NYC Environmental Protection

New York City's Water Challenge to Restaurants

In Partnership with

EPA WaterSense

NEW YORK STATE RESTAURANT ASSOCIATION

The City of New York
Mayor Bill de Blasio

ConEdison GREEN TEAM

SOLAR one
GREEN ENERGY, ARTS & EDUCATION CENTER

An Independent Contractor to:
nyserda
Energy. Innovation. Solutions.

Alliance for Water Efficiency

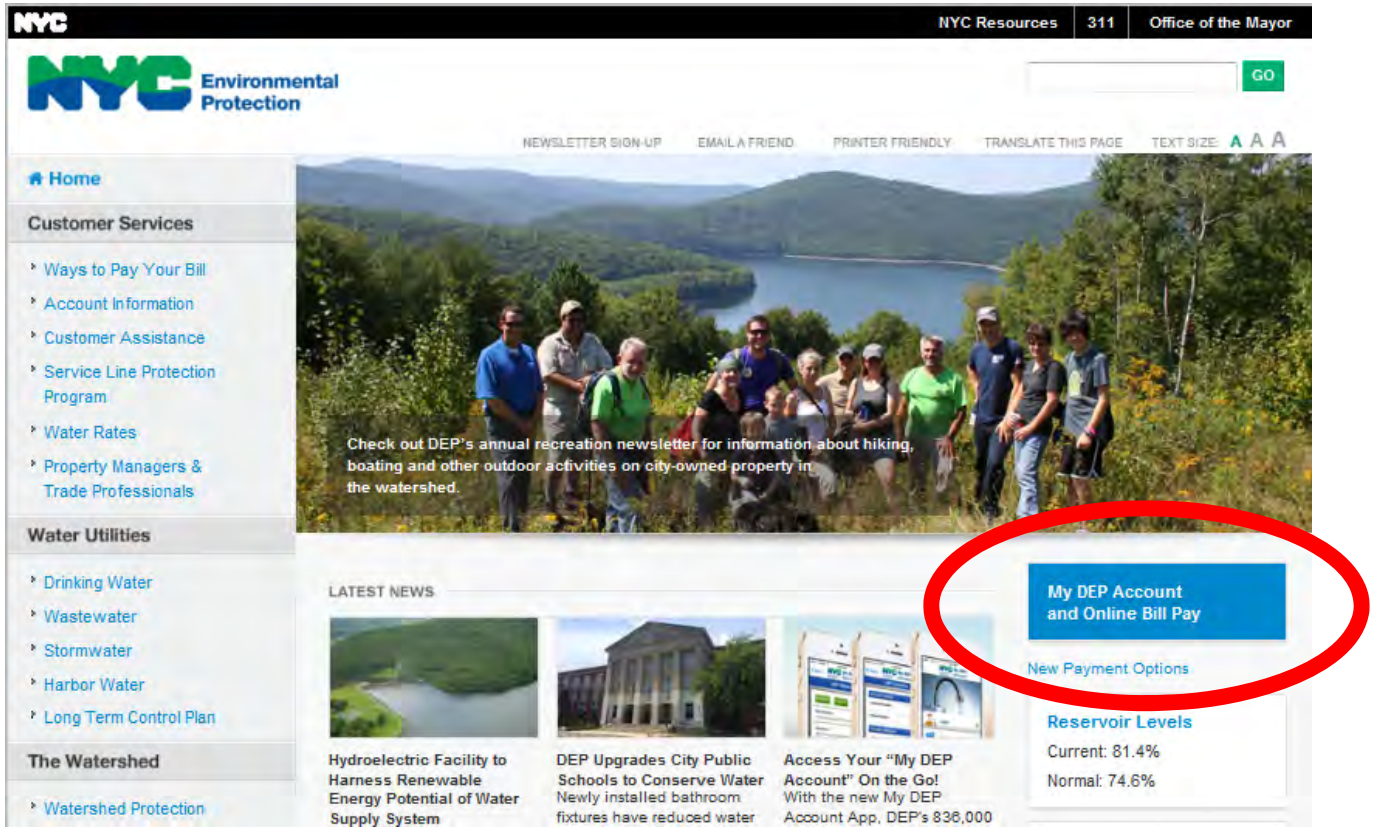
Program Welcome

Vlada Kenniff

Managing Director of Planning, Projections & Demand Management at NYC DEP

Program Welcome – Recap Workshop 01

1. Making a commitment to the program
   - Goals
   - Schedule
2. Assessing Facility Water Usage



NYC Water Challenge to Restaurants Program

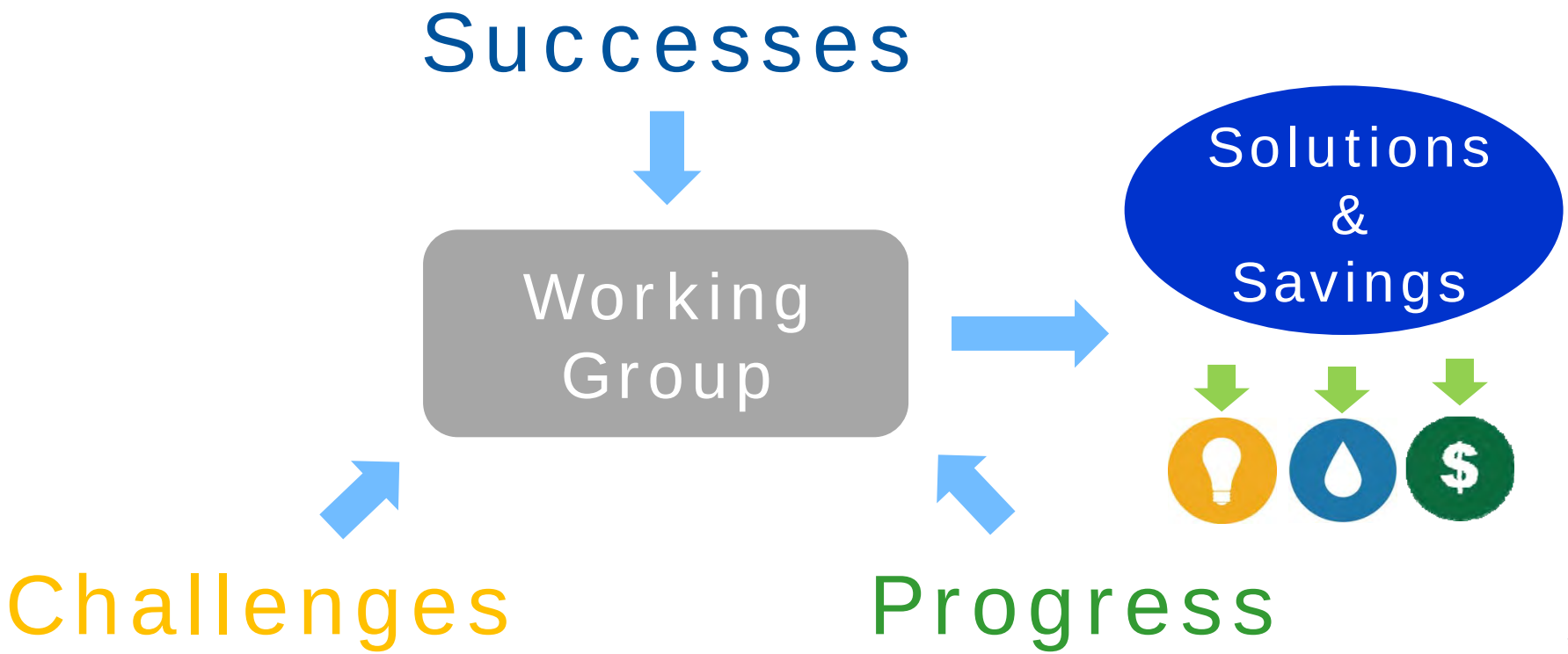
The approach of the New York City Water Challenge to Restaurants will loosely follow the seven step Water Management framework that the US EPA endorses on their WaterSense® website:

