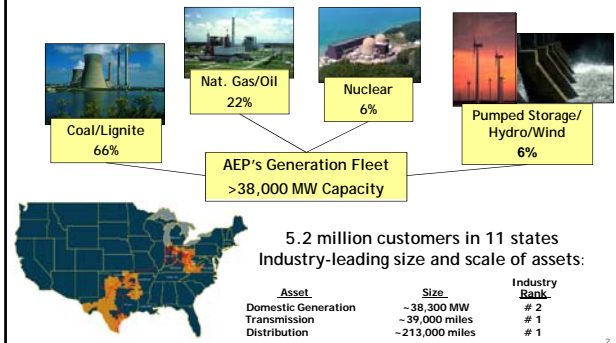


## American Electric Power's Carbon Sequestration and Storage Project, Mountaineer Power Plant New Haven, WV

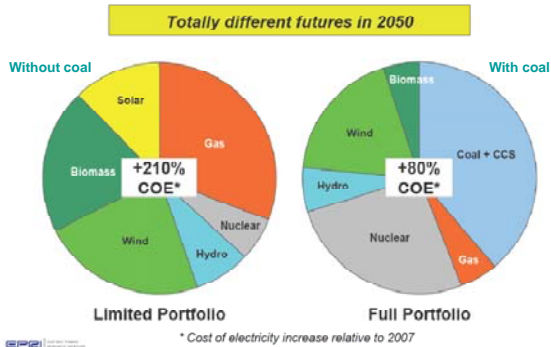
February 8, 2011

Elizabeth Gunter  
Senior Counsel

### AEP Company Overview

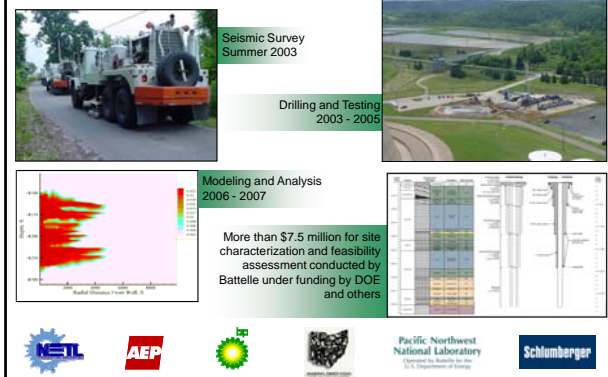


### Generation Mix & Electricity Costs--2050



### Site Characterization and Feasibility Study

The foundational work for AEP's CCS program began in 2003



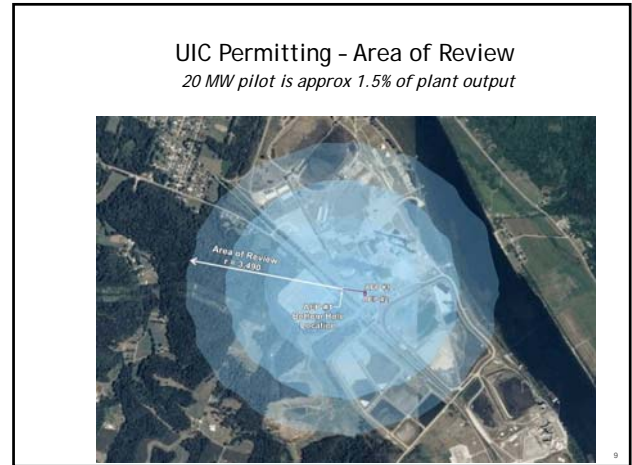
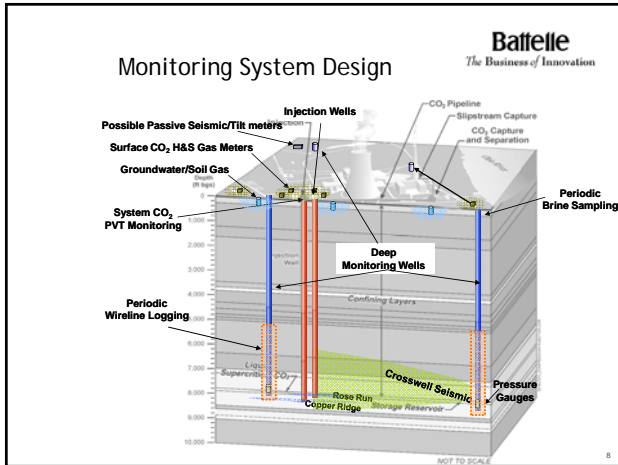
### AEP CCS Validation Facility 1,300 MWe Mountaineer Plant, New Haven, WV



- Scale:** 20 MWe slipstream
  - ~1.5% of power plant flue gas
- Cost:** >\$100M
  - Funding by AEP, Alstom, RWE, & EPRI
- Capture:** Alstom Chilled Ammonia Process
  - Ammonium Carbonate/Bicarbonate Reaction
  - >85% CO<sub>2</sub> capture rate

