



# Norfolk Naval Shipyard

Combined Heat and Power Plant and  
Energy Conservation Measures Briefing

# Welcome

- Call logistics
  - Q&A
- Introductions
  - Commander Bill Butler, Public Works Officer, NNSY
  - Mr. Keith Sellers, Deputy Public Works Officer, NNSY
  - Bob Albertini, Director, Program Management, Ameresco

# Agenda

- Introduction
- Opening Remarks
- Executive Summary and Project Purpose
- Project Overview and Community Benefits
- Q&A

# Glossary

NNSY	Norfolk Naval Shipyard
NavFac	Naval Facilities Engineering Command
NavSea	Naval Sea Systems Command
ESPC	Energy Savings Performance Contract
CHP	Combined Heat and Power
ECM	Energy Conservation Measures
IWTP	Industrial Wastewater Treatment Plant
RDF	Refuse Derived Fuel
VDEQ	Virginia Department of Environmental Quality
Ameresco	ESPC Contractor



# Opening Remarks

# Executive Summary

- A Combined Heat and Power Plant (or CHP) will be constructed at the Norfolk Naval Shipyard (NNSY) in Portsmouth, Virginia
- Once built, it will significantly improve the shipyard's energy security and efficiency by conserving energy and reducing emissions
- Energy cost savings from the CHP Plant will even help to pay for a new Industrial Wastewater Treatment Plant (IWTP) to replace the existing 40+-year-old facility that is well beyond its useful life
- While the coming changes for the shipyard are important, there will also continue to be significant positive impacts on the local economy and workforce