- Step 1: Making a Commitment
- Step 2: Assessing Facility Water Use
- Step 3: Setting and Communicating Goals
- Step 4: Creating a Water Conservation Plan
- Step 5: Implementing the Water Conservation Plan
- Step 6: Evaluating Progress
- Step 7: Recognizing Achievement

The goal of the New York City Water Challenge Program is to help Non-Residential water users achieve and sustain long-term water savings.

Program Welcome – Goals of Workshop 02

1. Understand why developing and maintaining a Water Conservation Plan is key to success.
2. Set-up with the tools to get started on developing your facility specific Water Conservation Plan.



Introduction to Water Conservation Planning

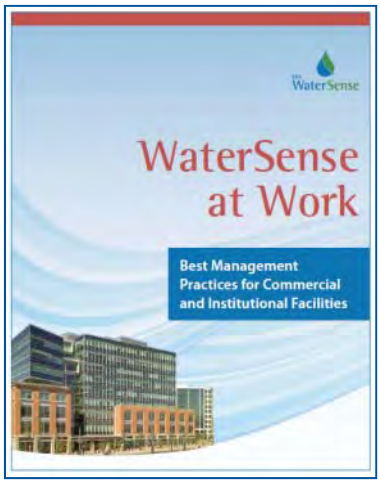
Veronica Blette,
Chief – WaterSense Branch
EPA

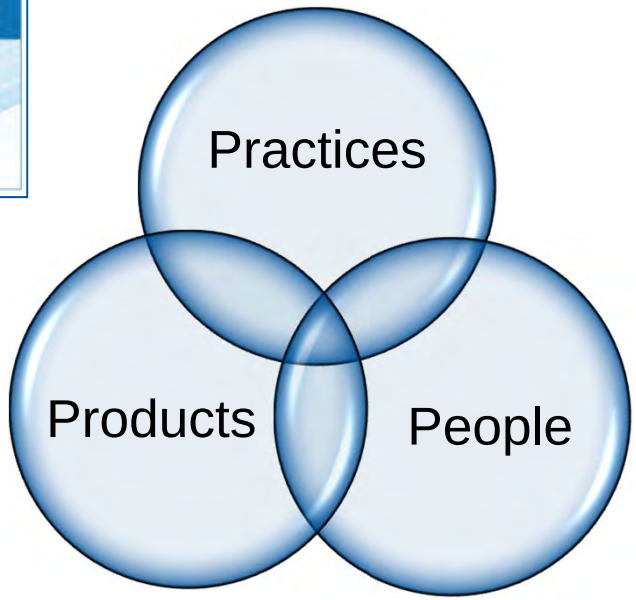
What Is WaterSense?

