

The Status of the Energy Conversion Industry in West Virginia



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WV Energy Summit
October 8, 2019

Longview State of the Art Facility

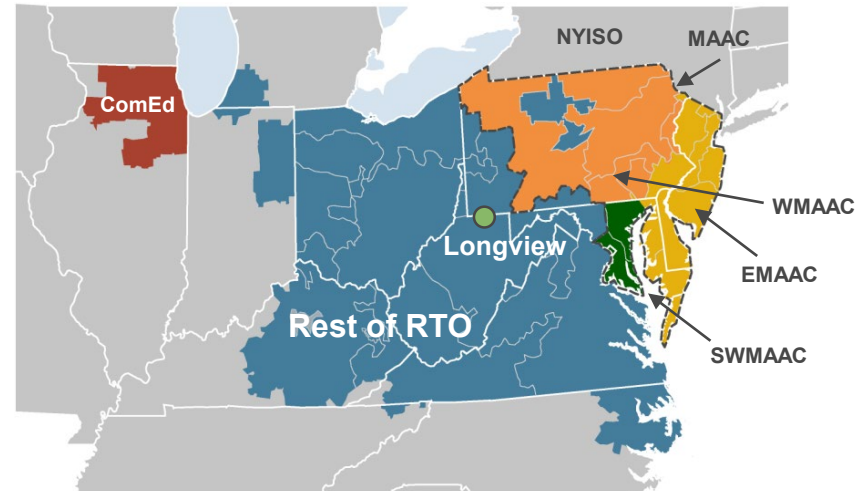
The Longview Facility consists of one 710 MW supercritical coal-fired unit and under development natural gas combined cycle and solar power facilities

- Longview is an independent power producer that operates in the wholesale PJM market
- The Company generates electricity through a 710 MW supercritical coal-fired power plant (“Longview Facility” or the “Facility”), located in Madsville, West Virginia
- The Facility can generate electricity more efficiently than any other coal-fired power producer and at more competitive rates than nearly all other fossil fuel generators, including new CCGTs due to the high quality, low cost Northern Appalachia coal
- The Facility generates enough electricity to power almost 700,000 homes.

Longview Facility Information

State / ISO / Interconnected Utility	WV / PJM / West Penn Power
Total Capacity	710 MW
Heat Rate	8,650 Btu/kWh
Technology / COD	Advanced Supercritical Steam Turbine / 2012
Coal Type / Source / Heat Content / SO ₂ Content	Bituminous / Northern App. / 13,000 Btu/lb / <3.0 lbs./MMBtu
Emission Controls	NOx: Selective Catalytic Reduction (SCR), Low NOx Burners (LNB), overfire air (OFA) SO ₂ : Tray type wet scrubber (WFGD) FGP: Baghouse, pulse-type (PJFF)

