



QUANTUM UTILITY GENERATION

MOUNDSVILLE POWER PROJECT (WV)



2016 Governor's Energy Summit



Quantum Utility Generation - Company Overview

Power Expertise

- Quantum Utility Generation (“Quantum”) is a power operations and development company focused on making control-oriented infrastructure investments in North America
- Management team consists of industry veterans with decades of experience in the development, acquisition, operations, management, financing and most importantly the economic optimization of conventional and renewable energy assets.

Strong Capital Base

- Quantum has a strong and sustainable capital base with committed equity capital from Quantum Energy Partners (“QEP”) and Canada Pension Plan Investment Board (“CPPIB”)
- QEP is Houston-based, private equity manager with more than \$9.5 billion of capital under stewardship and focused solely in the energy space
- CPPIB invests the excess funds of the Canada Pension Plan, which has investments in total over \$200 billion.



Community Focus

- Active, hands-on, day-to-day management from the leadership team of business activities
- Quantum team invests time and resources to improve both the business and the relationship of plants with their surrounding communities and customers

Exceptional track record

- Quantum continues to invest successfully in the power space - assets owned or in development include coal, gas, wind and solar across North America.
- Current portfolio has includes nine assets totaling ~1,400 MW of operating thermal capacity and 1,100 MW of development projects

QUG Portfolio

Operating Assets

Name	Fuel/Tech	Capacity (MW)	Location	Status
NCA 2	Gas CC	85	Las Vegas, NV	Operating
Lake	Gas CC	123	Umatilla, FL	Operating
Pasco	Gas CC	123	Dade City, FL	Operating
Hopewell	Coal	110	Hopewell, VA	Operating
Portsmouth	Coal	110	Portsmouth, VA	Operating
Choctaw	Gas CC	760	Ackerman, MS	Operating, Sold to TVA in April 2015
Auburndale	Gas CC	155	Auburndale, FL	Mothballed

Development Assets

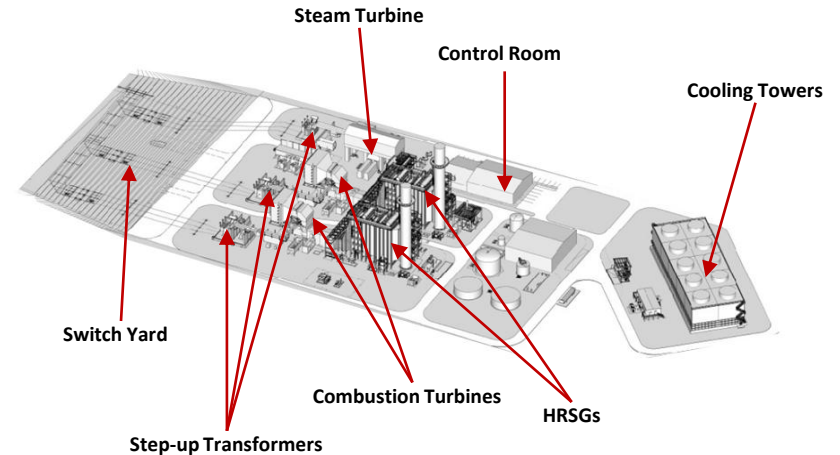
Name	Fuel/Tech	Capacity (MW)	Location	Status
Moundsville	Gas CC	626	Moundsville, WV	Development
Friendswood	Gas Peaking	121	Houston, TX	Under construction, Expected COD 2Q 2017
Passadumkeag	Wind	40	Penobscot County, ME	Developed & constructed by QUG, Sold to Southern Power in June 2016
Guam	Solar	20	Guam	Developed by QUG, Sold to NRG in July 2013
Van Alstyne	Gas Peaking	579	Grayson County, TX	Development
Union Valley	Gas Peaking	579	Wilson County, TX	Development
Clear Springs	Gas Peaking	579	Guadalupe County, TX	Development
Flat Hill	Wind	201	Glyndon, MN	Development



