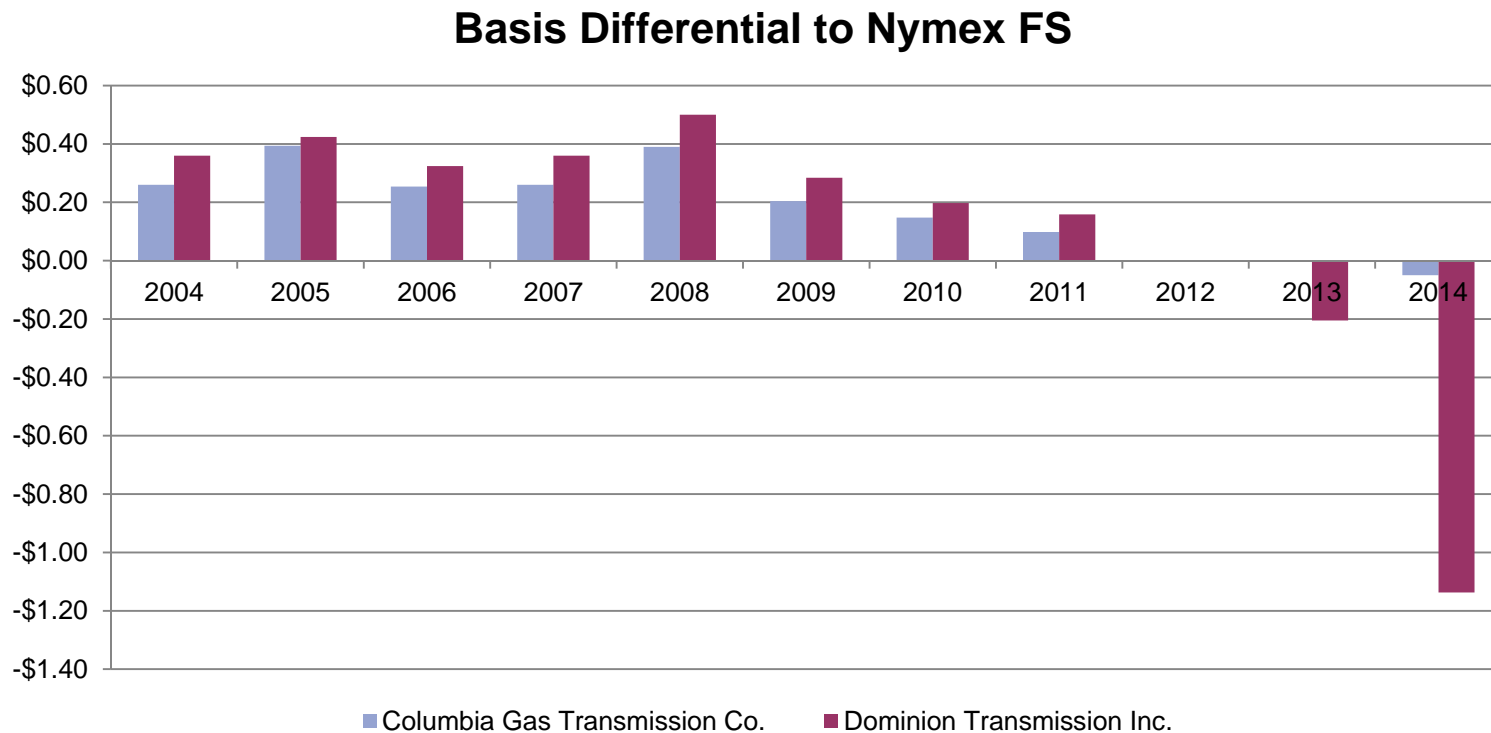
Summary

- Capacity: *150,000 dt/d to DTI;
* 200,000 dt/day to Tennessee Gas Pipeline (TGP)
- CapEx: \$129.1M
- In-Service: November 1, 2015
- Receipt: MarkWest Cadiz processing plant (Harrison County, OH)
- Delivery: New Interconnects with DTI's TL-400 and TGP

Facilities

- 14 mile 36" Pipeline Lateral from MW Cadiz to DTI
- 3 mile 36" Pipeline Lateral from DTI to TGP
- New M&R Stations

Marcellus and Utica Impacts on Regional Prices



Monthly Bills for DEO Residential Customers have Declined Since 2007

- Customers used about 6% more gas in 2014 than in 2007
- The cost impact due to increased consumption, the 2008 DEO rate case, and the PIR program cost has been **more than offset by the reduction in commodity costs**
- **Customers paid \$213 LESS for natural gas service in 2014 than they did in 2007**
- **If customers had used the same gas volume in 2007 as they did in 2014 – the savings would have been \$294**

What were the key points?

- DEO's system is unique and provides substantial supply flexibility for customers
- DEO's market has changed significantly and will continue to change in the years ahead
- DEO is making substantial capital investments which have improved the safety and reliability of its system
- Utica development will play a major role in economic development & maintaining low gas prices