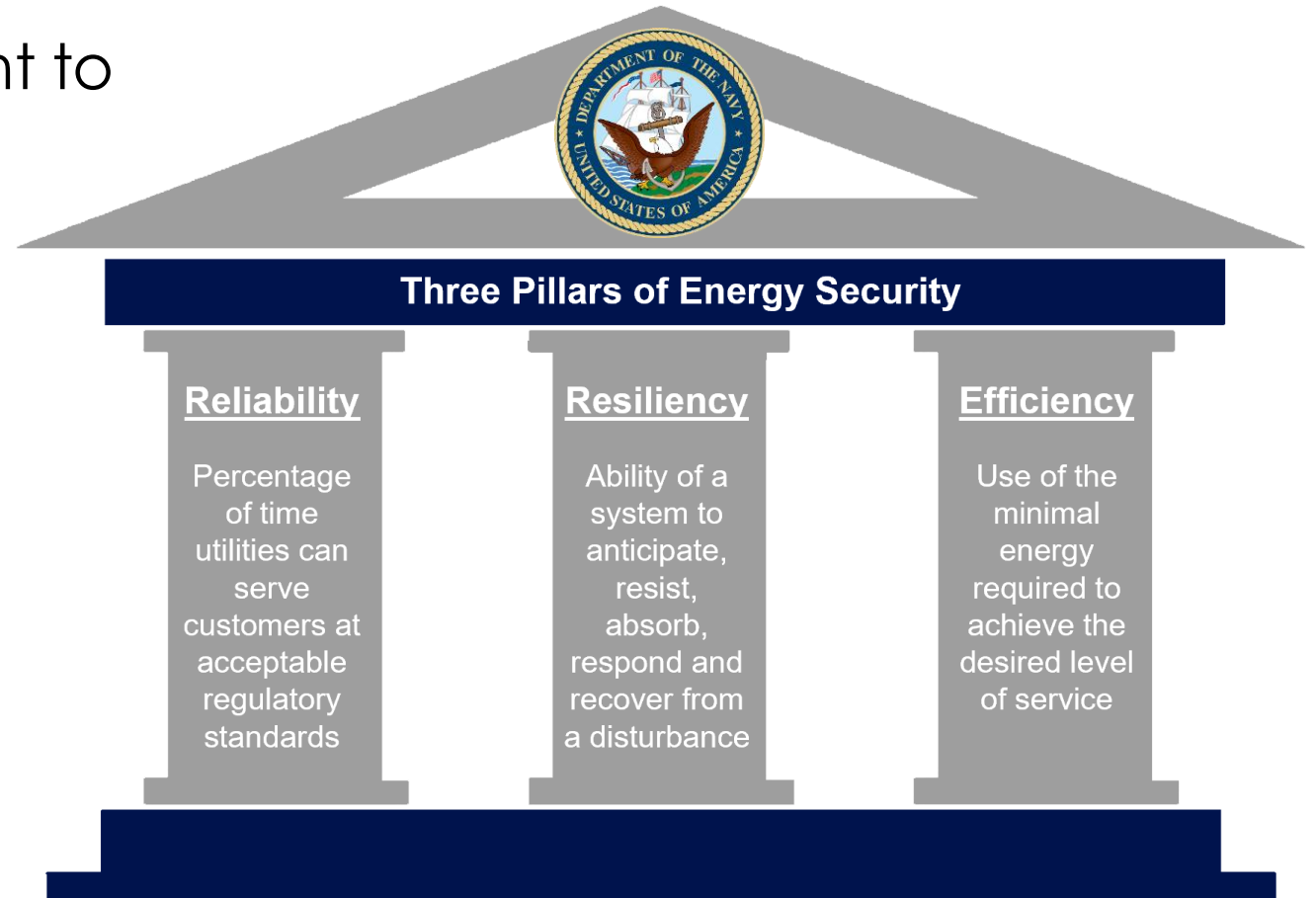
# Background Information

- An Energy Savings Performance Contract (ESPC) was awarded for four energy conservation measures (ECM) at Norfolk Naval Shipyard
- The largest ECM is the Combined Heat and Power Plant (CHP) being constructed at the NNSY
- The CHP plant will provide NNSY its own source of steam and electricity and the ability to operate independent of the electrical grid in the event of an extended grid outage

# Purpose of the ESPC

Provide significant improvement to the Department of the Navy's Three Pillars of Energy Security

