



**Metropolitan
Washington
Council of
Governments**

March 15, 2024



WSSC Water Carbon Emissions Reduction and Climate Resilience

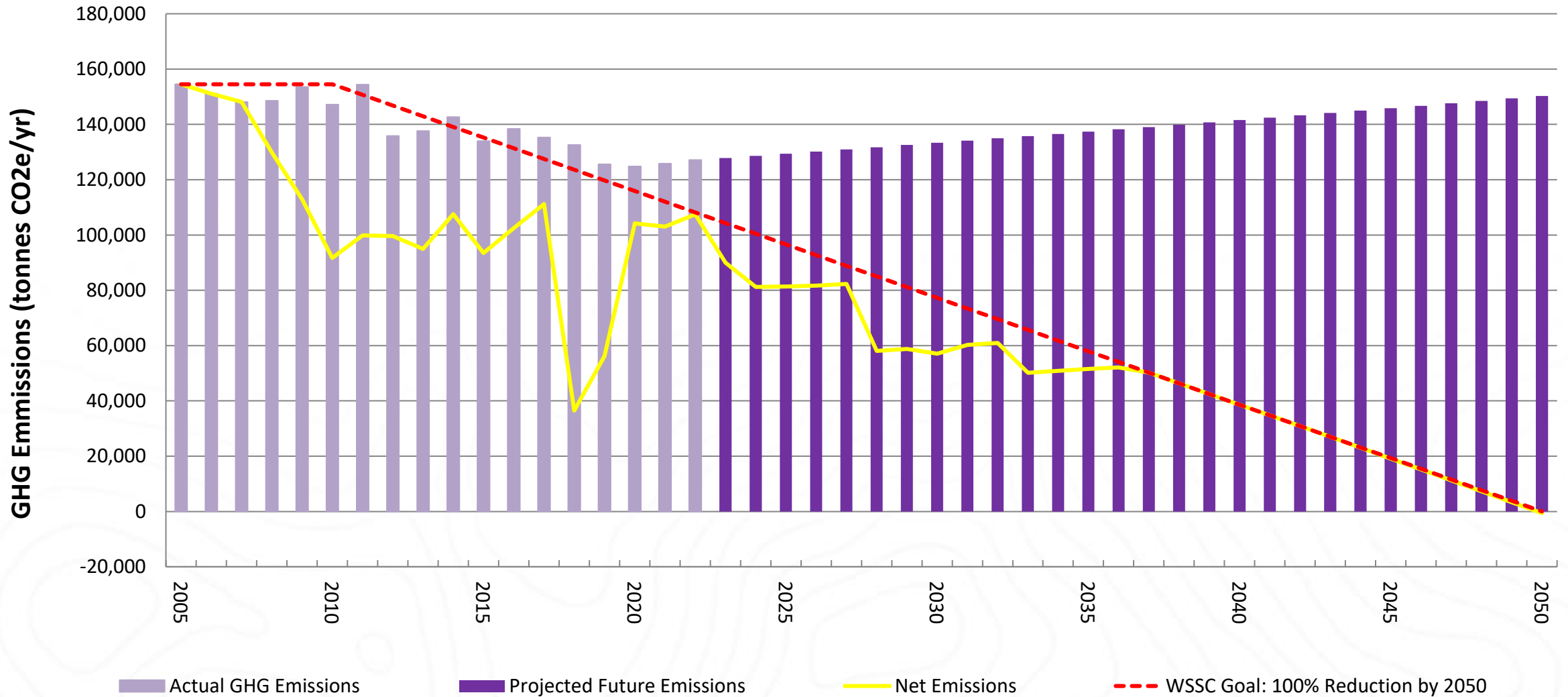
**Robert Taylor,
Energy Manager**

Agenda

- WSSC Water Greenhouse Gas Goals
- Projects Supporting Carbon Emissions Reductions and Climate Resilience
 - Potomac WFP Microgrid
 - Anacostia Sewer Thermal & Solar
 - Western Maryland Solar
 - Bioenergy
 - Climate Change Mitigation Projects



WSSC GHG Actual and Projected Emissions (2005-2050)