- WaterSense is a voluntary program launched by EPA in 2006 that provides a simple way to identify water-efficient:
  - Products
  - Homes
  - Programs
  - Practices
- To date, more than 14,000 different models have earned the label
  - Independently certified for water efficiency and performance
- www.epa.gov/watersense

WaterSense Focus – 3 P's

Actions that can be taken to reduce water use -- at home, outdoors and at work





Fixtures and technologies save water

Partners reach users to change behavior

WaterSense Labeled Products

Flushing Urinals
(≤0.5 gpf)

Lavatory Faucets
(≤1.5 gpf)

Tank-Type Toilets
(≤1.28 gpf)

Showerheads
(≤ 2.0 gpm)

More than 14,000 Labeled Product Models

Irrigation Controllers

Pre-rinse Spray Valves
(≤ 1.28 gpm)

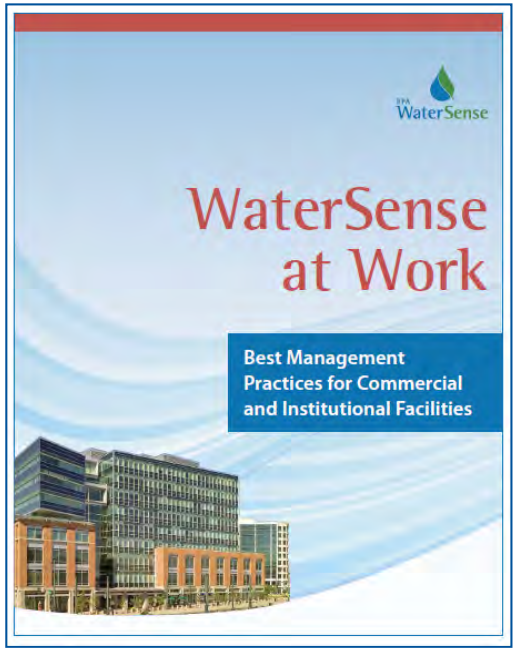
ENERGY STAR

Water factors are also included in many ENERGY STAR qualified products

Water Efficiency

Best Management Practices

- *WaterSense at Work* is an online guide facilities can use to manage water use :
  - Water management planning
  - Water use monitoring and education
  - Sanitary fixtures and equipment
  - Commercial kitchen equipment
  - Outdoor water use
  - Mechanical systems
  - Laboratory and medical equipment
  - Onsite alternative sources of water



www.epa.gov/watersense/commercial

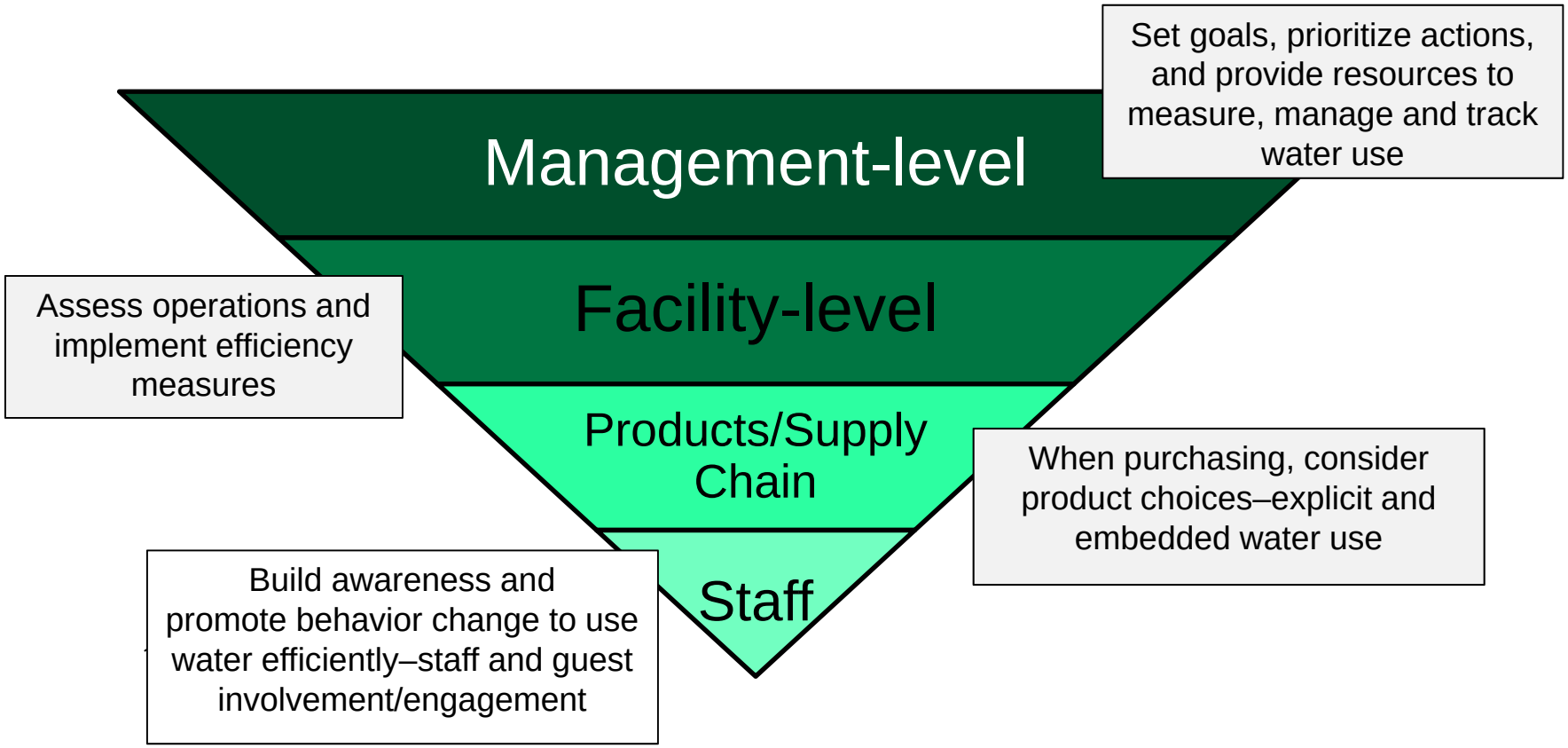
Water Management Planning

- You can't manage what you don't measure!
- A water assessment can help facility management personnel:
  - Understand where and how water is used
  - Identify leaks and other operational malfunctions to correct immediately
  - Develop and evaluate a comprehensive project list of water savings opportunities
- Continued water use tracking helps quickly identify problems

