Association of Union Constructors Industry Leaders Forum Natural Gas Industry Update

December 14, 2017

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Marcellus Shale Coalition

About MSC

Our Membership

- 200+ diverse members
- Producers, midstream and suppliers

Our Focus

- Long-term development
- End use opportunities
- Addressing landowner and public issues
- Maximizing benefits to secure our region's energy future

More than 95% of the natural gas in Pennsylvania is produced by MSC member companies.

Associate Members are an integral part of the MSC and the industry's robust supply chain.

The MSC Board of Directors consists of 34 major producer and midstream companies in the Appalachian Basin.

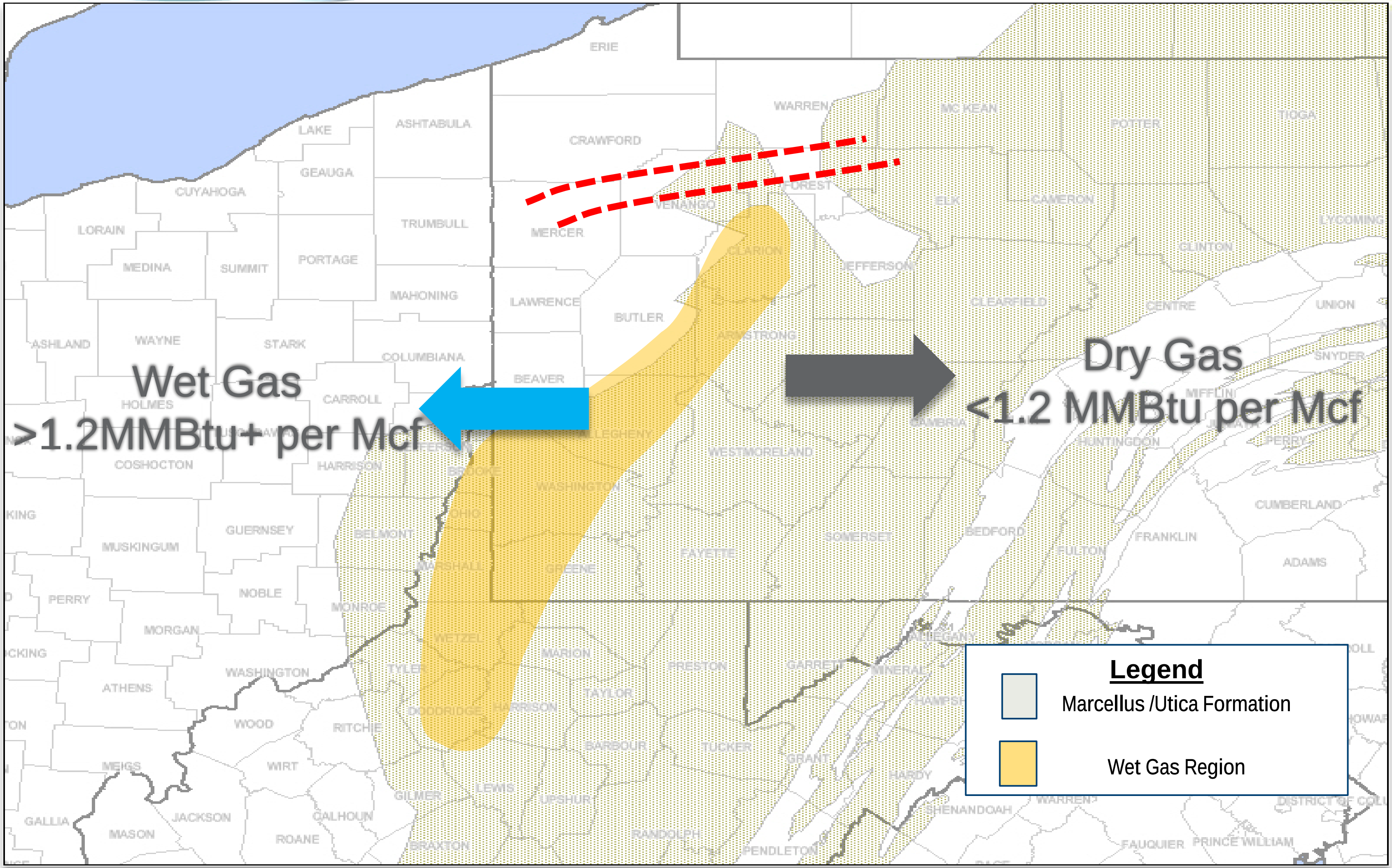
STATE OF THE INDUSTRY

December 2017

Pennsylvania:
A World-Class Player in Shale Gas Production

- 2nd largest natural gas producer in U.S.
- 9,923 unconventional wells*
  - 564 shut in
  - 792 drilling not completed
  - 638 inactive
- Nearly 7,880 producing wells
- 5.1 Trillion Cubic Feet (2016)
- 19.2% of total U.S. natural gas production
- 33 of 67 counties with at least 1 producing well

