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

<table>
<thead>
<tr>
<th>Name</th>
<th>Fuel/Tech</th>
<th>Capacity (MW)</th>
<th>Location</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>NCA 2</td>
<td>Gas CC</td>
<td>85</td>
<td>Las Vegas, NV</td>
<td>Operating</td>
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<tr>
<td>Lake</td>
<td>Gas CC</td>
<td>123</td>
<td>Umatilla, FL</td>
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<tr>
<td>Pasco</td>
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<tr>
<td>Portsmouth</td>
<td>Coal</td>
<td>110</td>
<td>Portsmouth, VA</td>
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<tr>
<td>Choctaw</td>
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<td>Ackerman, MS</td>
<td>Operating, Sold to TVA in April 2015</td>
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<td>Auburndale</td>
<td>Gas CC</td>
<td>155</td>
<td>Auburndale, FL</td>
<td>Mothballed</td>
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### Development Assets

<table>
<thead>
<tr>
<th>Name</th>
<th>Fuel/Tech</th>
<th>Capacity (MW)</th>
<th>Location</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Moundsville</td>
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<td>Moundsville, WV</td>
<td>Development</td>
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<tr>
<td>Friendswood</td>
<td>Gas Peaking</td>
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<td>Houston, TX</td>
<td>Under construction, Expected COD Q2 2017</td>
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<td>Passadumkeag</td>
<td>Wind</td>
<td>40</td>
<td>Penobscot County, ME</td>
<td>Developed &amp; constructed by QUG, Sold to Southern Power in June 2016</td>
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<tr>
<td>Guam</td>
<td>Solar</td>
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<td>Guam</td>
<td>Developed by QUG, Sold to NRG in July 2013</td>
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<td>Van Alstyne</td>
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<td>Grayson County, TX</td>
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<tr>
<td>Clear Springs</td>
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<td>Flat Hill</td>
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<td>Glyndon, MN</td>
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</table>

### Development Assets Map

- **Natural Gas**: Operating
- **Coal**: Realized
- **Renewables**: Development
- **Construction**: Development in progress

**Additional Notes**
- Choctaw sold to TVA in April 2015
- Friendswood under construction, expected completion 2Q 2017
- Passadumkeag developed and constructed by QUG, sold to Southern Power in June 2016
- Guam developed by QUG, sold to NRG in July 2013
| **Location**       | Marshall County, West Virginia  
|                   | PJM-AEP Zone                      |
| **Nameplate Capacity** | Winter: 673 MW     
|                   | Summer: 626 MW                     |
| **Fuel**           | Dual Fuel – Natural Gas and Ethane, up to 75% / 25% blend (volumetric) |
| **Equipment**      | 2 x GE 7FA Combustion Turbines: 189 MW  
|                   | 1 x GE D11 Steam Turbine: 310 MW     |
| **Heat Rate**      | Baseload: ~6,743 Btu/kWh  
|                   | Maximum Output: ~7,127 Btu/kWh       |
| **Electric Interconnection** | AEP’s George Washington 138 kV substation (0.1 miles from the Project site) |
| **Natural Gas Interconnection** | TETCO M2 Zone                |
| **Ethane Interconnection** | Blue Racer Midstream Ethane Pipeline |
| **EPC Contractor** | Black & Veatch                |
| **COD**            | Expected: 3/1/2019  
|                   | Guaranteed: 6/1/2019               |
Moundsville Site Location

Transmission Lines (kV)
- 345 – 450
- 450 – 500
- 500 – 735
- 735 – 1,000

- Texas Eastern Gas Transmission, LP
- Major City
- AEP Zone
- PJM

TETCO Zone 2

TETCO Zone 3

Moundsville Power

Major City
- Toledo, OH
- Cleveland, OH
- Columbus, OH
- Cincinnati, OH
- Pittsburgh, PA
- Philadelphia, PA
- Baltimore, MD
- Washington DC

PJM

Moundsville Power

William Moundsville Fractionator

Existing Substation

Existing 125kV line

Existing 345kV line

Existing 345kV line

Existing 345kV line
Moundsville Key Attributes

Low Operating Cost
- Designed to be lowest-cost high-dispatch factor CCGT in PJM
- 6,700 Btu/kWh Summer Baseload Heat Rate
- $1.50/MWH LTSA Fired-hour charge
- Direct connection to TETCO M2
- GE 7FA CTs, with +50 million hours of operating history