Step 1 Recap

√ Make a Commitment

- Build a team from throughout the organization and set the tone for moving forward



Step 2 Recap

√ Assess Facility Water Use

- Gather information on sources of water (metered and unmetered) and collect/review water bills
- Establish a water use baseline
- Inventory major water-using fixtures, equipment, systems, and processes
  - Water assessment
  - Walk-through
- Create a facility water balance

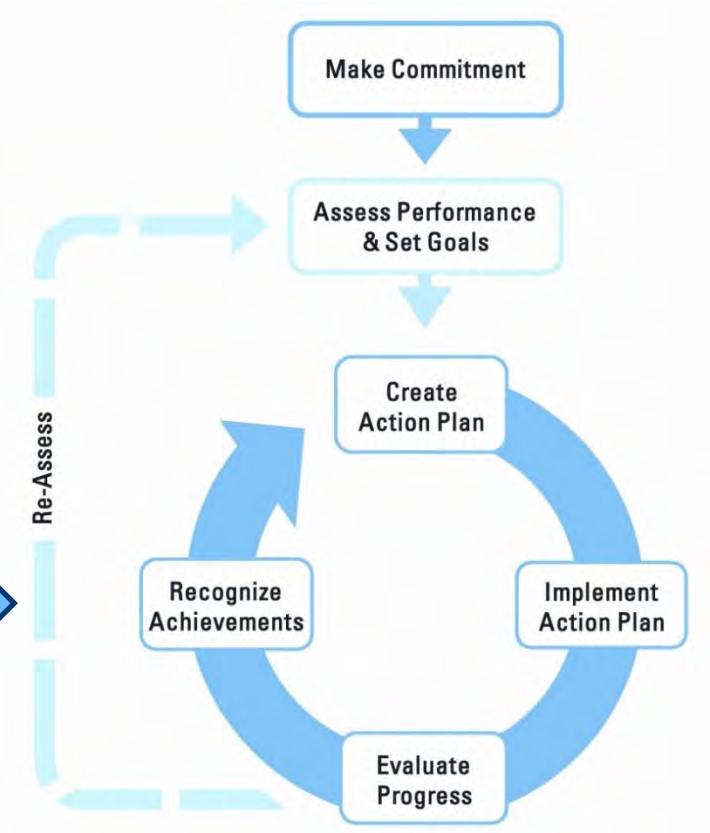
Step 3

Set and Communicate Goals

- NYC DEP has challenged participants to reduce water use by 5% in one year – but there are others you could adopt, e.g.,
  - Complete bathroom retrofits by X date
  - Improve commercial kitchen and dishwashing operations that use water by installing ENERGY STAR qualified products or implementing *WaterSense at Work* BMPs
  - Obtain outside recognition for water reduction efforts from a federal, state, or local program
- Make sure goals are realistic, measurable and achievable – they can always be strengthened
- Be ready to communicate the goals to staff and other relevant stakeholders, including customers

You have your goals, but now what?

Documenting your plan will help keep you on track and help ensure continuous progress



Considerations for Plan Content

Plans are plans are plans – everybody has their own way of putting one together that works for them….but some questions to address could include these –

- What do we have? (facility basics, utility bill info)
- What is our goal?
- How are we using water now?
- What do we need to do? (based on our assessment and considering priority)
  - Front of house, back of house
  - O&M change, Retrofit or Replace?
  - Who is going to do it?
  - When are they going to do it?
  - What resources will be used?
- Do we have a plan for water emergency? (may want to address that as well)
- How are we going to track progress and assess success and/or adapt plan?

Step 4

Create an Action Plan

- Identify projects and calculate cost and potential savings
  - Determine where retrofit and replacement projects are most viable. If replace, look to ENERGY STAR and WaterSense products where available
  - Consider largest water users to maximize potential savings
- Don't forget O&M practices which may require staff education to address…
  - Dishwashing practices
  - Service practices (e.g., serving water only upon request)
  - Food prep (e.g., thawing food)
  - Cleaning practices (e.g., floors, bathrooms)

Step 4: Create an Action Plan

Calculate Payback

- Calculate Simple Payback
  - Determine or estimate the total project cost
  - Estimate the water and energy savings for the project.
  - Identify the cost of water, wastewater, and energy (gas or electricity) that will be saved as a result of the project.

Simple Payback (years) = Project Cost ÷ [(Water Savings x Cost of Water and Wastewater) + (Energy Savings x Cost of Energy)]

Where:
- Project Cost (dollars)
- Water Savings (gallons per year)
- Cost of Water and Wastewater (dollars per gallon)
- Energy Savings (kWh or Mcf per year)
- Cost of Energy (dollars per kWh or Mcf)

Step 4: Create an Action Plan

Factors to Include in Payback

- For the most accurate payback estimates:
  - Use actual utility rates for water, sewer, and energy
  - Include actual occupancy rates to make savings calculations more realistic based on usage
  - If appropriate, consider other reduced costs in savings calculations, for example:
    - Decreased detergent costs for efficient laundry equipment installations

Step 4: Create an Action Plan

Restroom Payback Example

Public and Staff Restrooms Water Use

Current Water Use

Your existing water use for your public and staff restrooms is approximately 294,100 gallons of water per year. The following table provides your estimated water use for each fixture type.