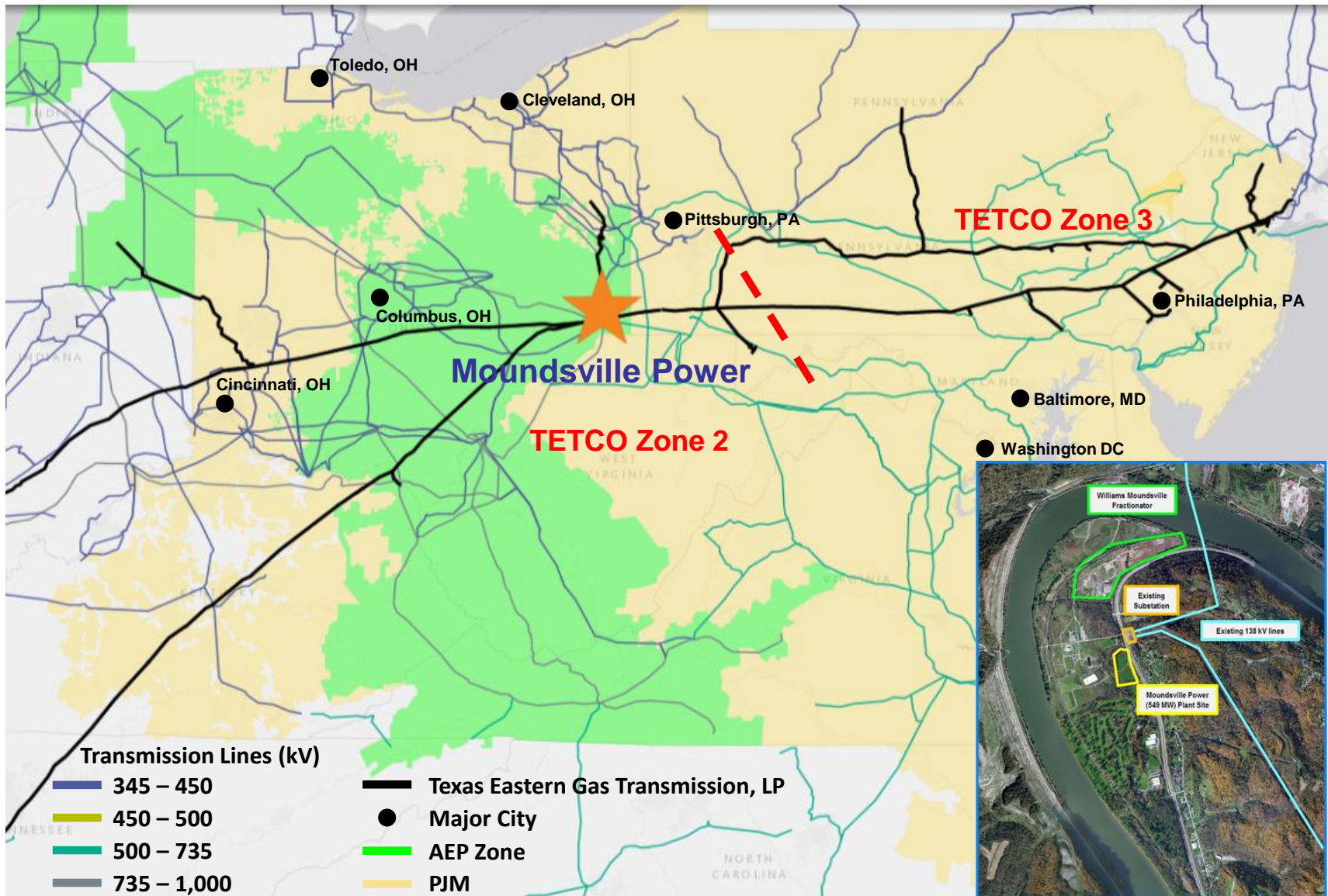
Moundsville Project Overview

Location	<ul style="list-style-type: none"> Marshall County, West Virginia PJM-AEP Zone
Nameplate Capacity	<ul style="list-style-type: none"> Winter: 673 MW Summer: 626 MW
Fuel	<ul style="list-style-type: none"> Dual Fuel – Natural Gas and Ethane, up to 75% / 25% blend (volumetric)
Equipment	<ul style="list-style-type: none"> 2 x GE 7FA Combustion Turbines: 189 MW 1 x GE D11 Steam Turbine: 310 MW
Heat Rate	<ul style="list-style-type: none"> Baseload: ~6,743 Btu/kWh Maximum Output: ~7,127 Btu/kWh
Electric Interconnection	<ul style="list-style-type: none"> AEP's George Washington 138 kV substation (0.1 miles from the Project site)
Natural Gas Interconnection	<ul style="list-style-type: none"> TETCO M2 Zone
Ethane Interconnection	<ul style="list-style-type: none"> Blue Racer Midstream Ethane Pipeline
EPC Contractor	<ul style="list-style-type: none"> Black & Veatch
COD	<ul style="list-style-type: none"> Expected: 3/1/2019 Guaranteed: 6/1/2019

