

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



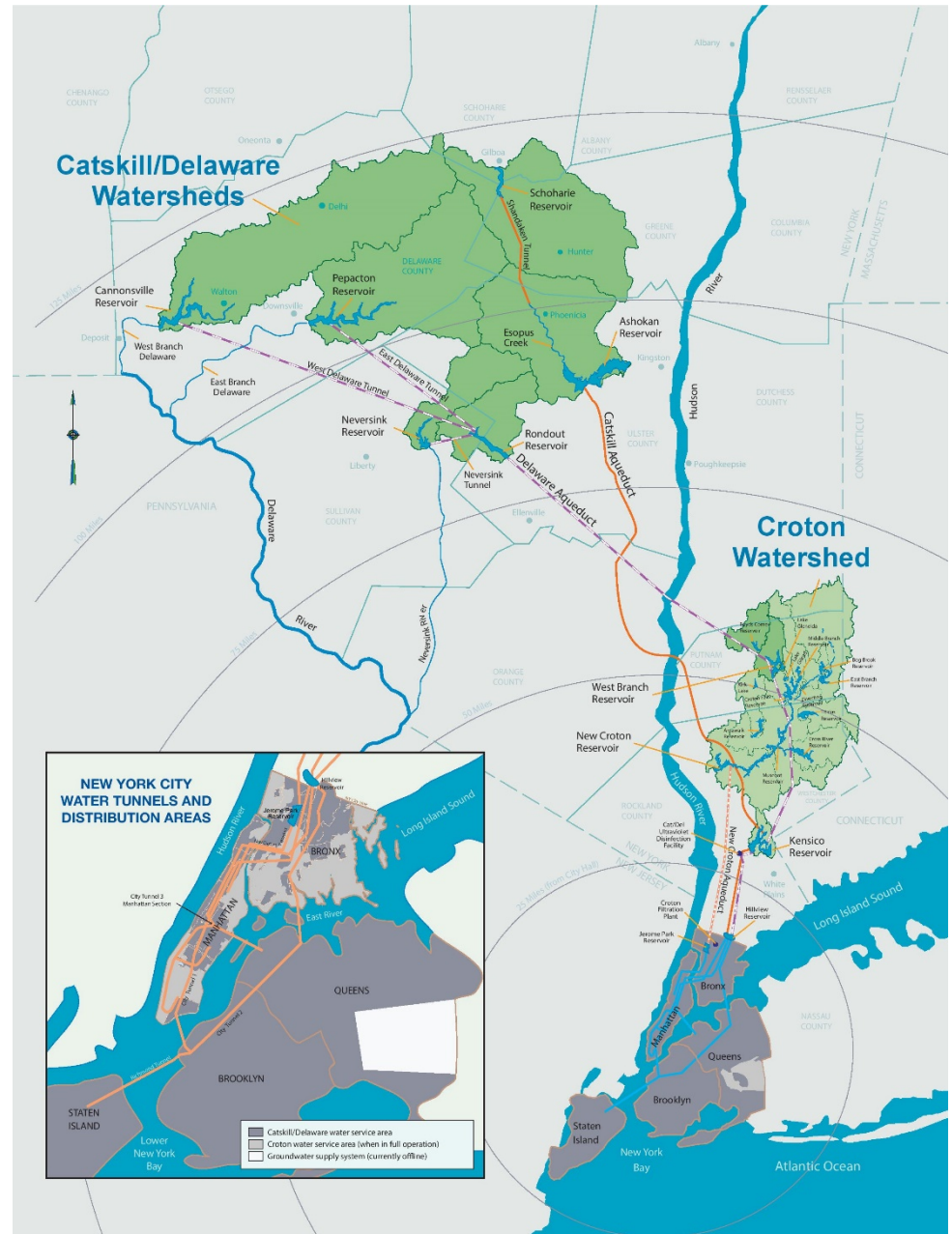


# Water For the Future and The Demand Management Plan

Ben Huff  
Program Manager  
Demand Management

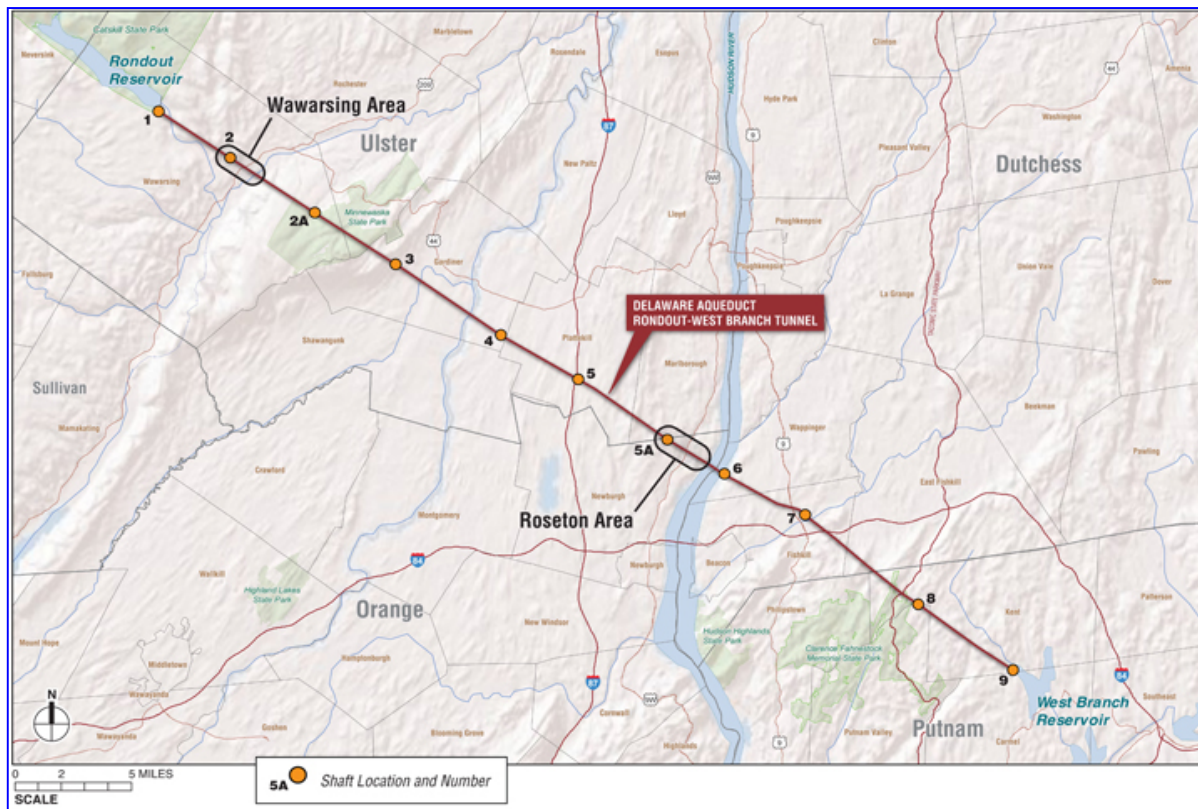
# Water Supply System

- 2,000 square mile watershed that has 19 reservoirs and 3 controlled lakes
- Serves 9 million people (50% of State)
- 580 billion gallon capacity
- Deliver 1 to 1.1 billion gallons/day
- 6,800 miles of distribution
- 14 WWTPs service NYC area



# Cause for Demand Management

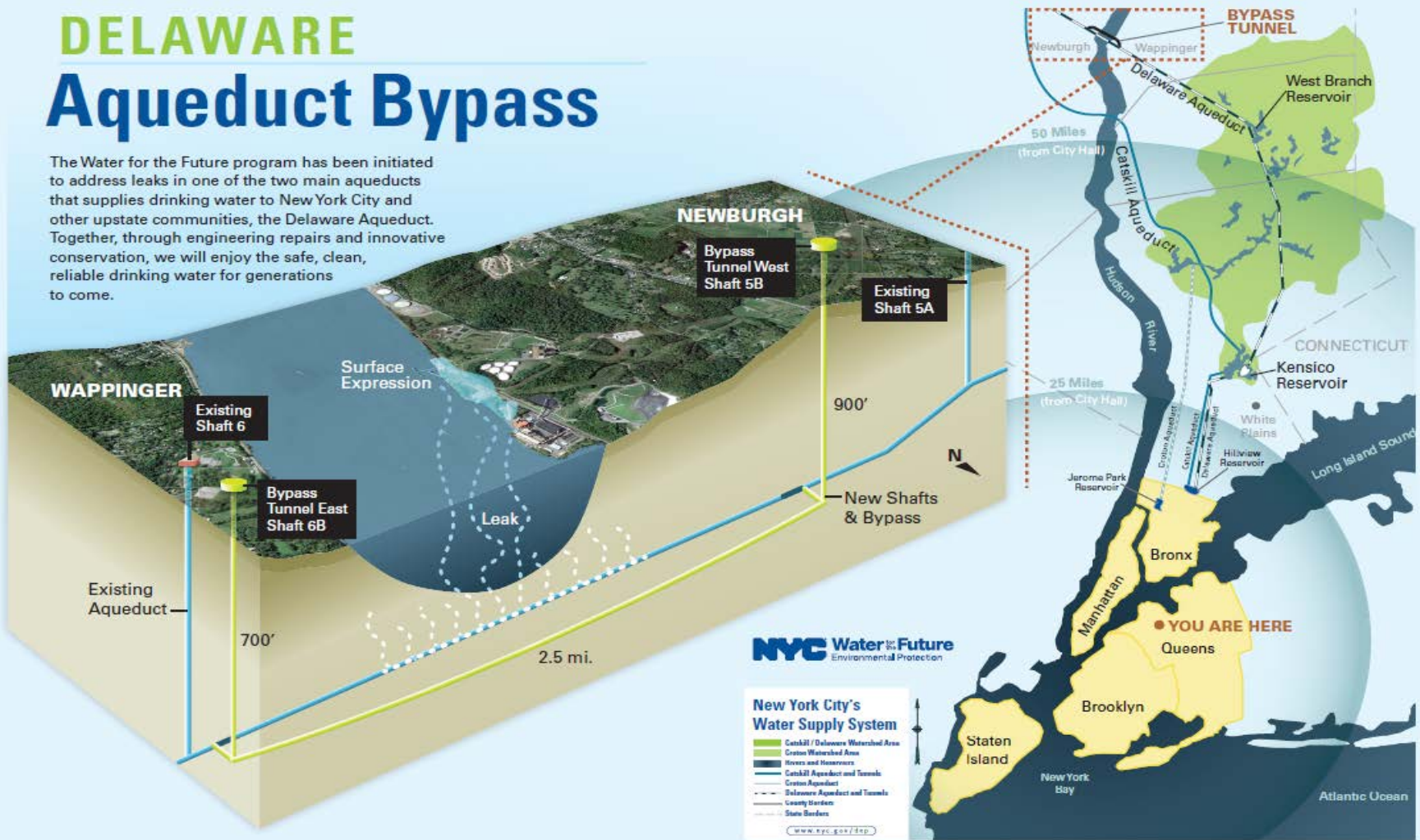
- Delaware Aqueduct has significant leakage in the Rondout-West Branch Tunnel (RWBT) section
- RWBT needs to be fixed to ensure future stability and supply
- During RWBT shutdown to repair the tunnel, NYC will need water from other sources
- Water supply needs are based on planned hydrology and shutdown duration