### AEP CCS Validation Facility 1,300 MWe Mountaineer Plant, New Haven, WV (Continued)

- Sequestration:** Deep saline formation storage
  - ~100,000 tons CO<sub>2</sub> per year
  - ~1.5 miles below the plant surface
- First CO<sub>2</sub> Capture:** September 1, 2009
- First CO<sub>2</sub> Storage:** October 1, 2009
- Planned operation:** 1 to 5 years

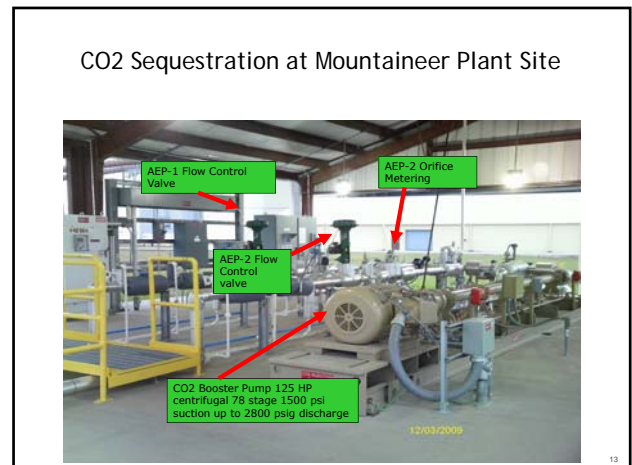
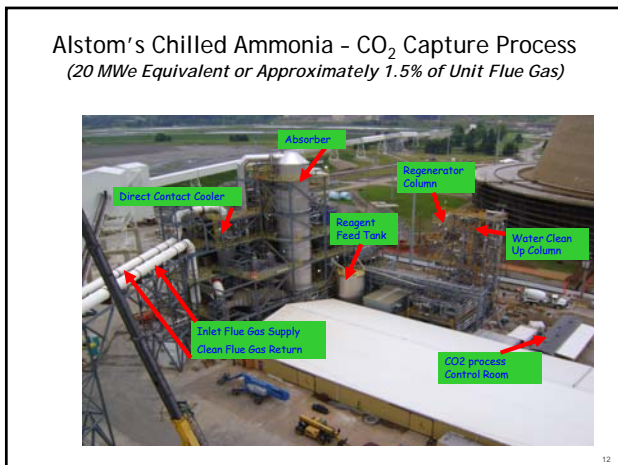


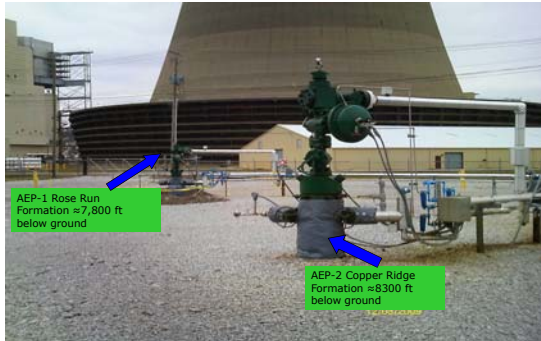
### Injection Well Design Example

- AEP#1 completion in Rose Run Sandstone and AEP #2 in Copper Ridge formation
- Multiple well casings isolate shallow freshwater and intermediate zones from injection
- Stainless steel casing and Acid/CO<sub>2</sub>-resistant cement used in the last 1000 ft. deep injection well casing

### It's All About Three Things...

*Location, Location, Location*



CO<sub>2</sub> Injection Wellheads

AEP-1 Rose Run  
Formation ≈7,800 ft  
below ground

AEP-2 Copper Ridge  
Formation ≈8300 ft  
below ground

AEP CCS Commercialization Project  
1,300 MWe Mountaineer Plant, New Haven, WV



- **Scale:** Full commercial demonstration
  - 235 MWe Slipstream
- **Cost:** ~\$668M
- **Funding:** CCPI Round III Selection
  - DOE awarded 50% cost share, up to \$334M
  - Cooperative agreement signed in January, 2010
- **Capture:** Alstom Chilled Ammonia Process
  - ~90% CO<sub>2</sub> capture rate

AEP CCS Commercialization Project  
1,300 MWe Mountaineer Plant, New Haven, WV  
(Continued)

- **Sequestration:** Battelle is Storage Contractor
  - Deep saline reservoirs
  - ~1,500,000 tons CO<sub>2</sub> per year
  - ~1.5 miles below the surface
  - Pipeline system with off-site wellheads
- **Geologic Experts Advisory Group**
  - Battelle, Schlumberger, CONSOL, MIT, Univ. of Texas, Ohio State, WVU, LLNL, WV Geo. Survey, OH Geo. Survey, & WV DOE
- **Planned Operation:** Startup in second half of 2015