	Estimated Annual Water Use (gal)
Tank-Type Toilets	166,000
Flushometer-Valve Toilets	0
Urinals	43,000
Faucets	76,000
Showerheads	9,100
TOTAL	**294,100**

Potential Water Savings and Payback Period

» **By replacing your existing, inefficient fixtures in your public and employee restrooms with WaterSense labeled and/or high-efficiency models, you can save approximately 190,800 gallons of water and $1,990 in water and energy costs annually. The following table provides estimated water, energy, and cost savings, and an estimated simple payback for each potential replacement project.**

	Estimated Project Cost ($)	Potential Annual Water Savings (gal)	Potential Annual Water Cost Savings ($)	Potential Annual Energy Savings (kWh)	Potential Annual Energy Cost Savings ($)	Total Annual Cost Savings ($)	Potential Payback Period (years)
Tank-Type Toilets	$2,400	105,000	$910	—	—	$910	2.6
Flushometer-Valve Toilets	N/A	N/A	N/A	—	—	N/A	N/A
Urinals	$1,500	28,000	$240	—	—	$240	6.3
Faucets	$60	56,000	$490	40	$330	$820	0.1
Showerheads	$20	1,800	$20	0	$0	$20	1.0
Complete Project	**$3,980**	**190,800**	**$1,660**	**40**	**$330**	**$1,990**	**2.0**

Step 4: Create an Action Plan

Organize your Path Forward

- Prioritize Projects
  - Start with simple projects and no- or low-cost options
    - Fix leaks and malfunctioning equipment
  - Prioritize the remaining projects using the method most meaningful to you:
    - Shortest to longest payback period
    - Highest to lowest potential for water savings
    - Most visible to least visible
    - Greatest to least overall environmental benefit
    - Operational improvements or reduction in labor
    - Availability of incentives
- Document projects in the plan and identify responsible parties

WaterSense at Work Sample Worksheet to help identify and prioritize actions

Water Use Reduction Opportunity/Project	Reference Section	Already Implemented ✔	Evaluate/ Consider ✔	Not Applicable ✔
Water Use Monitoring and Education				
Read water meters and record monthly water use.	2.2			
Install submeters on any major water-using equipment, systems, or processes.	2.2			
Implement a leak detection and repair program.	2.3			
Educate facility staff, building occupants, employees, and visitors on water management program goals and initiatives.	2.4			
Review, understand, and utilize information in codes, standards, and voluntary programs for water efficiency.	2.5			
Sanitary Fixtures and Equipment				
Replace old tank-type toilets with WaterSense labeled models.	3.2			
Replace old flushometer-valve toilets flushing greater than 1.6 gallons per flush (gpf) with high-efficiency models, and install retrofit dual-flush conversion devices on 1.6 gpf flushometer valve toilets.	3.2			
Replace old flushing urinals with WaterSense labeled models.	3.3			
Replace lavatory faucets or faucet aerators (for private use) with WaterSense labeled models and install 0.5 gallons per minute (gpm) faucets or aerators in public-use settings.	3.4			
Replace old showerheads with WaterSense labeled models.	3.5			

Step 5

Identify Financing Sources

- May also be addressed in implementation, but may want to consider availability when prioritizing
  - Rebate and incentive programs offered by local utilities and technical assistance programs
  - Facility's operation expenses or capital funding mechanisms
  - Leasing for larger, more expensive pieces of equipment
  - Private financing
    - Water and energy management service companies (WASCOs and ESCOs)

EPA's WaterUSE Tool

- Consider using EPA's Water Use Savings and Evaluation Tool and associated worksheets to help identify opportunities
  - Although developed for hotels, restaurants can use many of the sheets for their facility – e.g.; commercial kitchen, dishwashing, public restrooms
  - Worksheets are re-writable PDFs that can be used on a tablet
  - Tool will provide a summary of all of the potential water, energy, and cost savings and/or recommended best management practices

http://www.epa.gov/watersense/commercial/challenge_tools.html#wateruse-tool

NYC Environmental Protection

Making the Business Case

Veronica Blette,
Chief, WaterSense Branch
EPA Office of Wastewater Management

Revisiting the Why

- What is the business case? You tell me!

Why Save Water?

- Save operational costs
  - Water and sewer rates have risen well above inflation
  - Saving water saves energy costs for heating water
  - Improving plumbing fixtures can reduce maintenance calls
- Save water while enhancing your customers' experience
- Competitive edge in the marketplace
  - More companies are making water conservation a priority
  - Helps meet corporate sustainability goals
- Element of recognition programs – e.g., Certified Green Restaurants
- Show sustainability leadership in the community

Industry Reports

National Restaurant Association (NRA) 2013 Industry Forecast

- Between 29 percent and 50 percent of operators installed water-saving equipment or fixtures in 2012
- About 60 percent of fine-dining operators, 55 percent of casual-dining operators, and just about half of operators in other segments plan to upgrade in 2013
- Operators are also training employees to conserve water