- Reliability
- Resiliency
- Efficiency





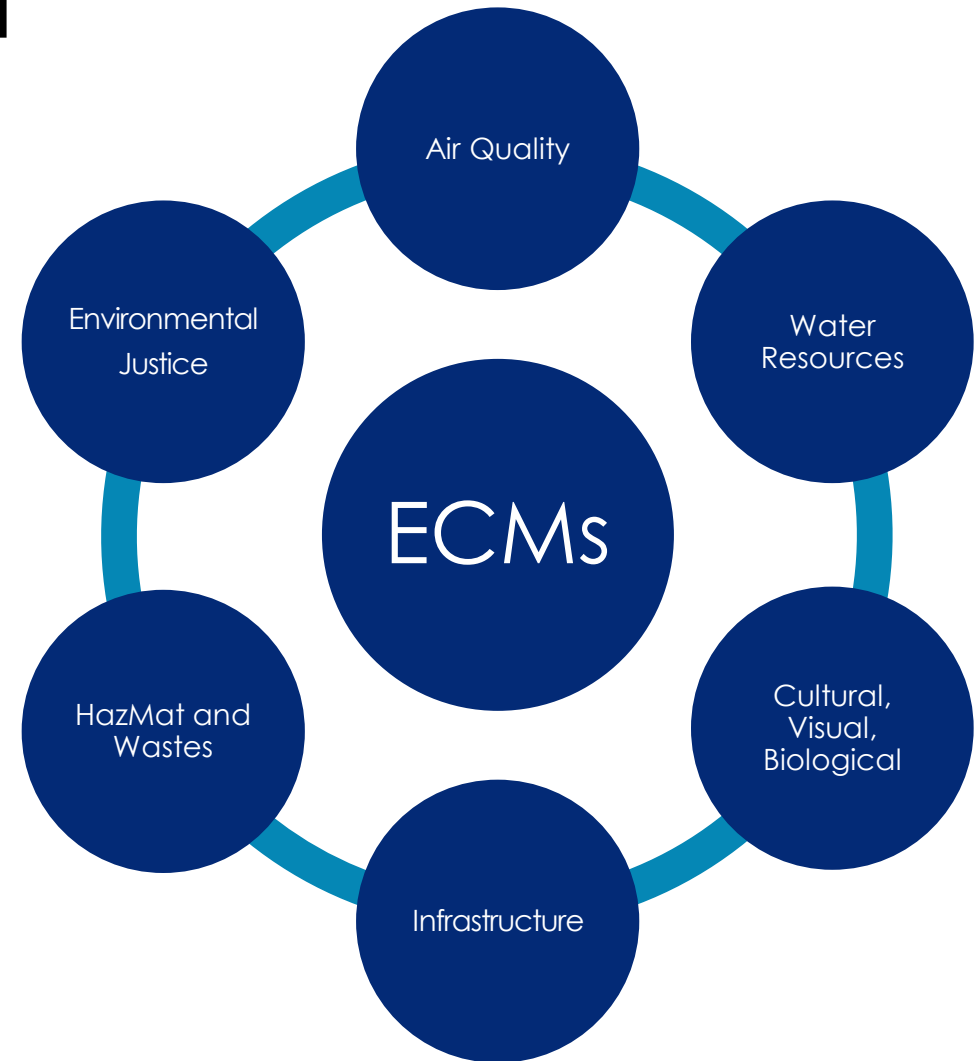
# ESPC Background

- CHP is one of four planned Energy Conservation Measures (ECMs) at NNSY
  1. CHP Plant
  2. New Industrial Wastewater Treatment Plant
  3. Steam System Improvement
  4. Electric Transformer Replacement
  
- All four ECM construction scopes are scheduled to be completed by the end of 2022



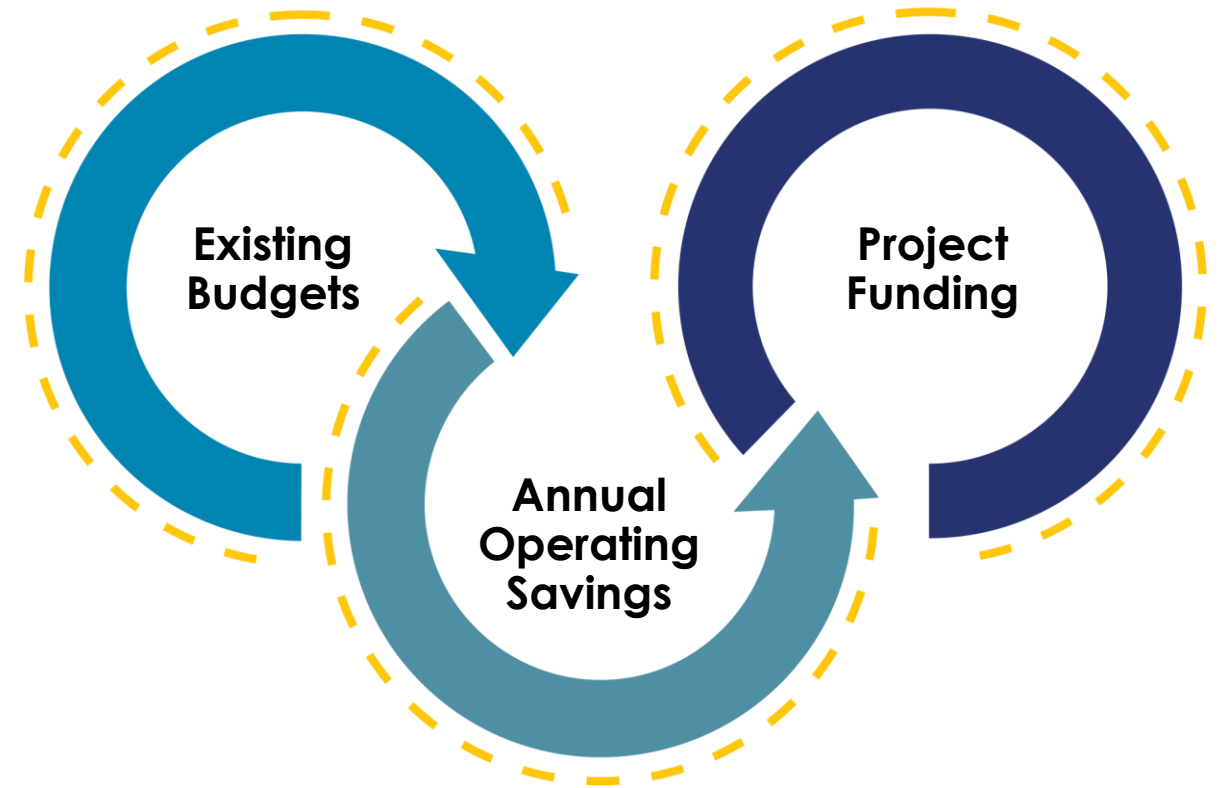
# Environmental Assessment

- NNSY's November 16, 2017 NNSY Environmental Assessment for the implementation of the ECMs addresses numerous factors
- There are no significant short-term, long-term, direct or indirect impacts to water resources, cultural, visual or biological resources during CHP Plant construction or operational activities