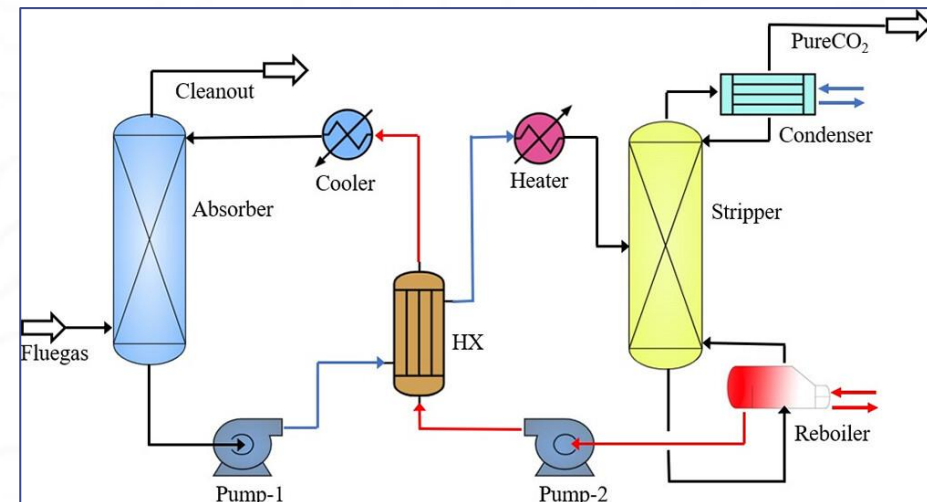
Potomac WFP Microgrid

- Scope:

- 2 Natural Gas Fired Generators (8,976 kW)
- 838 kW Solar
- 10 ft wall around Substation perimeter
- CO₂ Recovery/Sequestration

- Benefits:

- Provides 60-65% of operating capacity
- Greater reliability and resilience
- Provides future electricity price stability
- Reduction of 90% of PJM CO₂



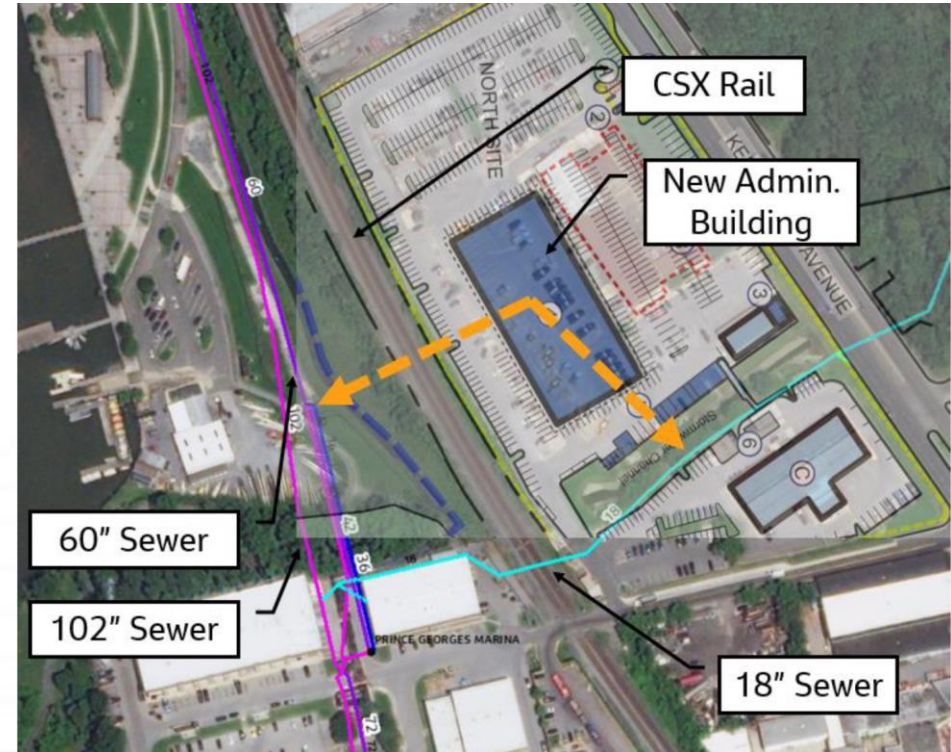
Potomac Microgrid

- Capital Cost = \$25 MM
- CO2 Recovery = 24,700 tonnes/year
- Life of Project = 30 years
- Simple Payback = 12 years