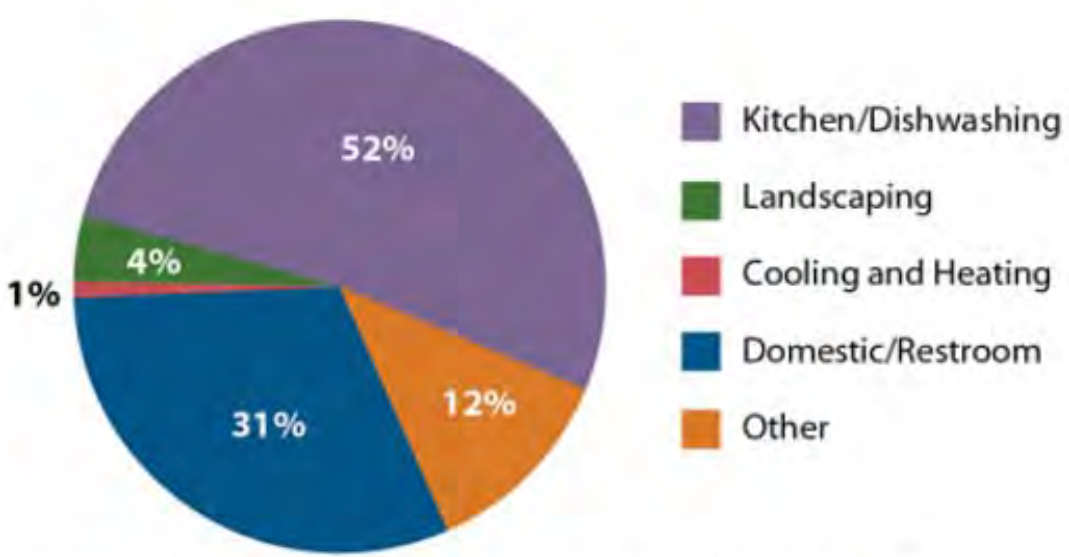
McGraw Hill 2013 Smart Market Report on Green Retail and Hospitality

- Almost all indicated energy efficiency and 2/3 indicated water efficiency are important green building issues
- For operations, reducing water is more important than energy and recycling
- Retrofits driven by cost savings, government regulations (e.g., water restrictions) and water use savings

Where Do Restaurants Use Water?

NRA 2013 Industry Forecast found

- Quick service restaurants consuming 500 to 1,500 gallons of water per day
- Full-service restaurants consuming up to 5,000 gallons per day



Created by analyzing data from: New Mexico Office of the State Engineer, American Water Works Association (AWWA), AWWA Research Foundation, and East Bay Municipal Utility District.

Keep in mind that saving water will save energy

- Many Energy Star products used in commercial kitchens will also save water

http://1.usa.gov/1LJMatu

http://1.usa.gov/1AqbdhI

Restaurant Products Using Water

Commercial Kitchen Products Covered in EPA BMPs	Water Efficiency Effect on Energy Use?	Sanitary Products Covered in EPA BMPs	Energy Use?
Commercial ice machines*	↔	Toilets	
Combination Ovens	↓	Urinals	
Steam Cookers	↓	Lavatory Faucets	↓
Steam Kettles	↓	Showerheads	↓
Wok Stoves	↑	Laundry	↓
Dipper Wells	↓		
Pre-rinse spray valves	↓		
Food Disposals	↓		
Commercial dishwashers	↓		
Wash Down Sprayers	↓		

* ENERGY STAR only labels air cooled machines (because water cooled waste a lot of water)

EPA Case Studies

- Uncommon Ground (Chicago) – implemented a number of BMPs that helped them become the first Four-Star restaurants under the Green Restaurant Association (GRA) Certified Green Restaurant program
- The Grey Plume (Lincoln, NE) – BMPs implemented helped them achieve GRA Greenest Restaurant in America status in 2010 and 2012
- Loyola Marymount University (L.A.) – BMPs implemented in commercial kitchens helped save more than 4.5 million gallons a year and $50,000 in water and sewer costs. Lair Marketplace, the largest dining facility, is one of only 2 universities to receive a 4-Star GRA certification

Case studies at
http://www.epa.gov/watersense/commercial/casestudies.html

Parting words…

- Develop a water management team to take control and responsibility
- Establish a water use baseline and water balance
- Set aggressive, but achievable goals
- Determine where water is used and identify opportunities for improving efficiency
- Develop a list of project priorities
- Create an action plan, and stick to it!
- Track your success
- Don’t forget to celebrate your achievements

