

Natural Gas Pipeline Expansion Activity

Energy Finance 2015

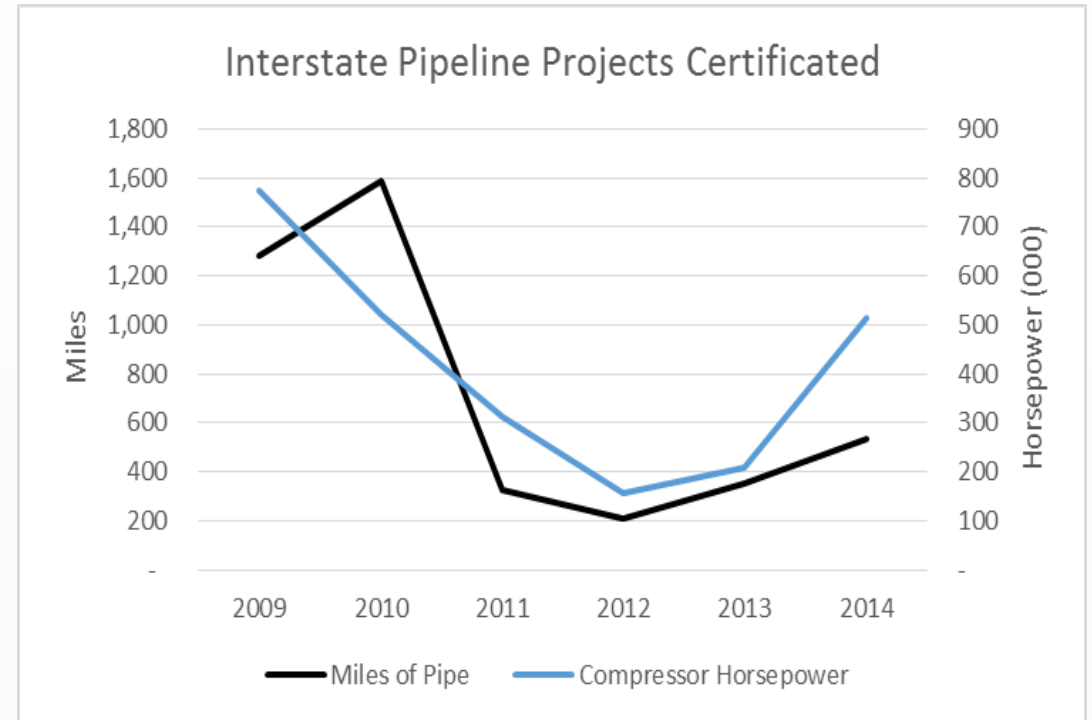
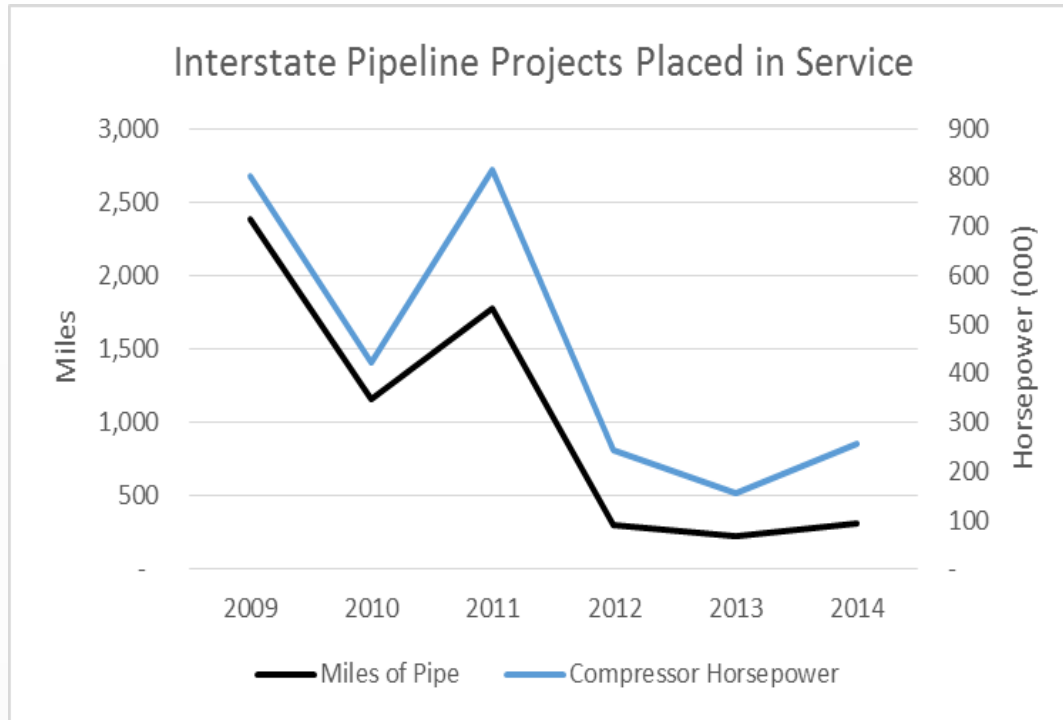
March 19, 2015