Longview Facility Location in PJM



Setting the Standards for Coal Facilities

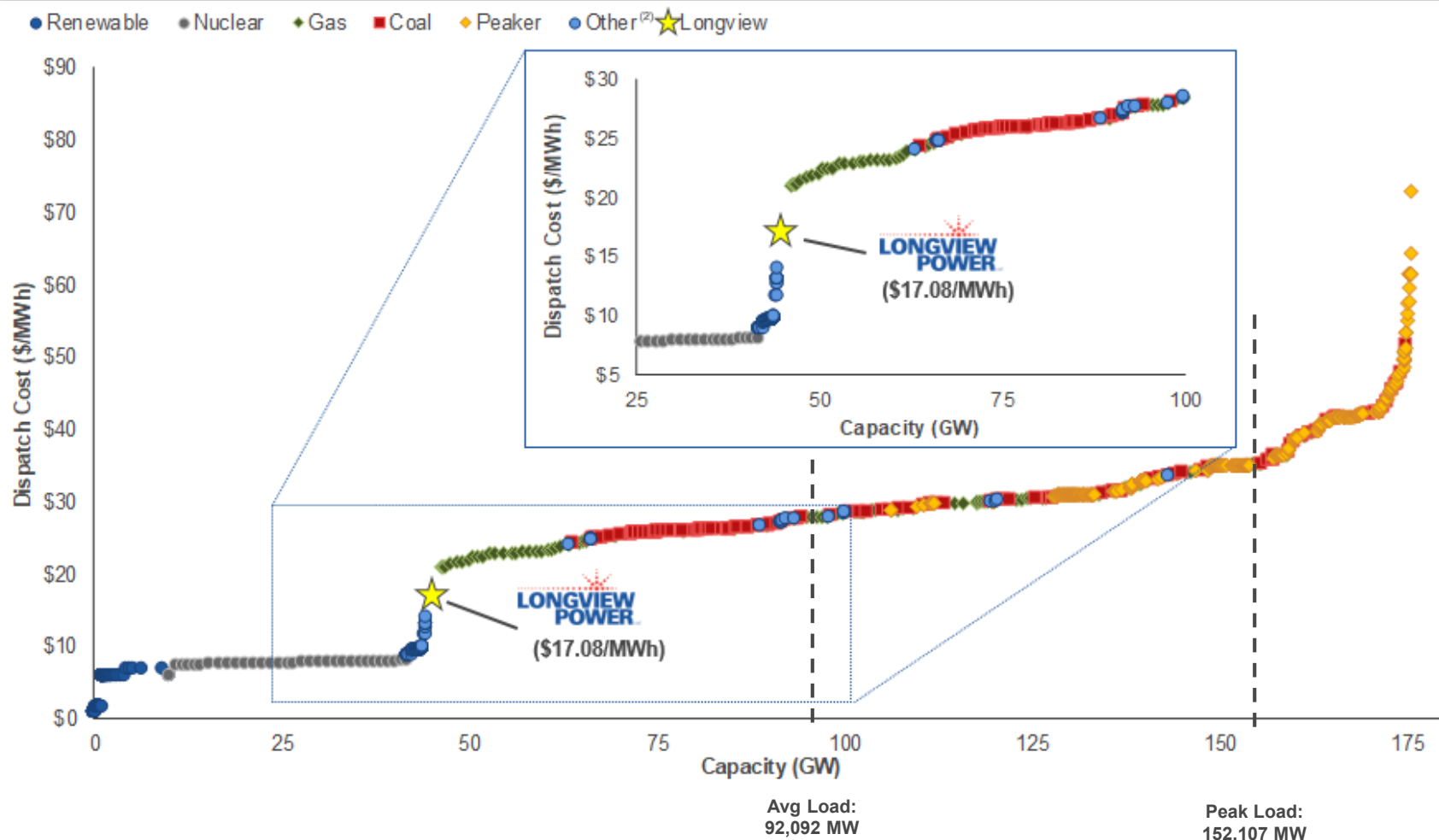
- Most efficient coal plant with lowest heat rate (8,650 Btu/kWh) in North America
- Minimal emissions with efficient, low cost BACT systems
- Highly reliable with a peak period Capacity Factor greater than 95% and PJM EFORD below 3%
- Safety- over 4 years since last lost LTA
- 2016 Power Magazine’s Reinvention Award



Longview Most Efficient and Lowest Cost Coal Plant in PJM

Longview's position on PJM dispatch curve illustrates its distinct competitive advantage relative to other fossil fuel generators

2019 PJM Supply Curve⁽¹⁾



Sources: PA Consulting and Longview

(1) Reflects forecasted Henry Hub price of \$2.77/MMBtu

(2) Other plants include biomass, landfill gas and refuse generators

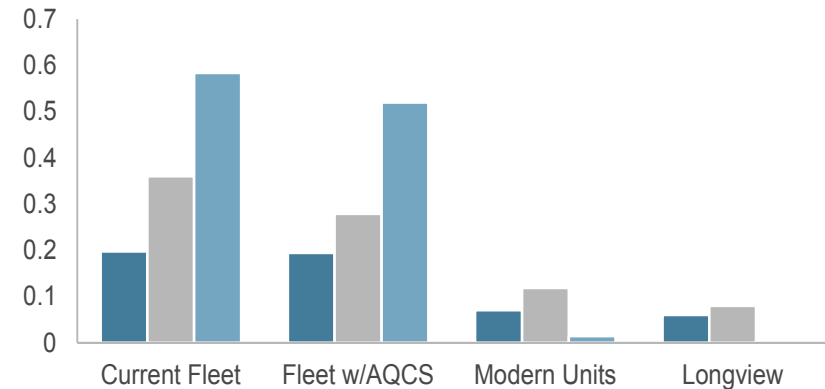
Longview is One of the Cleanest Coal Plants in the World