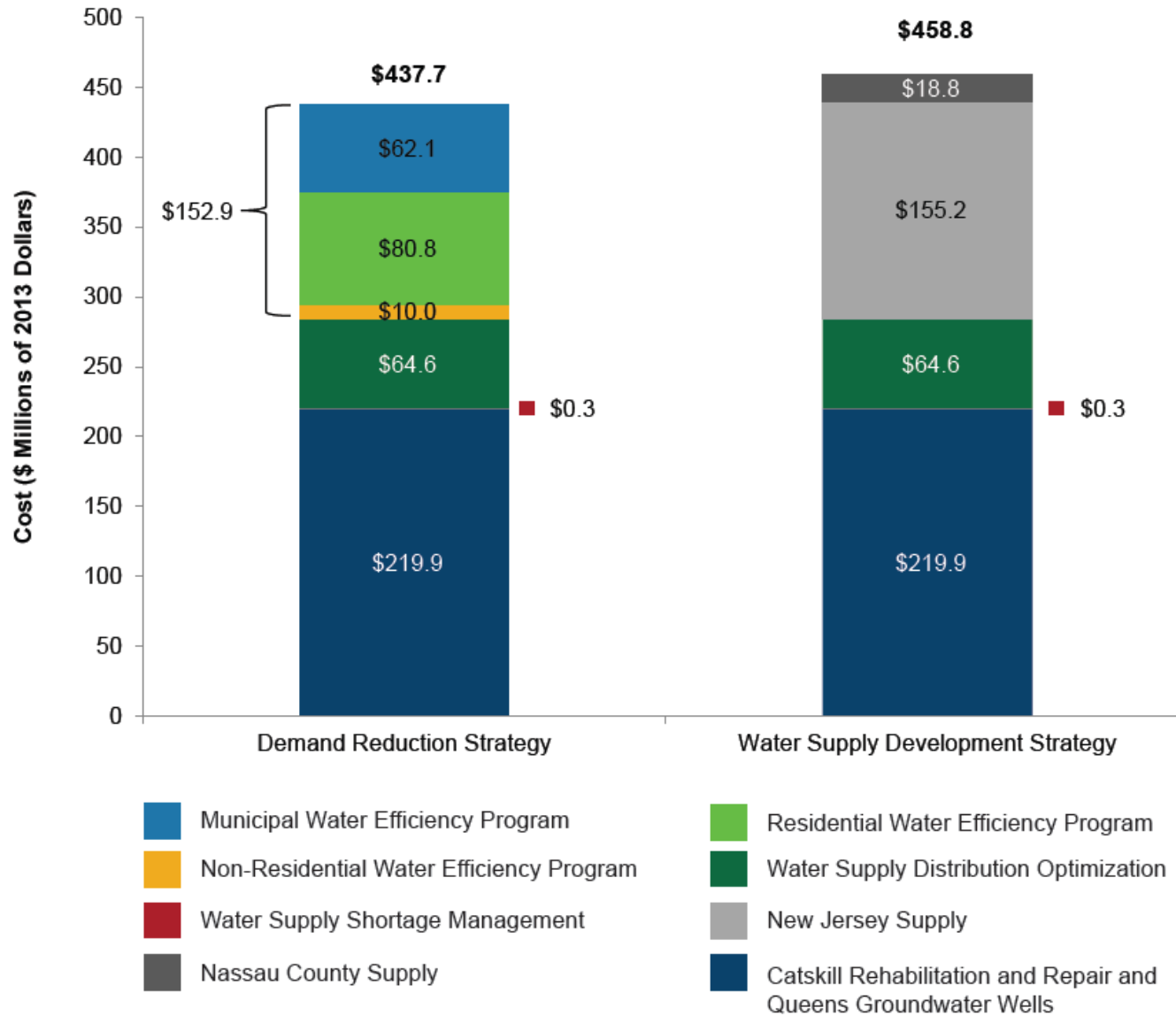


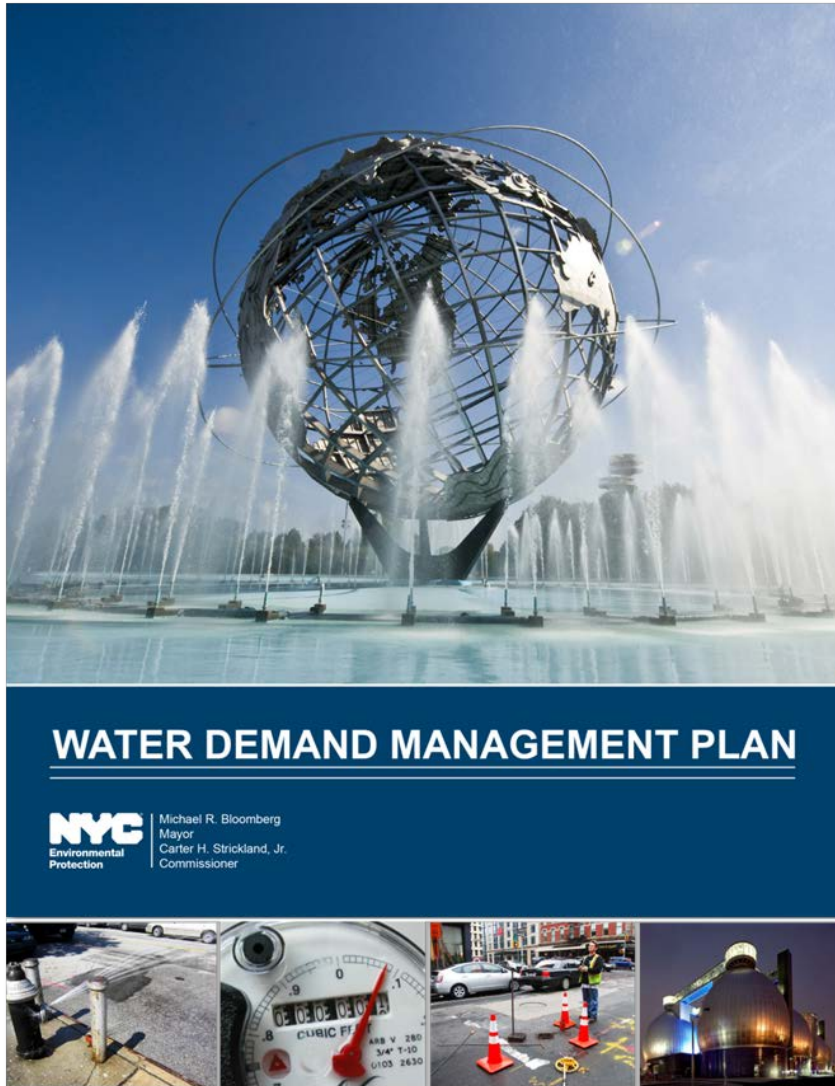
## DELAWARE Aqueduct Bypass

The Water for the Future program has been initiated to address leaks in one of the two main aqueducts that supplies drinking water to New York City and other upstate communities, the Delaware Aqueduct. Together, through engineering repairs and innovative conservation, we will enjoy the safe, clean, reliable drinking water for generations to come.