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Upswing in Gas Pipeline Development



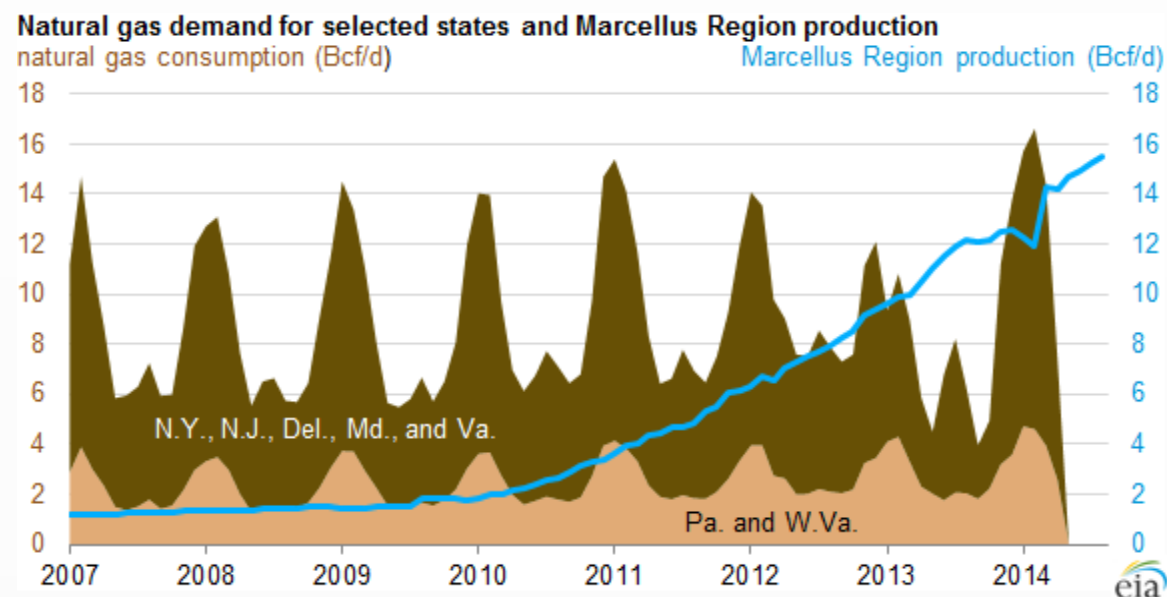
Source: Federal Energy Regulatory Commission (FERC)

Types of Projects

- Increase capacity of existing pipelines within established corridors
 - Additional compression
 - Pipeline “loop”
 - Pipe replacement
- New greenfield pipelines
 - Extend existing pipeline system
 - Create a new pipeline entity
- Lateral pipelines
 - Attach new supplies
 - Connect to new power plants or LNG terminals
- Pipeline modifications to allow bidirectional flows

Factors Driving Pipeline Expansion

- Increase take-away capacity from supply areas
- Expand delivery capacity to growing markets
 - New gas-fired electric generation
 - Residential and commercial markets
 - Industrial demand
- Export-driven projects
 - Canada
 - LNG terminals



Marcellus to Upstate New York

Project	Sponsor	Capacity	Receipt	Delivery	Pipe	Compression	Start Date
Northern Access 2016	National Fuel	0.35 Bcf	Western Pennsylvania	Niagara, NY	97 mi. (greenfield)	17,500 HP	2016
New Market Project*	Dominion	0.11 Bcf	Leidy Hub, PA	Schenectady, NY and IGTS	None	33,023 HP	2016
Constitution Pipeline**	Williams	0.65 Bcf	Susquehanna, Co., PA	Wright NY	124 mi. (greenfield)	None	2016
Northeast Energy Direct (Supply Path)	Kinder Morgan	0.6 - 1.0 Bcf	Troy, PA	Wright, NY	135 mi. (greenfield), 32 mi (loop)	Up to 92,000 HP	2018