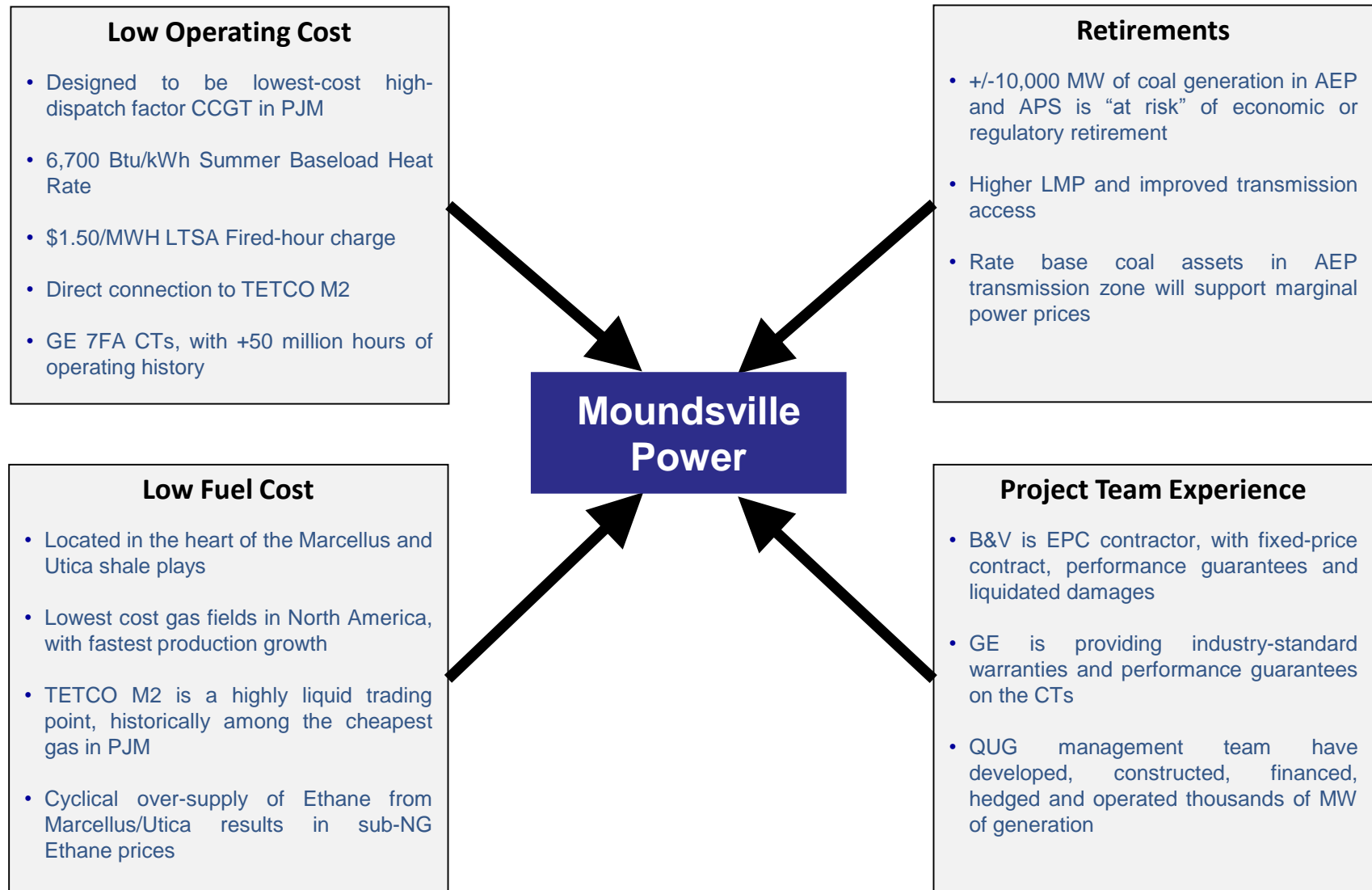
Moundsville Power Rendering



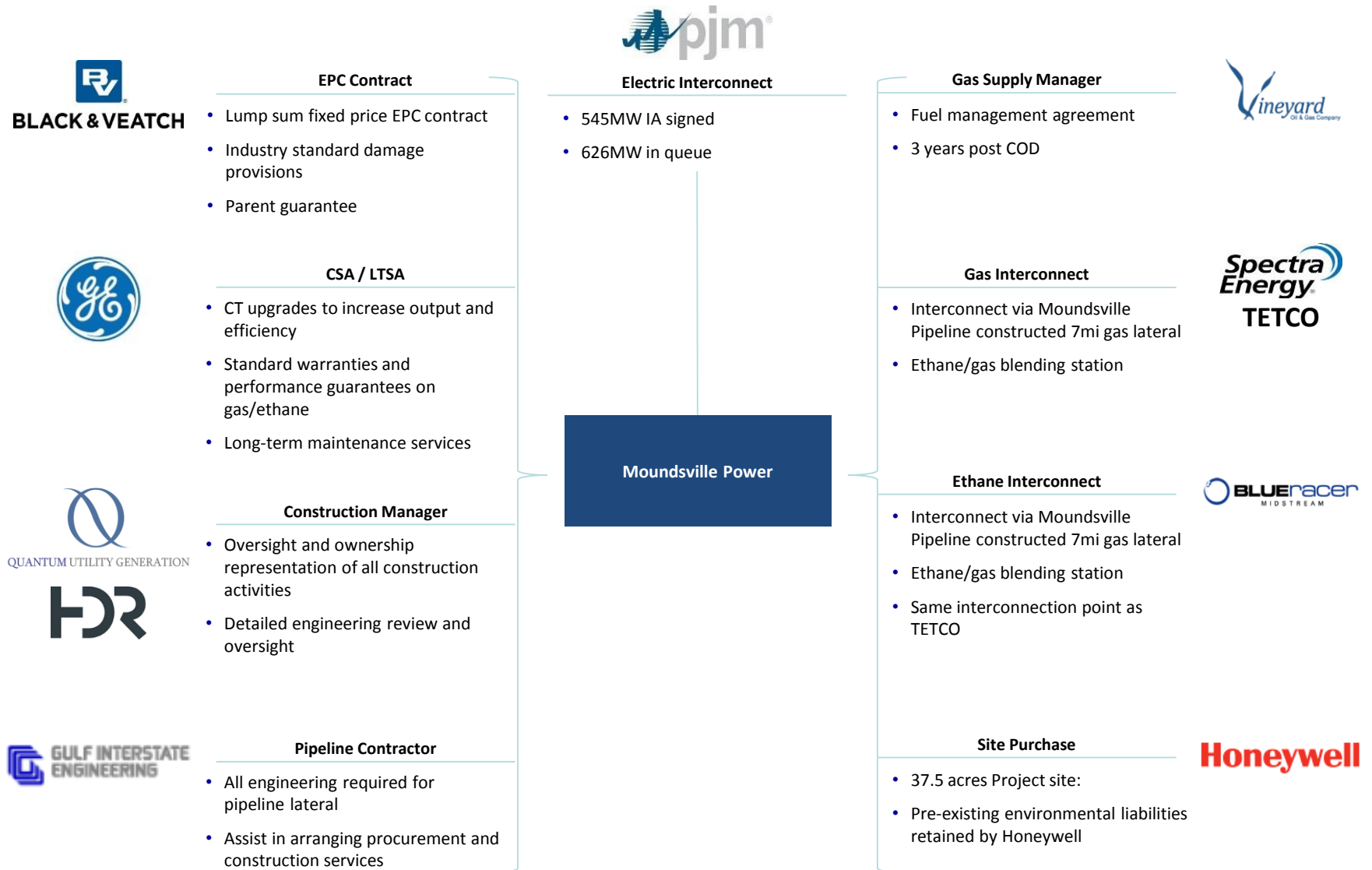
Moundsville Site Location



Moundsville Key Attributes

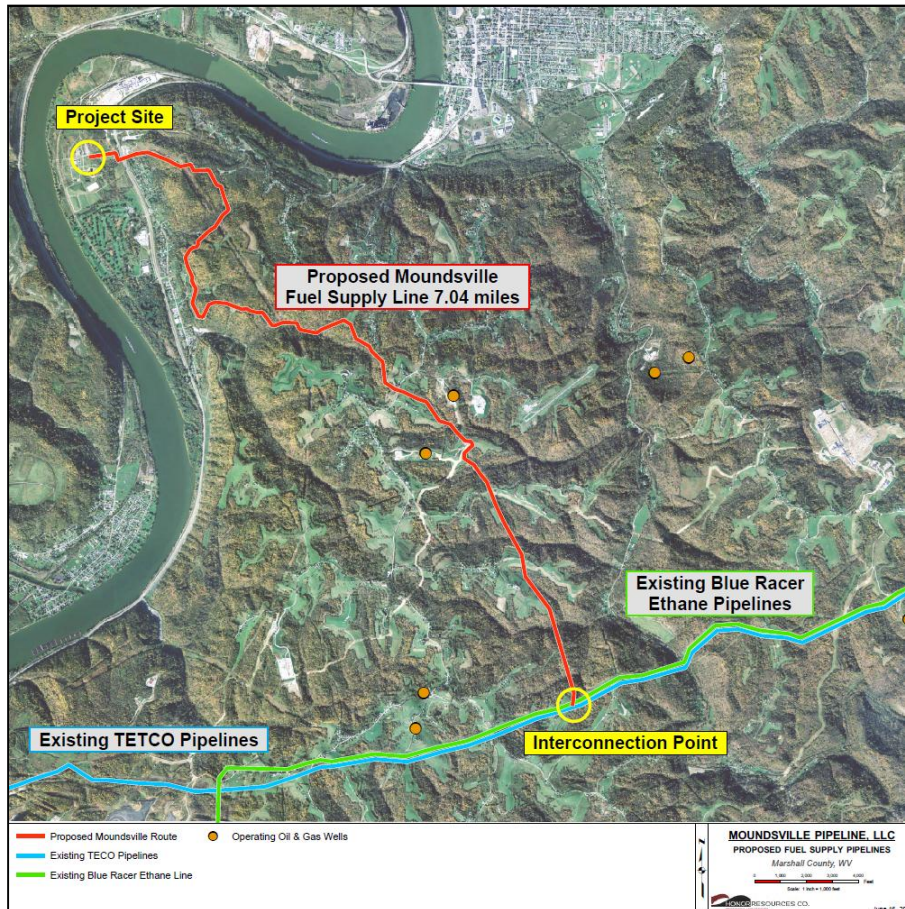


Key Project Partners



Located in the “Wet Gas Epi Center” and connected to TETCO

Pipeline Lateral Map

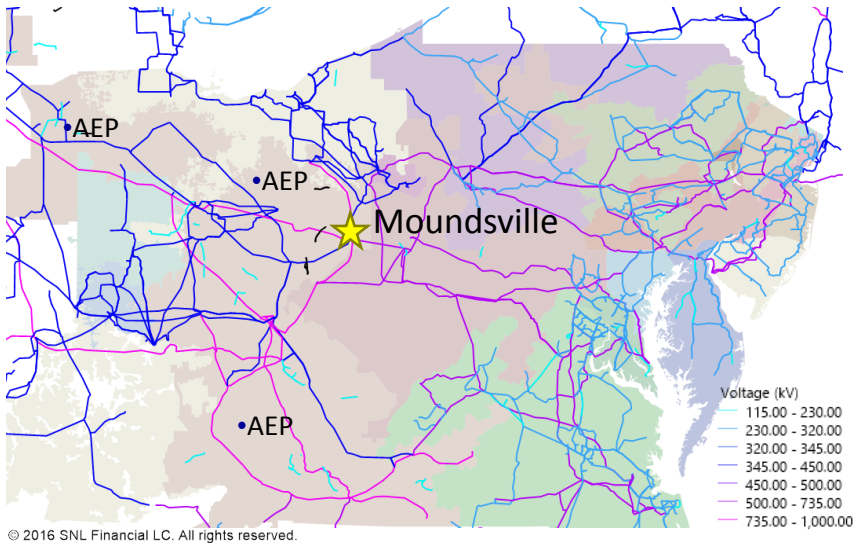


Pipeline Lateral Overview

- Moundville will receive its natural gas supply via a 7-mile pipeline lateral that connects directly to TETCO M2
- Moundville will also connect to Blue Racer for ethane supply up to 25% of the Project's fuel needs
 - Project anticipates being able to buy locally produced ethane at a discount to natural gas, when ethane netback to Mont Belvieu is zero or negative and gas pipelines are at max ethane blending limit
- Moundville's affiliate, Moundville Pipeline, will be responsible for constructing the TETCO and Blue Racer gas laterals
 - All rights-of way necessary to construct the laterals have been secured
 - Moundville will contract with Moundville Pipeline under a fixed price transportation contract to transport natural gas and ethane to the Project site
- Pipeline Specifications:
 - Diameter: 16 inches
 - Length: 7 miles
 - Throughput Capacity: 4 million SCF/h

