SCALE IT UP: HOW NYC AGENCIES WILL REACH 80X50

Panelists:

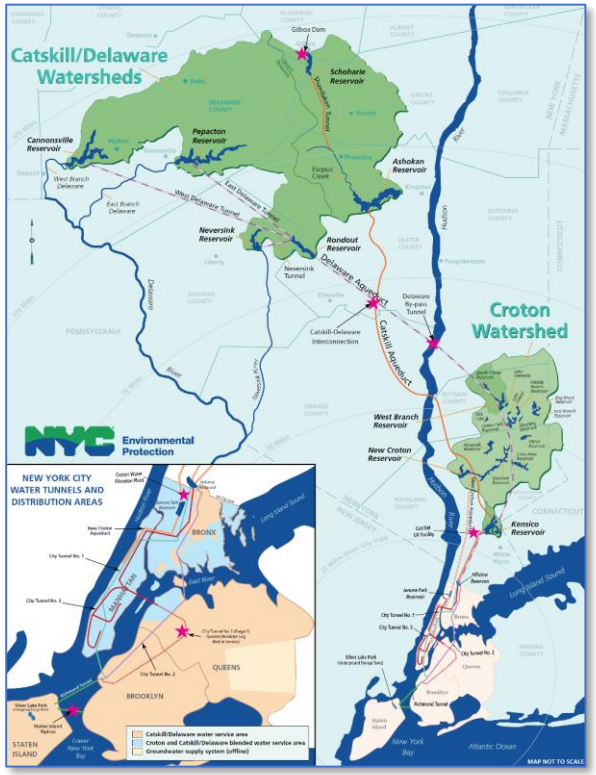
- Tarek Arafat, NYC Department of Citywide Administrative Services (DCAS)
- Chris Diamond, NYC Department of Design & Construction (DDC)
- **Mikael Amar, NYC Department of Environmental Protection (DEP)**
- Bomee Jung, NYC Housing Authority (NYCHA)
- Jessica Wurwarg, Caitlin Churchill, NYC Department of Transportation (DOT)

Moderator:

- Ellen Honigstock, Urban Green Council

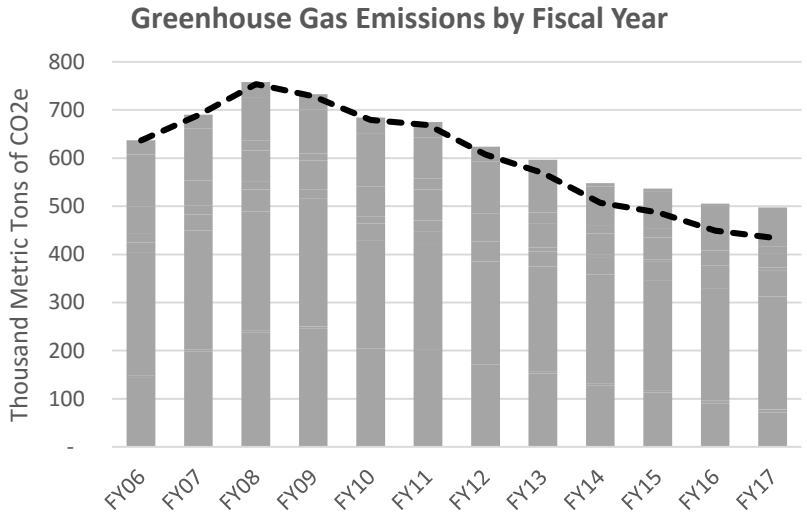
About NYC DEP

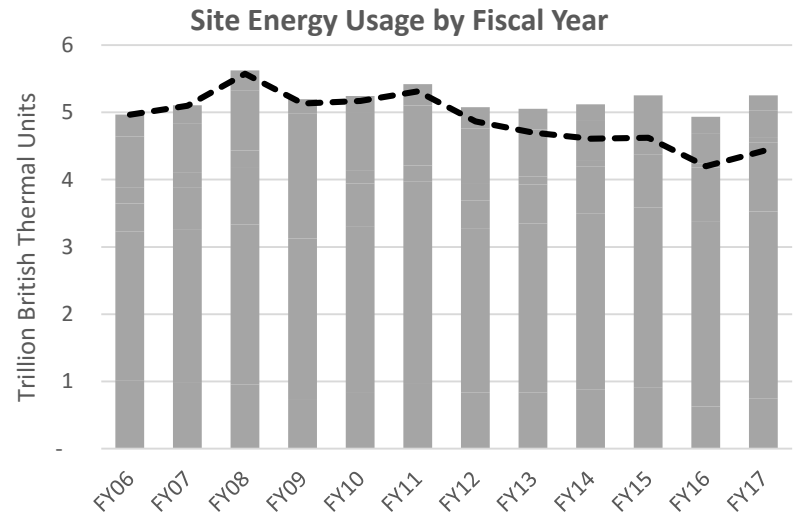
- Largest combined water and wastewater utility in the United States:
  - 9 million New Yorkers served by 6000 employees
  - 1.1 billion gallons per day (gpd) of water delivered
    - 7000 miles of water mains, 2000 square-mile watershed
  - 1.3 billion gpd of wastewater and stormwater treated
    - 7500 miles of sewers, 14 WWT plants (WWTPs)
- Air, noise, and hazardous waste policy & enforcement



