

Powerhouse Replacement Projects Savannah River Site

**Presentation to the SRS
Citizens Advisory Board**

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Purpose

Provide a briefing to the Citizens Advisory Board on the progress of the replacement of the A-Area and D-Area coal-fired Powerhouses and the K-Area oil-fired Package Boilers with new, state-of-the-art, renewable energy (biomass) steam plants.



Acronyms

- Biomass – wood chips, sawdust, forest residue, other clean wood products.
- EPACT – Energy Policy Act
- ESPC – Energy Savings Performance Contract
- Kpph – Thousand pounds per hour
- MMBtu – Million British Thermal Units
- MW – Megawatts = 1 million watts
- O&M – Operations & maintenance
- Pph – pounds per hour



A-Area Powerhouse Current Status



The existing A-Area Powerhouse was built in 1953 and currently provides steam to the Savannah River National Laboratory, Savannah River Ecology Laboratory, a few administrative support buildings remaining in A-Area, and the Dynamic Underground Stripping (DUS) Project.

It contains two 60 Kpph (thousand pounds per hour) coal fired boilers and costs approximately \$4.7 million annually to operate.



D-Area Powerhouse Current Status



The existing D-Area Powerhouse was built in 1953 and provides steam to nuclear and industrial activities in F-, H-, and S-Areas. It is a co-generation facility and makes approximately one half (20 MW) of the Site's electrical demand.

It contains four 330 Kpph coal-fired boilers and costs approximately \$24.8 million annually to operate and maintain.



K-Area Powerhouse Current Status



The existing K-Area Plant was built in 1992 and provides steam to K- and L-Areas for heating during the winter season only.

It contains one 30 Kpph and one 60 Kpph oil-fired boiler and costs approximately \$1.4 million annually to operate and maintain.