Electrical Interconnection Overview

Interconnection Map



Interconnection Overview

- ▶ Moundville will interconnect to PJM via a ~500 foot generator tie to the AEP 138kV George Washington Substation, located across WV Route 2 from the Project
 - AEP will upgrade the substation as part of the Project
- ▶ Prior to financial closing, the Project anticipates completing a feasibility study for 626 MW, providing a clear path towards interconnection agreement execution in 2Q 2017

Locational Advantages

- ▶ AEP has lost and is continuing to shut down coal capacity in the foreseeable future
- ▶ New mid stream processing as well as drilling effort requires material electric energy
- ▶ Per AEP Moundville Power's additional generation in the Moundville - Kammer area is assisting AEP to provide needed power

Interconnection Request Overview

Queue #	MW	Cumulative MW	Request Filed	Feasibility Study	System Impact Study	IA Signed
Current Requests						
Y3-068	525	525	✓	✓	✓	✓
Z2-048	20	545	✓	✓	✓	✓
AA2-098	20	565	✓	✓	3/2017	5/2017
AB1-140	10	575	✓	✓	3/2017	5/2017
AB1-143	10	585	✓	✓	3/2017	5/2017
AB1-157	10	595	✓	✓	3/2017	5/2017
AB2-101	31	626	✓	9/2016	3/2017	5/2017
Total Base Case	626					

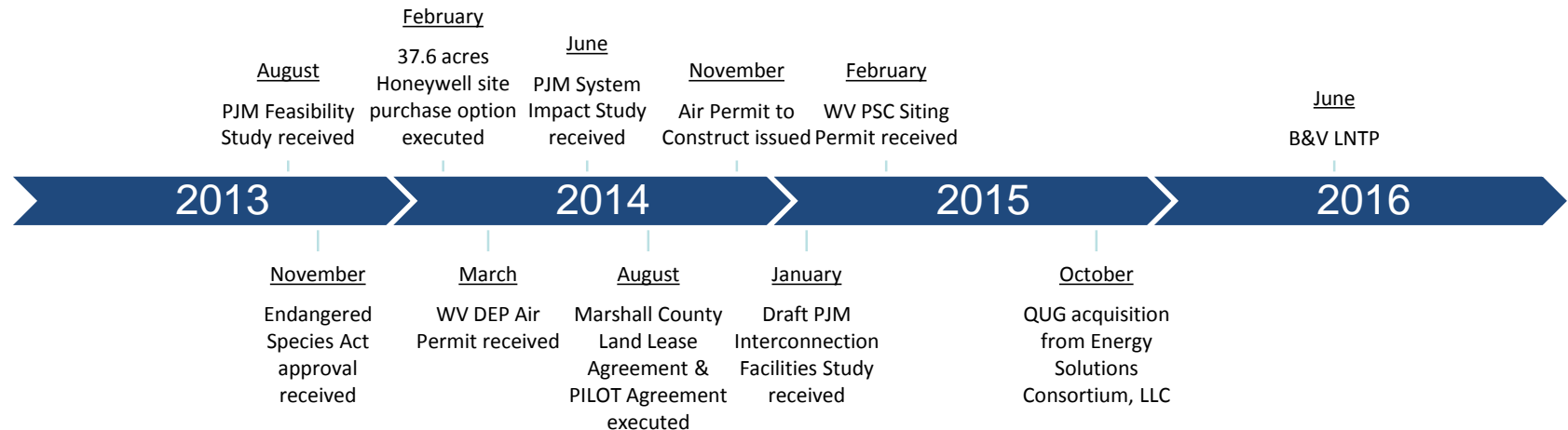
Moundsville Power Economic Impact

- During the construction phase of the Project, 3,026 job years and \$191 million in employee compensation are associated with the plant
- Moundsville Power intends to employ 30 permanent workers at the plant upon commencement of operation
- Marshall County will see approximately \$34.4 to \$43.4 million over 30 years in new revenues under PILOT and lease agreements
- Utilization of Ethane will allow for additional wet gas well development creates value for WV gas resources

