



The Future of Reliable
Clean Coal Power



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Longview Power Overview



- 778 MW gross (700 MW net) coal fired plant located near Morgantown, WV
- New plant started operations in December 2011 while PJM coal fleet averages >45 years
- Total project cost was approximately \$2.1B
- Additional \$120 million invested in 2015 to achieve high reliability
- Highly efficient with lowest heat rate of any coal plant in North America
- Exceptionally low air emissions with minimal wastewater discharge (zero to surface water)
- Lowest cost coal-fired generator in PJM
- Coal supplied by conveyor from affiliated mines

Longview- Advanced Combustion Technology

Amec Foster Wheeler- Advanced Supercritical Boiler

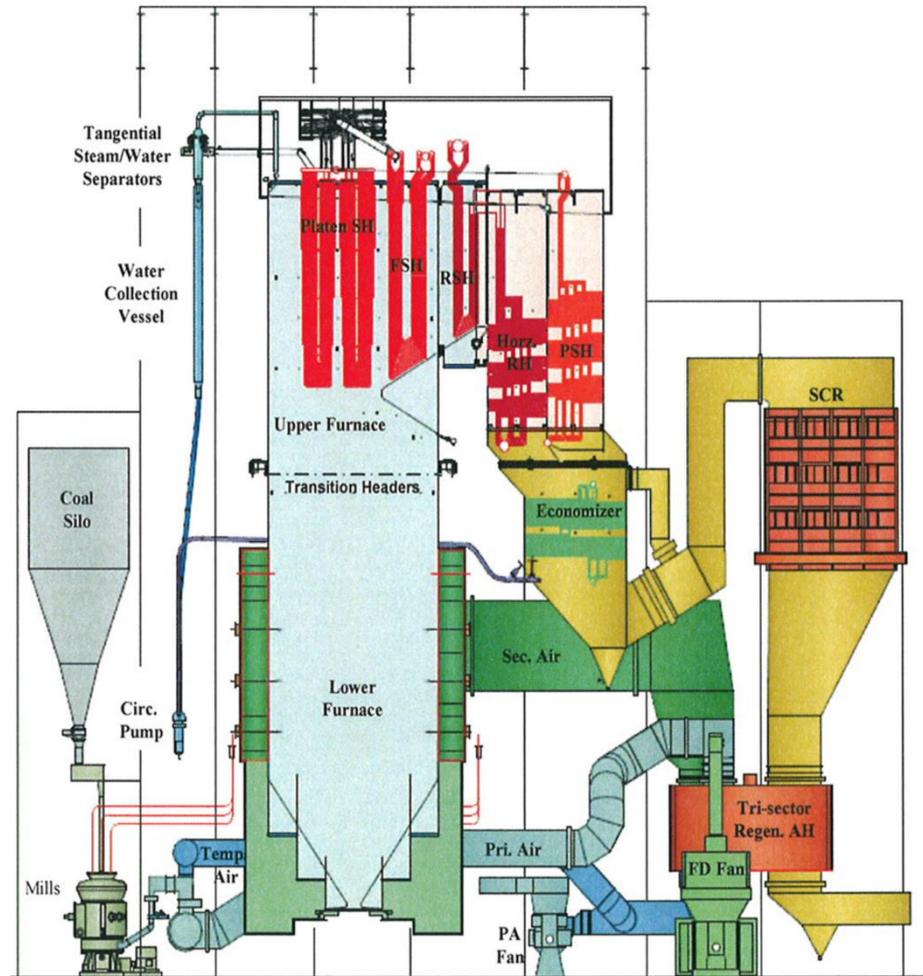
Steam Generator - First of a kind once thru, low mass flux vertical tube supercritical boiler

- Design for high efficiency
- Modified for reliability

Efficient Combustion System

- Best in class combustion control of fuel and air
- Catalyst and low NOx burners assure clean reliable combustion
- Excellent control of slagging over wide load range

In 2015 warranty replacement of nose arch and upper furnace tubes - no more leaks



Longview- Advanced Emissions Technology

Amec Foster Wheeler – Air Quality Control System (AQCS)