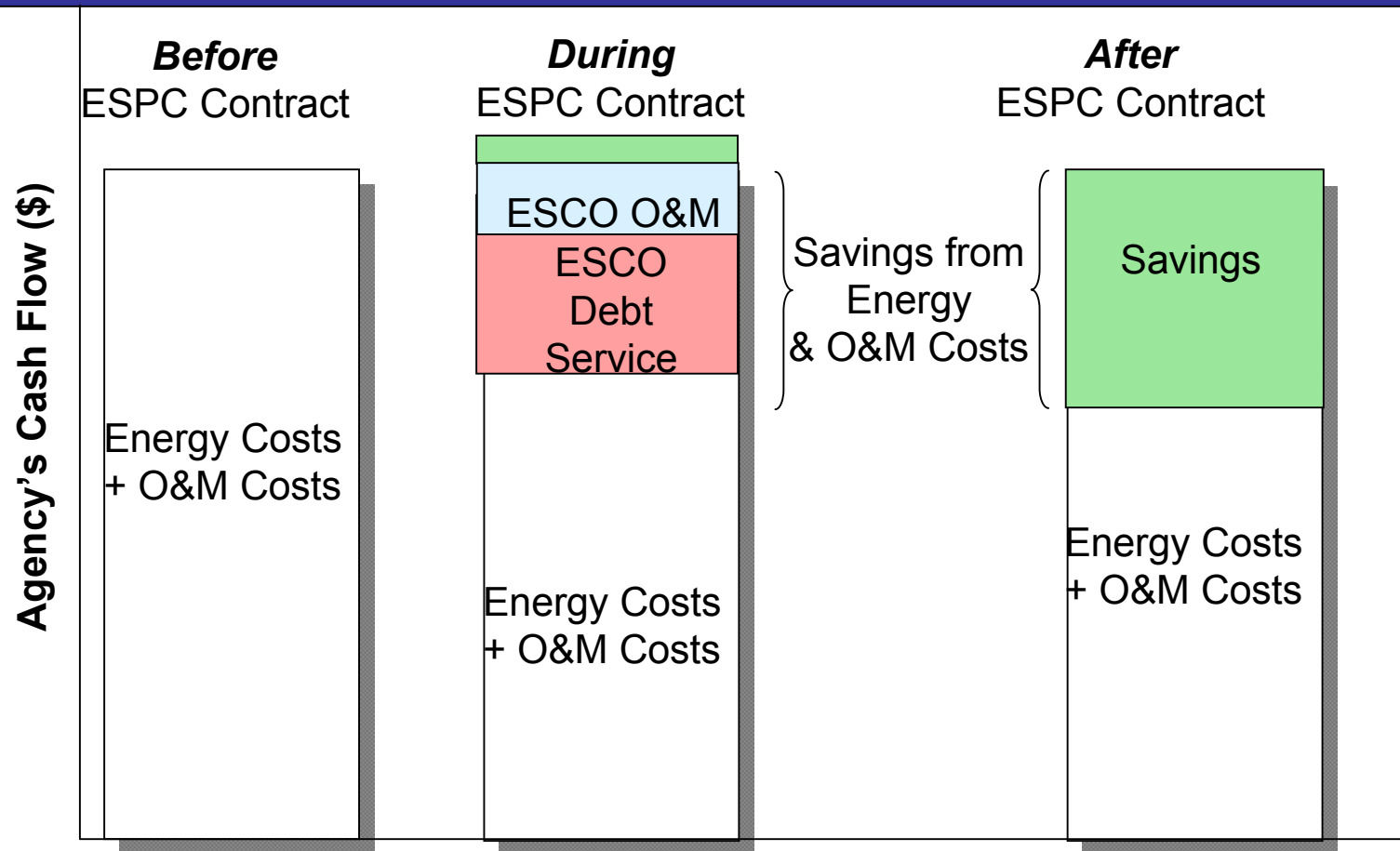


Drivers

- **A&D- Area Powerhouses are over 55 years old and well past their economic life. Condition and reliability are rapidly deteriorating.**
- **K-Area Boilers are not cost effective in the current seasonal use mode or with the unpredictable increasing price of fuel oil.**
- **Regulatory drivers, age, and condition will require significant upgrades for continued operation.**
- **Steam demand will remain for current and future critical missions, but will be reduced over time.**
- **Executive Order 13423 and DOE-HQ initiatives mandate maximum use of renewable energy sources and Energy Savings Performance Contracts. Statutory requirement of EPACT 2005 to increase use of renewable energy to 7.5% by 2013.**



Energy Savings Performance Contracts



After the ESPC term, all savings are retained by SRS.



New A-Area Biomass Plant Summary

- Two 30 Kpph boilers in vicinity of existing A-Area Powerhouse.
- Primary boiler will use alternative fuel (wood products).
- Backup boiler will use fuel oil.
- Startup - September 12, 2008.
- Proposal cost of \$13.8 million to be paid off over nine years.
- Combined energy and O&M savings of \$1.4 million annually.
- SRNS will operate and maintain new facility.



New D-Area Biomass Plant Summary

- **Proposed Measure Includes:**
 - Two 120,000 pph biofuel fluidized bed boilers system
 - Pollution Abatement Control systems
 - One 20 MW steam condensing turbine
- **Reduction in energy consumption by eliminating over 3.5 miles of steam distribution lines**
- **Annual Savings of over 500,000 MMBtu/yr & \$25 M**
- **Significant Source of Green Energy**
- **ESPC Contractor will operate for 21 years**



New K/L-Area Biomass Plants Summary

- **Proposed Project:**
 - (2) biomass boilers 10,500 pph capacity each (using biomass fuel from main plant)
 - Full-sized fuel oil burners for backup
 - Multi-cyclones for particulate matter reduction
 - Automated plant operations (hands free)
- **Deactivate 2.5 mile distribution line**
- **Net Energy Savings: ~4300 MMBtu/yr**
- **Annual Savings: ~ \$1.3 M**
- **Operated by ESPC Contractor for 21 years**