# Demand over Development





Retrofit and replace water fixtures at Schools, Parks, WWTPs, NYCHA, FDNY and Colleges



Replace inefficient fixtures in residential buildings



Create voluntary conservation programs in non-residential sectors and provide cost sharing



Continue leak detection, pressure management, and metering

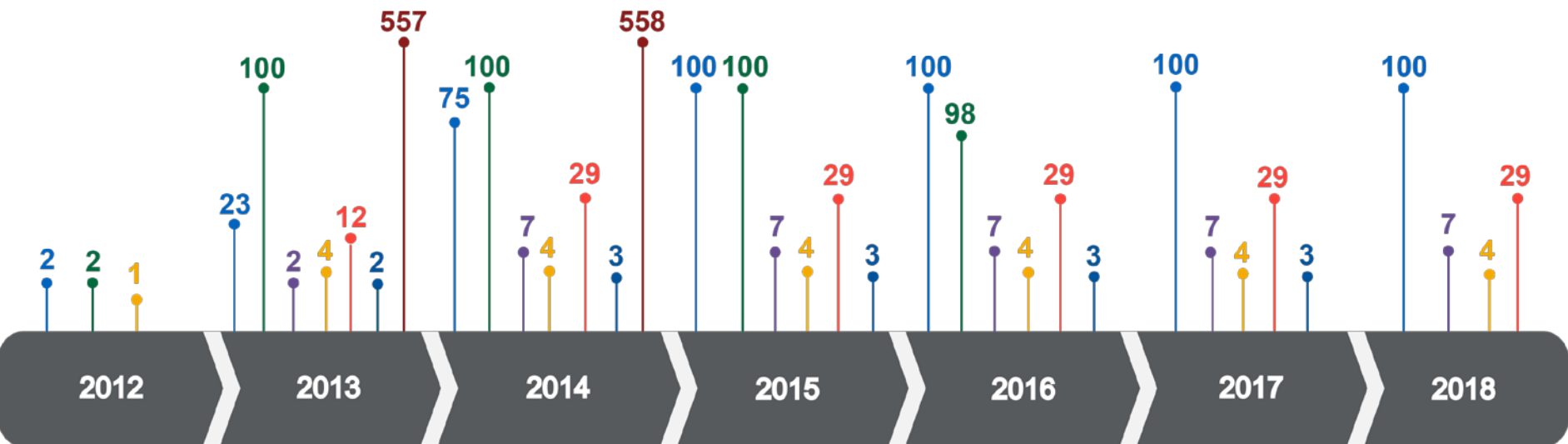


Adopt Water Shortage Rules, and emergency rates



Develop demand management plans for 10 upstate wholesale customers

# Strategy 1: MWEP Schedule



**500 Schools**

3.8 MGD saved  
\$20 million total cost  
\$5/GPD saved  
7 year implementation timeline

**400 Spray Showers**

1.1 MGD saved  
\$2.7 million total cost  
\$2.50/GPD saved  
5 year implementation timeline

**37 Rec Centers**

0.026 MGD saved  
\$0.2 million total cost  
\$8/GPD saved  
6 year implementation timeline

**21 Colleges**

0.75 MGD saved  
\$3 million total cost  
\$3/GPD saved  
7 year implementation timeline

**157 Fire Houses**

0.03 MGD saved  
\$0.4 million total cost  
\$11/GPD saved  
6 year implementation timeline

**14 DEP Facilities**

2.1 MGD saved  
\$7.6 million total cost  
\$3.50/GPD saved  
5 year implementation timeline

**1,115 NYCHA Developments**

1.54 MGD saved  
\$18 million total cost  
\$12/GPD saved  
2 year implementation timeline

**Estimated 9.3 MGD in water savings by completion of MWEP in 2018.**

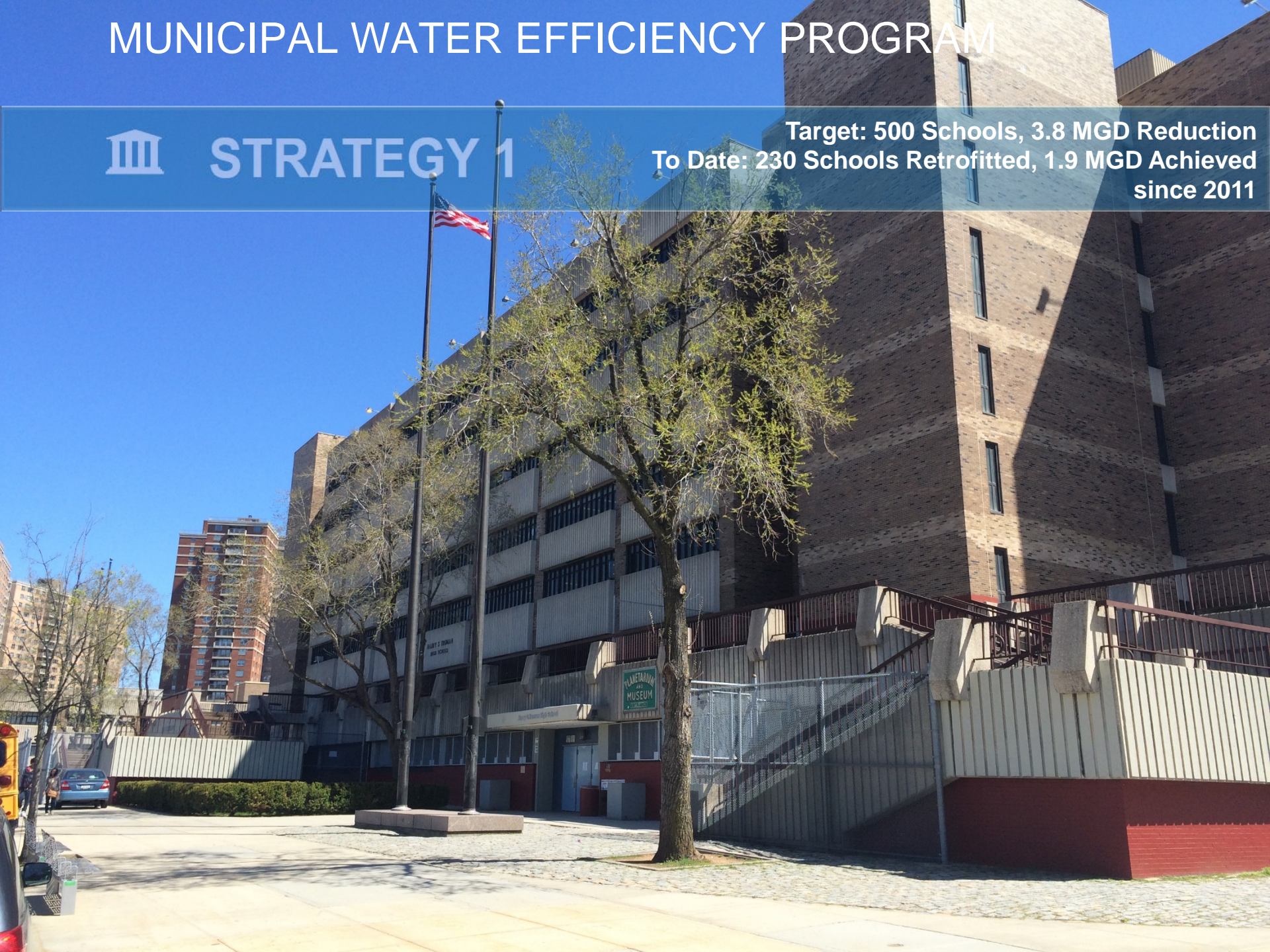


# MUNICIPAL WATER EFFICIENCY PROGRAM



## STRATEGY 1

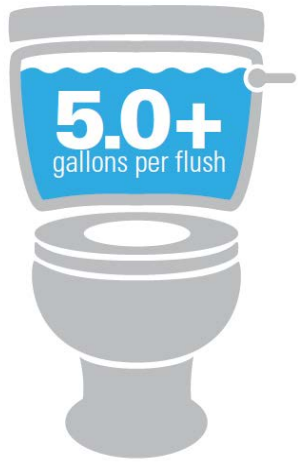
Target: 500 Schools, 3.8 MGD Reduction  
To Date: 230 Schools Retrofitted, 1.9 MGD Achieved  
since 2011