Design characteristics provide Longview with a competitive advantage relative to other coal facilities, many of which have to implement large capital expenditure programs to comply with environmental regulations and face significant operating cost increases

- Longview is fully compliant with existing environmental regulations
- Current emission levels make Longview one of the cleanest coal-fired power plants in the world
- Low air emissions with minimal wastewater discharge (zero to surface water)
- Longview's lower heat rate and state-of-the-art flue-gas cleanup equipment is up to 90% more environmentally efficient than the existing coal-fired fleet in the United States

Emission Rates

■ Nitrogen Oxides (lbs/MMBtu) ■ Sulfur Dioxides (lbs/MMBtu)
■ Particulate Matter (lbs/MWh)



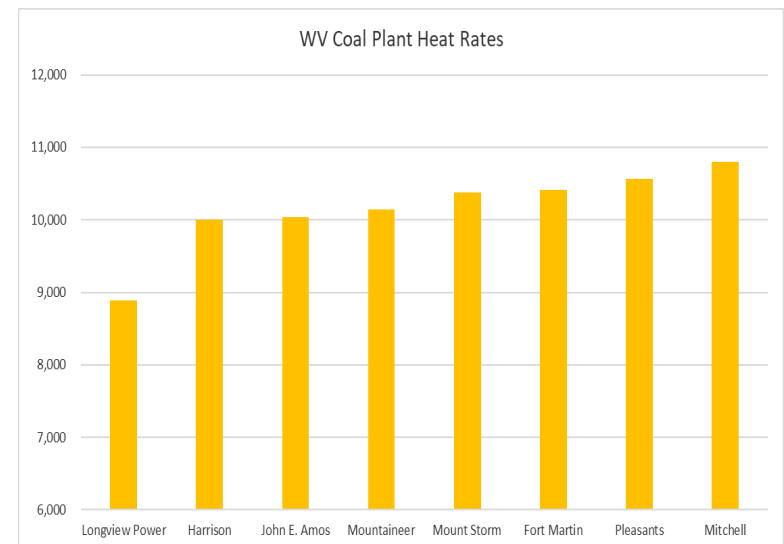
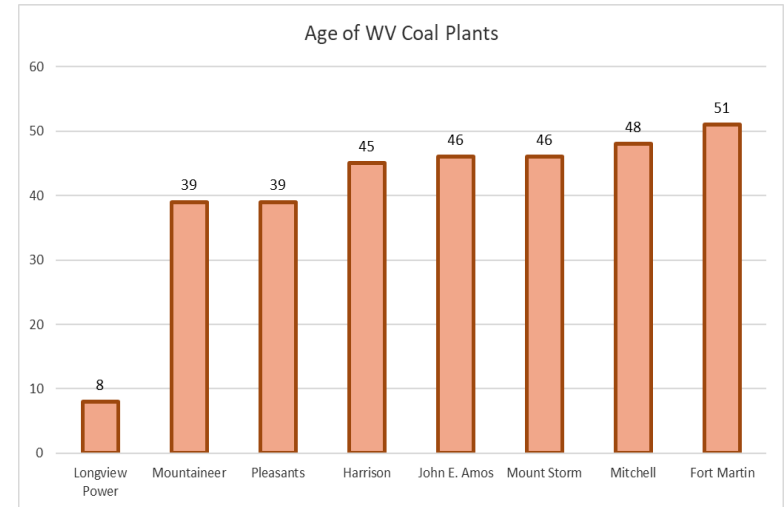
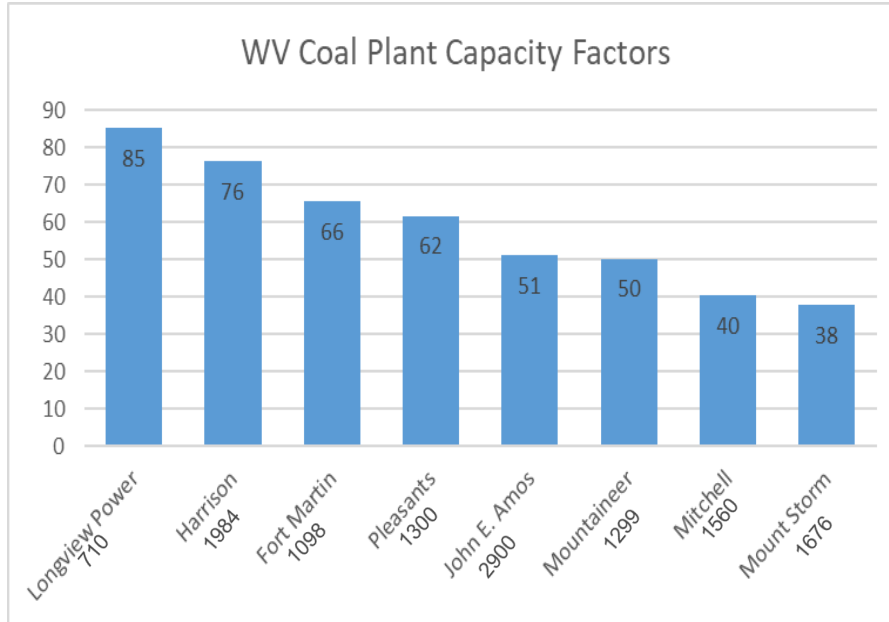
Compliance With Major Environmental Regulations