Feedstock: "Wet Gas" Region



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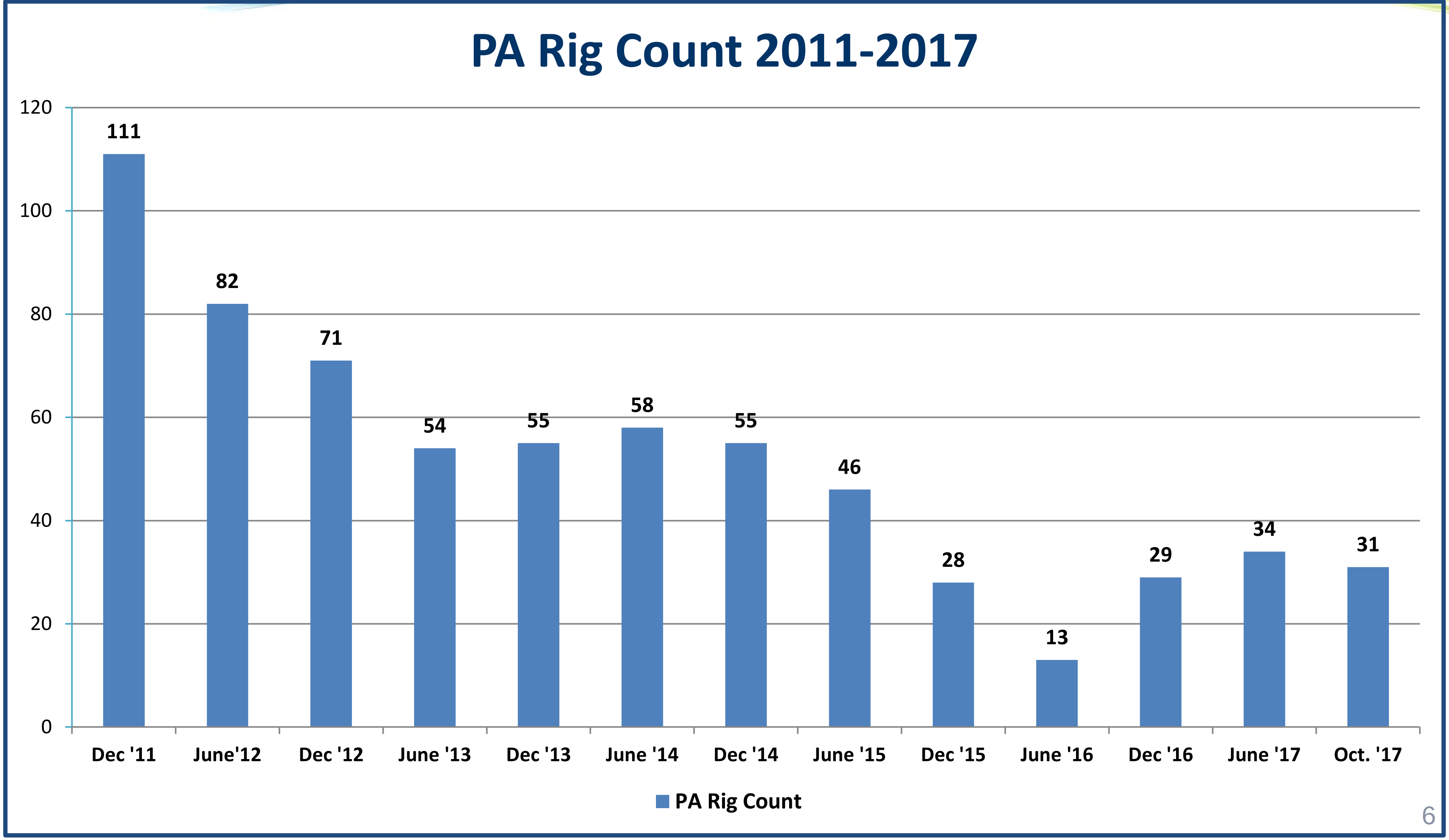
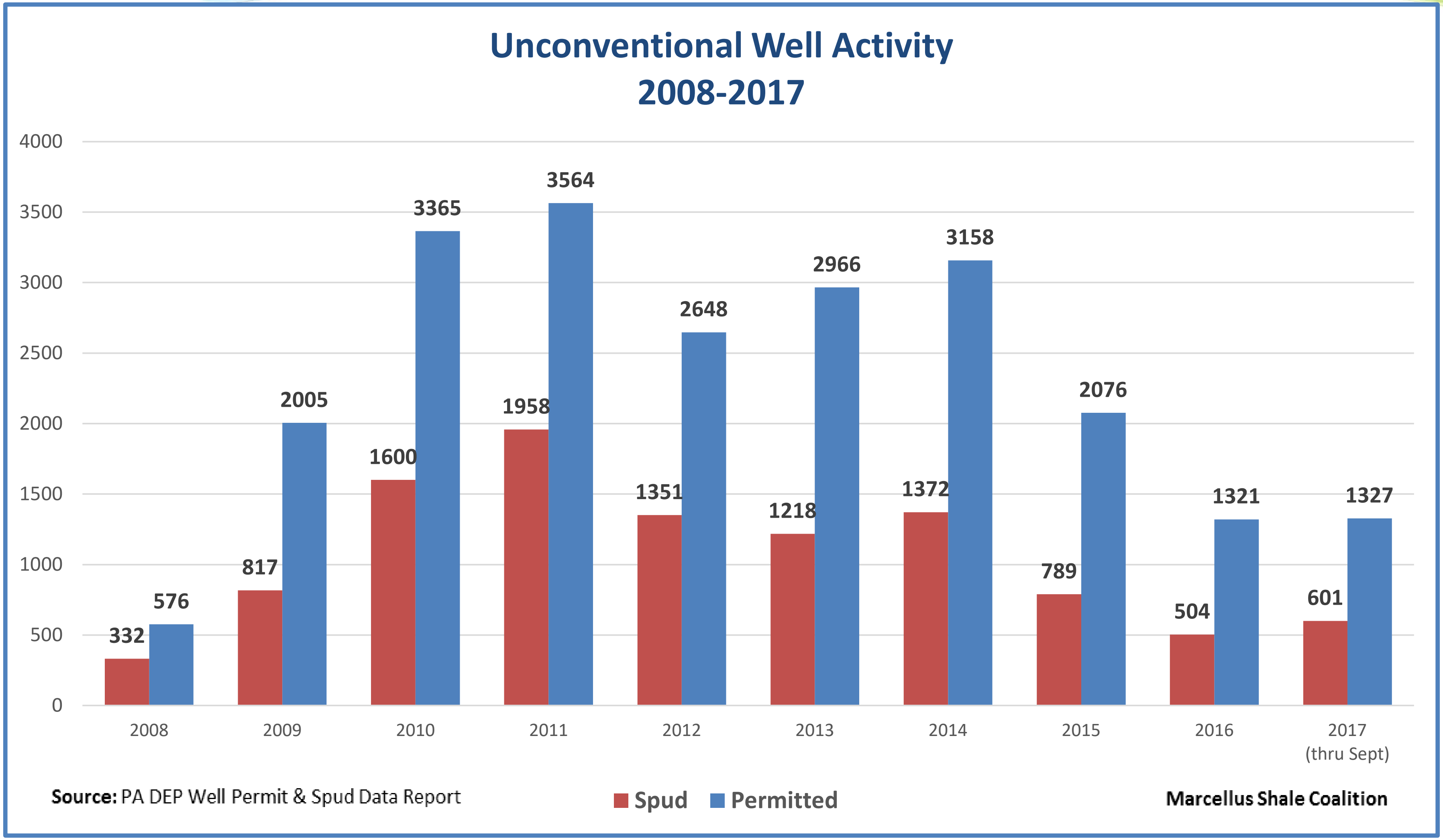
Drilling Activity in PA