GHG Profile and Energy Use at DEP

- **2nd largest municipal emitter of GHG, 3rd largest municipal energy consumer**
  - Over 700 utility accounts at over 300 locations
  - Annual spend on building & transportation energy ~$95-110 million
- **Annual WWT energy usage = 4.3 trillion Btu**
  - 695 million kWh electricity
  - 6.5 million therms natural gas
  - 2.5 million gallons fuel oil
  - 192,500 mlbs steam
  - 1.2 billion cu-ft anaerobic digester gas (ADG)
    - 3.6 BCF annual production = ~35% ben. use





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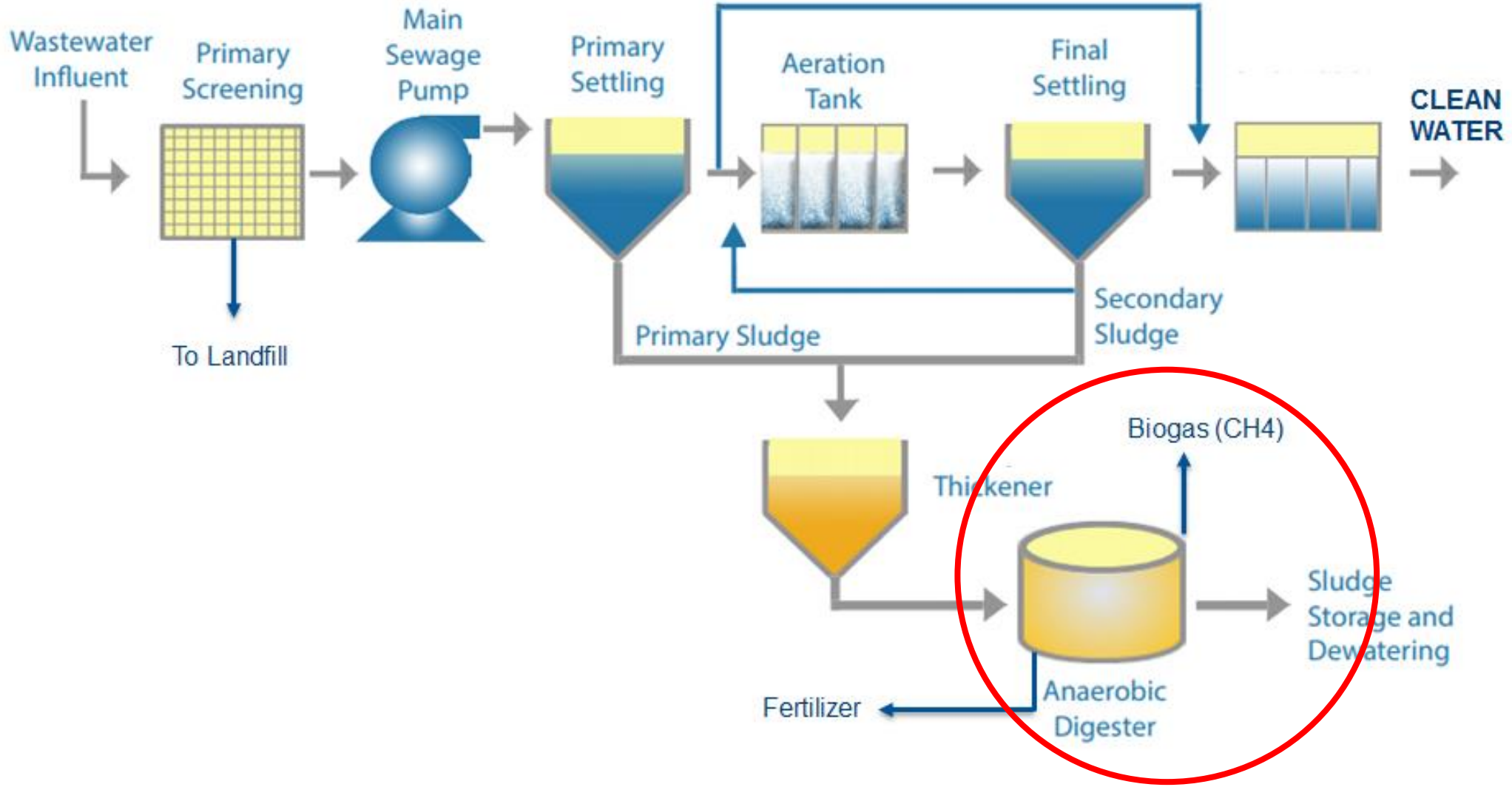
Wastewater Treatment Process



