

Powerhouse Replacement Projects Savannah River Site

**Presented to
SRS Citizens Advisory Board**

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Purpose

- **SRS Powerhouse Replacement Project Overview**
- **Energy Savings Performance Contracts (ESPCs) Overview**
- **ESPC Provisions that Protect DOE and Taxpayers**
- **Conclusions**
- **Questions/Next Steps**



Acronyms

- **Biomass** – wood chips, sawdust, forest residue, other clean wood products.
- **DOE** – Department of Energy
- **ESPC** – Energy Savings Performance Contract
- **ESCO** – Energy Service Company
- **Kpph** – Thousand pounds per hour
- **MMBtu** – Million British Thermal Units
- **MW** – Megawatts = 1 million watts
- **O&M** – Operations & Maintenance
- **Pph** – pounds per hour
- **SRS** – Savannah River Site



Overview of Powerhouse Replacement Project

SRS Plans to use an Energy Savings Performance Contract (ESPC) for the following project:

Proposed D- Area Replacement Plant Includes:

- Two (2) 120,000 pph biomass fluidized bed boilers system
- Full capacity backup fuel oil burners and provisions for emergency backup boilers
- Pollution Abatement Control systems
- One 20 MW steam condensing turbine

Proposed K- Area Replacement Plant Includes:

- Two (2) biomass boilers 10,500 pph capacity each (using biomass fuel from main plant)
- Full capacity backup fuel oil burners
- Multi-cyclones for particulate matter reduction
- Automated plant operations (hands free)

ESPC Contractor will operate all plants for contract performance period



Overview of Energy Savings Performance Contracts (ESPCs)

- ESPCs allow agencies to implement energy-savings projects without delay/uncertainty of Congressional appropriations
- **Through ESPCs, Energy Service Companies (ESCOs) provide upfront funding and are repaid through energy savings in future years**
 - Conduct comprehensive energy audit to identify improvement project that will save energy
 - In consultation with agency, design/construct project
 - Arrange private financing to pay for project
 - Guarantee project will generate savings sufficient to pay for project over term of contract
 - After contract ends, additional cost savings accrue to agency



Biomass Fuel Supply for New Replacement Powerhouses

- D/K/L Biomass Plants will use 325,000 tons of biomass/year. Also permitted to burn up to 30% shredded tires.
 - **Current plan is to contract with local biomass suppliers within 75 mile radius of SRS. Some fuel will come from SRS from loggers operating on SRS**
 - **Work with Three Rivers Landfill for tires and pallets**
 - **ESCO is responsible for all biomass fuel for entire contract period**
- DOE, US Forest Service, and the ESCO 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.



Biomass Fuel Supply Potential Issues

What if Biomass is not available due to increased demand throughout region?

ESCO is responsible for all fuel costs and O&M of plant. Backup fuel-oil burners can be used to operate the boiler and additional costs are bourn by ESCO.



Biomass Fuel Supply Potential Issues

How can ESCO reduce the risk associated with purchasing biomass for plant operations?

- Increase the amount of tires burned to offset the amount of biomass burned.
- With 60 days prior notice, ESCO can diminish or curtail electrical generation to reduce biomass consumption. Additional SCE&G costs to be bourn by ESCO.



Biomass Fuel Supply Potential Issues

What provisions are in place in the event of a total boiler failure and loss of steam?

Plant is equipped with tie-ins for package boilers that would be brought from off-site to provide emergency backup steam.



Biomass Fuel Supply Potential Issues

What contractual provisions are in place to mitigate price risk for future biomass fuel?

- Annual escalation rate of 5% for biomass is adequate to cover future projected costs.
- Interest bearing escrow account established from borrowed funds to be used if actual cost exceeds proposal cost. Contracting Officer authorizes withdrawals and unused funds returned to the government at end of contract.



Contract Provisions for Operational Reliability

What penalties or incentives are included in contract for adequate steam for facilities usage?

- Annual Steam Guarantee (ASG) included in contract based on SRS steam and electrical forecasts for 24/7 operations. Full capacity fuel oil backup systems available, if needed.
- Biomass obtained from SRS at less cost than the ESCO's guaranteed annual price provides additional funds for the escrow account for future use. Incentive to use SRS biomass fuel which reduces off-site purchases and is more accessible.



Summary

Biomass fuel provides a source of renewable energy and future plants within the region may impact the supply of biomass SRS. SRS has included numerous hedges and incentives in the ESPC Contract to mitigate risks associated with increased demand. The ESCO has included adequate funding and has the ability to negotiate good future contracts for biomass.

