

Benning Road Power Plant Decommissioning & Demolition Project



MD-DC Utilities Association Conference

Hyatt Regency Chesapeake Bay, Cambridge MD

Presented by: Pepco Energy Services

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Benning Road Power Plant Decommissioning & Demolition

■ Topics:

This presentation will review the following:

- Plant Description and fact sheet
- Site Map
- Plant Closure and Decommissioning Planning process
 - Engineering Guidance and Assessment
 - Recommendations and options for the plant closure
 - Review options and development of the cost estimates, budgets, schedule's
 - Further Development of the business case scenarios for Management decision
- Next Steps
 - Stakeholder Communication; PHI, Pepco, PES, CAG, ANC, DDOE, EPA, etc.
 - Hazardous waste characterization, sampling, and removal process's,
 - Decommissioning of the fuel /chemical tanks and removal activities,
 - Demolition design, planning and execution phases of the project.
- Lessons Learned
- Progress Photographs

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Benning Road Power Plant Decommissioning & Demolition

Fact Sheet

Built: 1906 – 1972

Site location: 3400 Benning Road, NE., Washington, DC. The plant resides on the east bank of the Anacostia River at the Pepco Benning Service Center Facility site.

Owned & Operated: (Pepco) Potomac Electric and Power Company from 1906-2000 and was acquired by (PES) Pepco Energy Services, Inc. in 2000 and operated through 2012.

Description of Plant:

The main generation units are Units No. 15 and 16 - 550MW units and are GE Steam Turbines & Combustion Engineering and Babcock & Wilcox Boilers.

In total, 16 units were installed over the life of the plant.

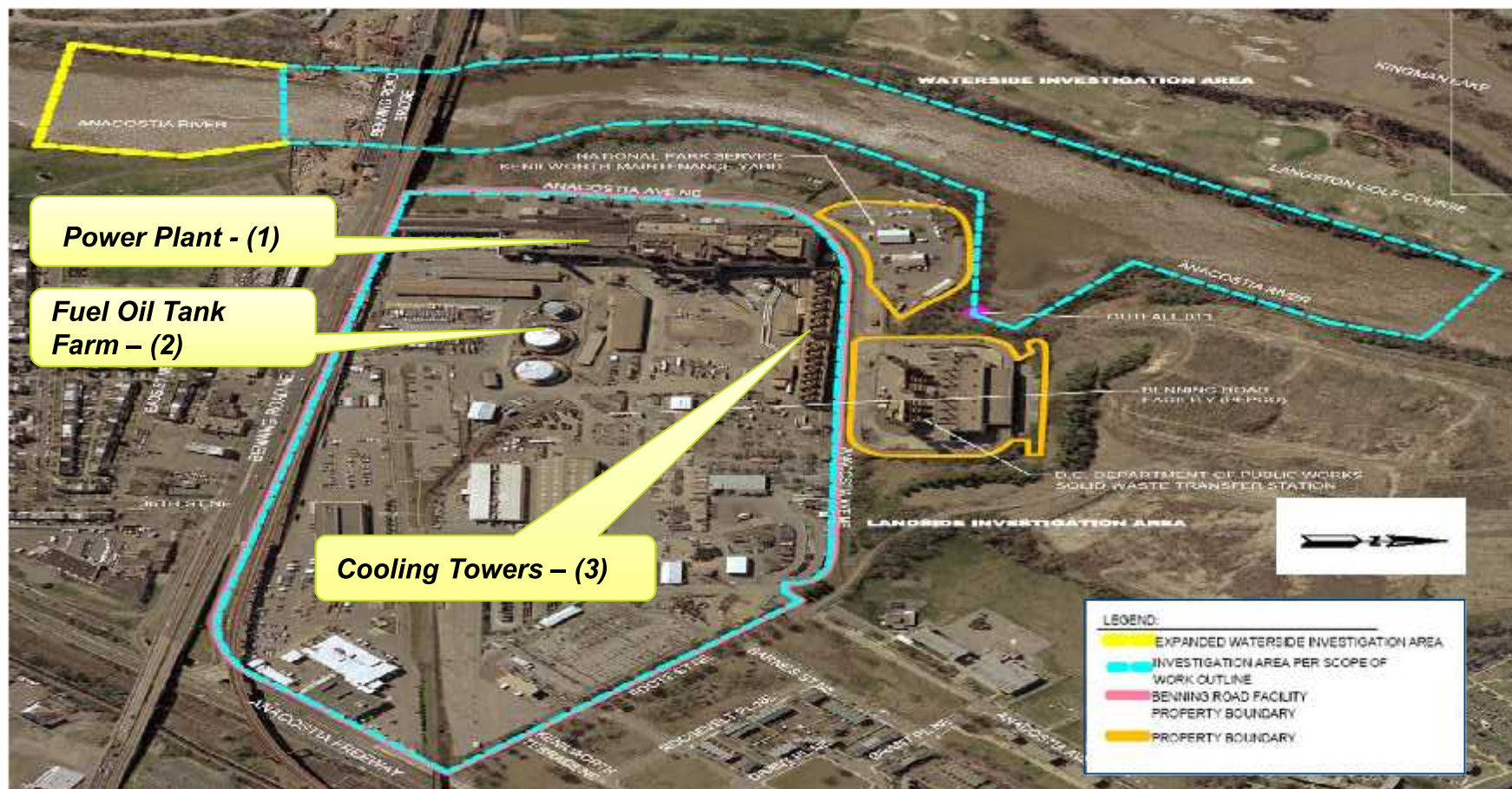
Commercial Operation:

Fall of 1906; the units were 25-cycle and 60-cycle units for powering railways and lighting homes and local businesses.

The 550MW units went commercial in 1968 and 1972.

In June 2012, PES ceased all plant operations and contemplated “Cold Closure”, decommissioning all generating units and rendering the plant inoperable.

Benning Road Service Center - Benning Road Power Plant, Site Map



East looking west view of the power plant, fuel oil tank farm and cooling towers.

Map Location Key

- 1 - Power Plant
- 2 - Fuel Tank Farm
- 3 - Cooling Towers

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Engineering Guidance, Assessment & Recommendations

- Engineering Study
 - Review of existing conditions
 - Hazard & Risk Assessment of Decommissioning plant components
 - River water inlets
 - Cooling towers
 - Fire suppression systems
 - ASTs (Above Ground Storage Tanks)
 - Building condition, maintenance & security
- Guidance on Decommissioning plan
 - Environmental & legal requirements
 - Title V – changes in permit status
 - NPDES (National Pollutant Discharge Elimination System)
 - Hazardous material, ACM & PCB, due to historical operations
 - Stormwater Pollution Prevention Plans
 - Above ground storage tanks
 - Water intake structures
 - Utility interface for water, electric, telephone
- Recommendations for Cold Closure activities
 - Disconnect all utility services & idle plant
 - Emptying & Removal all tanks - oil, water, chemicals, etc.
 - Decommission transformers, remove fluids and fill with nitrogen, either make safe “mothball” or resell “as is”
 - Remove all hazardous material such as ACM, Mercury, and PCBs.
 - Shutdown Units 15 & 16, & Auxiliary Boilers Nos. 1 & 2 equipment.
 - Remove or reduction in the size of the masonry chimneys & evaluation of condition of the metal stacks.
 - Consideration of isolating the building sumps, roof drains and river water connections
 - Demolition of the cooling towers
 - Modification of the fire water loop
 - Modification of the Air & NPDES permits
 - Sale of Fuel & spare parts inventory
 - Review asset value estimates & potential resale opportunities
 - Site Consent Decree & RI/FS coordination

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Plant Closure and Decommissioning Planning

Options for Plant Closure

Cold Closure

- Decommission Boilers systems
 - Decommission CEMS
- Decommission and Demolition of Chemical & Fuel Tanks