Regulation	Compliance	Longview
Mercury and Air Toxic Standards (“MATS”)	✓	➤ Equipped with Hydrated Lime Injection, wet FGD and PJFF
Section 316(b) Cooling Water Intake Structures – Clean Water Act	✓	<ul style="list-style-type: none"> ➤ 316b compliant intake design ➤ Minimum effluent water flow compliantly discharged into nearby abandoned mine
Coal Combustion Residuals	✓	➤ Facility utilizes a 12-bag compartment downstream PJFF baghouse to capture fly ash and residuals
111(d) Carbon Regulations of Clean Air Act	✓	➤ Less efficient coal plants, with higher CO ₂ emissions are likely to be forced to reduce load and/or payment for carbon credits if a carbon regime is adopted in the future

Source: SNL and Longview

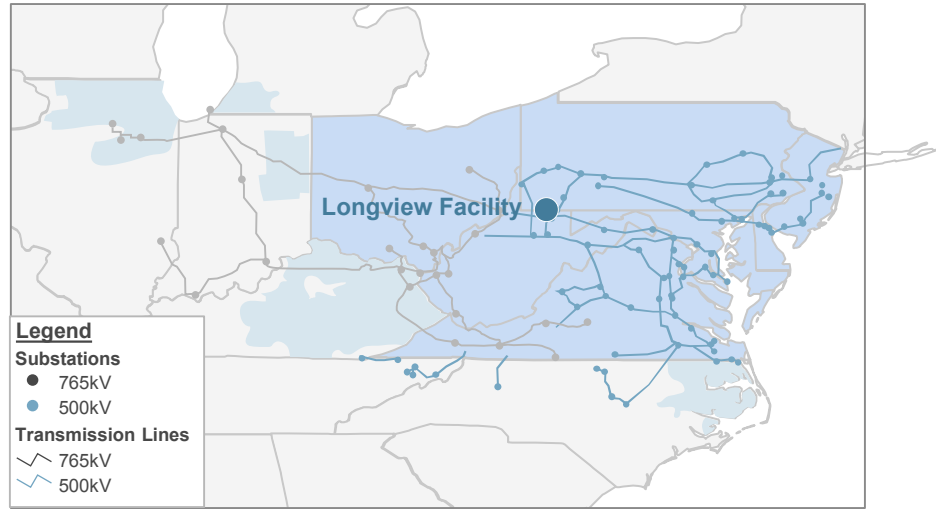
West Virginia Coal Generation Landscape

- Longview is 8 years old while other coal plants are over 39 years old
- Longview's heat rate (efficiency) at 8750 is the best in the US. All other West Virginia plants are 10,000 or more
- Capacity factors for plants reflect age and efficiency
- WV has only 3 gas peaker plants and no gas combined cycle plants. Modern gas combined cycle plants have heat rates of 6200

