

# Western Greenbrier Co-production Demonstration Project

## *Project Presentation*



## *Clean Coal Power Initiative - Round 1 -*

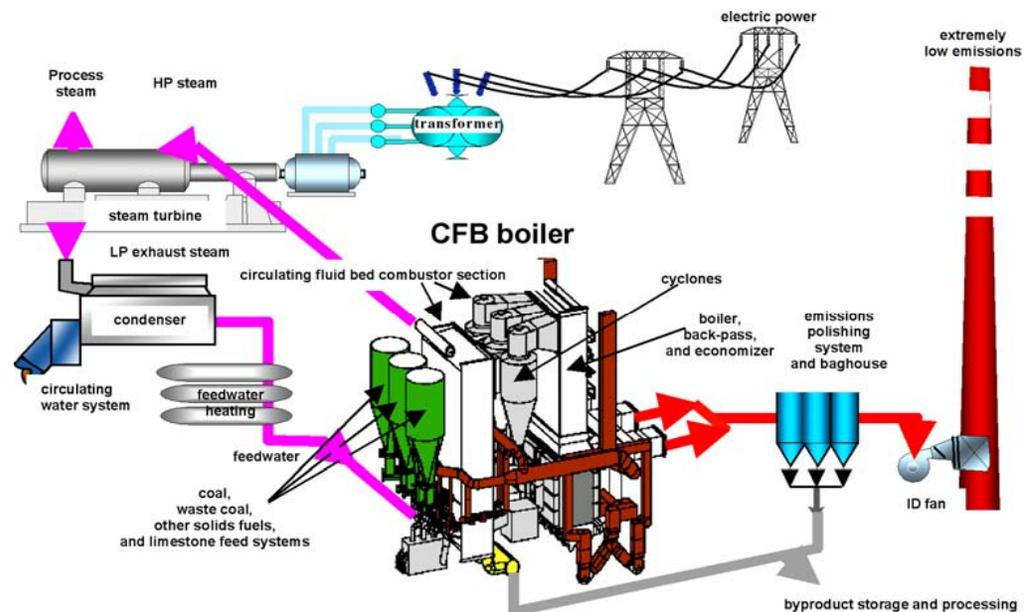
Demonstration of an 98 MWe  
Alstom Compact Inverted  
Cyclone, Circulating Fluidized-  
bed Furnace in a Co-Production  
Facility

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# Western Greenbrier Co-Generation, LLC

- Anchor tenant in a proposed environmentally balanced industrial “Eco Park” remediation model for state and local governments
- 98 MWe waste-coal-clean energy circulating fluidized bed (CFB) combustor with advanced multi-pollutant control system
- Total project cost: \$215 million;  
DOE share: \$107.5 million



# Background

- **A new public service entity serving three municipalities (Rainelle, Rupert, and Quinwood) in Greenbrier County, WV**
  - WGC will demonstrate an innovative 98 MWe CFB system incorporating state-of-the-art multi-pollutant controls
- **Project Location: Rainelle, Greenbrier County, WV**



## Background (continued)

- **Team Members**

- Western Greenbrier Co-Generation, LLC will be structured as a municipal entity owned by neighboring WV towns of Rainelle, Quinwood, and Rupert
- Alstom Power Inc. will provide power island (Windsor, CT)
- Hazen Research will develop ash by-product processes and facilities design (Golden, CO)

- **Fuel**

- Waste coal (1,610 tons/day) from a four million ton refuse site in Anjean, WV and 220 tons/day freshly mined coal



Reclaimed Land



# Unique Technology Aspects

- **Advanced, compact power plant design**
  - Employs state-of-the-art multi-pollutant controls (SO<sub>x</sub>, NO<sub>x</sub>, particulate, and mercury)
  - Includes an inverted cyclone design that enables boiler components to be rearranged with a more compact configuration reducing standard “footprint” by 40%
    - Reduces structural steel and related construction costs by 60%
    - Shortens construction time and increases safety
- **Hot water from turbine exhaust will be used by “Eco Park” to provide district heating and steam for potential industrial uses such as drying hardwood in a steam kiln**



## Unique Technology Aspects (continued)

- An integrated co-production facility produces value-added structural bricks
- Maximum generating efficiency, reduced CO<sub>2</sub> emissions, water conservation, and co-production of steam is achieved by plant's innovative design



View of overall site, looking southeast



# Project Schedule

- **Start**
  - 2004
- **NEPA Process**
  - EIS complete 2007
- **Construction**
  - 2007 to 2009
- **Completion**
  - 2010



## Conclusions

- Improved industrial ecology from employing advanced multi-pollutant control systems
- Coal waste “Gob Pile” remediation (West Virginia alone contains approximately 400 million tons of Gob)
- Successful integration of these technologies and development of this facility can serve as a model for Gob remediation in the United States and abroad
- Acid mine drainage remediation (using alkaline ash)
- High-quality, long term employment at plant and “Eco Park”
- Beneficial use of coal ash by-products



“Gob” Pile