Source: Baker Hughes

Drilling Activity in PA



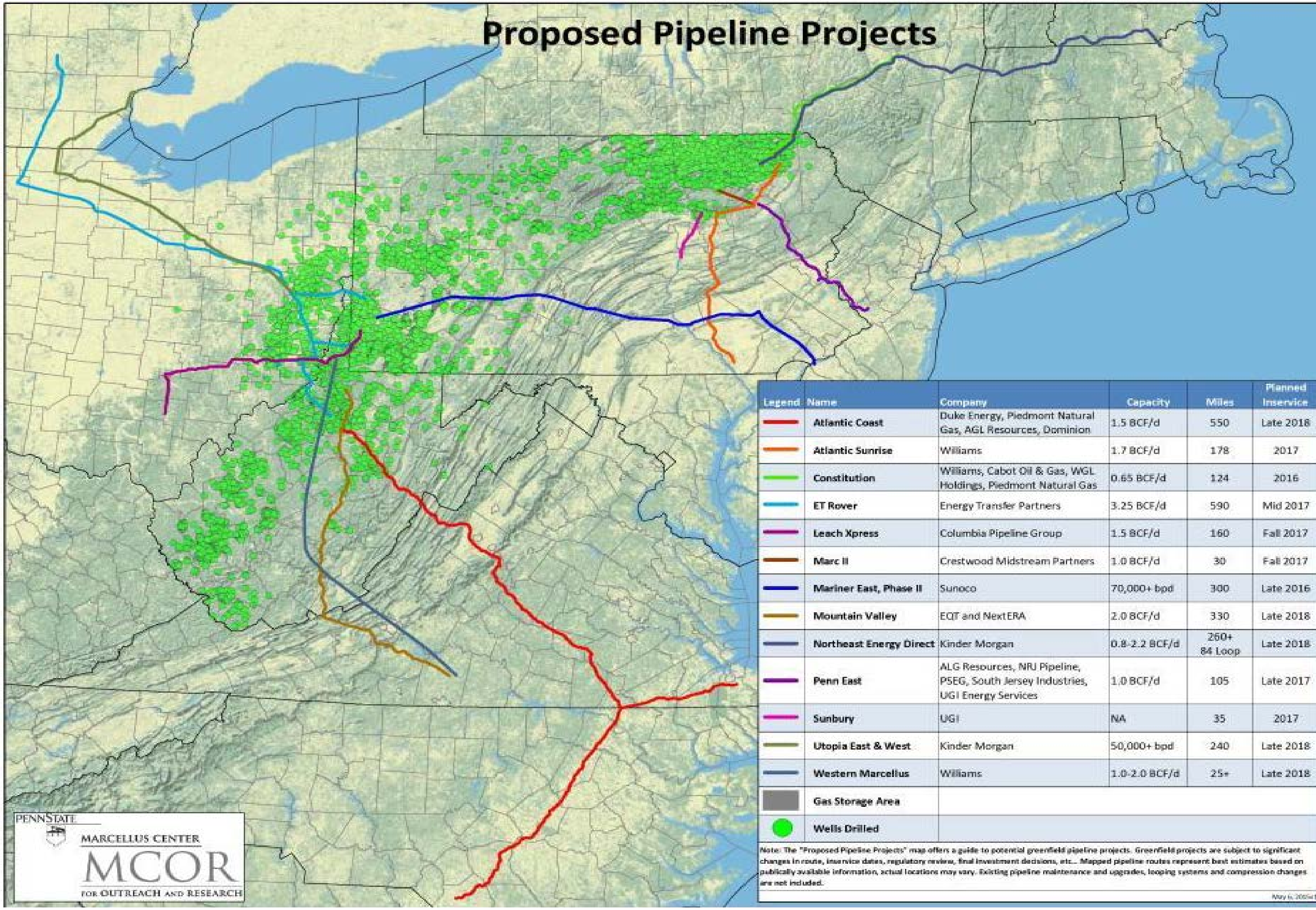
Challenges

- Vital need for Infrastructure
  - 24 FERC projects (Tri-State Area)
  - $12.9 Billion (PA)
- Climate Certainty
  - Chapter 78a
  - GP-5 and GP-5A
  - Permit delays
  - Severance tax
  - Post-production costs
  - Local zoning

Primary PA Interconnect Points

December Bid Week Pricing (Inside FERC's Gas Market Report)	
Tennessee Zone 4	**$2.29/MMBTU**
Leidy Receipts	**$2.39 MMBTU**
Dominion Appalachia	**$2.50/MMBTU**
Average Gas Sales $	**$2.39/MMBTU**
Average Gathering of $0.80/ MMBTU (Independent Fiscal Office)	

Proposed Pipeline Projects



Legend	Name	Company	Capacity	Miles	Planned Inservice
	Atlantic Coast	Duke Energy, Piedmont Natural Gas, AGL Resources, Dominion	1.5 BCF/d	550	Late 2018
	Atlantic Sunrise	Williams	1.7 BCF/d	178	2017
	Constitution	Williams, Cabot Oil & Gas, WGL Holdings, Piedmont Natural Gas	0.65 BCF/d	124	2016
	ET Rover	Energy Transfer Partners	3.25 BCF/d	590	Mid 2017
	Leach Xpress	Columbia Pipeline Group	1.5 BCF/d	160	Fall 2017
	Marc II	Crestwood Midstream Partners	1.0 BCF/d	30	Fall 2017
	Mariner East, Phase II	Sunoco	70,000+ bpd	300	Late 2016
	Mountain Valley	EQT and NextERA	2.0 BCF/d	330	Late 2018
	Northeast Energy Direct	Kinder Morgan	0.8-2.2 BCF/d	260+ 84 Loop	Late 2018
	Penn East	ALG Resources, NRJ Pipeline, PSEG, South Jersey Industries, UGI Energy Services	1.0 BCF/d	105	Late 2017
	Sunbury	UGI	NA	35	2017
	Utopia East & West	Kinder Morgan	50,000+ bpd	240	Late 2018
	Western Marcellus	Williams	1.0-2.0 BCF/d	25+	Late 2018
	Gas Storage Area				
	Wells Drilled				