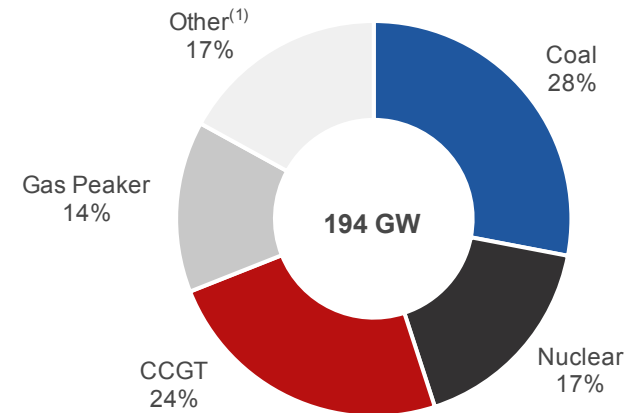


The Shift to Natural Gas as the Primary Electricity Fuel

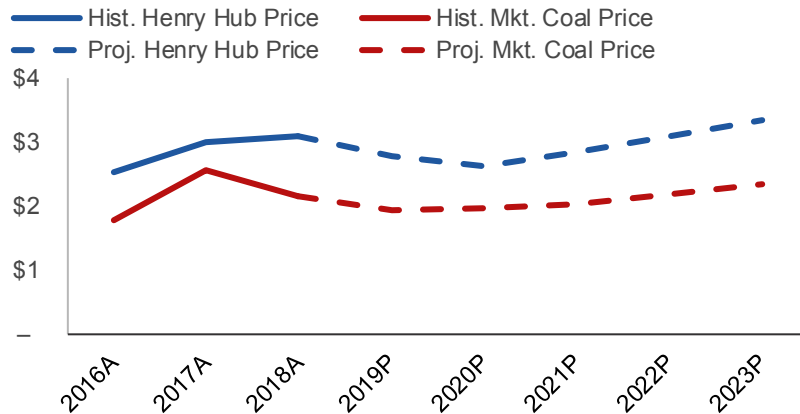
PJM Backbone HV Transmission System



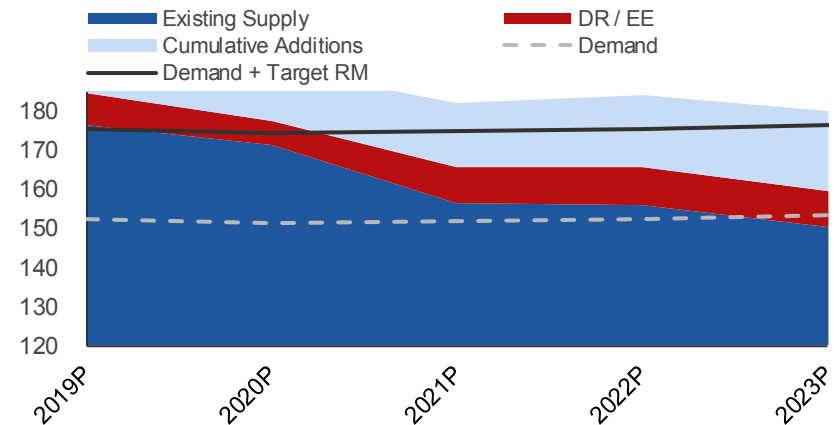
2019 PJM Capacity Mix (%)



Market Coal & Natural Gas Fuel Prices (\$/MMBtu)



Supply / Demand Balance (GW)