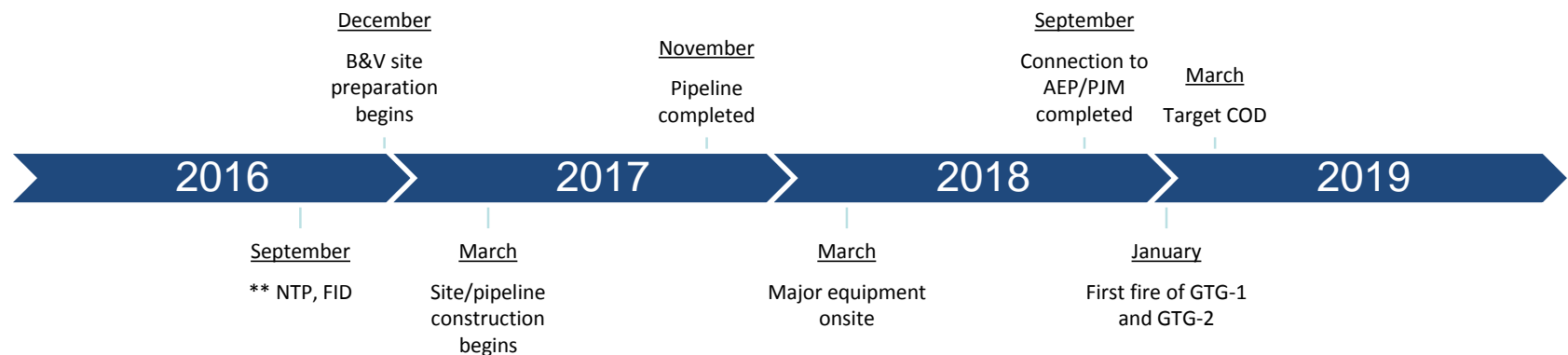


Project History & Timeline

Timeline – History to Date



Timeline – Present through COD

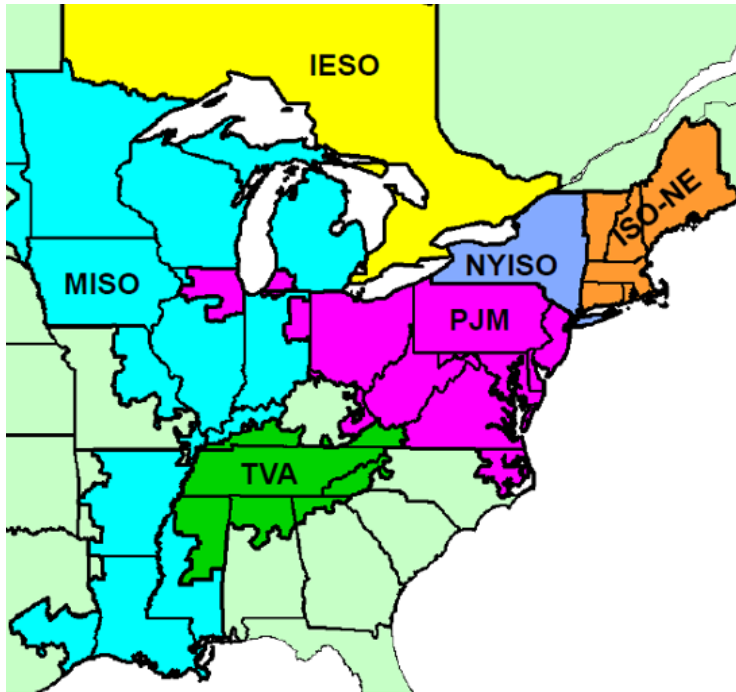


** Currently delayed

Moundsville Power Delay issues

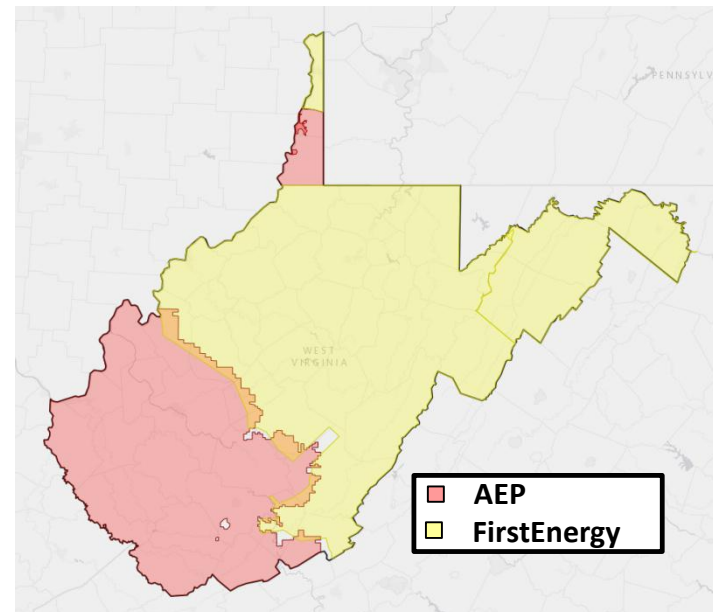
- The Moundsville Power project has been temporarily delayed due to legal actions taken by the Ohio Valley Jobs Alliance against the air permit already granted, appealed and granted again by the West Virginia Department of Environmental Protection and Division of Air Quality.
- OVJA's mission is to stop any and all natural gas power plants in the region – often criticizing those using the same tax structure as the coal-fired Longview Power Plant in Morgantown.
- The Division of Air Quality states the following about the OVJA:
 - “It should be noted that the Board was somewhat concerned by OVJA's apparent lack of knowledge about the contents of its appeal, lack of cognizable purpose related to the environment, and overall express intent to stop the construction of the plant solely to benefit another industry.”
- These legal actions could delay the project's notice to proceed into 2017.