# Water Conservation in Schools

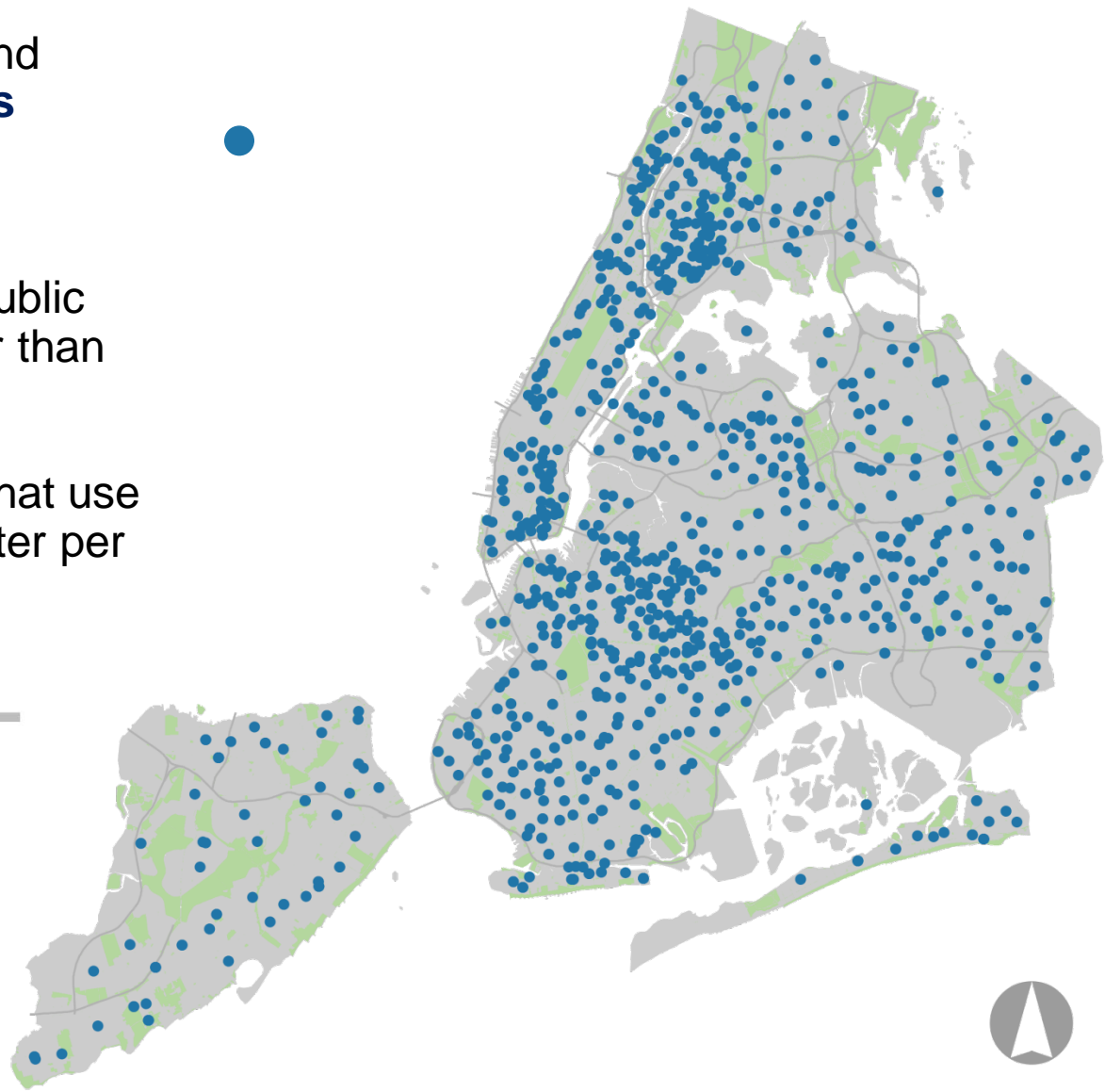
- Replacing inefficient toilets and urinals in **500 public schools citywide** with high efficiency models.
- Toilets and urinals in many public schools consume more water than necessary per flush.
- DEP will be installing toilets that use as little as 1.28 gallons of water per flush.



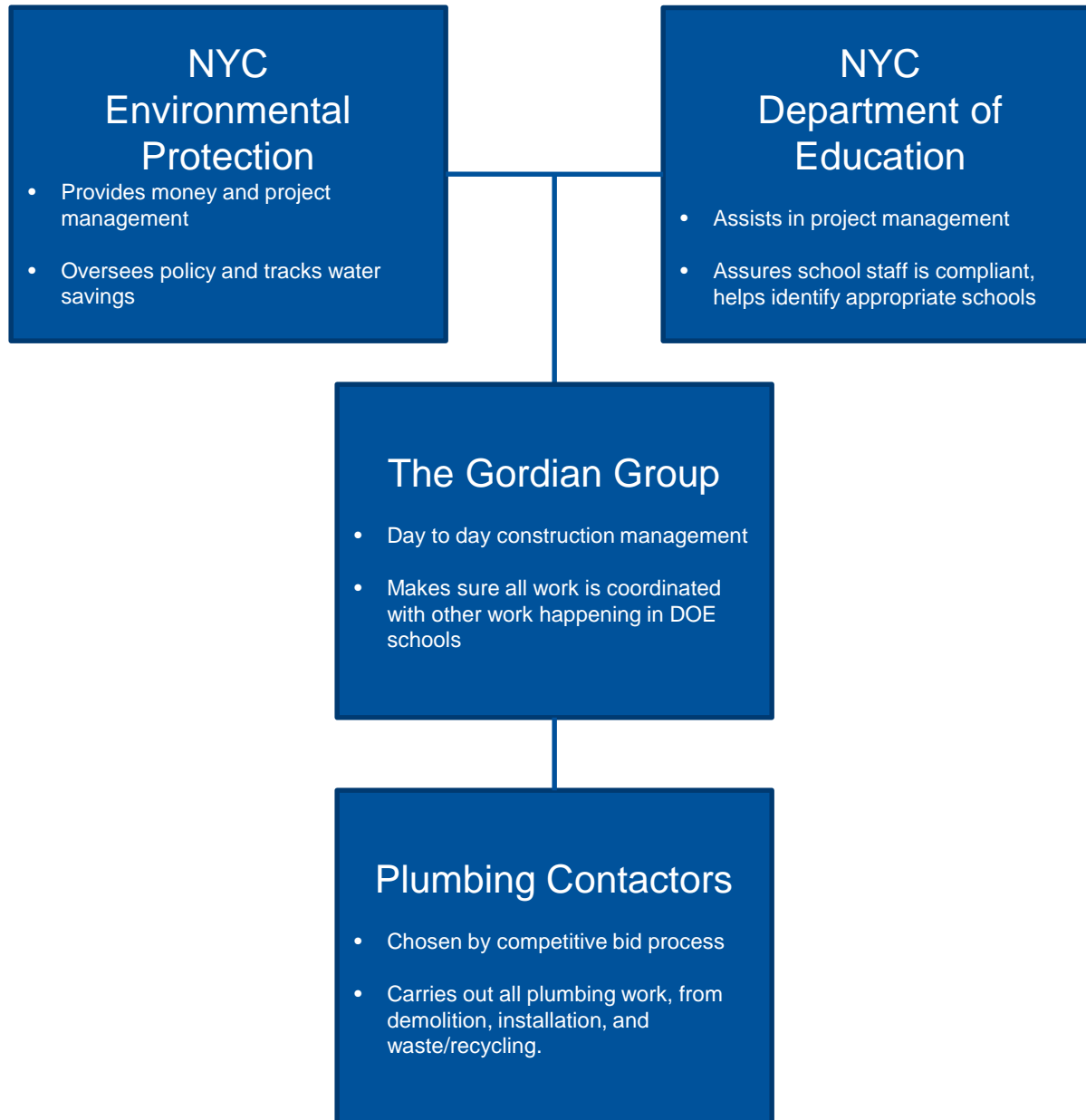
PRE-1980's TOILET



HIGH-EFFICIENCY TOILET TODAY



# Project Management in Schools



# Water Conservation in Schools

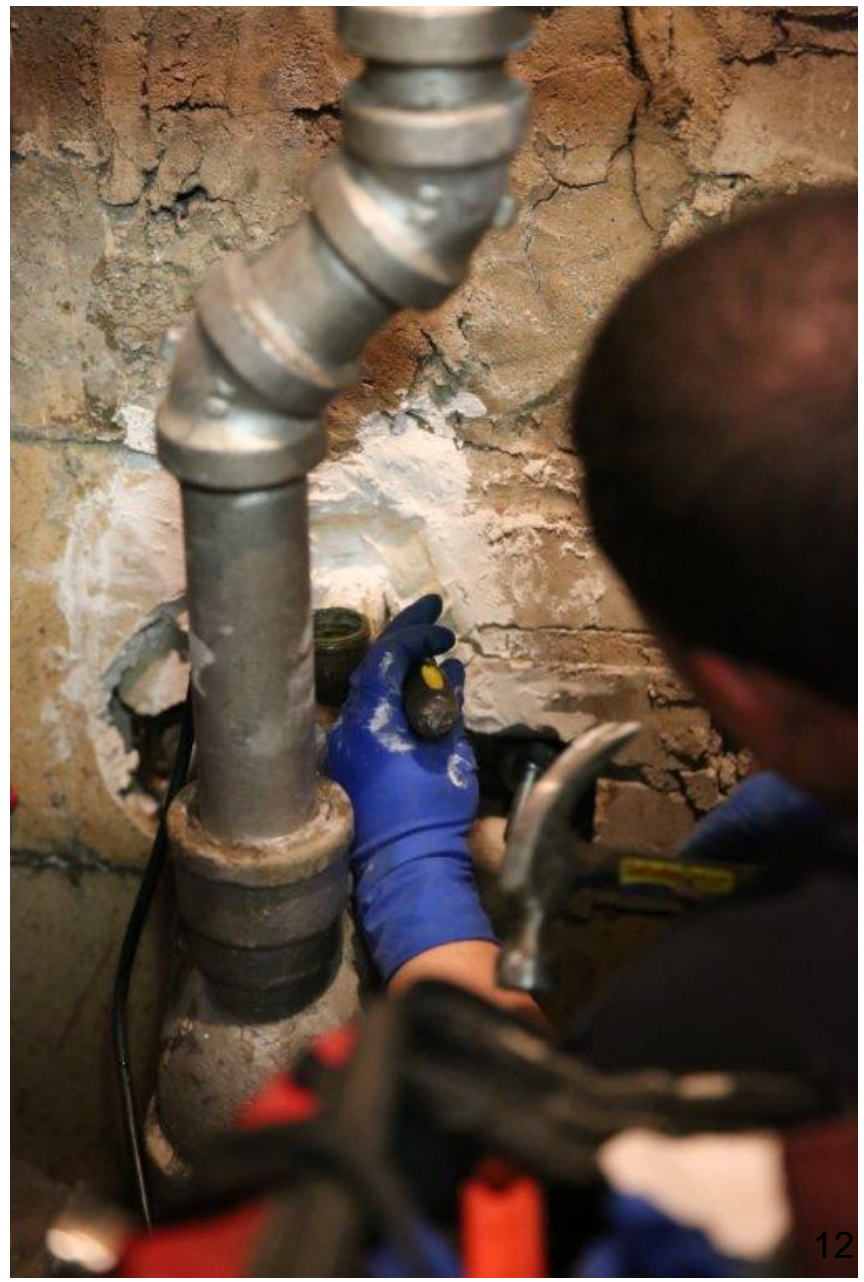
Bayside and Hillcrest High Schools in Queens, each have student populations in excess of 3,000 students and are in operation for most of the day, including after-school programming. Fixtures in these bathrooms have not been replaced on a large-scale, and are using from 3.5-5 gallons of water per flush.