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Wastewater Treatment Plants as Resource Recovery Factories

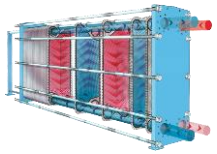
Residential/Commercial Wastewater

Industrial Wastewater

Stormwater

Food Waste

Heat Reuse & Loss



Process Water Reuse

Digester Gas Reuse

Clean Water

Fit-for-Purpose Water

Biosolids Products

Renewable Energy

Next Generation Products

Inputs
Raw Materials

Processing
Manufacturing

Outputs
Products

How NYC Agencies Will Reach 80x50

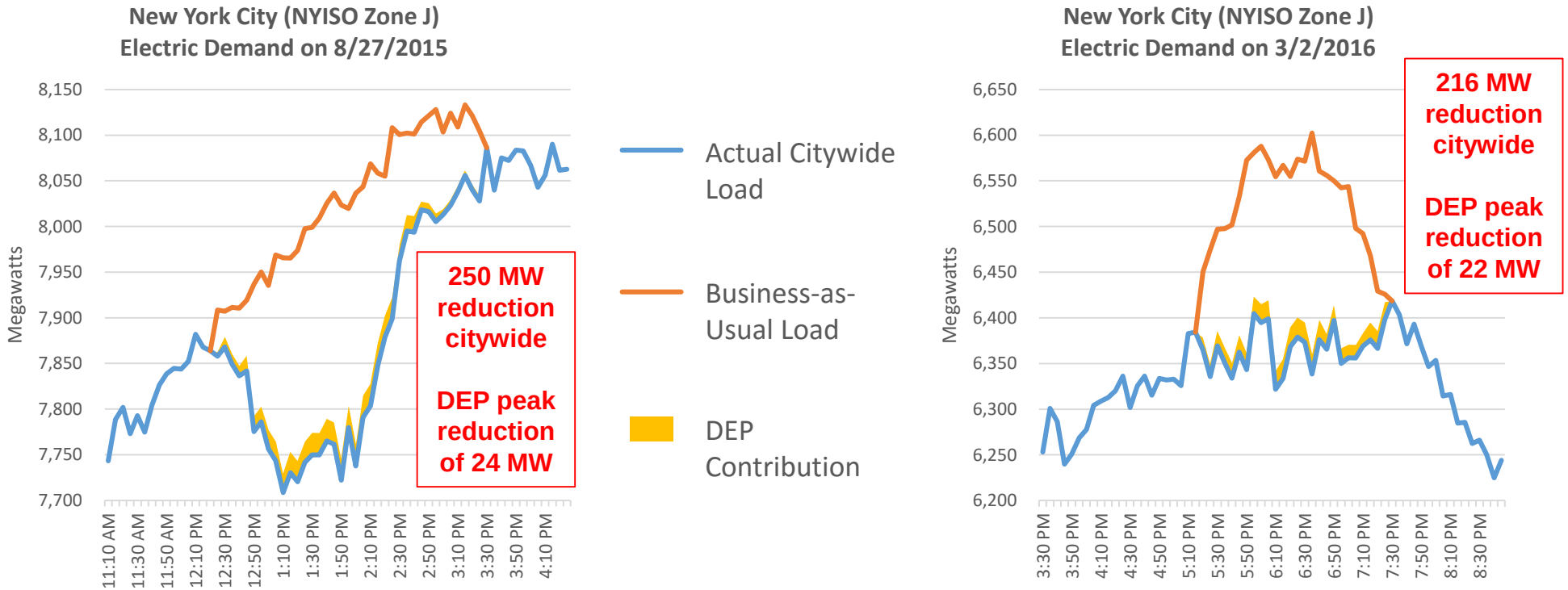
Citywide Drivers for Change

- **80% reduction in GHG emissions by 2050**
  - Carbon neutrality in new 1.5 degree Celsius Plan
- **Energy-neutral wastewater treatment plants by 2050**
  - Maximize digester gas production
  - Maximize digester gas beneficial use
  - Minimize digester gas fugitive emissions
