Flint Creek Power Plant

Reliable Electric Power for Northwest Arkansas

Southern Legislative Conference
July 27, 2014
Little Rock, Ark.
Flint Creek Power Plant

- Coal-fueled
- 528 MW
- Serves base load
- Co-owners
  - AEP SWEPCO (50%)
  - Arkansas Electric Cooperative Corp. (AECC) (50%)
- Operated by SWEPCO
- In-service date: 1978
- Location: Gentry, Ark.
SWEPCO Generation

- Coal / Lignite
  - Base Load
- Natural Gas
  - Intermediate / Peaking
- Wind
  - Power Purchase Agreements (from TX, OK, KS)

- SWEPCO Generation Capacity: 5,675 MW
- Wind power purchases: 469 MW
- SWEPCO customers in 3 states: 525,400

Flint Creek
SWEPCO Part of SPP

SWEPCO operates in the Southwest Power Pool (SPP) – 9-state Regional Transmission Organization (RTO)
Lack of high-voltage transmission infrastructure + large load = need for baseload generation
Flint Creek and the NWA Grid

- Flint Creek anchors the NW Arkansas electric grid
- Only base load plant located in NW Arkansas
  - Baseload plants supply power 24/7
- Located near load centers of Fayetteville, Springdale, Rogers, Bentonville
- Has powered regional growth for 30+ years
  - Walmart, Tyson, J.B. Hunt, University of Arkansas
- Necessary to meet demand and reliability reserve requirements
  - Electric load in the region exceeds local power supply
  - NWA is already transmission-dependent (a net importer of electricity)
Base Load Power

- Base load is the basic demand for power that exists on the system around the clock.
- Base load plants operate 24/7 to meet these daily needs.
EPA Regulations Forced a Choice for Flint Creek

- Flint Creek Power Plant required to meet stringent air emissions limits to comply with new EPA regulations – or cease operations after April 2015
  
  - **Mercury and Air Toxics Standard (MATS)** – reduction of mercury and other hazardous air pollutants. Required April 2016 (with one-year extension for installation under way)
  
  - **Regional Haze Rule** – reduce pollution that impairs visibility to federal Class I areas (designated wilderness areas and national parks) – reduce SO2, NOx, and particulate matter. Required in 2017/2018
In the Public Interest

• APSC ruled in July 2013 that retrofit with additional environmental controls is in the public interest

• ADEQ granted one-year extension to April 2016
  • Can continue operations beyond EPA’s 2015 deadline while controls are installed

• ADEQ issued air permit in November 2013, including authorization to construct and operate new pollution control equipment
Retrofit Benefits

- New technology will be added to a valuable existing asset
- Maintain critical reliability
- Meet stringent new environmental regulations
- Lowest reasonable cost impact to our customers
- Preserves/add jobs
Retrofit Benefits

- Preserves Flint Creek’s existing 69 jobs, $3.9 million payroll and $1.2 million annual real estate/property taxes
- Preserves Flint Creek’s total economic output of $28.2 million for Washington, Benton Counties
- 300+ construction jobs at peak
- Up to 20-30 permanent jobs
Current Environmental Systems

- Low-sulfur fuel supply
- Low NOx burners control burning to reduce formation of nitrogen oxides
- Electrostatic precipitator removes more than 99% of fly ash (particulate) from the flue gas stream
- Continuous emission monitoring system (CEMS) to help ensure compliance with regulations
Retrofit Technology Summary

- **Scrubber** – Dry Flue Gas Desulfurization (FGD) with pulse jet fabric filter (commonly called baghouse)
  - NID technology
  - Removes SO2 (95% or better)
  - Uses lime as reagent
  - Co-benefit of additional mercury, metals, acid gas removal
- **Activated Carbon Injection (ACI)**
  - Injects powdered activated carbon to remove mercury (~ 90%)
- **Low NOx Burners and Over Fire Air**
  - Improves efficiency of fuel combustion to minimize NOx
  - Installation time frame depends on final regulations
New Environmental Controls

DFGD (Dry Scrubber) – NID Technology – with Pulse Jet Fabric Filter (Baghouse)

Activated Carbon Injection

Low NOx Burners, Over Fire Air (TBD)

Coal-Fired Steam Generator

Over Fire Air Low-NOx Burners

Pulverized Coal

Electrostatic Precipitator

70% of Fly Ash Removed

Air Heater

Flue Gas

Flue Gas Desulfurization (FGD) System

SO2 Reactor

Fabric Filter

Fluidizing Trough

More than 90% of SO2 Removed

Mercury Mitigation System

More than 90% of Mercury Removed

Water

Lime

Fluidizing Fan

Stack

Induction Draft Fan

Continuous Emissions Monitor (CEMS)

This illustration is conceptual. Relationships in size and volume may not be accurately portrayed.
Project Cost

- Estimated capital cost – $408 million
  - SWEPCO - $204 million
  - AECC - $204 million
- Estimated cost impact for SWEPCO’s Arkansas retail customers, beginning in 2017, increase of:
  - Approx. $2.97 per month, or 3.85%, for residential customers (using 1,000 kWh per month)
  - Approx. 3.87% for commercial and small industrial customers
- AECC’s estimate of the wholesale cost impact to its distribution cooperative members:
  - Annual cost of $30 million – increase of approx. 3.4%
Environmental Control Retrofit Project

Before ...

... After Completion (Rendering)
**Time Line**

- APSC approval July 2013
- ADEQ air permit issued November 2013
- Construction began November 2013
- 30-month construction schedule with equipment in operation by June 2016
NID Foundation Work – Extracting Pier Casing
Rail Scale Base at Lime Handling Area
Duct Bank Work
EPA Carbon Regulation

- EPA has proposed 111(d) regulation of greenhouse gas emissions from existing power plants
- Proposed rules pose significant impacts to cost and reliability of electricity
- Impact on individual facilities not yet known
- Requirements vary by state – some states well above EPA national target of 30% by 2030
- Four EPA “building blocks” to achieve CO2 reductions:
  - Heat rate improvement for coal plants
  - Increase dispatch of natural gas plants to displace coal
  - Increase renewables and nuclear
  - Increase energy efficiency and demand-side management
EPA Carbon Regulations

• The rules threaten customers’ investments in power plants to meet previous EPA regulations:
  • AEP is retiring more than one-fourth of existing coal-fueled power plant fleet in the next few years
  • The plants that remain are most efficient in our fleet; equipped with more than $10 billion worth of emission controls installed to meet other EPA requirements
• Maintaining a diverse, reliable and affordable supply of electricity is vital to customers, communities and the economy.
Environmental Stewardship

- 500-acre SWEPCO Lake
- Eagle Watch Nature Trail
- IRWP partnership, tree farm
- Habitat management
- Public and community partnerships
Eagle Watch Nature Trail

- Built in 1999 by plant employees and Gentry Boy Scout Troop 34
- Located on SWEPCO Lake at Flint Creek Power Plant
- 1 mile west of Gentry, Ark.
- 65 acres
- Half-mile nature trail
- Wildlife viewing pavilion
- Facebook: www.facebook.com/SWEPCO EagleWatch
Our Safety Culture

• **17 years** without a lost-time accident – Oct. 12, 2013

• **2 million work hours** without a lost-time accident – July 11, 2012

• *No aspect of operations is more important than the health and safety of people. Our customers' needs are met in harmony with environmental protection.*
Questions?

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Eagle Watch Nature Trail at Flint Creek Power Plant

Peach orchard in bloom – Spring 2013