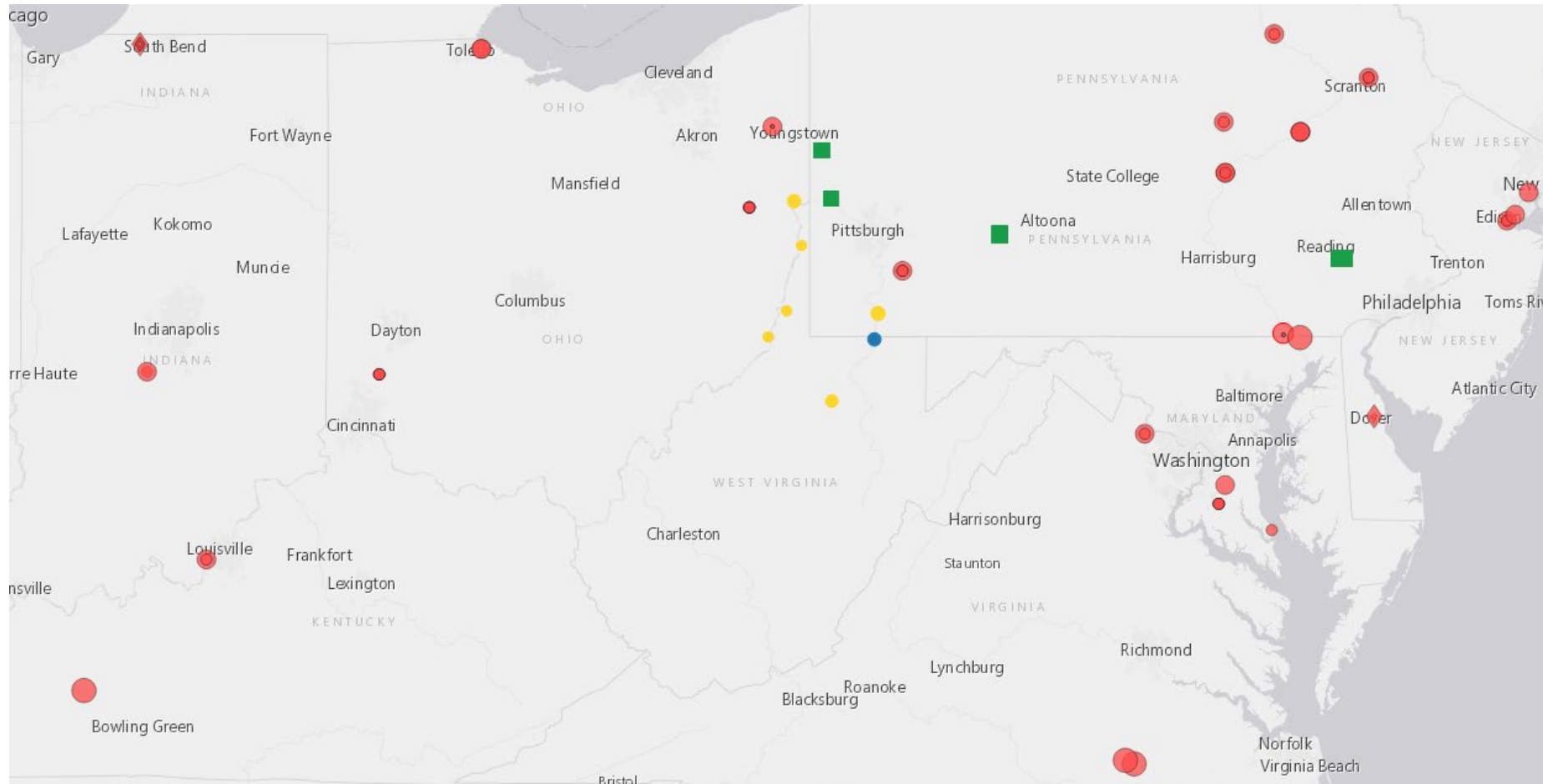
Source: PA Consulting

(1) Other consists of Oil Peakers, ST Gas / Oil, Wind, Hydro and other generating assets

Where are the WV Natural Gas Generation Facilities?

Natural gas has become the dominant fuel for electricity production in PJM and the United States.