* FERC application filed

** FERC certificate

New England Market

Project	Sponsor(s)	Capacity	Receipt	Delivery	Pipe	Compression	Start Date
Connecticut Expansion*	Kinder Morgan	0.07 Bcf	Wright, NY	CT	13 mi. (loop)	None	2016
Algonquin Incremental Market (AIM)**	Spectra	0.34 Bcf	Ramapo, NY	CT, RI, MA	38 mi.	81,620 HP	2016
Atlantic Bridge	Spectra	0.22 Bcf	Mahwah, NJ	CT, RI, MA, NH, ME	36 mi.	29,530 HP	2017
Atlantic Access	Spectra, NGrid, Eversource	TBD	NJ, NY	CT, RI, MA, NH, ME	TBD	TBD	2018
Northeast Energy Direct (Market Path)	Kinder Morgan	0.6 - 2.2 Bcf	Wright, NY	CT, RI, MA, NH	260 mi. (greenfield)	Up to 373,000 HP	2018

Marcellus to Mid-Atlantic and Southeast

Project	Sponsor(s)	Capacity	Receipt	Delivery	Pipe	Compression	Start Date
Leidy Southeast**	Williams	0.525 Bcf	NE PA	Transco mainline to Sta. 85 (AL)	30 mi. (loop)	71,900 HP	2015
Atlantic Sunrise	Williams	1.7 Bcf	NE PA	Transco mainline to Sta. 85 (AL)	179 mi. (greenfield)	127,000 HP	2017
PennEast	Spectra, UGI and NJ utilities	1.0 Bcf	Luzerne Co., PA	Mercer Co., NJ	108 mi. (greenfield)	26,733 HP	2017
Mountain Valley Pipeline	EQT and NextEra	2.0 Bcf	WV	Transco Sta. 165 (VA)	300 mi. (greenfield)	225,000 HP	2018
Atlantic Coast Pipeline	Dominion, AGL Duke, Piedmont	1.5 Bcf	Harrison Co., WV	Robeson Co., NC	554 mi. (greenfield)	109,000 HP	2018
Sabal Trail Transmission*	Williams and NextEra	0.83 Bcf	Transco Sta. 85 (AL)	Osceola Co., FL	508 mi. (greenfield)	127,900 HP	2017
Florida Southeast Connection*	NextEra	0.64 Bcf	Osceola Co., FL	Martin Co., FL	126 mi. (greenfield)	None	2017

Marcellus/Utica to Midwest and Southeast

Project	Sponsor(s)	Capacity	Receipt	Delivery	Pipe	Compression	Start Date
Ohio Valley Connector	EQT	0.85 Bcf	WV	Clarington, OH	35 mi. (greenfield), 14 mi. (loop)	36,500 HP	2016
Broad Run Expansion*	Kinder Morgan	0.2 Bcf	WV	Tenn. Gas Pipeline mainline to Gulf Coast	None	100,000 HP	2017
Ohio Pipeline Energy Network**	Spectra	0.55 Bcf	OH	Texas Eastern mainline to Gulf	76 mi. (greenfield)	18,800 HP	2016
Rover Pipeline*	Energy Transfer	Up to 3.25 Bcf	WV, PA, OH	Livingston Co., MI	771 mi. (greenfield)	232,000 HP	2016/2017
NEXUS Gas Transmission	Spectra and DTE	Up to 1.5 Bcf	Kensington, OH	Willow Run, MI	150 mi. (greenfield)	130,000 HP	2018

LNG Export-Driven Projects

Project	Sponsor(s)	Capacity	Receipt	Delivery	Pipe	Compression	Start Date
Pacific Connector*	Williams and Veresen	1.1 Bcf	Eastern OR	Jordan Cove LNG	232 mi. (greenfield)	41,000 HP	2017
Washington Expansion*	Williams	0.75 Bcf	Sumas, WA	Oregon LNG	140 mi. (loop)	89,620 HP	2018
Coastal Bend Header	Boardwalk	1.54 Bcf	Various East Texas points	Freeport LNG	65 mi. (greenfield)	129,400 HP	2018

Potential for Over-Expansion

- Physical characteristics of pipeline networks
 - Minimum efficient scale
 - Larger pipe diameter creates “cheap expansibility”
- Competition between pipeline systems
 - Add rate base
 - Protect or expand markets
- Gas utilities may over-contract for service
 - Maintain peak day reserve
 - Uncertain timing of future expansions
 - Increase pipeline competition or diversity of supply
 - Possible affiliate interests