Selective demolition

- Phased demolition of the Plant systems
- Defueling of the Fuel Systems & Tank Cleaning
 - Asset Resale or Salvage options
 - Utilities Disconnection
 - Hazardous Material Abatement

Total demolition

- Hazardous Material Abatement
- Asset Resale or Salvage options
 - Contractor Salvage Guarantee
- Raze Plant & Demolition of all Systems

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Plant Closure and Decommissioning Planning

Management Review for Next Steps

- Provided further developed business case(s)
- Provided budgetary costs for cold closure options & maintenance requirements
 - Provided schedule for activities & regulatory process
 - Provided asset and salvage value assessments

Management Decision to Move Forward

- Decommission All Plant Systems
 - Phased Demolition
 - Hazardous Material Abatement
 - Contractor Salvage guarantee
 - Total Plant Demolition
 - Collaboration with Stakeholders
- Coordination with Benning Service Center Consent Decree

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Plant Closure and Decommissioning Planning

Stakeholder Communication

PES Team

Accounting, Legal, Construction, Executive Management

PEPCO & PHI

PHI Government Affairs, Corporate Communications, Environmental Health & Safety, Pepco Operations and Executive Management

District of Columbia

DC Mayors Office

DDOE (District Department of Environment)

DCRA (Department of Consumer and Regulatory Affairs)

CAG (Community Advisory Group)

ANC (Advisory Neighborhood Commissions)

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Hazardous material and waste characterization, sampling, and removal process

■ Hazardous Materials

- Third party hazardous material surveys conducted for asbestos and PCB's.
- Identified disposal procedures and corporate approved disposal sites
- Confirmed local, state and federal requirements and regulations
- Provided qualified list of abatement contractors and experienced CIH & IH consultants

■ Hazardous Waste

- EHS (Environmental Health & Safety) manager on staff
- Characterize waste
- Inventory waste, and documentation of waste generation
- Utilized approved hazardous waste transporters & permitted disposal facilities

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Decommissioning & Removal of the Chemical & Fuel Tanks

Decommissioning Fuel Systems

- Performed existing condition surveys
- De-energize systems
- Develop RFP for fuel removal & sale
- Solicit, evaluate bids including the fuel value
- Provided recommendation to management
- Award defueling contract & purchase agreement
- Assign facility team to manage project
- Implement Project; Manage contractor(s), perform QA/QC program
- Review health/safety & work plans
- Obtain final closeout of contract

Cleaning & Removal of the Tanks

- Develop RFP for cleaning & demolition
- Solicit, evaluate bids & salvage value
- Provided recommendation to management
- Award contract
- Assign facility team to manage project
- Implement Project; Manage contractor (s), perform QA/QC program
- Review health/safety & work plans
- Obtain Certification of tanks being clean & gas free
- Obtain regulatory final approvals
- Obtain final closeout of project

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Plant Demolition design, planning and execution phases

- Preliminary Design Development & Budgeting
 - Development of A/E scope of work & Bid Packages
 - A/E Bid Solicitation, selection & Award
 - Design development; plans and technical specification
 - Budget & equipment (asset) valuation and or salvage
- Business case for demolition options
 - Selective Demolition, or Total Demolition - Raze Plant
 - Develop project schedule, Budget, including management costs, and provided cash flow expectations
 - Submitted further developed business plan, obtained management decision and selection of project method

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Plant Demolition design, planning and execution phases Procurement planning, Bid phase & Recommendation

- Develop procurement process & qualification of contractors
 - Two step procurement process
 - » Step 1 - Qualifications & Experience
 - » Step 2 – Technical expertise & price
- Develop demolition bid packages
 - Scope of work
 - Statement of work
 - Schedule of values
 - Drawings
 - Specifications
 - Project documents
- Evaluation analysis of contractors bids
 - Scope review
 - Schedule Review
 - Means & Methods
 - Budget review
- Recommendation to management
 - Project budget, schedule & staffing
 - Contractor selection
 - Stakeholder buy-in
 - » PES, PHI, Local Community, Permit regulators, DDOE, DCRA