# Project Funding

- This project is being executed with no additional taxpayer expense
- Self-funding project
  - Annual operating savings relative to existing budgets are used to fund the project





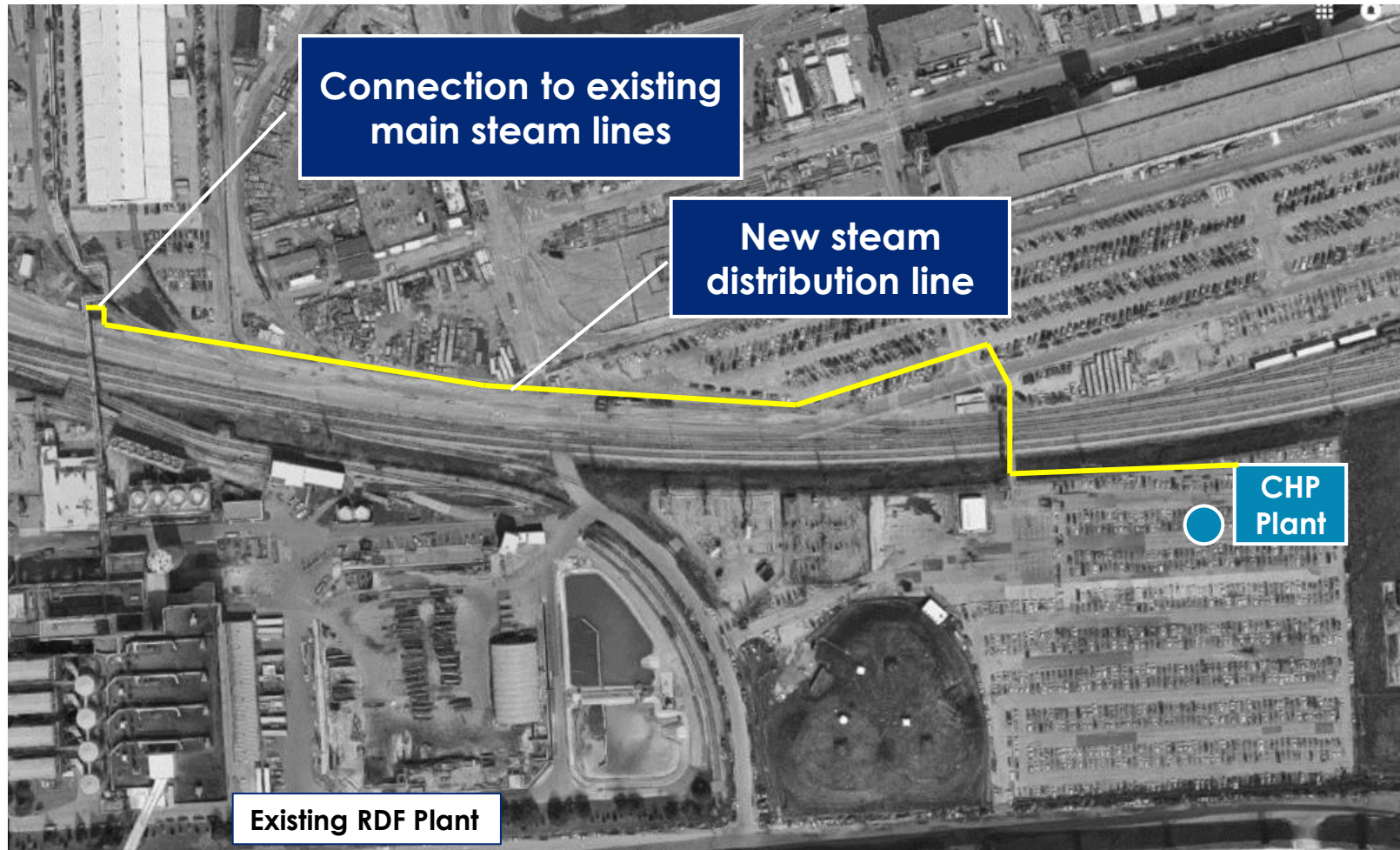
# Project Overview

# CHP Project Background

- A two-story, 30,000 square foot building will be constructed to house the CHP
- Location: South end of NNSY in existing parking lot
- Project components:
  - CHP Plant providing on-site electric and steam generation
  - Microgrid Control System
  - Battery Energy Storage System