Northeast Power Markets – PJM & West Virginia

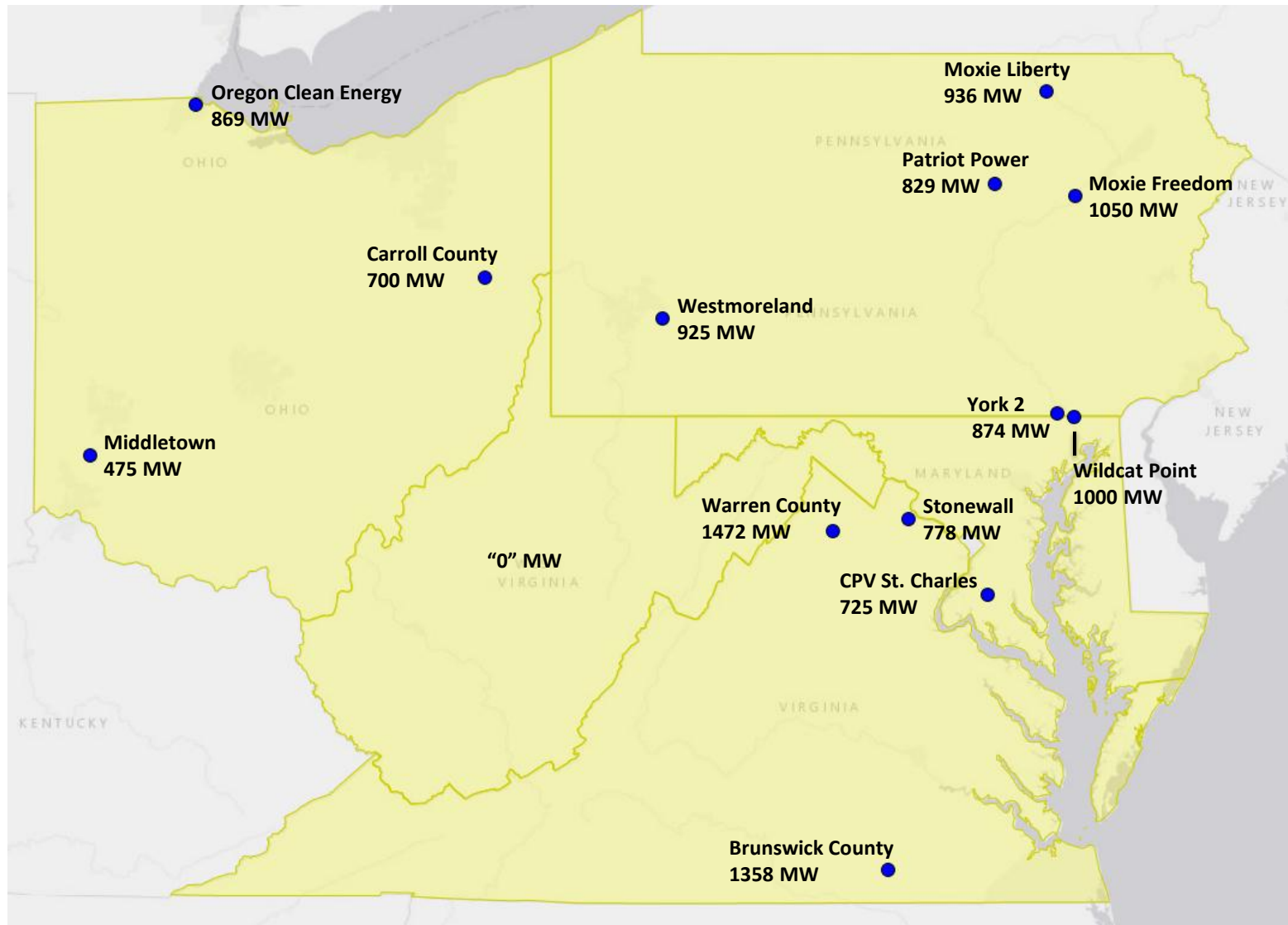


- PJM is the largest northeast power market and provided a blue print for the market structures in NY, New England and much of the US.
- PJM, initially limited to Pennsylvania, New Jersey and Maryland now includes parts of 11 states with over 185,000 MW of generation and 166,000 MW of peak load
- PJM provides a transparent daily and hourly power price for each supply and load location based on generation cost and power transmission

- West Virginia load is served by AEP and First Energy, both part of PJM.
- Other than transmission-based constraints, power effectively flows “freely” across the PJM footprint.