Anacostia Service Center- Sewer Thermal Exchange

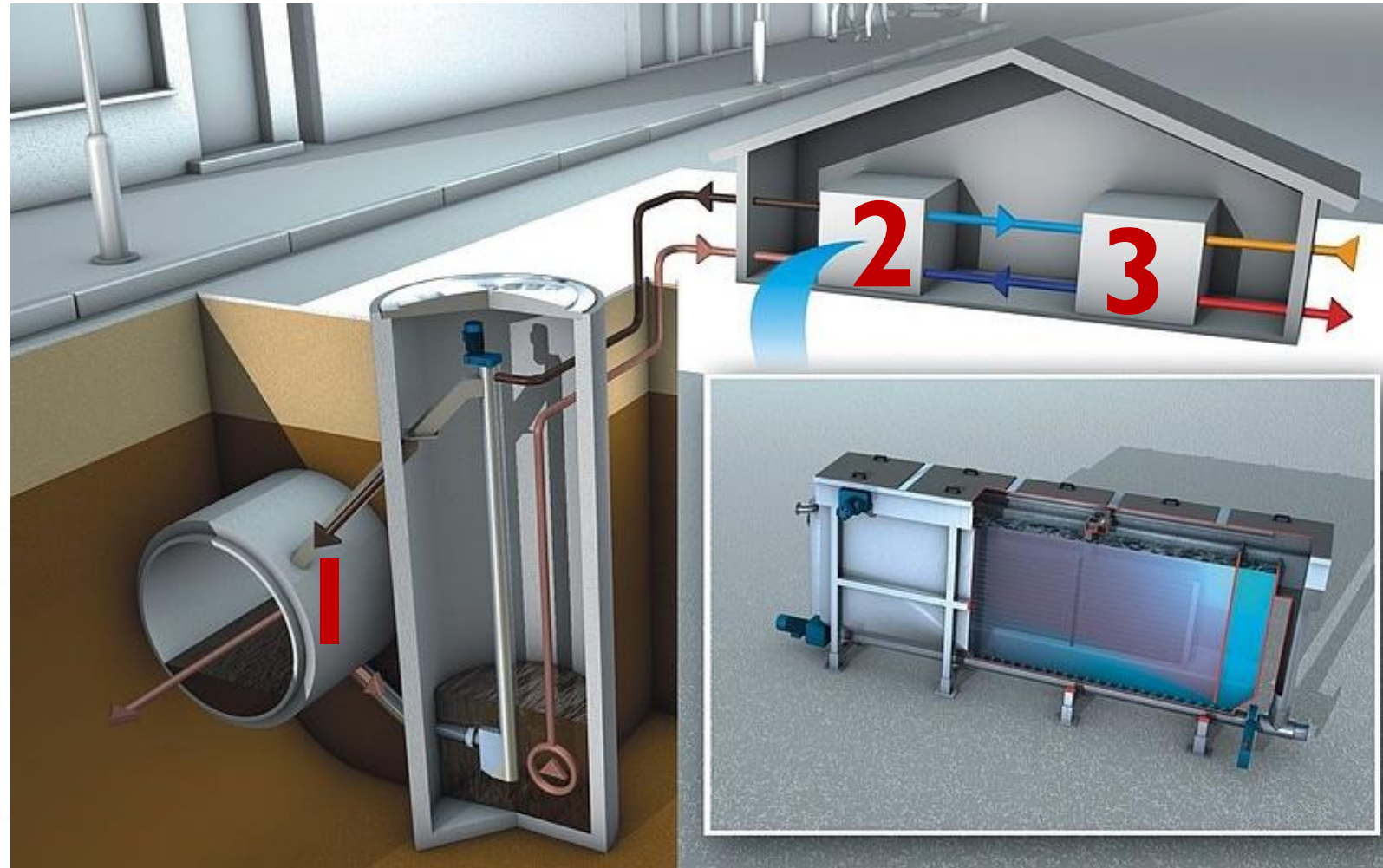
- Currently in design.
- Includes Administration Building, new Aggregate Bin Storage, a new Jet Truck Shed, and a reconfiguration of the parking lot.
- The site is adjacent to three sewers that can be tapped for sewer thermal implementation - 102-inch and 60-inch diameter sewers located west of the site, and an 18-inch diameter sewer located to the south.
- Additional sites – warehouse and heavy equipment shop – also being considered for sewer thermal.