Note: The "Proposed Pipeline Projects" map offers a guide to potential greenfield pipeline projects. Greenfield projects are subject to significant changes in route, inservice dates, regulatory review, final investment decisions, etc... Mapped pipeline routes represent best estimates based on publically available information, actual locations may vary. Existing pipeline maintenance and upgrades, looping systems and compression changes are not included.

Market Opportunities

Electricity generation, heating

Combined heat and power applications

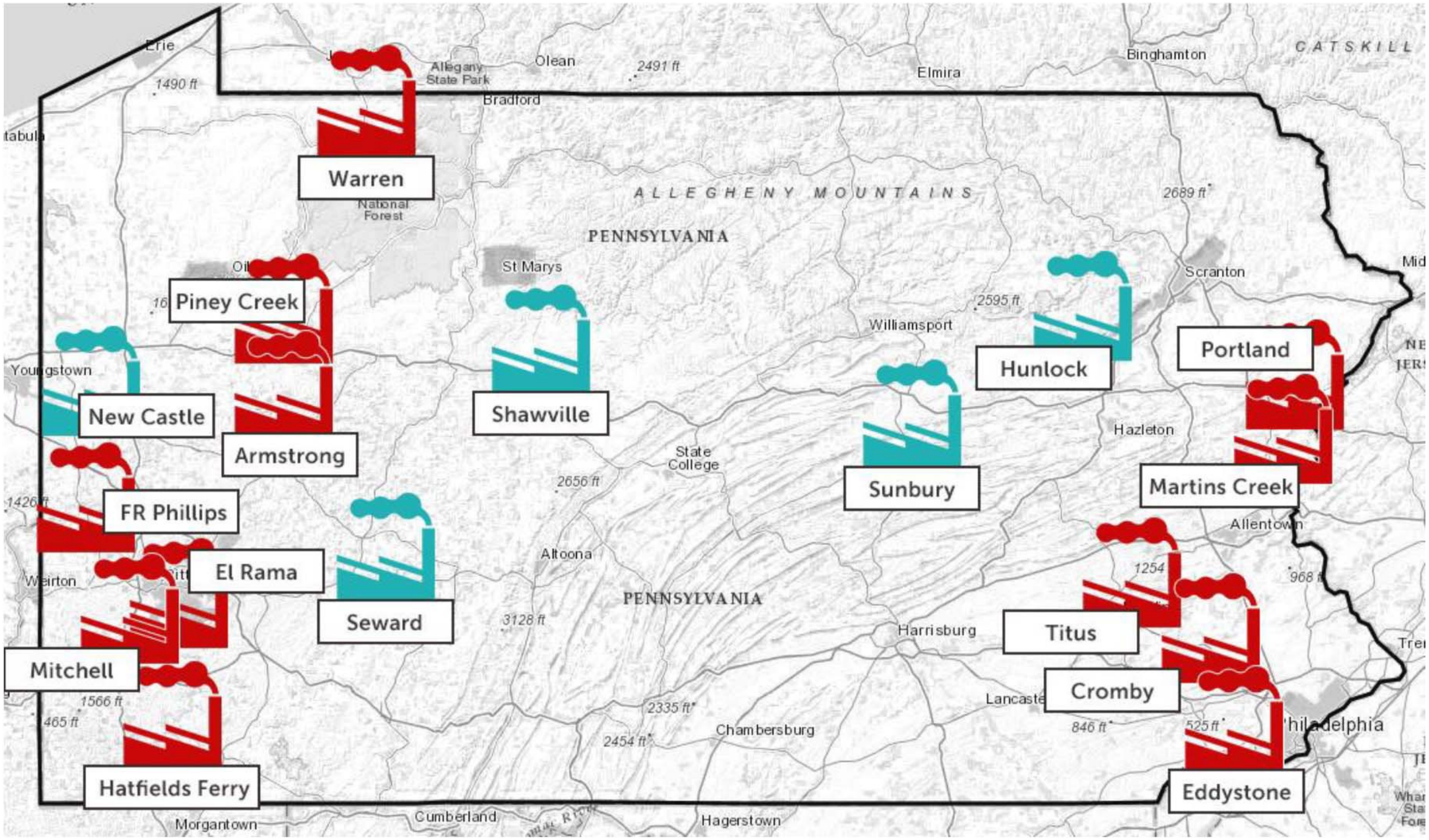
Light and heavy duty transportation applications