- Bayside High School Total Retrofits: 179
  - Estimated water savings: approx. 13,800 GPD
- Hillcrest High School Total Retrofits: 121
  - Estimated water savings: approx. 14,900





# Water Conservation in Schools



# Water Conservation in Schools



Before  
High Consumption



After  
High Efficiency





- Installing AMR Meters at all schools part of retrofit program
- This allows us to track savings, and set up leak detection



# Reusing Porcelain from Old Fixtures

- Working with contractors to salvage porcelain
- Large portion will be used in oyster reef restoration project in Jamaica Bay
- Working with our Office of Green Infrastructure to use other porcelain in right of way bioswales



- Article on the NY Times highlighted our recycled porcelain component which was picked up by all other news outlets who covered the story.



N.Y. / REGION

## *Oysters Are Nearly Extinct in New York Waters. This Team Is Trying to Coax Them Back.*

By SAMANTHA SCHMIDT SEPT. 4, 2016

A floating cage containing hundreds of oysters was pulled into Jamaica Bay from Bayswater Point State Park in Queens on Thursday. Dave Sanders for The New York Times

Torrential rain poured down on the team of scientists and conservationists on Jamaica Bay as their small boat slowly towed about 85 cages packed with 36,000 oysters, a species that once blanketed New York Harbor but is now



## III STRATEGY 1

Target: 400 Spray showers, 1.1 MGD Reduction  
To Date: 350 Spray showers done, 1.0 MGD Achieved  
since 2011

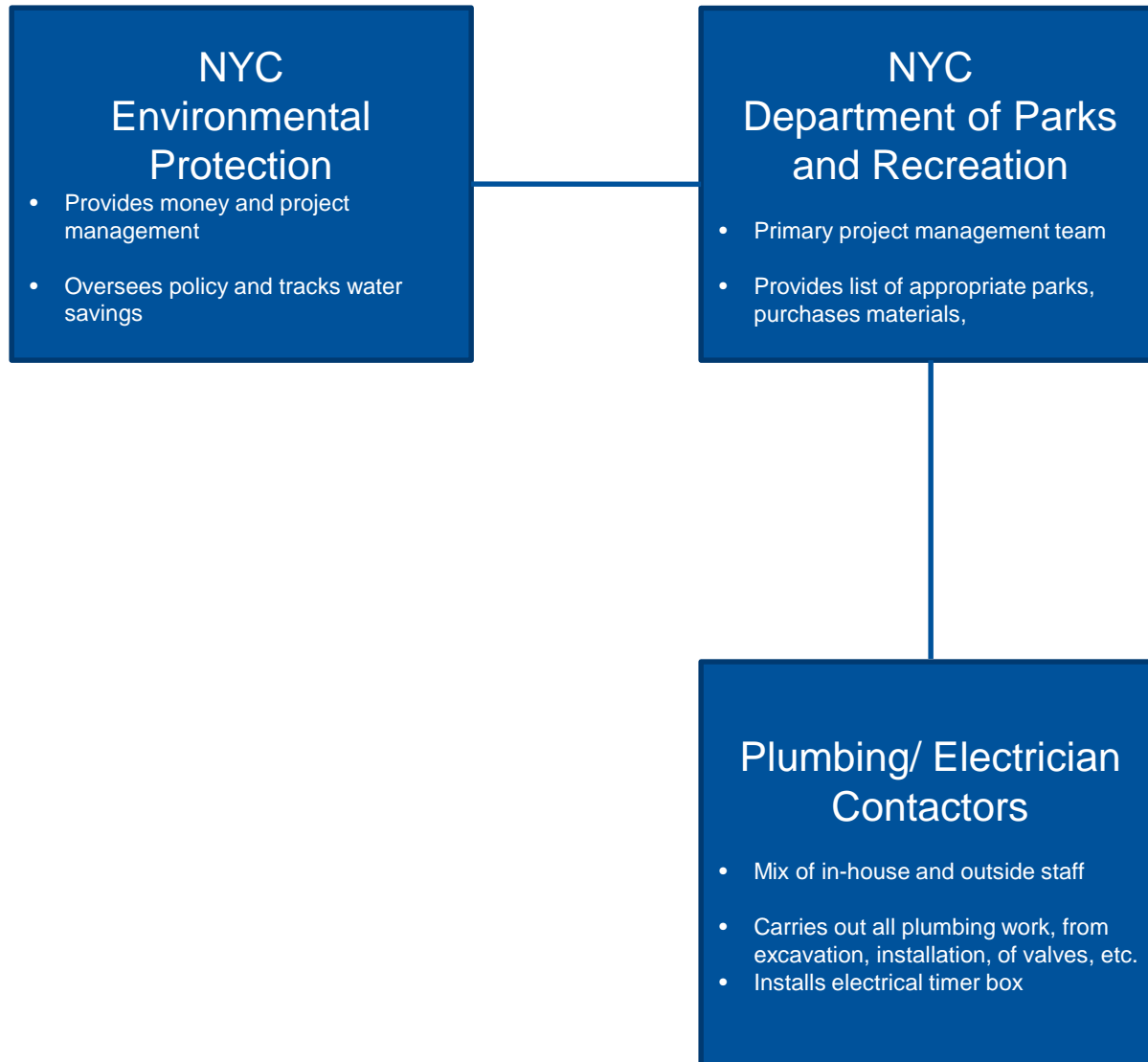








# Project Management in Parks





## STRATEGY 1

Target: 12 Fire Houses, Water Recovery Facility, 0.04 MGD  
To Date: 12 Fire Houses done and work started on  
recovery facility





# MUNICIPAL WATER EFFICIENCY PROGRAM



## STRATEGY 1

Target: 14 WWTPs, 2.1 MGD  
To Date: 10 WWTPs targeted, 1.6 MGD achieved  
since 2013





# MUNICIPAL WATER EFFICIENCY PROGRAM

- Each year we target 3 to 4 plants to be part of the Commissioner's Water Challenge.
- We create a baseline of their water consumption from their meter's for the previous year, and create a goal of a 10% reduction for the challenge year.
- A walkthrough of the plant is done by BEPA staff to help outline funding opportunities for upgrades that could result in water savings
- Winning plants are treated to an appearance by the Commissioner and a breakfast



# Examples of WWTP upgrades



- Installed high efficient water nozzles at all plants for tank wash downs. Old nozzles used 110 GPM, new ones use 55 GPM
- Working to replace old pump seal boosters in Treatment Plants to prevent water loss. Replacing at one plant expected to save 17,000 gpd with a \$10/GPD