NOx Removal

- Low NOx burners
- SCR

Acid Mist Reduction

- Hydrated lime injection system

Particulate Matter (PM) Removal

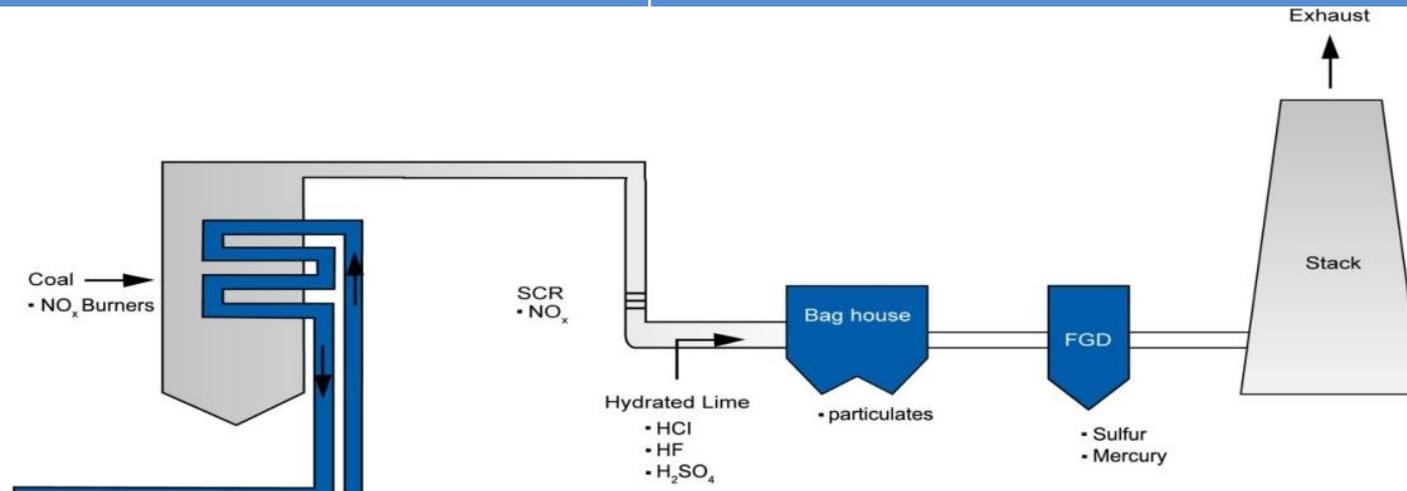
- Baghouse > 99% Particulate Removal
- In 2015 added 30% greater capacity
- Best in class performance

SO2 Removal

- Wet Flue Gas Desulfurization System (FGD)
- 2015 added enhancements/upgraded dewatering/improved fines removal Up to 99.5% removal –
- Best in class performance

Mercury and HAPS Removal

- MATS compliance with combined AQCS equipment
- State of the art performance

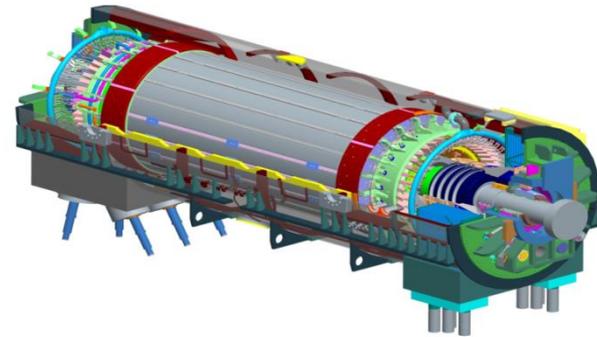
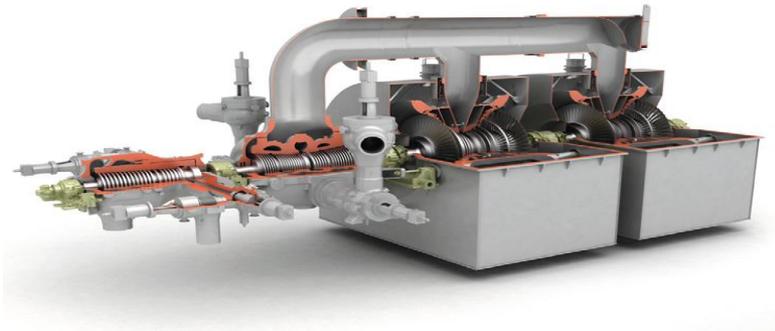