- 36% of electricity production in PJM is from natural gas and 28% from coal
- More than 25 new combined cycle facilities have been built in and around PJM in the last five years and four more are under construction
- No natural gas combined cycle facilities have been built in West Virginia



● Operating CC ◆ Operating CC w/ additional planned ■ Under Construction CC ● Permitted CC ● Longview Site

Longview Power Clean Energy Center

The CCGT & Solar Expansion Projects

Longview has the existing infrastructure to build a new CCGT at a materially lower cost (~\$182 million) than comparable new builds in PJM and to develop 70 MW of utility grade solar adjacent to the Longview Facility and new CCGT plant

- Company is actively pursuing the development of a 1,200 MW gas-fired CCGT plant and a 70 MW utility-grade solar project
- Total CCGT build cost savings of approximately \$182 million versus comparable PJM CCGT new build costs at greenfield sites
 - On-site O&M staff can operate additional plants at a minimal cost
 - Experienced management team brings expertise in development, operations, market origination and energy management
- Additional plants would increase revenue potential at lower \$ / kW fixed costs as well as provide operational and fuel diversity



	CCGT Expansion Project	Utility-Grade Solar Project
Key Project Attributes	<ul style="list-style-type: none"> ■ 1,200 MW gas-fired 2x1 combined cycle plant <ul style="list-style-type: none"> ■ State-of-the-art advanced class gas turbines with water cooling will have a target heat rate of 6,200 Btu/kWh ■ Existing water pipeline and treatment facility are sufficient size to supply existing coal unit and additional CCGT ■ Only 6.2 miles for lateral to the Columbia interstate natural gas pipeline with all right of ways owned or controlled by Longview <ul style="list-style-type: none"> ■ Additional pipeline located 10 miles beyond Columbia if needed ■ 500 kV transmission system capable of adding additional 1,210 MW ■ Gas usage – 59 million dt/year 	<ul style="list-style-type: none"> ■ 70 MW_{dc} utility-grade solar installation <ul style="list-style-type: none"> ■ Site includes 90 acres for solar panels ■ Project contemplates approximately 188,000 solar panels rated at 370 Watts each ■ Lay down areas to be built in connection with the construction of the CCGT expansion project to be repurposed to site solar arrays ■ Solar project to interconnect into Pennsylvania and receive solar Renewable Energy Certificates (“RECs”)