- **100 MW of solar on City-owned properties by 2025**
- **Zero waste to landfills by 2030**
  - Maximize biosolids beneficial use
  - Maximize food waste beneficial use
- **50 MW enrolled in Demand Response Program by 2017**

How NYC Agencies Will Reach 80x50

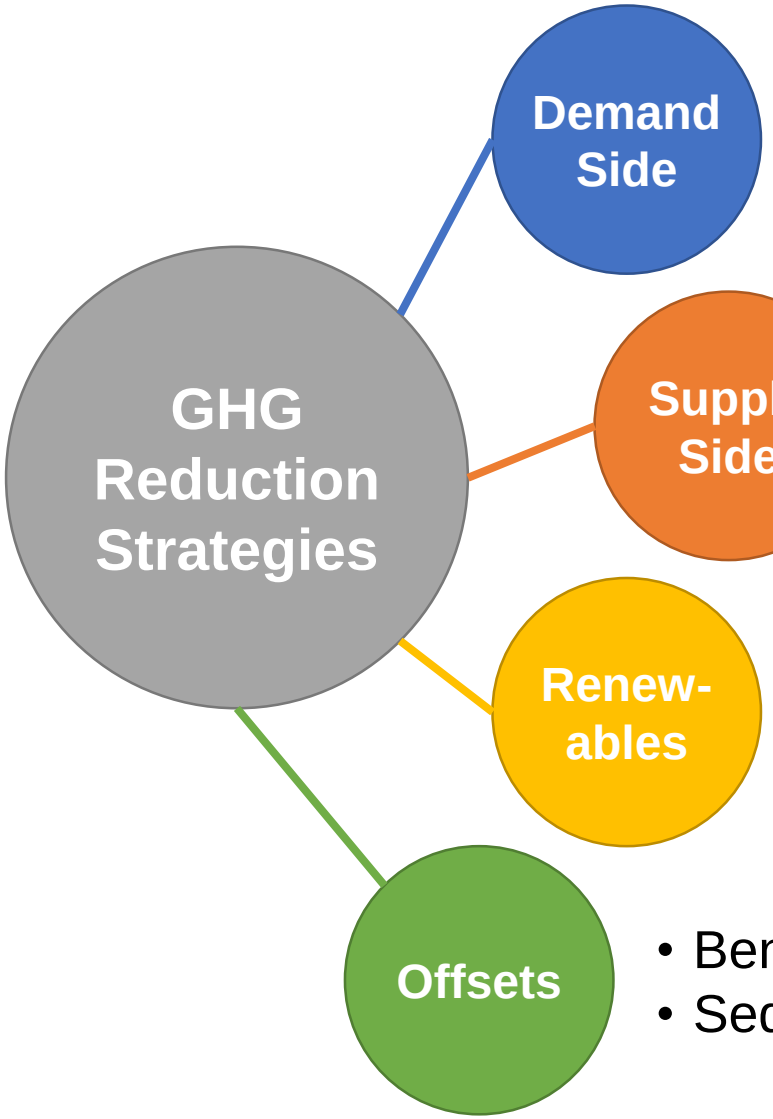
Demand Response Program at DEP

- **DEP is a major player in citywide DR efforts:**
  - Historical commitment of 16-20 MW and performance of 120% or greater.
  - Has accounted for as much as ~10% of citywide reductions during events.



Data source: NYISO & DEP RTMs

Strategies for GHG Reduction at DEP



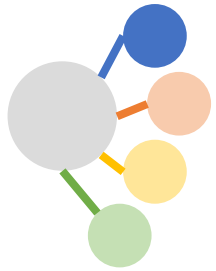
- Energy conservation and efficiency
- Equipment and operational improvements
- Water demand management

- On-site energy generation using anaerobic digester gas
- Other beneficial uses of ADG

- Non-ADG renewable energy
- Hydro, solar PV, etc.