Sewer Thermal Typical Application:

Side-Stream systems have three parts

1. A side stream of sewage is diverted to a pit where a screen/ macerator prepares sewage for heat exchange. Sewage is then returned to the sewer.
2. A heat exchanger at the building transfers the thermal energy to a clean loop
3. A heat pump elevates and transfers the energy to an end-use



Anacostia Service Center

- Sewer Thermal Benefits:
 - Very low carbon
 - Renewable Energy Credits (RECs) Thermal energy from wastewater qualifies as a Tier I REC in Maryland (House Bill 561 2023)
 - Reduced thermal pollution

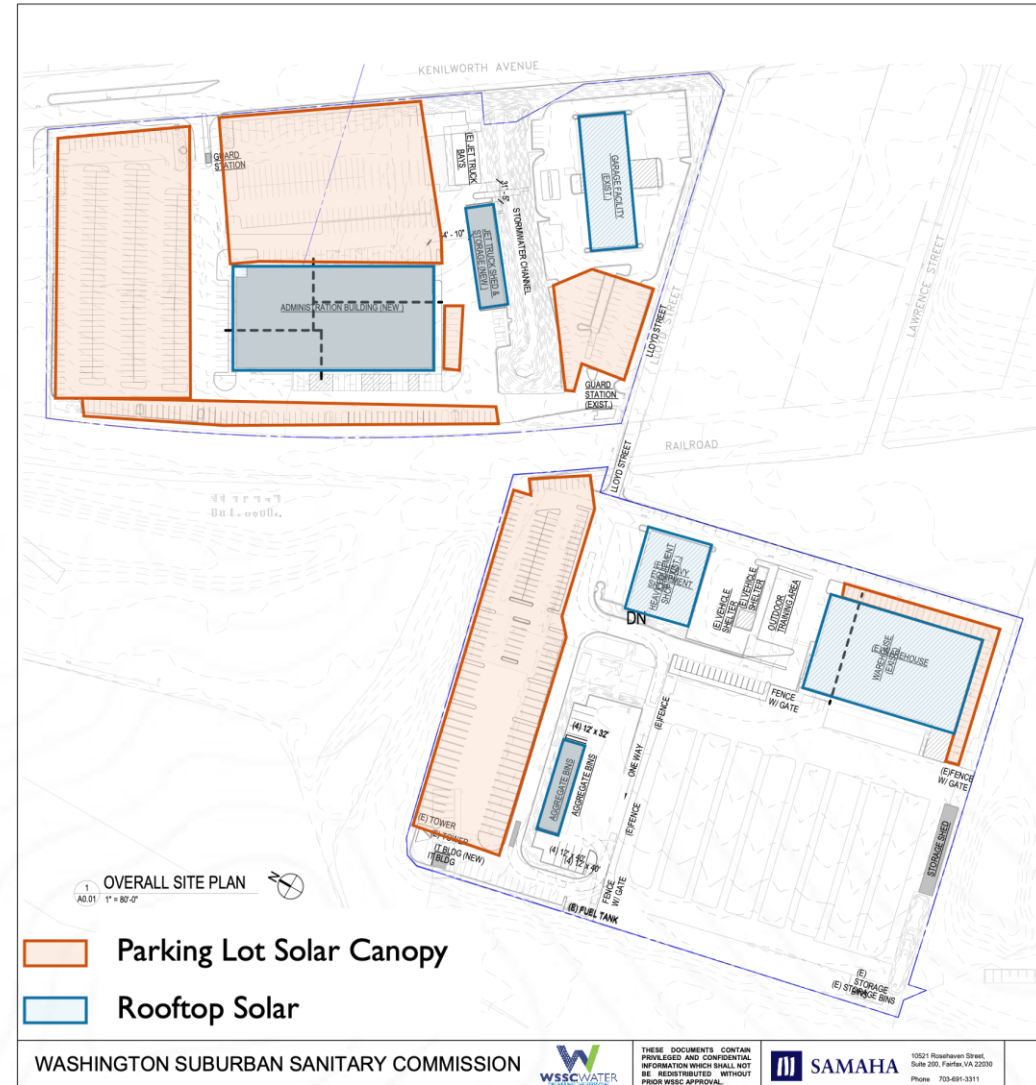


Anacostia Service Center- Solar

- **Parking Lot Solar Canopy**
 - Area: 40,000 sq. ft.
 - 600 kW production
 - Annual savings: 834,000 kWh