Feedstock for industries and other liquids use

- Rebirth of manufacturing

Exports

Opportunities in Power Generation



Pittsburgh Regional Alliance

Benefiting Consumers

- Electric prices down 40% since 2008
- Natural gas prices for end-use customers down 57% - 81% since 2008
- Average annual savings > $1,200 per household

Benefiting Consumers-PA Story

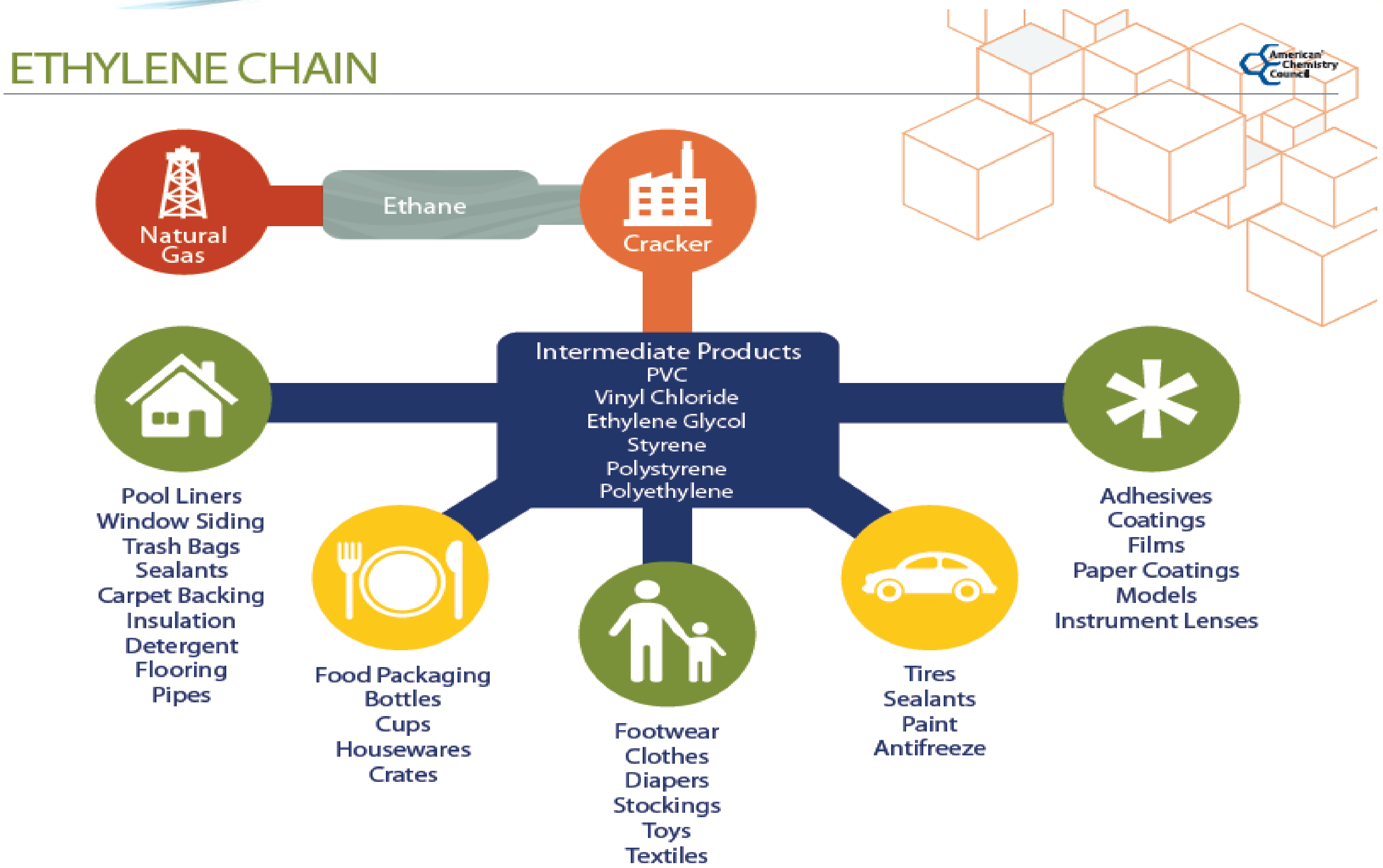
Lower Prices = Customer Savings
2008 - 2016