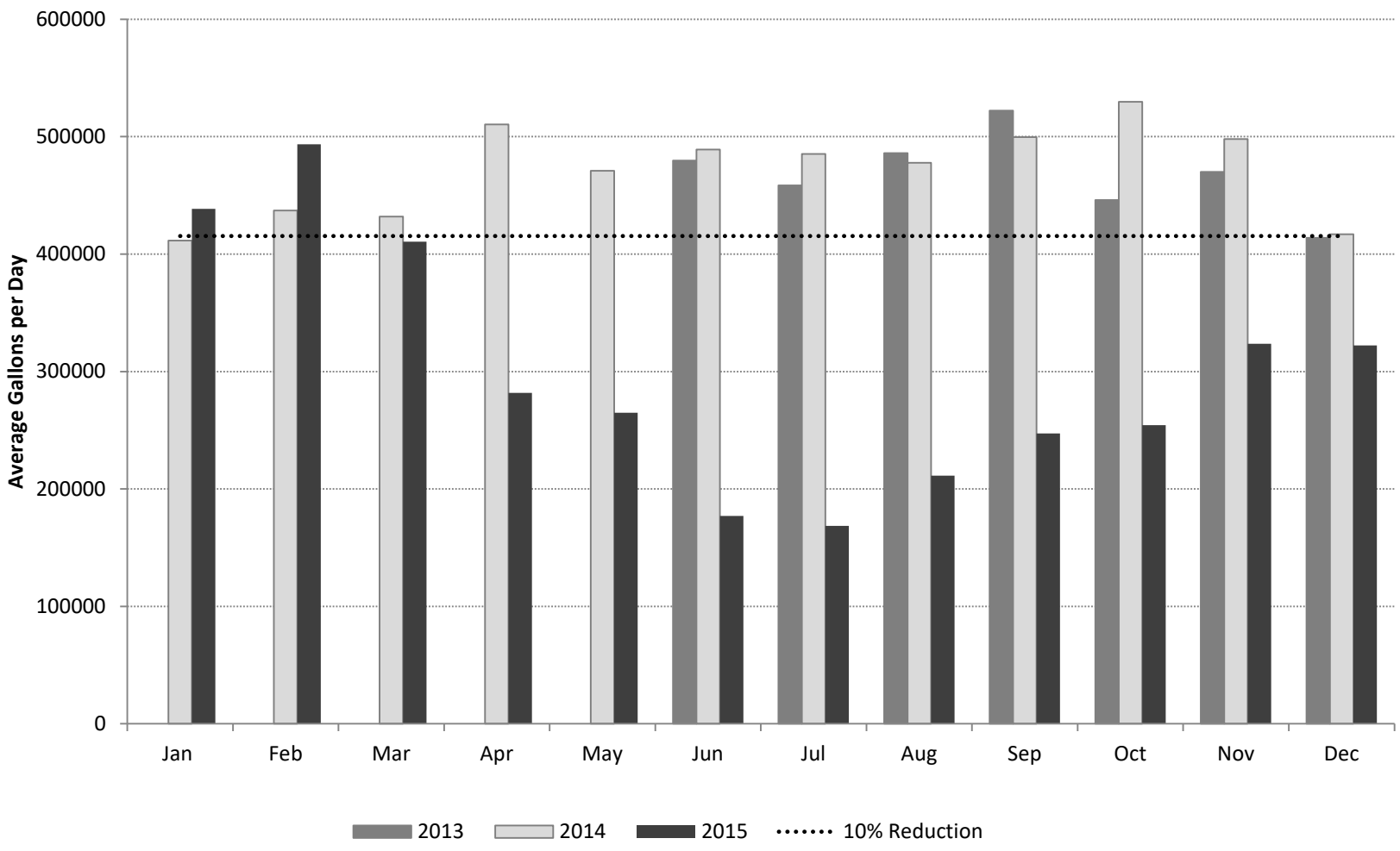




# Tracking Data

\*2012 Avg = Baseline  
\*2013 Avg = March - Present

## Hunts Point WWTP City Water Consumption



# MUNICIPAL WATER EFFICIENCY PROGRAM



## STRATEGY 1

Target: 21 Colleges, 0.75 MGD Reduction  
To Date: CCNY and Lehman College underway





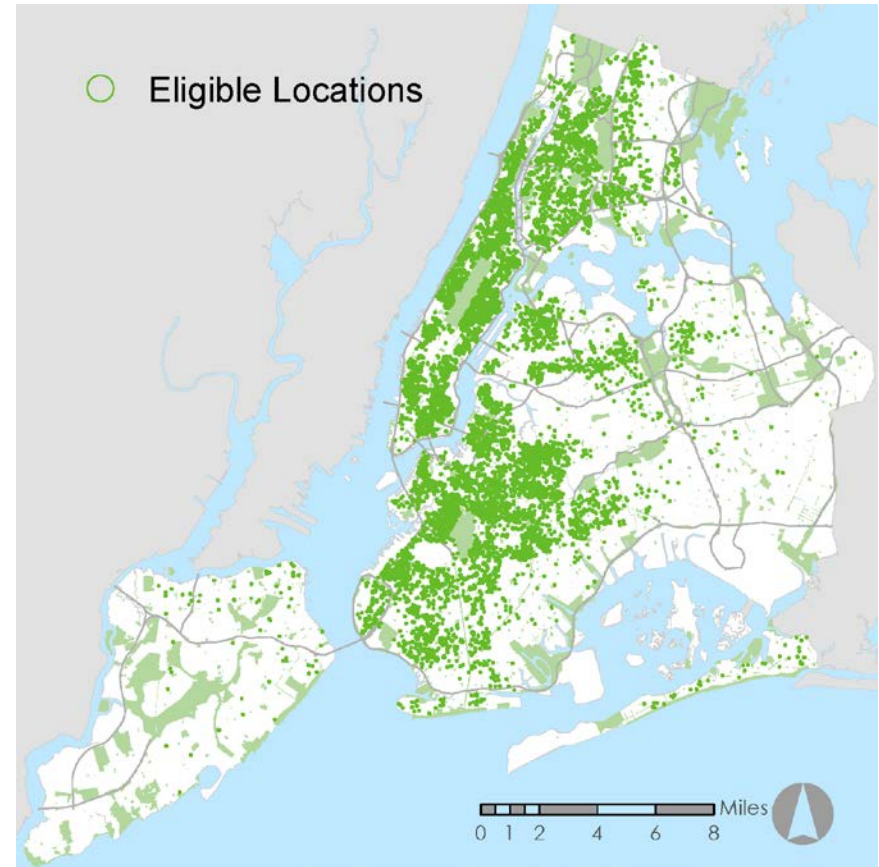
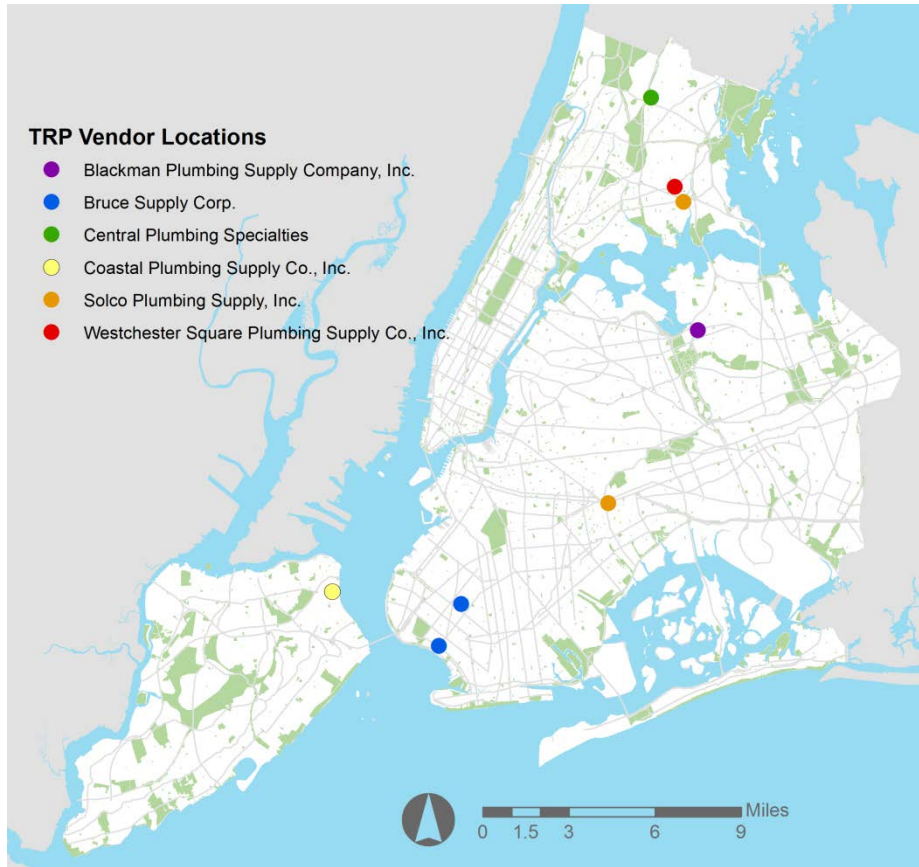


## STRATEGY 2

TRP Phase 1 Target: 150K fixtures, 5 MGD Reduction  
To Date: 10,100 fixtures retrofitted or in pipeline  
since 2014