- Beneficial use of biosolids & biogas offsite
- Sequestration by green infrastructure, wetlands, and watershed

Ongoing Demand-Side Initiatives at DEP



- **Energy Conservation Measures:**
  - Energy audits completed at WWTPs. Developing plan to integrate ECMs into State-of-Good-Repair capital projects.
- **Analytics, Education, and Accountability:**
  - Ensuring data is clean and reliable. Creating performance metrics. Tracking progress of project implementation. Energy in employee reviews. Energy reports and meetings increase transparency. Training and classes.
- **Design Guidelines:**
  - Update and implement for more energy-efficient alternatives. Energy Profile Report for each new or reconstruction project.
- **Others:**
  - Incentivizing fixture replacements and water reduction challenges. Green infrastructure (Water-Energy Nexus tool).

Energy Projects at DEP

Port Richmond WWTP
Rooftop Solar PV

Fuel Switching, Cogeneration, & Electrification (Multiple Facilities)

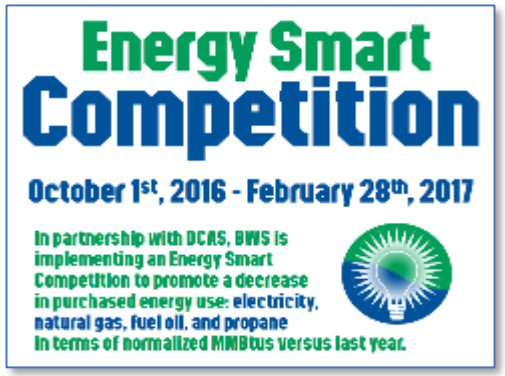
Newtown Creek WWTP
Food Waste Co-Digestion & Renewable Natural Gas / Biogas-to-Grid

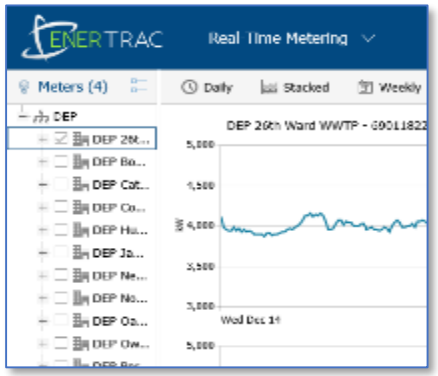
Energy Projects at DEP (cont.)

Cannonsville Dam Hydroelectric

LED Lighting Upgrades (Multiple Facilities)

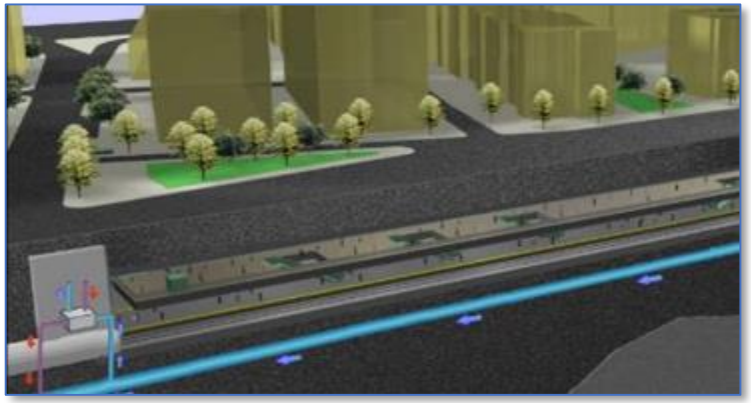
Behavior-Change Projects, Trainings, Etc. (Multiple Facilities)





Next-Generation Projects

WWTPs as Resource Recovery Facilities



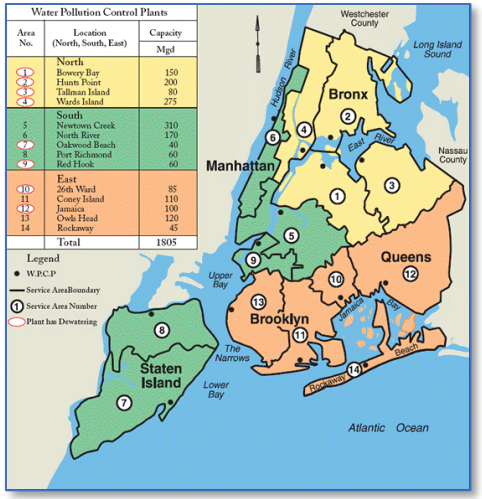
Altering Secondary Treatment

Solar Over Process Tanks

Land Management

Chemical Conversion

Potential Creative Solution



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