Utility	PGC Rate / mcf		% Change	Customer Savings
	2008*	2016*	2008-2016	Annual
PECO	$11.10	$3.41	- 69%	$1,384
NFG	$10.34	$1.92	- 81%	$1,516
PGW	$10.58	$3.22	- 70%	$1,325
Columbia	$10.25	$3.64	- 64%	$1,190
Equitable	$11.81	$2.72	- 77%	$1,636
UGI	$11.79	$5.06	- 57%	$1,211
UGI Penn	$10.66	$3.72	- 65%	$1,249
Peoples	$9.53	$2.72	- 71%	$1,226

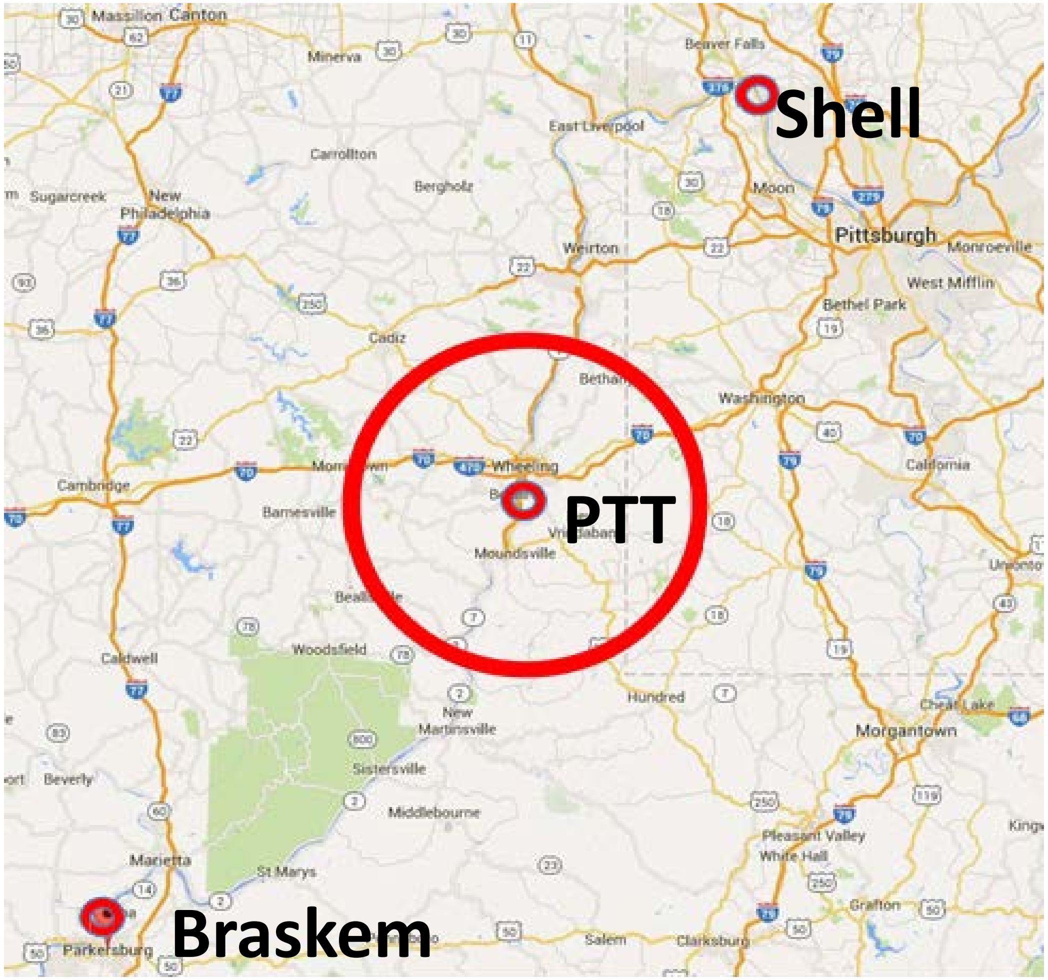
*** 1st Quarter 2008 & PUC-approved rate for 2016**

*** Residential heating customer using 15 mcf/month**

The Ethane Factor



"Active Cracker Projects



Pittsburgh Regional Alliance

Shell's Monaca Site

Operations

- $6B+ Capital Investment
- ~3.5B Pounds of Polyethylene / Year
- 600 Full-time Employees
- 6000 During Construction Phase

