

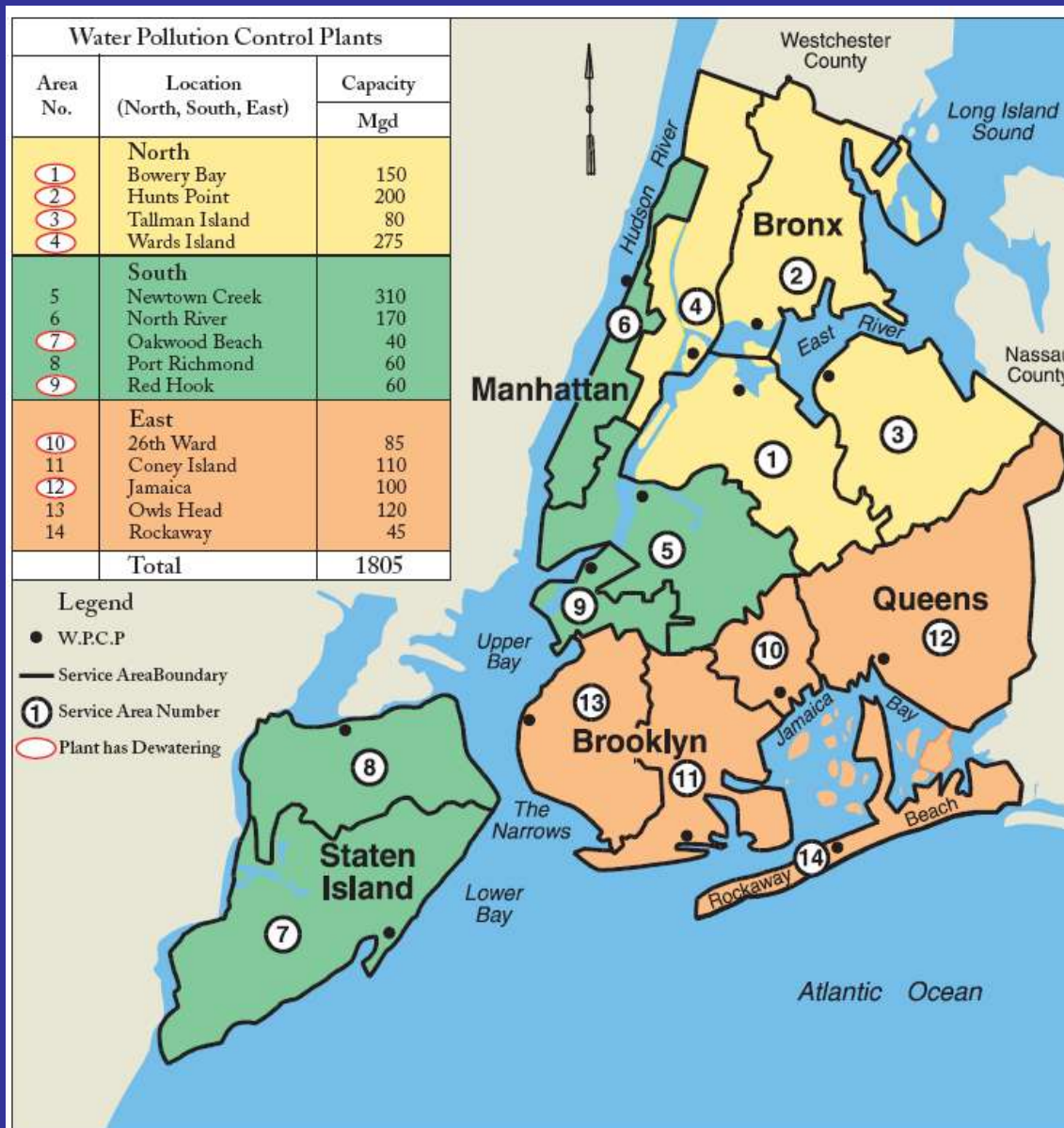
Increasing Energy Efficiency in New York City Water Pollution Control Plants