# Location





# Project Benefits

# Project Benefits – Navy

- Maintains Shipyard Mission and avoids potential ship repair delays
- Eliminates potential off-site waste disposal & cost
- Faster implementation versus appropriated funding
- Reduced operation and maintenance costs
- Guaranteed CHP plant performance over 22-year contract term



# Economic Benefits - Navy

- \$13.7 million estimated annual savings for NNSY
  - \$11.8 million from the CHP
  - \$1.3 million from the IWTP
  - \$467,000 from steam system upgrades
  - \$100,000 from replacement of electric transformer across the shipyard
- Considerable savings on the facilities' energy bills due to CHP's high efficiency
- Upgrades will serve to avoid shutdowns, delays in maintaining and repairing ships and in the long-term save money on excess repair costs and maintenance



# Energy Security - Navy

- The Norfolk Naval Shipyard will be able to operate independently of the community's electrical grid in the event of a blackout

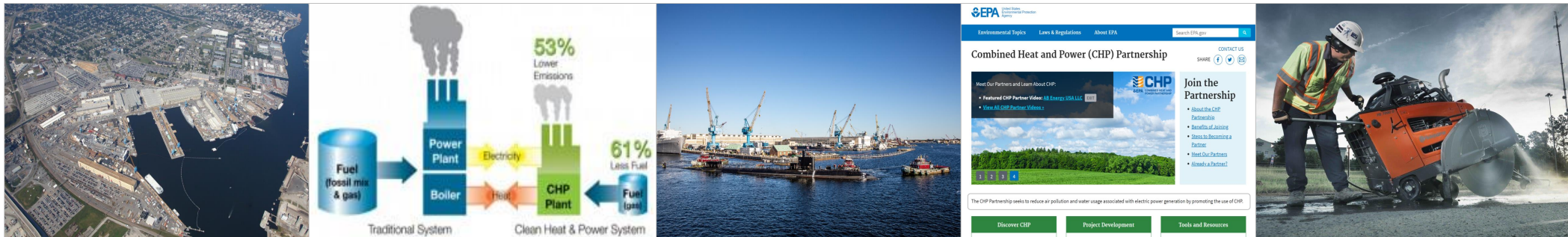




# Community Benefits

# Community Benefits

- Economic Impact
- Workforce
- Environmental
- Air Quality



# Economic Impact

- **Total Local Economic Impact: \$37.38 million** (including \$29.7 million in local subcontracting and \$7.7 million in food, lodging, and other ancillary revenues)
- Local businesses within 1/4 mile of the plant will be utilized, including ready-mix concrete and concrete piles

Component	Local Subcontracting	Prime Contractor Ancillary Food/Lodging/Other
CHP Plant	\$ 18,200,000	\$ 4,800,000
IWTP	\$ 9,555,000	\$ 2,000,000
Other Subcontracting	\$ 1,979,000	\$ 844,000
Totals	\$ 29,734,000	\$ 7,644,000
<b>Total Local Economic Benefit</b>	<b>\$ 37,378,000</b>	

Figures provided by Ameresco, ESPC contractor

# Workforce Benefits

- 210+ local construction tradesmen will be employed by contractors and subcontractors during construction
- 17 full time employees will be hired for the operations of the plant
- 15 employees from the home office of the project's contractor will be paid per diem to establish a temporary residence in the local area, making a direct economic impact of \$4.8 million



# Environmental Benefits

- There are no significant short-term, long-term, direct or indirect impacts to water, cultural, visual or biological resources during construction or operation
- CHP is promoted by the Environmental Protection Agency (EPA)
  - Their CHP Partnership seeks to reduce air pollution and water usage associated with electric power generation  
<https://www.epa.gov/chp>
- CHP reduces emissions of greenhouse gasses and other pollutants

United States Environmental Protection Agency

Environmental Topics   Laws & Regulations   About EPA   Search EPA.gov

## Combined Heat and Power (CHP) Partnership

CONTACT US  
SHARE

Meet Our Partners and Learn About CHP:

- Featured CHP Partner Video: [AB Energy USA LLC](#) EXIT
- [View All CHP Partner Videos »](#)