# Toilet Replacement Program - Vendor Locations

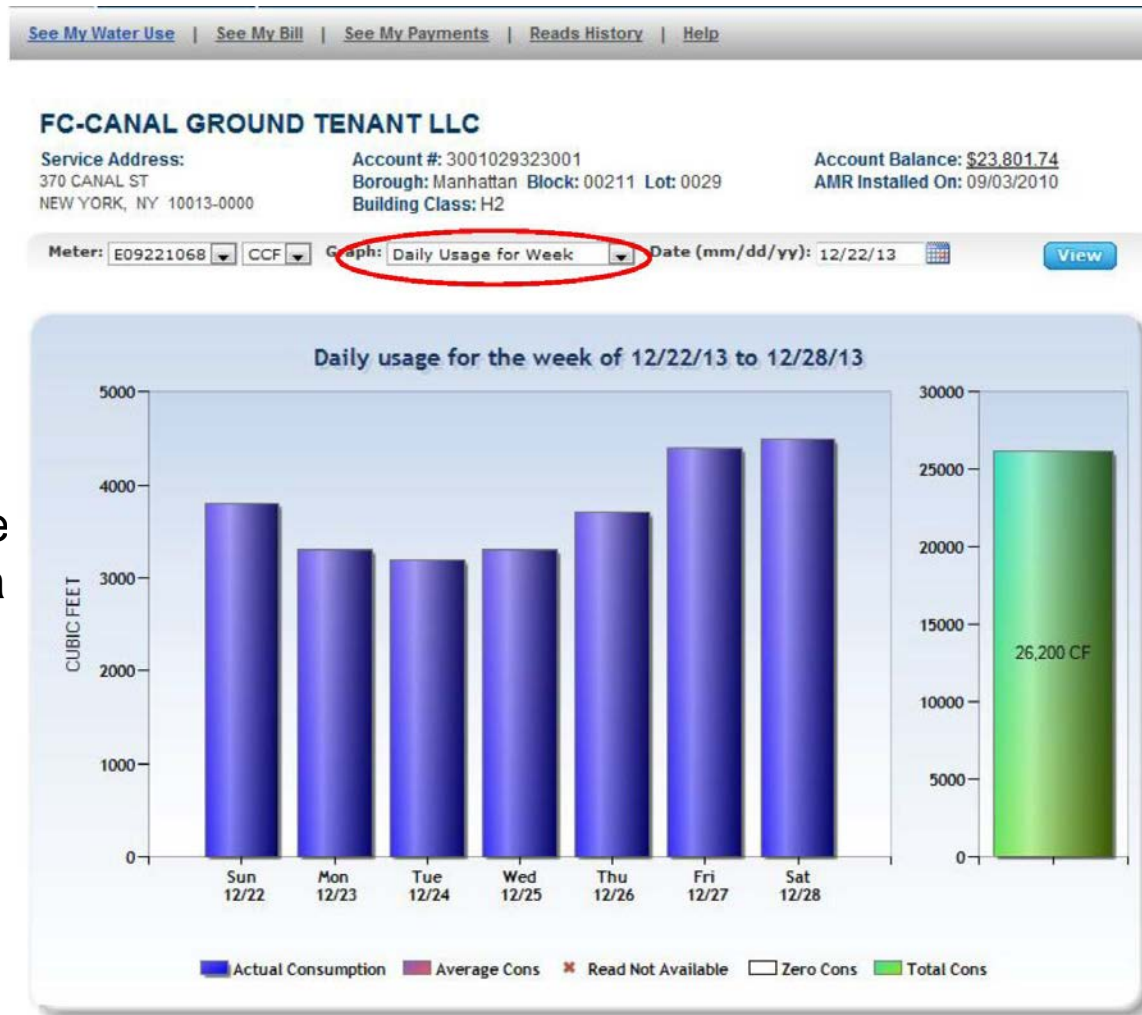


- 6 Vendors
  - 8 Locations
  - +10,000 potential customer transactions
- Program participants will bring their old toilets to the vendor locations where they used their vouchers to get their new toilets

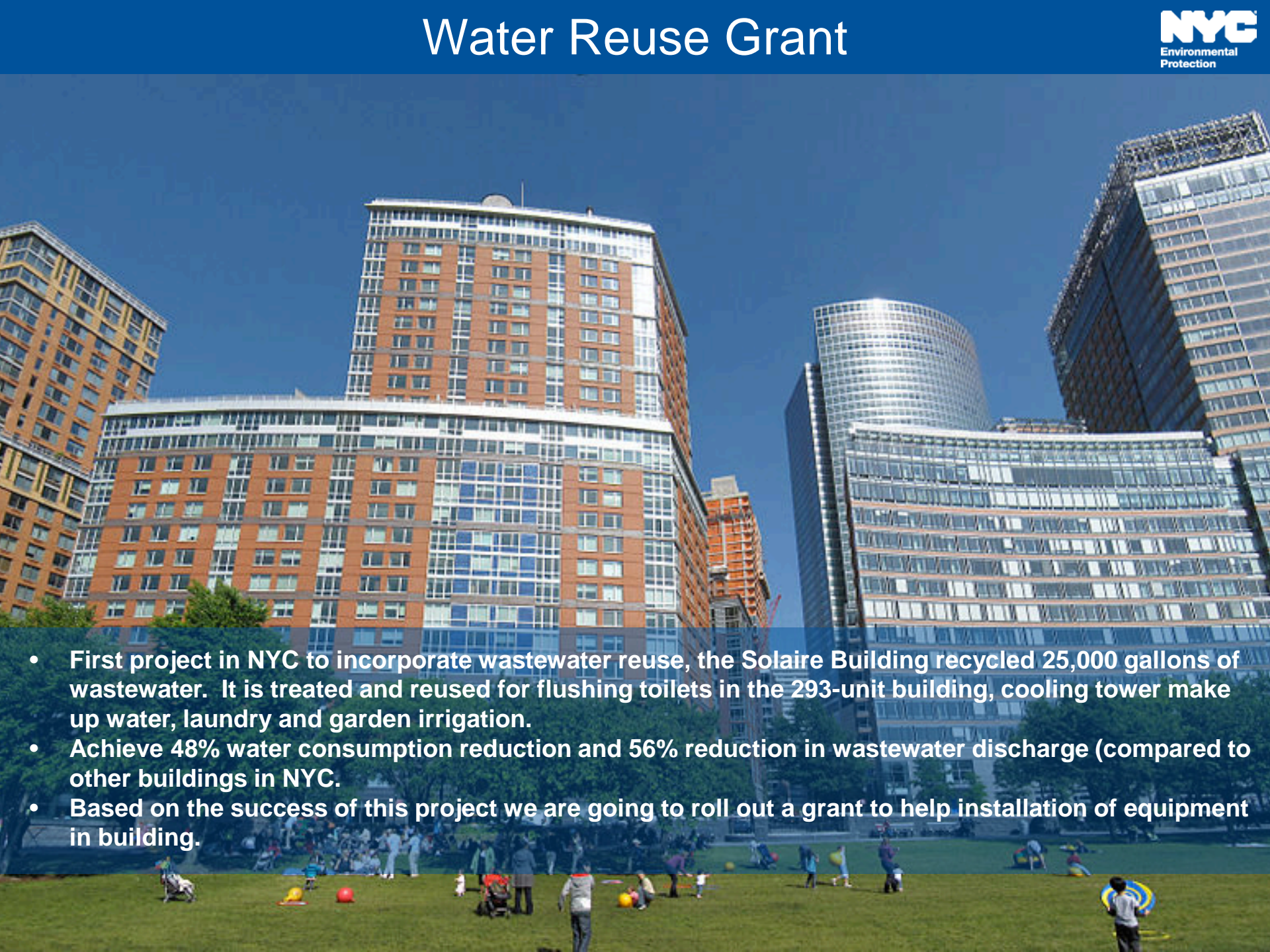


# Verifying eligibility in My DEP Account

- Beyond being eligible customers must have 90 days of AMR reads to create a baseline usage
- All paperwork is done through a TRP portal to save paper and create easy tracking
- After the voucher for replacement is deactivated we track usage to see if there is a drop. If not we can inspect their property to ensure new bathrooms were installed.



# Water Reuse Grant

- 
- First project in NYC to incorporate wastewater reuse, the Solaire Building recycled 25,000 gallons of wastewater. It is treated and reused for flushing toilets in the 293-unit building, cooling tower make up water, laundry and garden irrigation.
  - Achieve 48% water consumption reduction and 56% reduction in wastewater discharge (compared to other buildings in NYC).
  - Based on the success of this project we are going to roll out a grant to help installation of equipment in building.



# NON RESIDENTIAL EFFICIENCY PROGRAM

## STRATEGY 3

Target: Various Industries, 0.04 MGD Reduction  
To Date: Completed Hotel and Restaurant Challenge,  
Achieved 0.3 MGD since 2013





# Restaurant Example



Style Small Italian Eatery

Service 11:30 am – 11:00pm

Size 3,500 sq ft

## Project Summary

- Benchmark water use
- Water Conservation Plan
- Register for DEP leak detection program
- Strategy: implement low costs retrofits
  - Suggested - Low-flow aerators

## Highlights

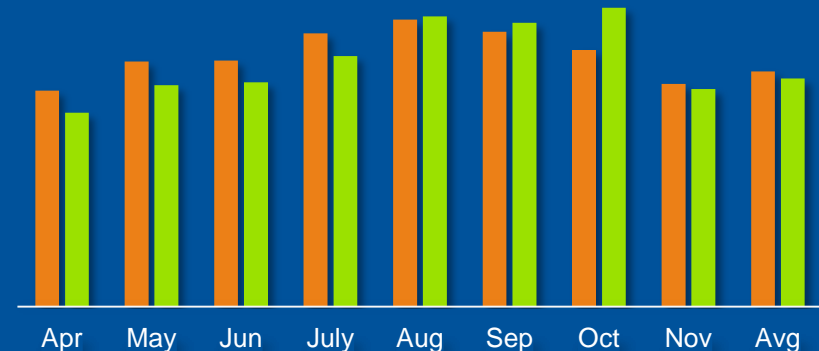
Consumed 2.6M gal in 2014

Saved 83,000 gal in 2015

\$aved 6% off water costs

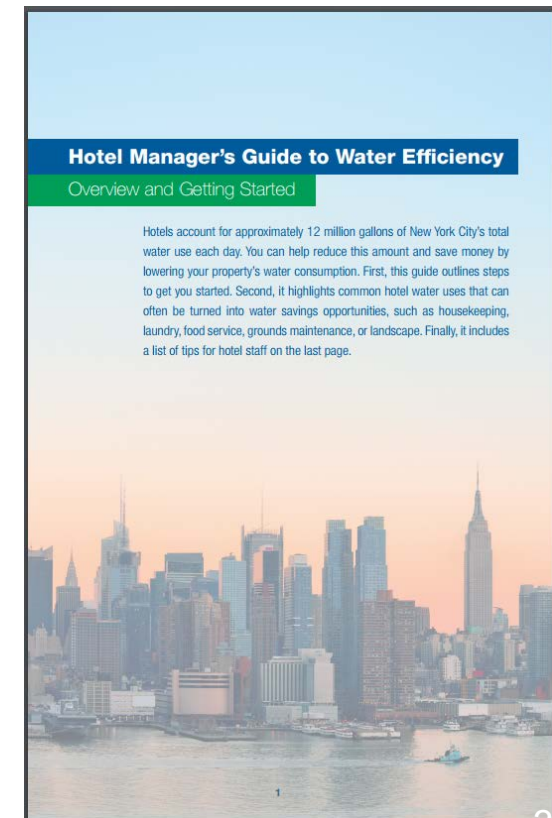
## Monthly Water Consumption (gal)