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New York City Plant Locations



NYC's Wastewater Treatment System

- Over 6000 Miles of Sewer Pipes
- 135,000 sewer catch basins
- Over 494 permitted outfalls for combined sewer overflows (CSOs) and stormwater
- 93 wastewater pumping stations
- 14 wastewater treatment plants (including 8 dewatering facilities)

Wastewater Treatment Processes

- The plants treat about 1.4 billion gallons per day of wastewater
- Primary Treatment
- Secondary Treatment
- Disinfection
- Thickening
- Digestion
- Sludge Dewatering



Hunts Point (2004)

North River



ENERGY RESOURCES

- Electricity
- Fuel Oil
- Natural gas
- Anaerobic Digester Gas

ENERGY AUDITS

- Energy audits are conducted at the plants to identify energy conservation measures (ECM)
- Several ECMs are implemented at the plants to improve energy efficiencies

ENERGY EFFICIENCY PROJECTS

- Several energy efficiency projects have been completed and many are underway
- The most notable is the installation of eight (8) fuel cells with a total capacity of 1.6 MW, powered with the renewable digester gas
- Microturbines or Stirling engines to be powered with digester gas will also be installed



ENERGY EFFICIENCY PROJECTS

- Installation of Supervisory Control and Data Acquisition Systems (SCADA)
- Fine Bubble Diffusers
- Automation of Dissolved Oxygen Control
- Variable Frequency Drive Pumps

ENERGY POLICIES & PROGRAMS

- Has a system in place to track energy consumption and costs
- Replaces equipment with energy efficient ones during minor or major upgrades

ENERGY POLICIES & PROGRAMS

- DEP Generates power on-site using digester gas for energy demand reduction
- Participates in Peak Load Management Program

ENERGY POLICIES & PROGRAMS

- DEP plans to enter into a bilateral agreement with the New York Power Authority (NYPA) to develop and implement of energy conservation measures
- DEP currently has energy projects with NYPA totalizing \$160,000,000

ENERGY POLICIES & PROGRAMS

- The Office of the Mayor just issued a document: plaNYC: A Greener, Greater New York City which calls for sustainable energy generation and usage
- This plan proposes the upgrade of the City energy infrastructure to provide clean energy

ENERGY POLICIES & PROGRAMS

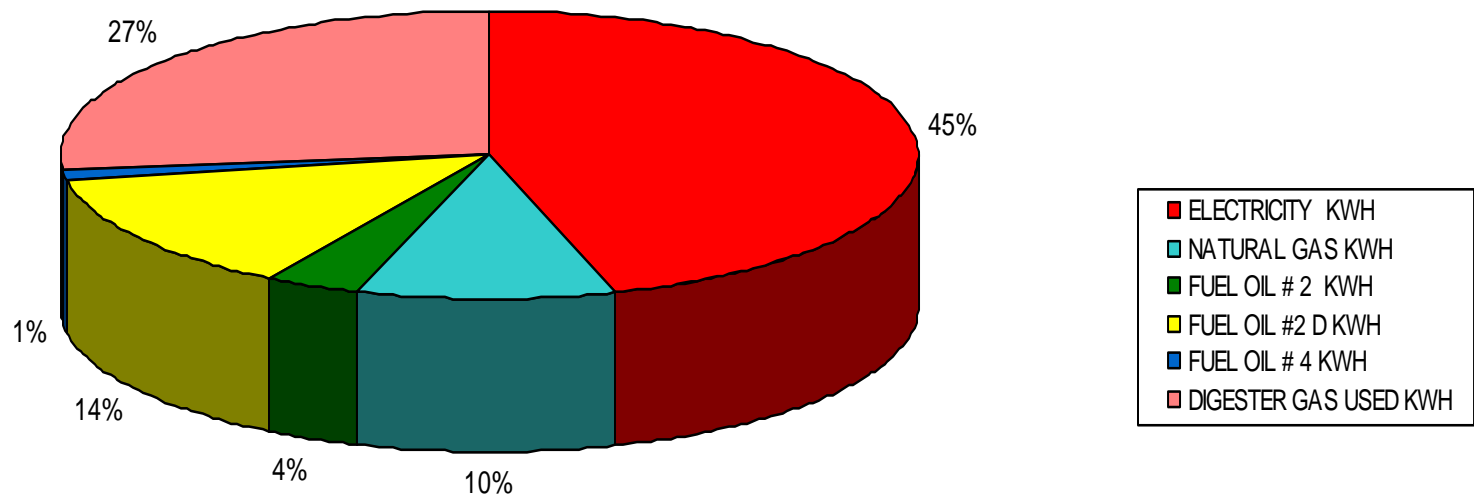
- DEP is committed to increasing energy efficiency at the WPCPs
- Intends to capture all the digester gas produced at the plants
- Explores the possibility of installing solar panels
- Evaluates the feasibility of installing hydro turbines at the effluent