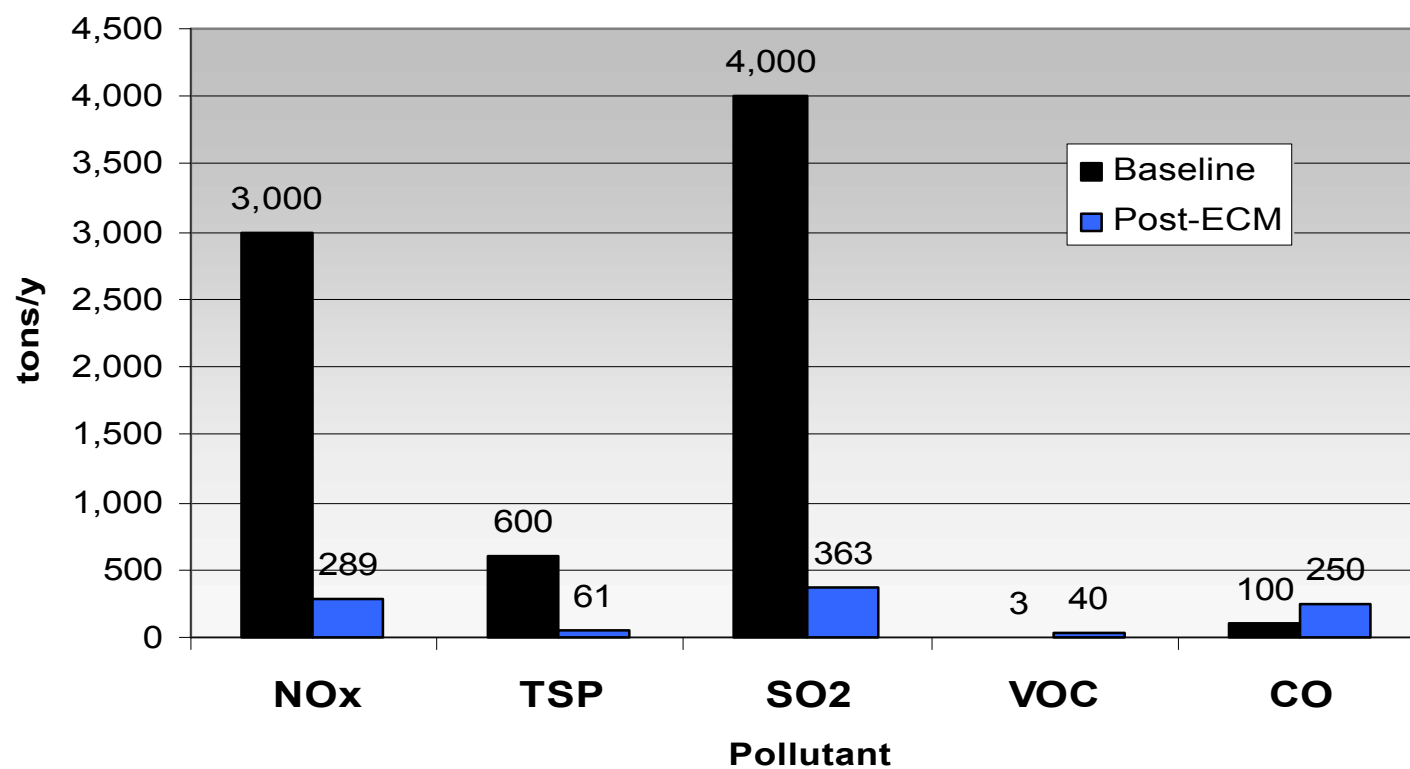
D/K/L-Area Biomass Plants Benefits

- **Replaces 2 aging and inefficient plants**
- **Major source of renewable energy**
- **Positive Impact to Environment**
- **Currently in final design phase**
- **Cogen Plant construction schedule of 30 months**
- **K/L Boilers construction schedule of 15 – 18 months**