Polyethylene Grades

High Density

Low Density

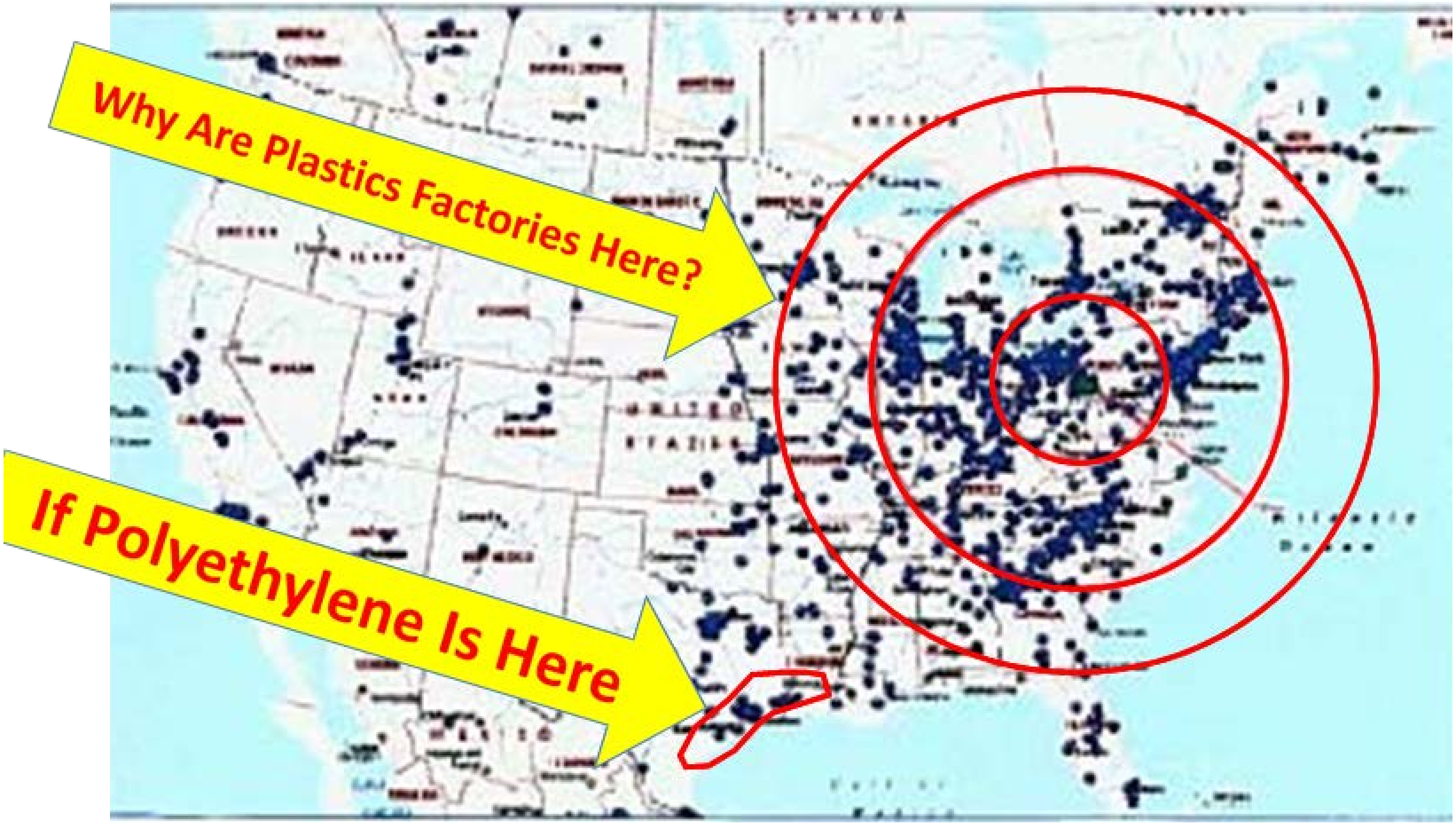
Linear Low Density

Advantages to Local PE Supply

- Reliability
- Transportation Costs:
  - Potential Savings of ~2¢ / lb.*
  - ~1.5% COGS*
- Reduced Delivery Time:
  - Reduced Inventory Carrying Costs
- Transportation Options

*PRA estimates based on available industry data

Proximity to End Customers



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Use It Or Lose It

Mariner East Pipeline Project

Sunoco Logistics

- Proposed ME2 Pipeline
- Existing Third Party Pipeline
- ME1 Pipeline
- SXL Terminal Facilities
- Third Party Facilities
- Propane Delivery Points
- Truck Intake Point
- Third Party Fractionation (for truck intake)
- Marcellus Shale Formation

Follow The Gas

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Grassroots Initiatives

USA UNITED SHALE ADVOCATES™

www.UnitedShaleAdvocates.com

- Take Action on public policy priorities
- Connect with shale supporters
- Get involved in advocacy events
- Access timely shale-related information

Thank you!

Marcelluscoalition.org