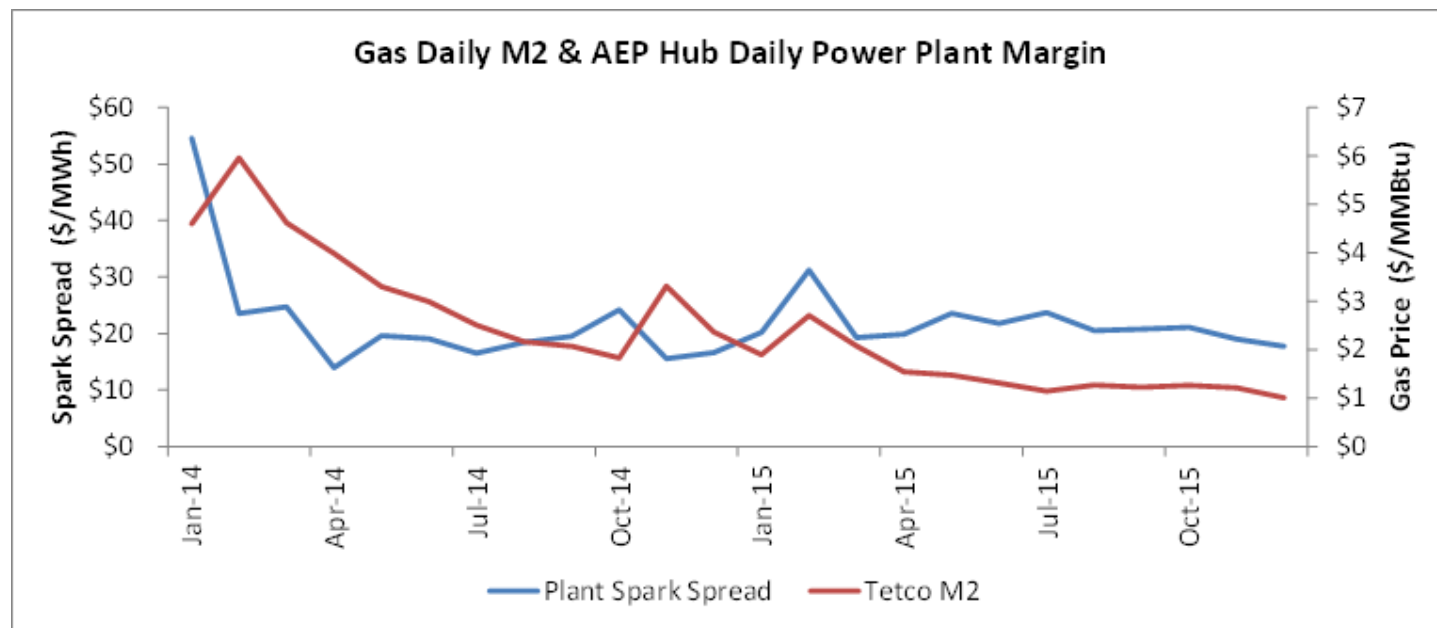


Shale Region Gas Power Plants in Construction – All Outside WV



Power Prices vs Gas Prices in the Northeast Shale Region

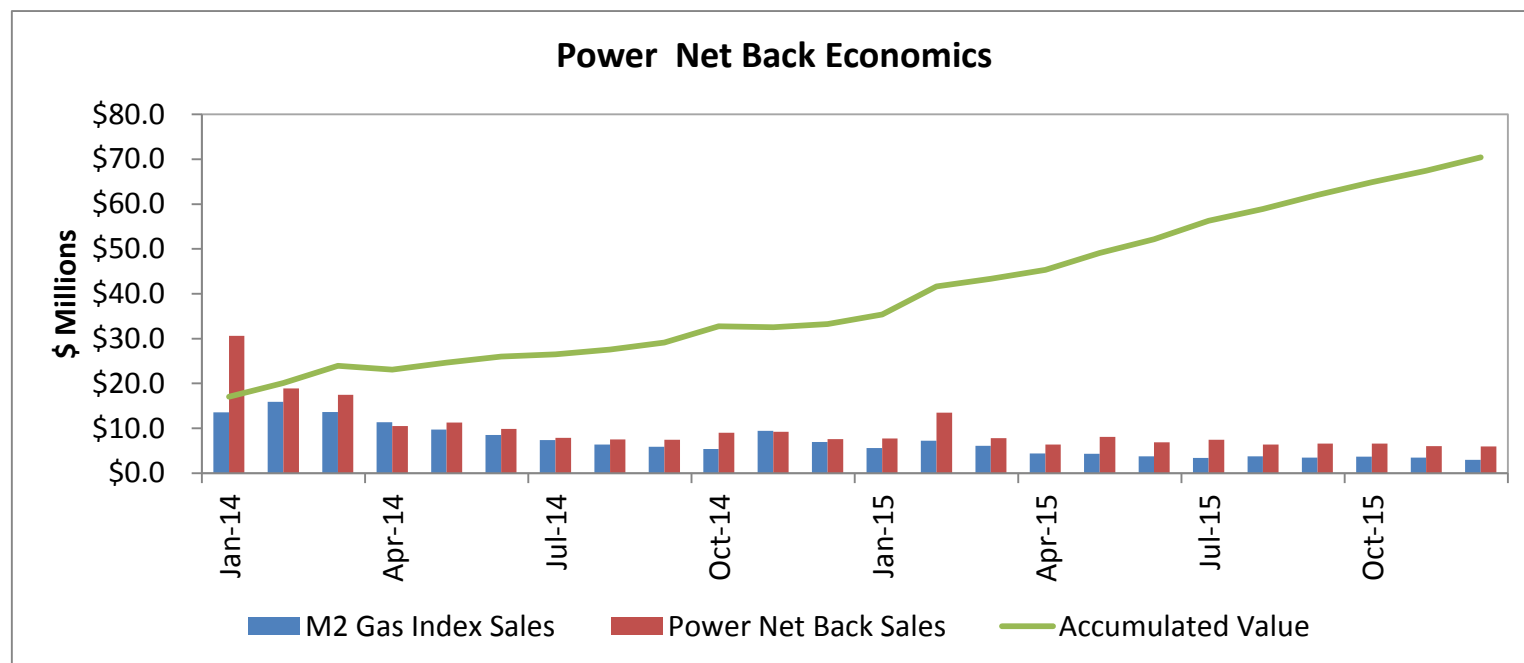
- ▶ As shale gas production ramps up, natural gas prices in the region have been pressured. Power prices, due in part to significantly less congestion on the power transmission system, have not come down as much, providing significant uplift for power plant margins.
- ▶ Local M2 region gas producers could benefit by a “Power Netback” structure whereby a producer sells their physical gas based on a price linked to financial PJM power
- ▶ Moundsville assumes that material coal fired capacity continues to operate over the next decade that will define marginal cost in the power market and assisting to create attractive spark spreads.



Note: Spark Spread is a term that calculates the margin a power plant receives net of gas cost. For example, \$30 Power, \$3 gas, 7 mmbtu/hour gas use means $\$30 - (\$3 * 7) = \$9$ Spark Spread

“Power Netback” as a Producer Gas Hedge Creates “Win – Win”

- ▶ Power Netback hedge swaps the producers physical gas for financial power
- ▶ Power Netback provides producers exposure to power prices that have a significantly higher relative floor price, primarily due to coal-on-margin economics, plus the upside volatility during summer and winter peaks
- ▶ Moundsville is interested in selling Power Netback to lock in margin to support equity and financing decisions and avoid having to sell into a highly illiquid forward power market
- ▶ Example of a Power Netback historical economics of a recent Moundsville Power proposal provided below:





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