Environmental Protection

Getting Started

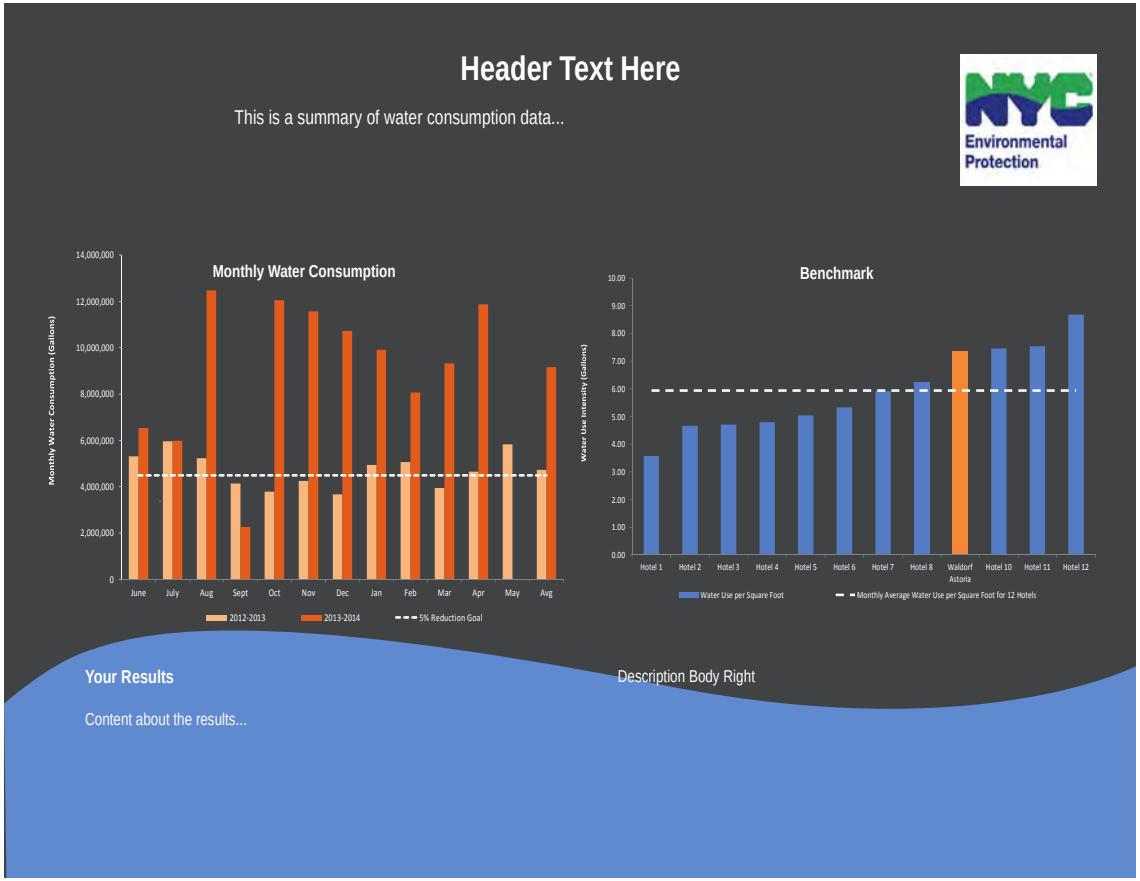
Che Flowers,
Water Management Coordinator,
NYC DEP

Working with DEP NYC

- Working with DEP NYC
  - Water Use Summary
  - Social Cross Promotion
- Water Conservation Plan
  - Water Conservation Strategy
  - Plumbing Equipment Inventory
  - Kitchen Equipment Inventory
- Water Conservation Toolkit

Water Conservation Plan

- Water Conservation Plan
  - Water Conservation Strategy
    - Analyzes Water Consumption
    - Compares Water Consumption
    - Provides Insight



Water Conservation Plan

- Water Conservation Plan
  - Water Conservation Strategy

Water Conservation Strategy

Water Use Reduction Opportunity/Project	Already Implemented (X)	Evaluate/ Consider (X)	Not Applicable (X)
Water Use Monitoring and Education			
Locate Water Meters			
Benchmark 12 months of water use	X		
Install submeters on major water-using equipment, systems, or processes			
Implement a leak detection and repair program			
Educate restaurant staff			
Review, understand, and utilize information in codes, standards, and voluntary programs for water efficiency			
Sanitary Fixtures and Equipment			
Replace old tank-type toilets with efficient models			
Replace old flushing urinals with WaterSense labeled models			
Replace old lavatory faucets or faucet aerators with WaterSense labeled models			
Replace old showerheads with WaterSense models			
Commercial Kitchen Equipment			
Replace old ice machines with ENERGY STAR qualified models			
Replace old steam cookers with ENERGY STAR qualified models			
Switch to connectionless combination ovens, steam cookers, and steam kettles			
Replace old water-cooled wok stoves with waterless wok stoves			
Install in-line flow restrictor to reduce dripper well flow rate to 0.3 gpm			
Replace existing pre-rinse spray valves with models that use 1.3 gpm or less			
Install food strainers and compost food waste.			
Replace old dishwashers with ENERGY STAR qualified models			
Use a broom or mop instead of a high-pressure hose to clean floors.			

Water Conservation Plan

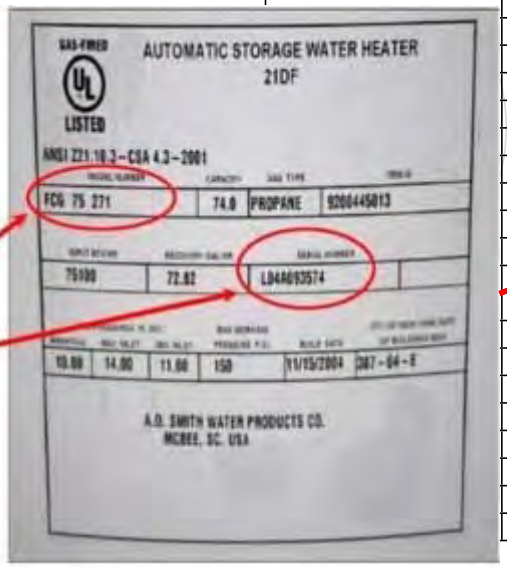
- Water Conservation Plan
  - Water Conservation Strategy
  - Plumbing Equipment Inventory

Plumbing Equipment Inventory

Instructions:

Identify the essential plumbing equipment in your restaurant and note it below. Insert additional rows as needed.