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Plant Demolition design, planning and execution phases Execution & Implementation

- Project Execution & Planning
 - Select management team from PES
 - Contract Award to contractor & provided notice to proceed
 - Notify stakeholders of project commencement

- Project Implementation
 - Project Kickoff Meeting
 - Review project requirements, organization chart – personnel (roles & responsibilities), project schedule, site requirements & safety orientation
 - Establish frequency of project meetings and required project documentation.
 - Preconstruction requirements
 - » Submittals
 - » Permits applications
 - » Public notifications

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Plant Demolition design, planning and execution phases Implementation

- Manage project implementation
 - Mobilize site offices
 - Project Administration on site
 - Maintain daily presence on project and manage Contractor(s)
 - Maintain document control
 - Provide Monthly project status reports to management
 - Community & Stakeholder Outreach and coordination with PHI
 - Continuous QA/QC assurance & inspection
 - Continuous health & safety monitoring & program audits
 - Project Closeout
 - Project documentation
 - Project regulatory signoffs & Owner acceptance

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Pepco Energy Service's Commitment to Stakeholder's

- It is our commitment to the community that the dismantling and removal is conducted safely and in compliance with all applicable government regulations and standards.
 - OSHA 29 CFR 1926.1101
 - EPA 40 CFR 61 Subpart M (NESHAP)
 - DDOE Air Quality Division – Title 20 Chapter 20-8
- PES site supervisors, contractors, security and safety teams have established appropriate procedures to monitor all work activities and prevent any potential hazard. They are certified in 10 hour and 30 hour OSHA training.
- For more information and updates, community members can visit the website at benning-service-center.com

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Lessons Learned

Lessons learned

- Earlier involvement of team members & stakeholders
- Conduct a hazardous material surveys for demolition design application - rather than utilizing existing operations material inventory data book.
- Earlier involvement with site Utilities identification and review of existing conditions
- Conduct site underground survey & topographical survey rather reliance on historical data

Demolition Phases – Power Plant Progress Photographs – Defueling & Cleaning



South view of fuel tank no. 2 defueling operation - All fuel tanks were defueled using approved work plans and certified to be clean and gas free in accordance with (API) American Petroleum Institute standards.

Map location key (2)

Demolition Phases – Power Plant Progress Photographs – Fuel Tank Demolition



East view of fuel tank no.1 - All tank demolition was conducted via conventional methods by approved contractors. All material was salvaged and used to offset the costs of demolition.
Map location key (2)

Demolition Phases – Power Plant Progress Photographs – Cooling Tower Area Ancillary Buildings



Units 15 & 16 cooling towers – West view of both cooling towers and ancillary buildings
Pre-construction pictures 2012.

Map location key (3)

Demolition Phases – Power Plant Progress Photographs – Cooling Tower Equipment & Ancillary Buildings Removal



West View of Units 15 & 16 cooling towers after asset recovery/equipment removal and ancillary building removal. All wood, metal and fiberglass was either salvaged, recycled or disposed of as construction debris in approved landfill sites.

Map location key (3)

Demolition Phases – Power Plant Progress Photographs – Cooling Tower Superstructure Demolition



East View of Unit 15 cooling tower - demolition in progress conducted by conventional means utilizing mechanical excavator equipment (Shear).

Map Location key (3)

Demolition Phases – Power Plant Progress Photographs – Cooling Tower Basin Sampling



Cooling tower basin removal effort –PES & PHI has collaborated on the soil sampling adjacent to CT Basins and the substrate below the cooling towers to coordinate with Consent Decree RI/FS plan.

Map location key (3)

Demolition Phases – Power Plant Progress Photographs – Demolition – Site Sediment & Erosion Controls



View of Truck wash station, construction entrance/exit and site sediment and erosion controls. All work done in accordance to approved sediment and erosion control plans.

Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Demolition Contractor Mobilization



Contractors site & Owners Operations offices.
Map location key (1)

Demolition Progress – Power Plant Photographs – Asbestos Coating Removal



View of Auxiliary Boiler Stack – ACM removal operation. All stack ACM removal and scaffolding operations is completed and done in accordance to work plans developed by a Certified Industrial Hygienist and Professional Engineer. All work is supervised by PES, with oversight of the DDOE.
Map location key (1)

Demolition Progress – Power Plant Photographs – Asbestos Removal



ACM removal operation on the Precipitator Unit.
Map location key (1)

Demolition Phases – Power Plant Progress Photographs – Abatement Containment Areas



Power Plant Boiler No. 13 south-side view of Asbestos containment area.
Map location key (1)

Demolition Phases – Power Plant Progress Photographs – ACM & Transite Panel Removal



West view of the Power Plant structure where transite panel removal.
Map location key (1)

Demolition Phases – Power Plant Progress Photographs – ACM & Transite Panel Removal



West Elevation of Turbine Hall at Units 15-16. All ACM removal and Transite Panels are complete and certifications received.

Map location key (1)

Demolition Phases – Power Plant Progress Photographs – ACM & Transite Panel Removal



East Elevation of the Power Plant. PES and DDOE have meet and reviewed all work as complete and final certifications and documentation received for the Raze Permit.

Map location key (1)

Demolition Phases – Power Plant Progress Photographs – Air Monitoring System



View of Air monitor devices, weather station and trailer base station. Air Monitoring Program alert level ($> 100 \mu\text{g}/\text{m}^3$) and action level ($> 150 \mu\text{g}/\text{m}^3$ (15-minute average concentration - $\mu\text{g}/\text{m}^3$ – Micrograms per cubic meter), Noise Action Level 80dB, Visible dust – dust observable in project task area.

Demolition Phases – Power Plant Progress Photographs – Power Plant Demolition Commencement



East View of Locker Room Area of the Main Power Plant structure demolition in progress. This is being conducted by conventional means utilizing mechanical equipment (sheer) and dust mitigation methods.
Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Superstructure Demolition Progress



Demolition in progress conducted by conventional means utilizing mechanical excavator equipment and dust mitigation methods with fire hose and “Dust Boss”.
Map Location key (3)

Demolition Phases – Power Plant Progress Photographs – Engineering Controls Dust Mitigation



South view of Old Turbine Hall area, demolition in progress Engineering controls - dust mitigation methods with the “Dust Boss”.

Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Superstructure Demolition



South View of Old Turbine Hall area.
Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Superstructure Demolition Progress



View of the Old Turbine hall, Administration Building and Auxiliary Boiler Building.
Location key (1)

Demolition Phases – Power Plant Progress Photographs – Superstructure Demolition Progress



West View of the Old turbine hall and Four Isle. The excavator is removing turbine concrete and steel pedestal with a hammer attachment. The other excavator is removing steel with a shear utilizing attachment.

Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Superstructure Demolition Progress



East View where the demolition crews have separated the auxiliary boiler building from main generation structure. The Auxiliary building structure will remain in place for the masonry stack to be imploded.

Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Superstructure Demolition Progress



View of Auxiliary Boiler Building and the Main Generation Unit structure. The main generation structure masonry and steel will be removed to the footprint of units 13-16 Boilers and the steel structures and boilers will be demolished by means of implosion.

Map Location key (1)

Demolition Phases – Power Plant Progress Photographs – Salvage Material



Salvage operations – harvesting electrical buss bar, connectors, condenser tubes, wire, copper and building steel. Ferrous and Non-ferrous material provided \$7.7 Million in Salvage credit for this project.

Map location key (1)

Demolition Phases – Power Plant Progress Photographs – Salvage Operations



Asset recovery – conducting salvage operations. Salvage Crews are on-site working harvesting Non-Ferrous and Ferrous material.

Map location key (1)

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Questions / Comments

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