Longview's Best Available Control Technologies (BACT) set the standard for air emissions

Longview- Advanced Generation Technology

Steam Turbine & Generator

Thermal Energy → Mechanical Energy → Electrical Energy
(Boiler) (Steam Turbine) (Generator)



Siemens HMNN 770 MW Turbine System

- Tandem Compound Design: 1x single flow HP, 1 x double flow IP, 2 x double flow LP Sections
- Modern design that allows fast ramping

Siemens Model # SGen6-3000W Generator

- Rated for 807MW/hr
- Hydrogen inner cooling and water-cooled stator winding
- Up to 99% operating efficiency
- Repaired to “like new” condition in 2015

High efficiency with reliable cycling capability

Longview- Gas Supply and Advanced Start Up Capability

Startup Capability- Pipeline and LNG to assure start-ups



LNG

- World's largest mobile LNG facility
- Onsite capacity for 2 full starts
- Ideal for winter peak or pipeline outage coverage and for new PJM CP requirements

Natural Gas Pipeline

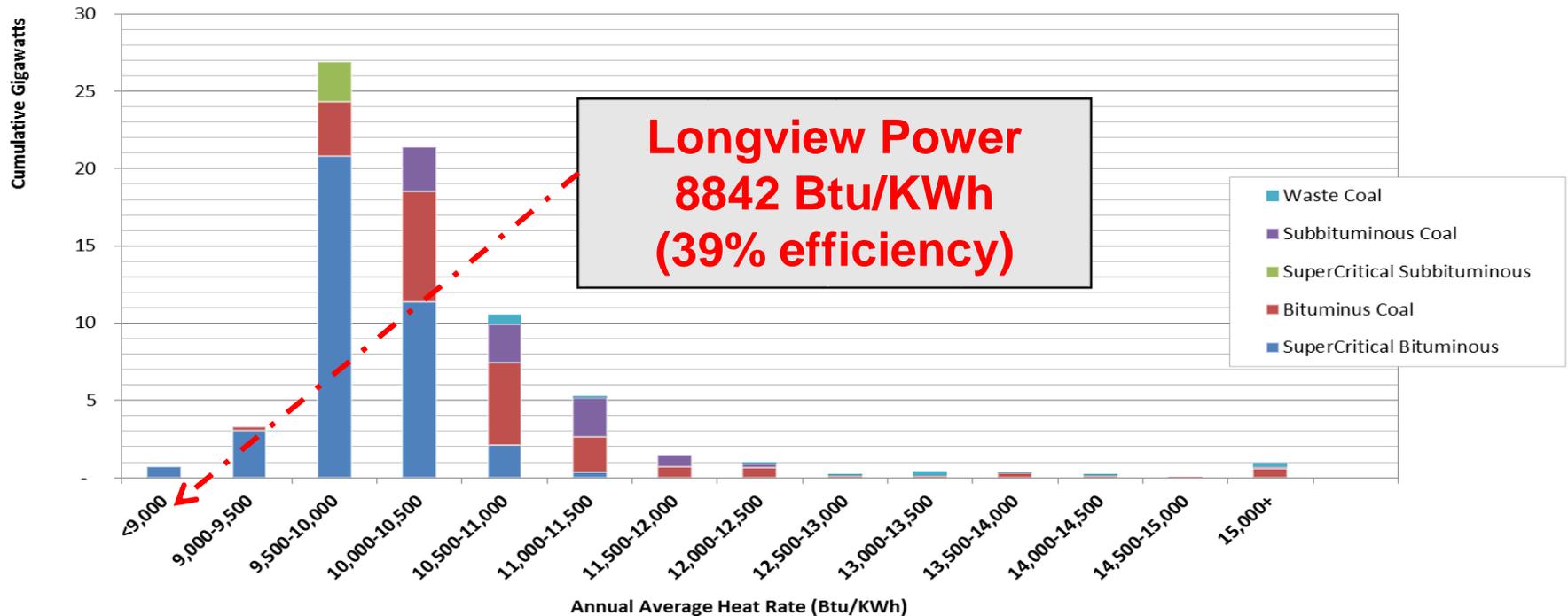
- Supplied by local gas utility (Dominion)
- Winter peak curtailments occur frequently
- 20% natural gas co-firing capability without additional cost
- Higher efficiency and lower emissions

Longview has co-firing and “inside-the-fence” startup reliability

Longview- Best in Class Efficiency

Longview is the most efficient coal-fired unit in North America.