ENERGY CONSUMPTION in 2005

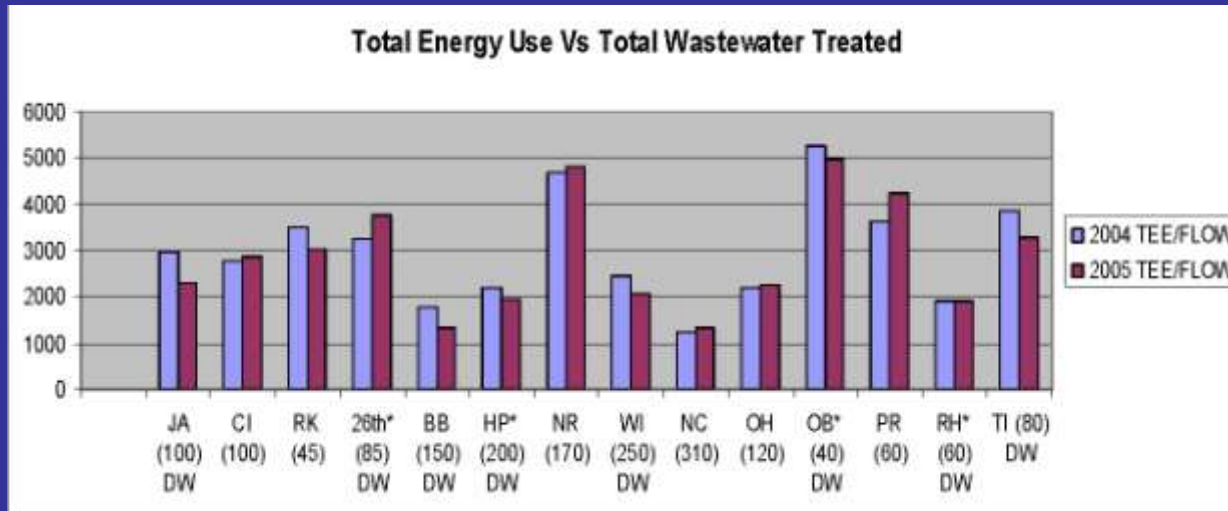
- The plants consumed about 547,135,894 kWh of electricity
- Approximately 5,212,210 gallons of fuel oil
- About 367,358,329 ft³ Natural gas
- And 1,827,573,000 ft³ Anaerobic Digester Gas