**Join the Partnership**

- [About the CHP Partnership](#)
- [Benefits of Joining](#)
- [Steps to Becoming a Partner](#)
- [Meet Our Partners](#)
- [Already a Partner?](#)

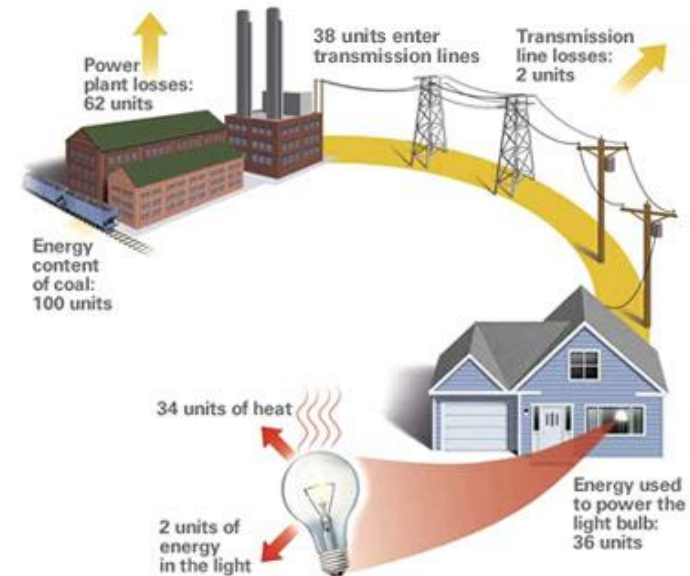
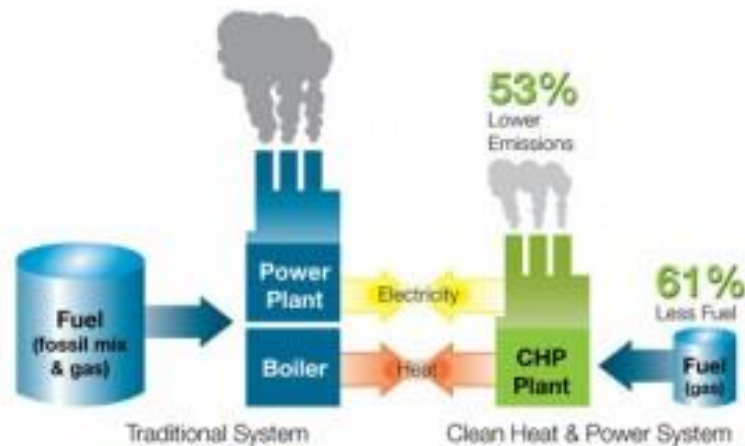
The CHP Partnership seeks to reduce air pollution and water usage associated with electric power generation by promoting the use of CHP.

Discover CHP   Project Development   Tools and Resources

# Environmental Benefits (cont'd)

The CHP plant will reduce the Navy's energy consumption which results in reduced emissions and reduced demand

- CHP requires less fuel to produce a given energy output
- Avoids transmission and distribution losses that occur when electricity travels over power lines





# Air Quality

- The CHP plant will incorporate Best Available Control Technologies (BACT), per the VDEQ
- BACT controls include a combination of clean fuels, good combustion practices and other technologies
- Controls will minimize the effects of any additional emissions
- Net decrease in Greenhouse Gas emissions





# Neighborhood Considerations

# Neighborhood

- Construction noise exposure off the CHP property will not exceed any of the current noise levels
- Project dust will be minimal and silt discharge will be minimized off-site
- Silt run off to the Elizabeth River will be prevented during construction



# Construction

- Minimal construction traffic to be added to the area
- Major truck deliveries will be staged and offloaded in the CHP laydown/former Ship's Force parking
- Locally sourced materials will decrease the traffic impact by eliminating an estimated 900 deliveries



# Construction (cont'd)

- All construction waste will be disposed of or recycled in a manner consistent with NNSY sustainable practices and procedures
- Noise exposure off the CHP property will not exceed any of the current noise levels





# Q&A

# Contact Us

- If your question was not answered during this session, please email it to [terri.k.davis@navy.mil](mailto:terri.k.davis@navy.mil)
- For project information, please visit [navsea.navy.mil/Home/Shipyards/Norfolk/](http://navsea.navy.mil/Home/Shipyards/Norfolk/)



Thank you for attending today's information session.