AES Warrior Run
CFB Coal Technology

Governors' Energy Summit
October 23rd 2014

Clean Energy for a Clean Maryland
About The AES Corporation

Mission: Improving lives through safe, reliable and sustainable energy solutions.

Diversity Across Markets, Fuels & Technology

Income Sources
(2013 adjusted PTC)

By Fuel Type

- 21 countries
- 38,000 MW generation
- 9 utility companies
- 11 million customers
- $42 billion assets
- $18 billion revenues
- 25,000 global workforce
About Warrior Run

• Located in Cumberland Maryland
• 180-MW Circulating Fluidized Bed (CFB) combustion technology using MD coal
• Our two products (cogeneration for efficiency)
  • Electricity
  • Beverage Grade Liquid Carbon Dioxide
• Commercial operation commenced in 2000
• 30-year Power Purchase Agreement as a QF Facility under PURPA
• Support AES Values
  • Safety, Integrity, Commitment, Excellence, Fun
About WR...The Technology

- CFB Combustor Technology for efficiency, fuel flexibility, & low emissions
- Pulverized dry limestone for SO2 and Hg control
- CFB and Selective Non-Catalytic Reduction (SNCR) technology for NOx reduction
- Fabric Filter bag house for PM capture
- Co-generation facility with CO2 capture
- Ash beneficial re-use through Mine reclamation
CFB Technology in Today’s Regulatory Challenges

**Regulation**
- MATS
- CCR
- CAIR/CSAPR
- NAAQS
- Effluent Guidelines
- 316b
- GHG/Clean Power Plan/RGGI

**How does WR match-up?**
- Testing for LEE (low emitter EGU)
- Alkaline ash for mine reclamation
- Low NOx & SO2 emitter
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- On-site waste water treatment
- Cooling Tower (with city water supply)
- Efficiency, CO2 capture, RGGI
Integrating with the Local Economy

- Maryland mined local coal
- Truck Delivery
- Ability to combust various types of locally sourced Fuel
- Low Discharge
- Alkaline Ash used as mine reclamation and acid mine run-off correction
- Limestone is locally sourced
- Cooling Water Purchased from Cumberland Utilities
Carbon Capture

**CO2 Facility**

- Extract ~4% of flue gas
- Amine process to capture the CO2
- CO2 is purified, compressed and liquefied
- 115 tons per day of Beverage Grade Product
- Process requires
  - 5% of our steam production equivalent to ~3.8 MW
  - ~1.3 MW of internal load
Partnering with the Community

Evergreen Heritage Center

- Outdoor Learning & Hands-on Programs for Environmental Education & Conservation
- Joined in building the new Energy Learning Station
- Future plans for the Evergreen Coal Trail
- EHC Combines education of Natural Resource Sustainability by understanding our heritage to prepare for our future
Thank-you