Heat Rate, Fuel Type & Technology Class
of Coal-Fired Generating Units in PJM

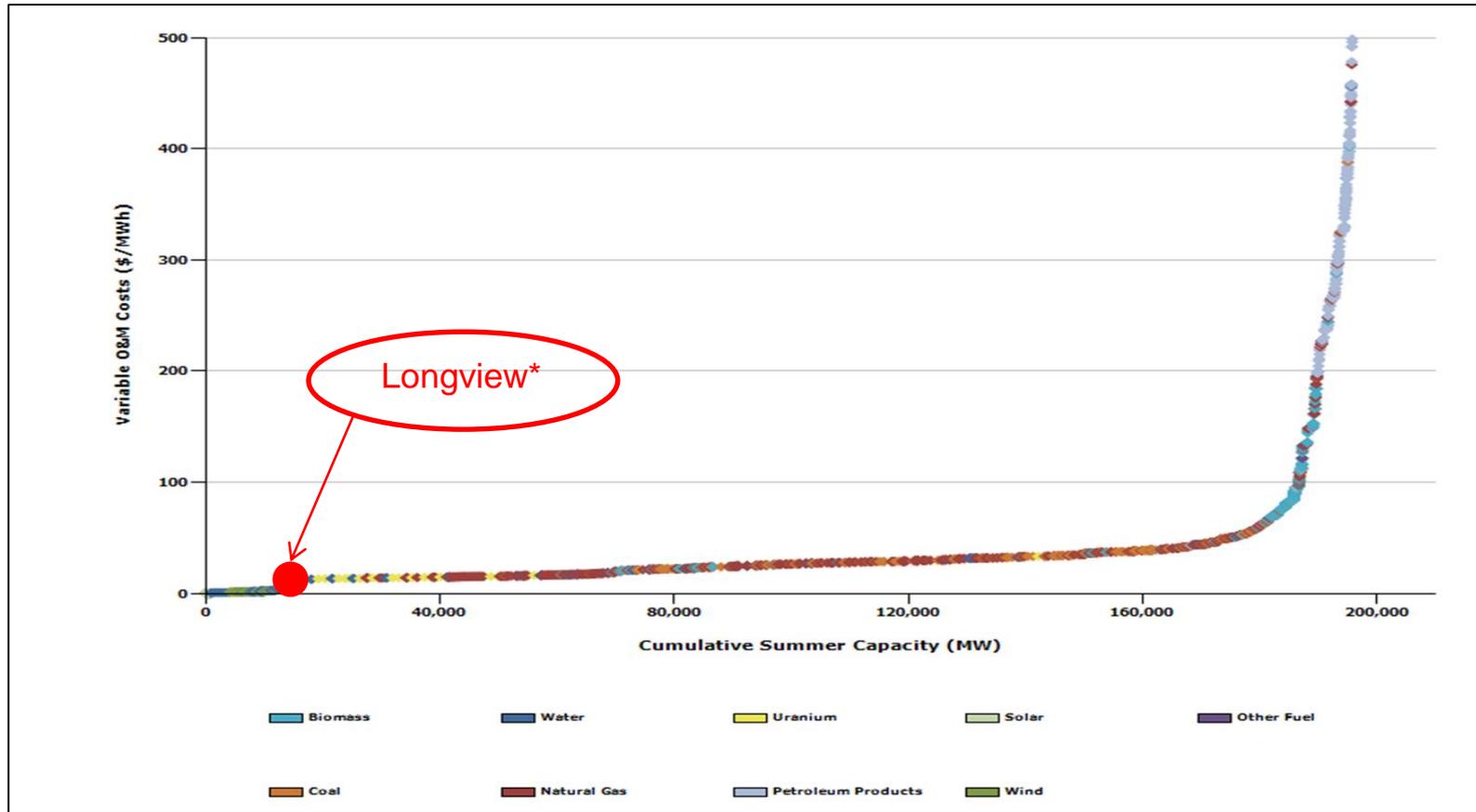


Source: Velocity Suite Nov-2012

US Coal plants have not achieved this level of performance until now

Longview- Lowest Cost in PJM

PJM Dispatch Curve (Marginal Cost of Dispatch by Unit)