ENERGY UTILIZATION

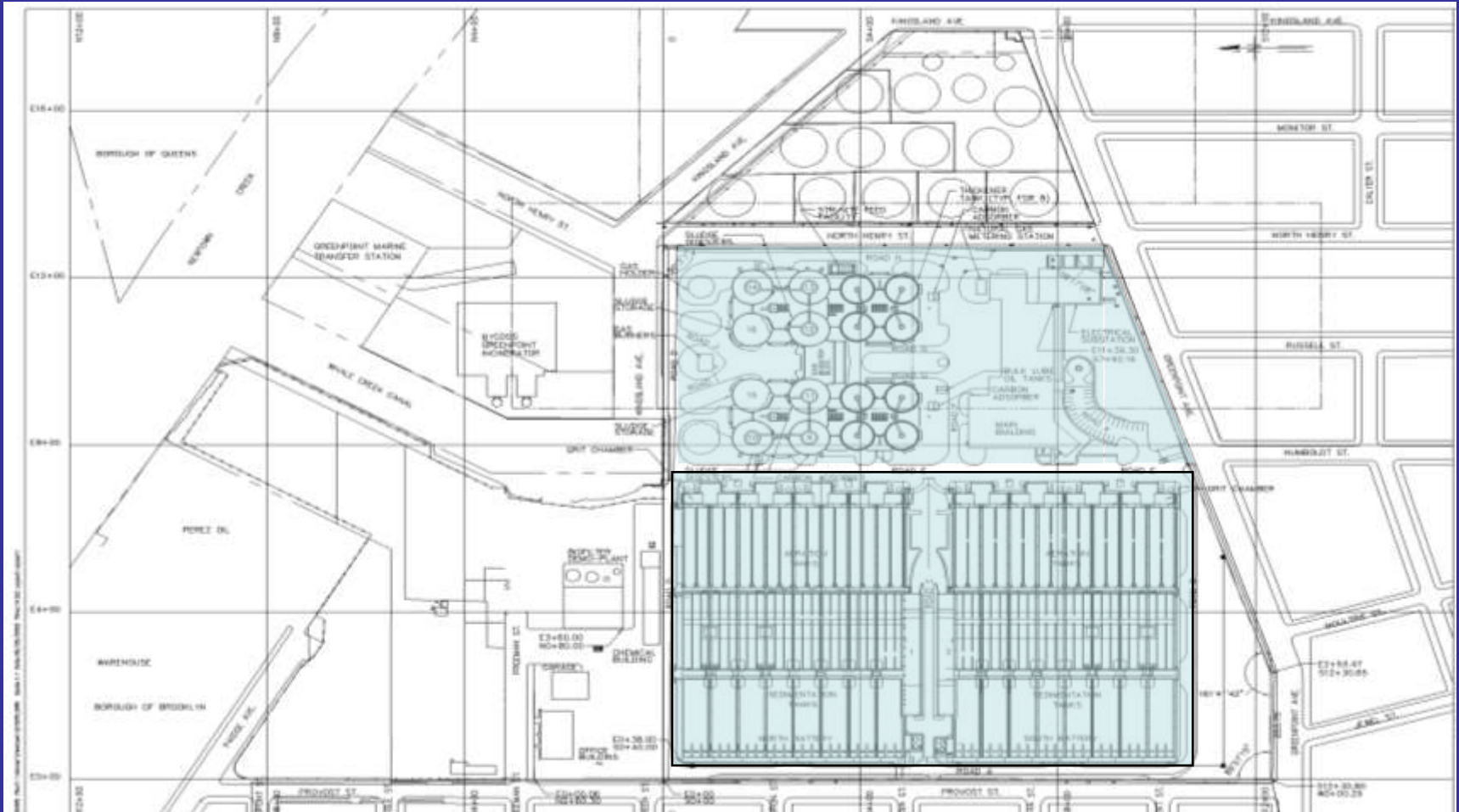
TOTAL EQUIVALENT ENERGY USED AT THE PLANTS IN 2005



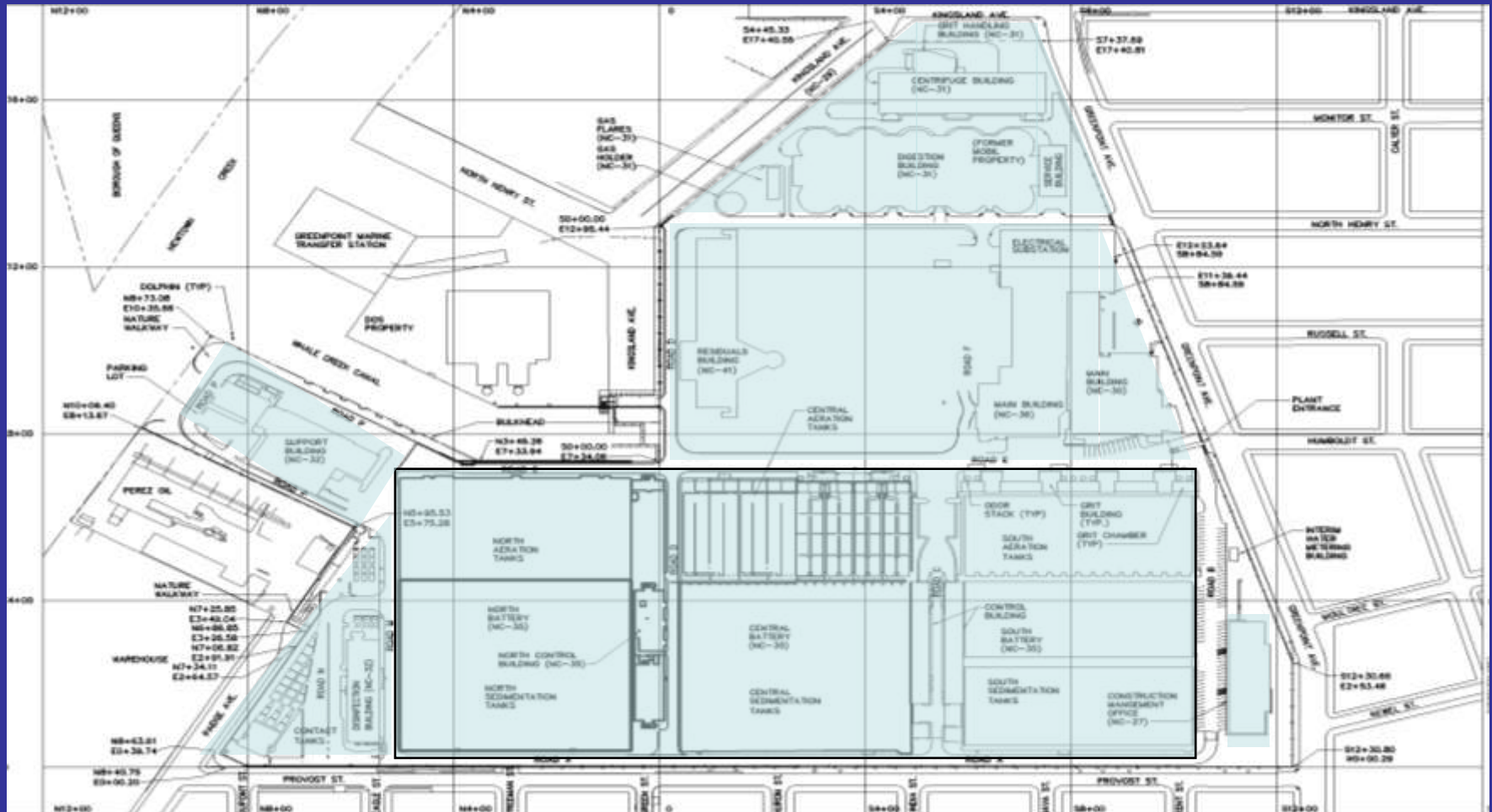
Total Equivalent Energy Consumed



Site Plan: Existing Facility (32 acres)



Site Plan: At Upgrade Completion (53 acres)



Site Plan: At Upgrade Completion (53 acres)