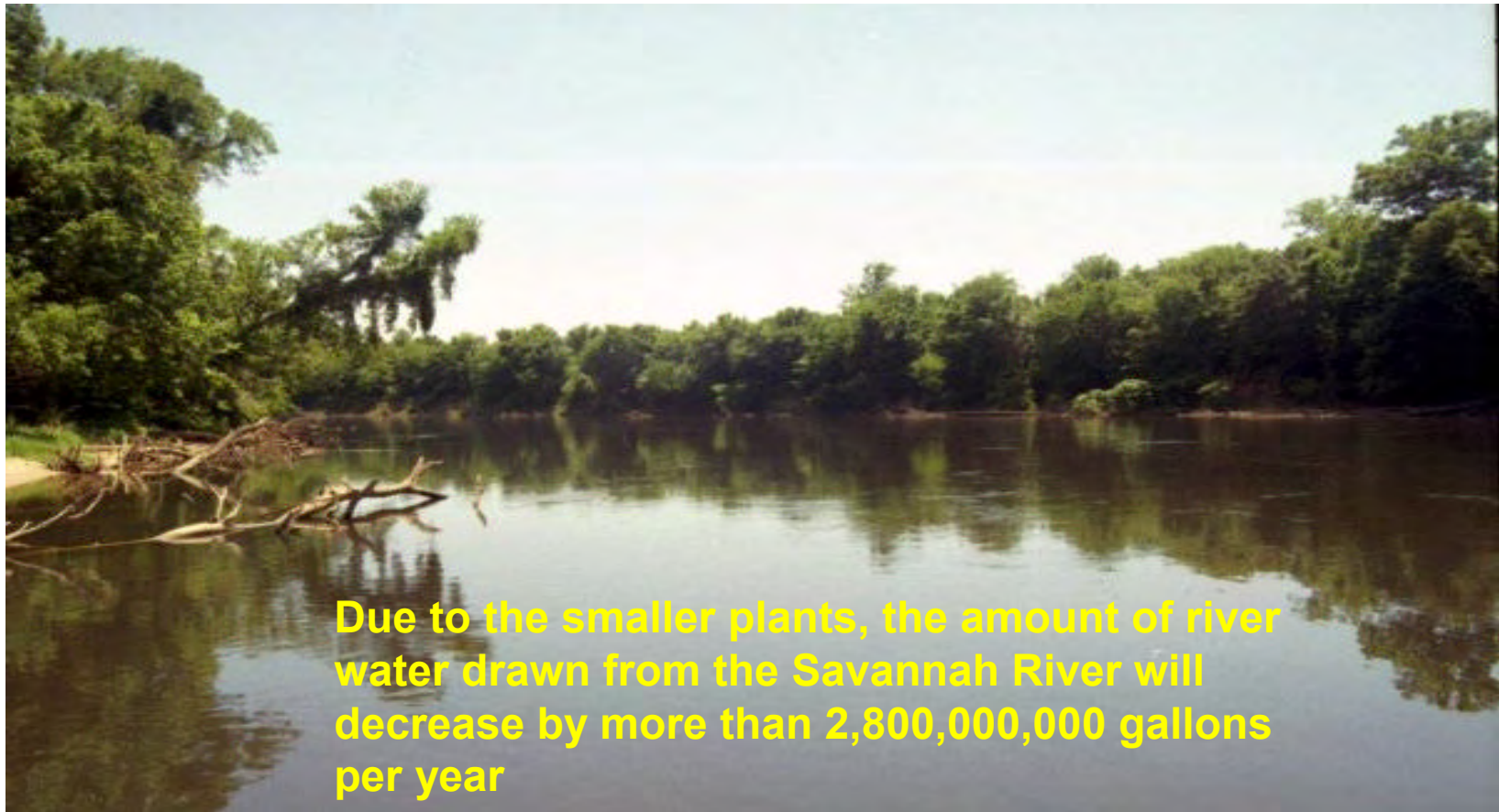


D/K/L Emission Reductions

Project Emissions



D/K/L Project Environmental Benefit



Fuel Sources



Biomass Fuel Supply

- **A-Area Biomass Plant will use 27,000 tons of biomass/year.**
 - One year contract with Collums Lumber with 3 one-year options.
- **D/K/L Biomass Plants will use 325,000 tons of biomass/year. Will also burn up to 30% shredded tires.**
 - Current plan is to initially contract with local biomass suppliers
 - Work with Three Rivers Landfill for tires and pallets
- **DOE, US Forest Service, and the Powerhouse contractor will work to locate and obtain biomass from SRS consistent with the natural resource management of SRS with no adverse effects on timber sale operations.**



D/K/L Project Schedule

Submit initial proposal	6-07 (complete)
HQ Review Board approval	8-07 (complete)
Submit final revised proposal	8-08 (complete)
HQ Review Board approval	8-08 (complete)
HQ Business Clearance approval	9-08
Award contract	9-08
Start construction	10-08
Complete construction	4-11
Start operations	5-11



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Questions?