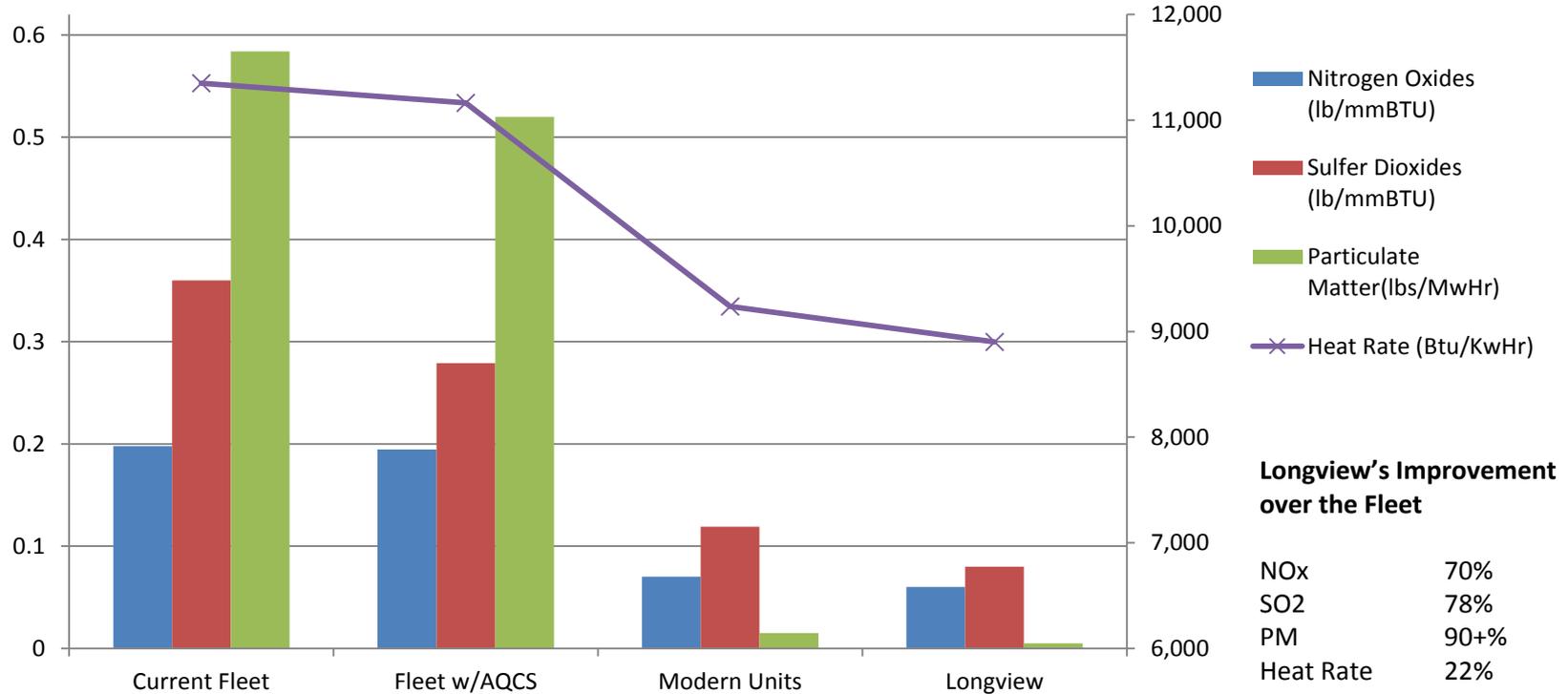
Longview data based on consolidated marginal cost of production of Longview and Mepeco (Utility Plant data from SNL)
Longview marginal cost close to the cost of non-dispatchable, subsidized renewables

Longview reliably provides low-cost clean coal electricity

Longview- Clean Coal with Very Low Emissions

Modern Highly Efficient Plants have very low emissions.