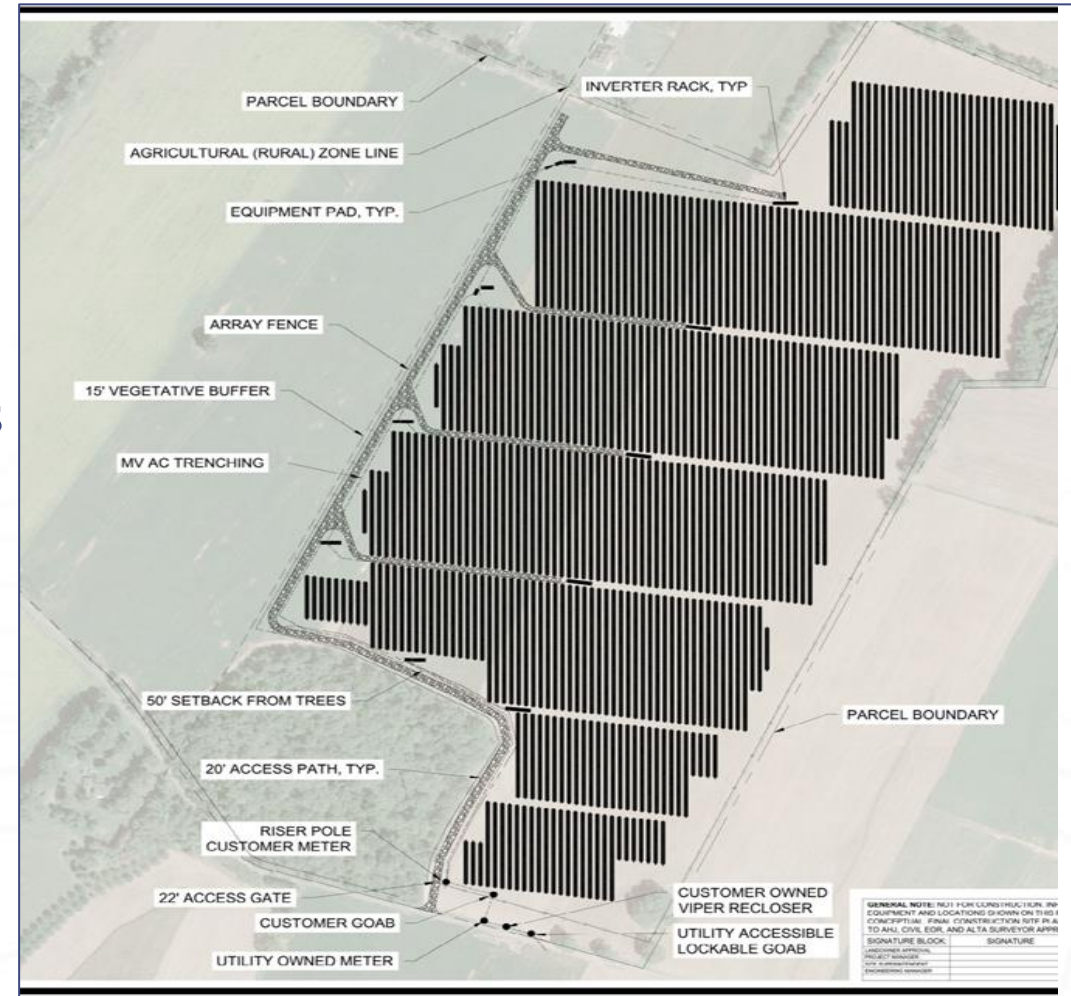
- **Rooftop Solar**
 - Area: 67,000 sq. ft.
 - 1006 kW production
 - Annual savings: 1,400,000 kWh

- **834 tonnes/yr. CO₂e reduction**



Western Maryland Solar PPA

- 12 MWac solar capacity
- Located in Smithsburg, Washington County
- Will be operational late 2024
- 20-year PPA with fixed rate plus escalation
- WSSC receives the RECs and Carbon Credits
- Reduces GHG emissions 24,000 tonnes/yr.