Retirements
- +/-10,000 MW of coal generation in AEP and APS is “at risk” of economic or regulatory retirement
- Higher LMP and improved transmission access
- Rate base coal assets in AEP transmission zone will support marginal power prices

Low Fuel Cost
- Located in the heart of the Marcellus and Utica shale plays
- Lowest cost gas fields in North America, with fastest production growth
- TETCO M2 is a highly liquid trading point, historically among the cheapest gas in PJM
- Cyclical over-supply of Ethane from Marcellus/Utica results in sub-NG Ethane prices

Project Team Experience
- B&V is EPC contractor, with fixed-price contract, performance guarantees and liquidated damages
- GE is providing industry-standard warranties and performance guarantees on the CTs
- QUG management team have developed, constructed, financed, hedged and operated thousands of MW of generation
Key Project Partners

**EPC Contract**
- Lump sum fixed price EPC contract
- Industry standard damage provisions
- Parent guarantee

**Electric Interconnect**
- 545MW IA signed
- 626MW in queue

**Gas Supply Manager**
- Fuel management agreement
- 3 years post COD

**Gas Interconnect**
- Interconnect via Moundsville Pipeline constructed 7mi gas lateral
- Ethane/gas blending station

**Ethane Interconnect**
- Interconnect via Moundsville Pipeline constructed 7mi gas lateral
- Ethane/gas blending station
- Same interconnection point as TETCO

**Construction Manager**
- Oversight and ownership representation of all construction activities
- Detailed engineering review and oversight

**CSA / LTSA**
- CT upgrades to increase output and efficiency
- Standard warranties and performance guarantees on gas/ethane
- Long-term maintenance services

**Pipeline Contractor**
- All engineering required for pipeline lateral
- Assist in arranging procurement and construction services

**Site Purchase**
- 37.5 acres Project site:
- Pre-existing environmental liabilities retained by Honeywell

**TETCO Gas Supply Manager**
- Fuel management agreement
- 3 years post COD

**TETCO Gas Interconnect**
- Interconnect via Moundsville Pipeline constructed 7mi gas lateral
- Ethane/gas blending station
- Same interconnection point as TETCO

**TETCO Ethane Interconnect**
- Interconnect via Moundsville Pipeline constructed 7mi gas lateral
- Ethane/gas blending station
- Same interconnection point as TETCO
Located in the “Wet Gas Epi Center” and connected to TETCO

- Moundsville will receive its natural gas supply via a 7-mile pipeline lateral that connects directly to TETCO M2
- Moundsville 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
- Moundsville’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
  - Moundsville 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 Overview**

- Moundsville 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 Moundsville Power's additional generation in the Moundsville - Kammer area is assisting AEP to provide needed power

**Interconnection Request Overview**

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<tr>
<th>Queue #</th>
<th>MW</th>
<th>Cumulative MW</th>
<th>Request Filed</th>
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<th>System Impact Study</th>
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<td>9/2016</td>
<td>3/2017</td>
<td>5/2017</td>
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**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

2013
- August: PJM Feasibility Study received
- November: Endangered Species Act approval received

2014
- February: 37.6 acres Honeywell site purchase option executed
- March: WV DEP Air Permit received
- August: Marshall County Land Lease Agreement & PILOT Agreement executed

2015
- June: Air Permit to Construct issued
- November: WV PSC Siting Permit received
- January: Draft PJM Interconnection Facilities Study received
- October: QUG acquisition from Energy Solutions Consortium, LLC

2016
- June: B&V LNTP

Timeline – Present through COD

2016
- December: B&V site preparation begins
- September: Connection to AEP/PJM completed
- March: Target COD
- September: ** NTP, FID

2017
- March: Site/pipeline construction begins
- November: Pipeline completed

2018
- March: Major equipment onsite

2019
- January: First fire of GTG-1 and GTG-2

** 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

- Oregon Clean Energy 869 MW
- Middletown 475 MW
- Carroll County 700 MW
- Westmoreland 925 MW
- “0” MW
- Warren County 1472 MW
- CPV St. Charles 725 MW
- Brunswick County 1358 MW
- Stone Wall 778 MW
- Moxie Liberty 936 MW
- Patriot Power 829 MW
- Moxie Freedom 1050 MW
- Moxie Liberty 936 MW
- Wildcat Point 1000 MW
- Yorkshire 874 MW

Proprietary and Confidential
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:

![Power Net Back Economics Chart]

- M2 Gas Index Sales
- Power Net Back Sales
- Accumulated Value
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