Emission Rates



Longview's Improvement over the Fleet

NOx	70%
SO2	78%
PM	90+%
Heat Rate	22%

Permit Limits for Modern Units. Actuals likely lower by 10 to 20%
Source: SNL and EPA

Longview's actual emissions are well below its permitted limits

Strategic Fuel, Water and Byproducts Disposal

- » Longview's competitive position is driven by low-cost fuel supplied by Mepco, its affiliate West Virginia based coal company, from mine mouth to the plant by a 4.5 mile conveyor, minimizing environmental and community impacts
- » Longview minimizes water requirements to less than 5,700 gpm on average and reuses water in plant processes so that it only discharges on average 30 gpm for treatment at an AMD treatment facility operated by Mepco
- » Longview recycles its ash and Mepco's environmentally compliant beneficial reuse facility provides a long term solution for ash and gypsum byproducts disposal for two power plants



Fuel supplied by conveyor and reuse of water and byproducts minimizes environmental and community impacts

Longview- Best in Class Results

» Reliability

- 21 day test completed on December 8, 2015 resulted in 99.5% EAF
- Plant is continuing highly reliable service – 92% EAF and 86% CF during 2016
- Other new supercritical units 2015 CF was 67%

» Efficiency

- 2015 annual (all-in) heat rate including all outages and start-ups was 9,009 btu / kWh and Longview received the Peabody Clean Coal Award for heat rate
- The 2015 result was better than #1 ultra critical plant (Turk) reported heat rate of 9,038 btu / kWh
- Heat rate (all-in) for 2016 improved to 8842 btu /kWh

» Emissions

- Emissions well under very low permit limits (PM is under 93% and Mercury is under 85%)
- CO₂ emissions are 20% below other coal fired plants

» Output

- Rated output is 700 MW but unit can operate at 710+ MW for durations that demonstrate full unit capability

» Dual Fuel Capability

- Unit co-fires natural gas for up to 20% of heat input without additional upgrades or costs



Clean Coal=High efficiency and reliability with very low emissions

Longview- Economic Impacts/Community Benefits

- » Longview and Mepco employ over 600 skilled workers providing high-paying jobs with combined annual payroll and benefits of approximately \$72 million
- » Longview uses locally sourced coal and limestone
- » Longview and Mepco purchase over \$105 million per year of goods and services from local and regional vendors
- » Longview and Mepco collectively contribute almost \$8 million in annual PILOT and tax payments
- » Longview and Mepco support a number of local and regional initiatives to enhance the environment and support our communities

Longview is a major economic driver in northern West Virginia and southwestern Pennsylvania

Longview- Demonstrating the Future of Coal

- Longview shows what advanced coal combustion technology can be
- Replace the existing coal fleet largely consisting of 40+ years old plants with modern advanced high efficiency low emissions coal plants
 - Order of magnitude reduction in conventional emissions- SO₂, NO_x and PM
 - 20% reduction in CO₂ emissions
- With modern high efficiency low emissions coal plants driven by design improvements
 - In Japan greater than 40% efficiency has been achieved (~8000 btu/kWh heat rate)
 - Competitive with latest generation combined cycle plants
 - Higher efficiency means lower cost electricity
- Modern advanced coal plants could be designed to co-fire natural gas
 - Further increasing efficiency and lowering cost to compete with gas fired plants
 - Also reducing CO₂ levels in a manner that complies with the Clean Air Act

If there is to be coal, then it should be Modern High Efficiency/ Low Emissions Coal Plants Like Longview?