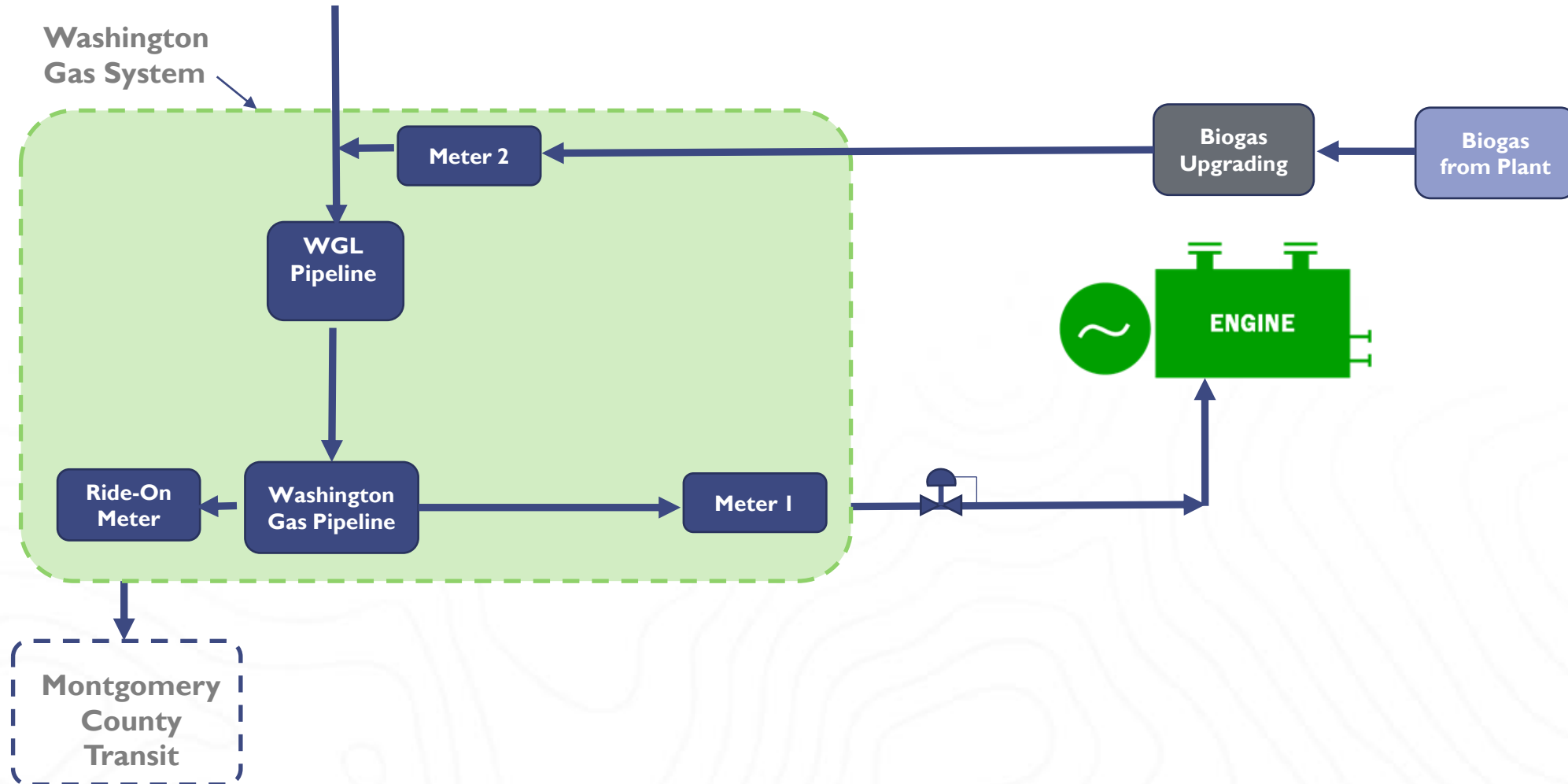


Bio-Energy Facility

- Anaerobic Digestion/THP will process all biosolids transported from Seneca, Damascus, Western Branch and Parkway WRRFs to the Piscataway WRRF.
- It will produce 125,000 Dekatherms (Dth) of RNG per year
- (3) 1500 kW NG fired E-G will provide continuous on-site power
- Expected Completion December 2024



Flow Diagram- Bioenergy



WSSC Vulnerability Assessments- Resiliency

49 out of 200+ WSSC Water facilities are located in or near a floodplain



18 facilities prioritized for flood vulnerability assessments

All 18 have been completed

Vulnerability Assessments Completed to Date

8 out of 18 found to be at risk from current or projected flooding

Coastal

- Broad Creek WWPS
- Western Branch WRRF
- Anacostia Complex
- Fort Foote WWPS
- Anacostia WWPS #1
- Anacostia WWPS #2
- Hyattsville WWPS
- Piscataway WRRF
- Colmar Manor WWPS
- Forest Heights WWPS

Riverine

- Rocky Gorge WPS
- Parkway WRRF
- Reddy Branch WWPS
- Hyattstown WRRF
- Air Park WPS
- Decatur Street WWPS
- Marlboro Meadows WWPS



From these assessments, \$2.5 million of projects have been created to mitigate Climate Change



Questions?

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