2014 2015



# Create guides from lessons learned

- Put all workshop slides and results on our website
- Created a Manager's guide for each challenge also available on our website
- This allows us to share these lessons learned with other customers who did not participate in the challenge





# WATER DISTRIBUTION SYSTEM OPTIMIZATION

## STRATEGY 4

Target: Meter Replacements, Leak Detection, 3.3 MGD To Date:  
Achieved: ~9,000 meters replaced, repaired ~10,000 hydrants  
Ongoing

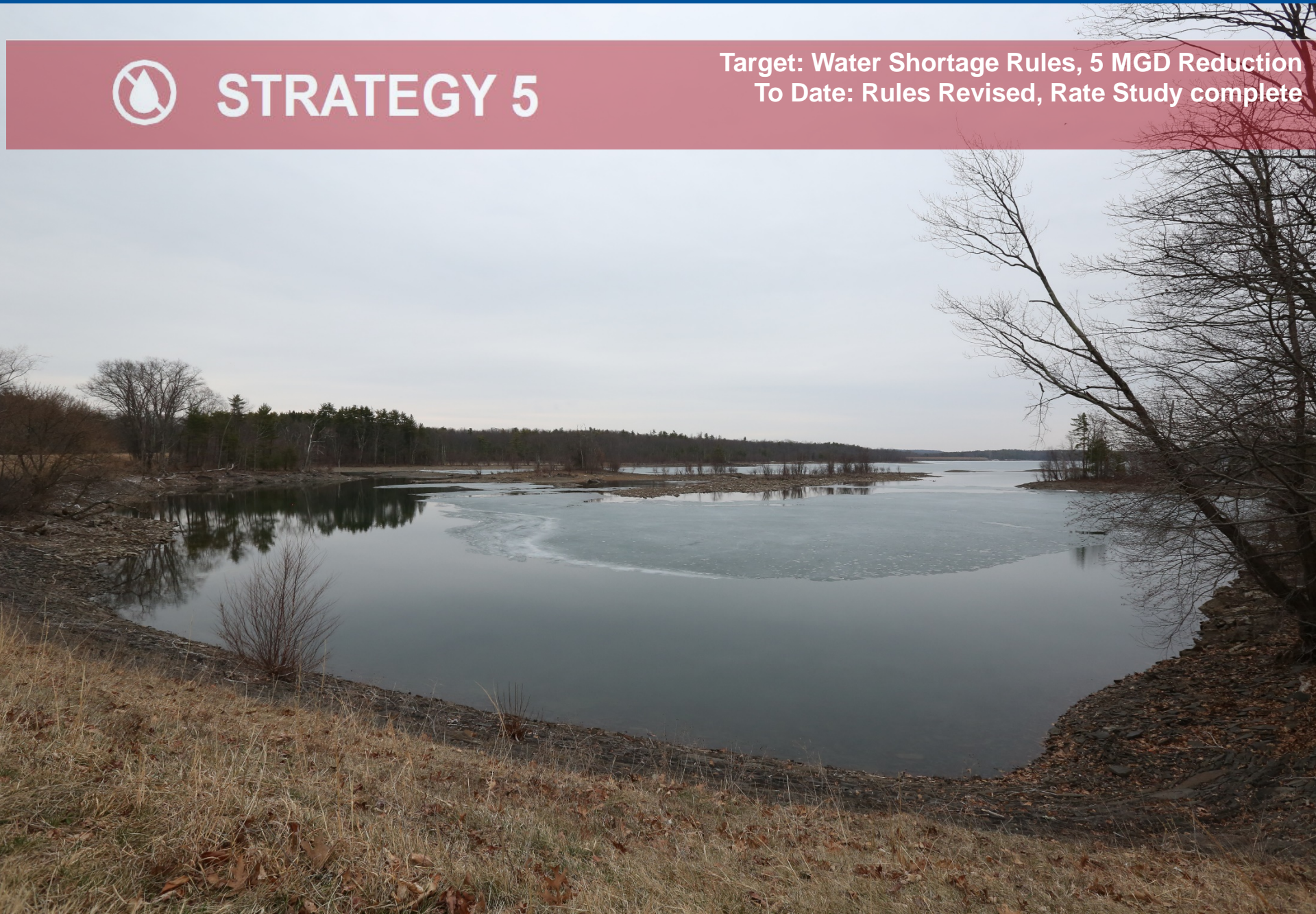






## STRATEGY 5

Target: Water Shortage Rules, 5 MGD Reduction  
To Date: Rules Revised, Rate Study complete

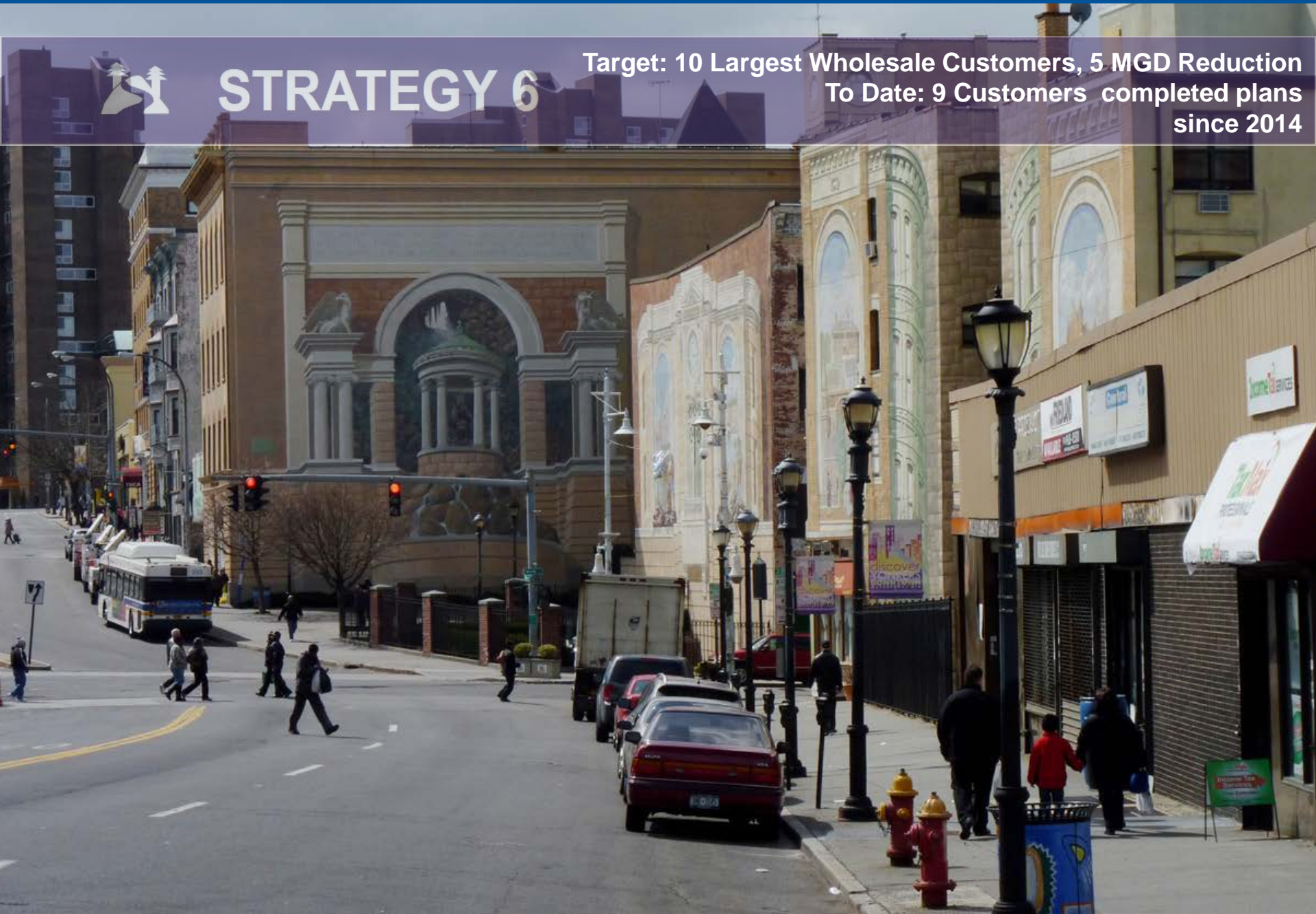






## STRATEGY 6

Target: 10 Largest Wholesale Customers, 5 MGD Reduction  
To Date: 9 Customers completed plans since 2014



# Questions?

**Thank you for listening!**

**For more information about the New York City Water Supply System  
and conservation,  
please visit our website at:**

**[www.nyc.gov/dep/conservation](http://www.nyc.gov/dep/conservation)**

**Contact me: [bhuff@dep.nyc.gov](mailto:bhuff@dep.nyc.gov)**