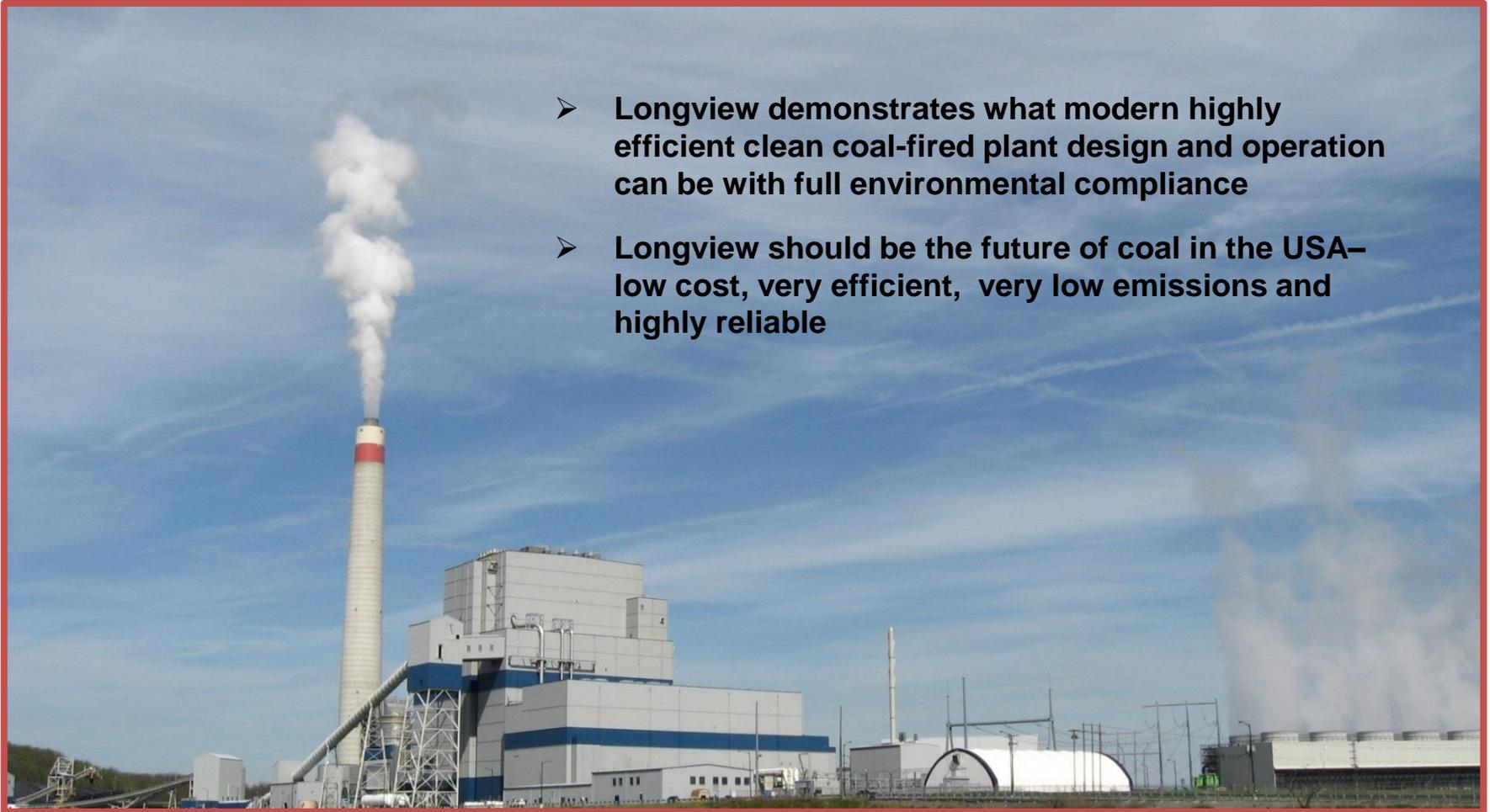
Longview- Demonstrating the Future of Coal

- » Regulations including the Clean Power Plan and the New Source Rule have blocked development of advanced clean coal technology power plants in America.
- » As a result, the coal fleet averages 40+ years in age and is not competitive with CCGT's based on cost, efficiency and emissions
- » New Administration intends to roll back regulations and could seek to repeal the Clean Power Plan or seek guidance from Congress regarding EPA's authority to regulate CO₂ under Clean Air Act
- » Rewrite the Clean Power Plan to focus on regulating CO₂ emissions as permitted under the Clean Air Act using "best system of emissions reductions" at the source – i.e. within the fence line of power plants.
- » Longview demonstrates "best system of emissions reductions" - the plant to be replicated to maintain coal fired power.
- » By building advanced high efficiency low emissions coal fired plants, we could continue to use coal to provide reliable low cost electrical power while creating and preserving thousands of good paying jobs in the industry.

Why Not Build Modern High Efficiency/Low Emissions Coal Plants Like Longview?

Longview - The Model for the Future of Coal

- Longview demonstrates what modern highly efficient clean coal-fired plant design and operation can be with full environmental compliance
- Longview should be the future of coal in the USA—low cost, very efficient, very low emissions and highly reliable



High Efficiency/Very Low Emissions Coal Plant of Today and the Future