Longview Power Clean Energy Center

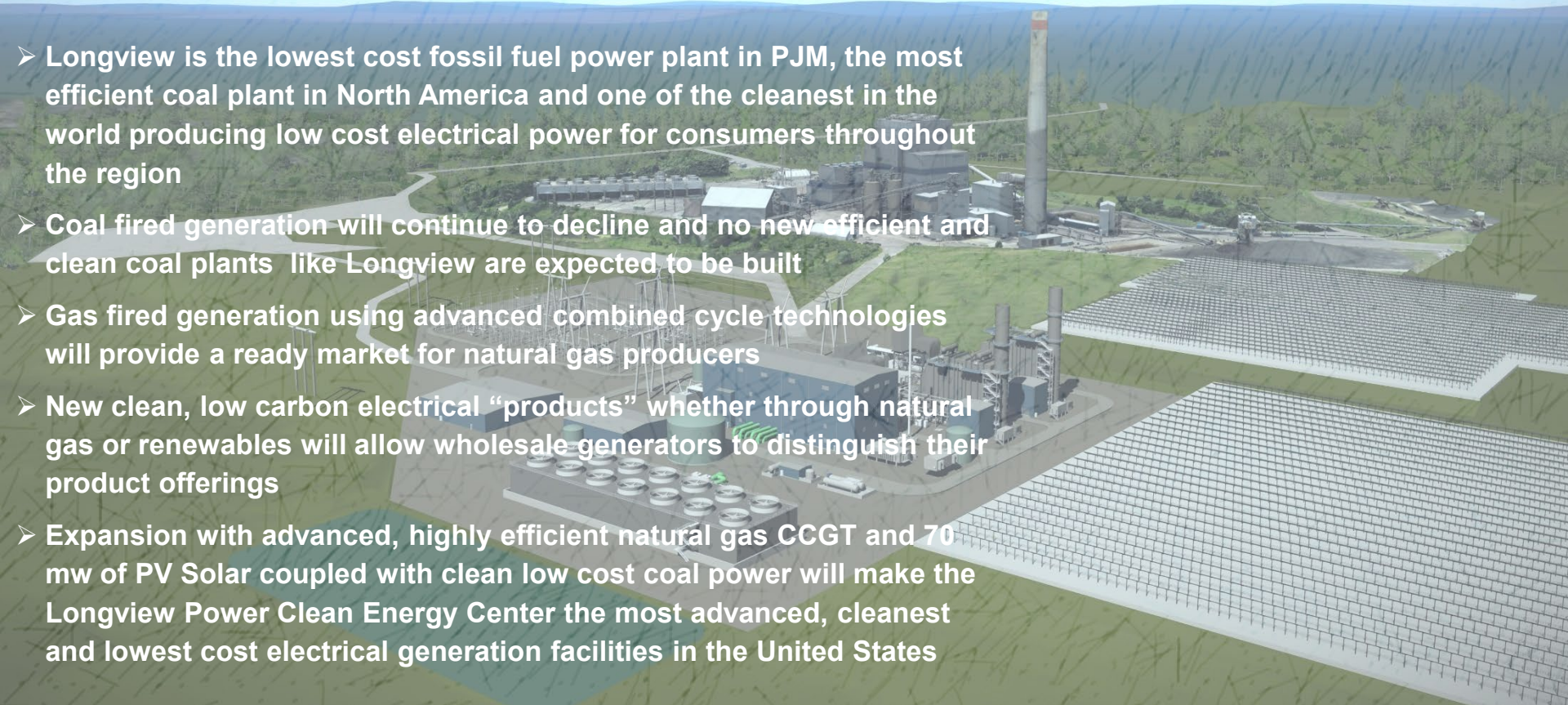
Creating Significant Job Opportunities and Economic Activity in Northern West Virginia and Southwestern Pennsylvania

- The Longview coal plant, built with a total investment of over \$2 billion, created more than 10,000 union construction jobs during the serious recession from 2007-2011 helping to insulate the region from the 10%+ unemployment in the nation. Longview currently employs 150 in high paying power generation jobs.
- Longview coal pays over \$3 million in PILOT and taxes each year and invests substantial amounts to maintain roads, build AMD remediation projects and improve other infrastructure in the region
- The Longview gas plant and solar projects will cost approximately \$1.1 billion to construct- approximately \$925 million for the gas plant in West Virginia and \$175 million in Pennsylvania for the pipeline and solar facilities.
- 5,000 direct and indirect jobs will be created during the construction of the expansion projects with employee compensation exceeding \$360 million. Longview expects to add over 30 more power generation jobs to operate and maintain the expansion facilities and that the projects will create 165 additional induced jobs with total compensation of \$165 million.
- The expansion projects will make an additional \$2 million in PILOT payments and taxes, and the gas line will support additional economic growth in the region.
- Producing over 2000 MW of electricity (enough for 2 million homes), the Longview Power Clean Energy Center will be one of the largest “all of the above” fully integrated power generation entities in the region, with modern state of the art facilities, using abundant local fuel sources to serve West Virginia and Pennsylvania.



The Longview Power Clean Energy Center

The Future of Energy Conversion in WV



- Longview is the lowest cost fossil fuel power plant in PJM, the most efficient coal plant in North America and one of the cleanest in the world producing low cost electrical power for consumers throughout the region
- Coal fired generation will continue to decline and no new efficient and clean coal plants like Longview are expected to be built
- Gas fired generation using advanced combined cycle technologies will provide a ready market for natural gas producers
- New clean, low carbon electrical “products” whether through natural gas or renewables will allow wholesale generators to distinguish their product offerings
- Expansion with advanced, highly efficient natural gas CCGT and 70 mw of PV Solar coupled with clean low cost coal power will make the Longview Power Clean Energy Center the most advanced, cleanest and lowest cost electrical generation facilities in the United States