Plumbing Equipment Inventory				
Use Area	*Location*	*Equipment*	*# of Units*	*Type (e.g. connectionless, boiler-based)*
~~Basement Floor~~	~~Prep Closet~~	~~Water heater~~	~~3~~	~~Specs~~



Water Conservation Plan

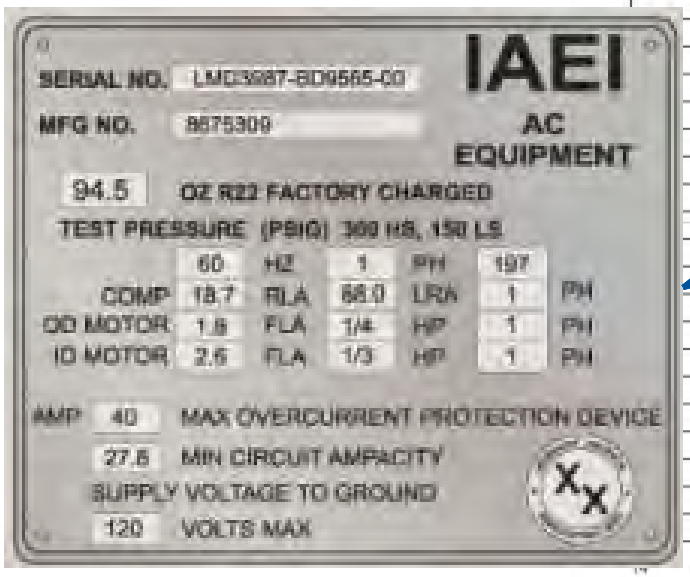
- Water Conservation Plan
  - Water Conservation Strategy
  - Plumbing Equipment Inventory
  - Kitchen Equipment Inventory

Kitchen Equipment Inventory

Instructions:

Please complete a survey of fixtures at your restaurant and input the results below. Insert additional rows as needed.

Item	Location	Quantity	Flow (gallons per minute)	Operating Time (hours or minutes per day)	Flow per day (gallons per day)	Remarks
ex. Pre-Rinse Spray Valve	Prep Kitchen	5	5 gpm	4 hours	Use = approx. 2 hours per day... 5gpm * 60 *2 = 600 gpd	Could replace for high efficiency spray valve at 1.5 gpm
ex. Urinal	Men's room	9	3	18 hours	n/a	Could replace for low-flow toilets



Questions?

Con Edison
SBDI, C&I, DMP Incentives
For Restaurants

David Yeung PE, LEED AP
Energy Analyst
February 5, 2015

Small Business Direct Install Program

Program Eligibility

- Peak monthly demand <110 kW
- System Benefits Charge (SBC)

FREE energy efficiency survey

FREE measures up to $100

- Compact fluorescent lamps (CFLs)
- Refrigeration Night Covers
- Low Flow Faucet Aerator
- Strip Curtains
- Pipe Insulation

Small Business Direct Install Program

Con Edison pays 70% of the equipment and installation cost

- Fluorescent T-12 to Fluorescent T-8 or T-5 bulbs
- Light Emitting Diodes (LED)
- Anti-Sweat Door Heater Control
- Heating Ventilation and Air Conditioning (HVAC) Tune-up
- Pre-Rinse Spray Valve
- Occupancy Sensor
- Evaporator Fan Control
- LED Exit Signs

- In specific networks and neighborhoods of Brooklyn and Queens, pays up to 100%

Commercial & Industrial (C&I) Program

- Program Eligibility – SBC
- Prescriptive Rebates for Equipment Upgrades
  - Electric: LED, Fluorescent T-8 or T-5, Heat Pumps, Air Conditioning Units, Controls, Motors, and more.
  - Gas: Furnaces, Boilers, Infrared Heaters, Rinse Valves, and more.
- Performance-based Custom Incentives
  - Gas and Electric equipment not covered under the prescriptive rebate program

Commercial & Industrial (C&I) Program

- Prescriptive Electric Rebates for Equipment Upgrades
  - Lighting Incentives:
    - Fluorescent fixtures: $15-$75/fixture
    - LED exit signs: $15/fixture
    - LED downlight: $70/fixture
    - LED for display cases: $2-$6/linear foot
    - Occupancy sensor: $50/sensor
  - HVAC Incentives:
    - Air-source Air Conditioner: $50- $100/ton
    - Air-source Heat Pump: $50- $125/ton

Commercial & Industrial (C&I) Program

- Prescriptive Gas Rebates
  - Furnace: $500-$2,500/unit
  - Boiler: $700-$15,000/unit
  - Programmable Thermostat: $30/thermostat
  - Infrared Heaters: $500/heater
  - Pre-Rise Spray Valves: $25/valve
- Custom Incentives
  - Electric: $0.16/kWh
  - Gas: $1.00/therm or $2.00/therm

Demand Management Program (DMP)

Program Eligibility - Monthly Adjustment Charge (MAC)

DMP adder to existing program incentives

Applicable Incentives:

Project Type	Current Incentive	DMP incentive
• Battery Storage: $1,500/kW	$0.16/kWh	+
• HVAC/Control/Process: $1,250/kW	$0.16/kWh	+
• Lighting/LED: $800/kW	$0.16/kWh	+
• Demand Response Enablement:	$200/kW	+ $600/kW

Demand Management Program (DMP)

Must be installed and operational by June 1st, 2016.

Projects or portfolios must have a combined peak demand reduction of 50kW or greater.

Continuous Demand Reduction (kW) between the hours of 2pm-6pm, Monday through Friday, from June 1st through September 30th.

SBDI Case Study – International Restaurant

Sunset Park, Brooklyn, NY 11220

- Total Cost: $4,057
- Incentives: $2,879
- Cost to Customer: $1,178

Estimated Annual Savings:

- 21,607 kWh
- $3,241

Questions?

Available Incentive Programs

Mike Simmons & Samuel Man
NYSERDA EDGE Regional Outreach Contractors
March 19, 2015

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nyserda
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Agenda

- Introduction to NYSERDA
- EDGE/Solar One
- Planning Effectively
- EE Programs
- Next Steps

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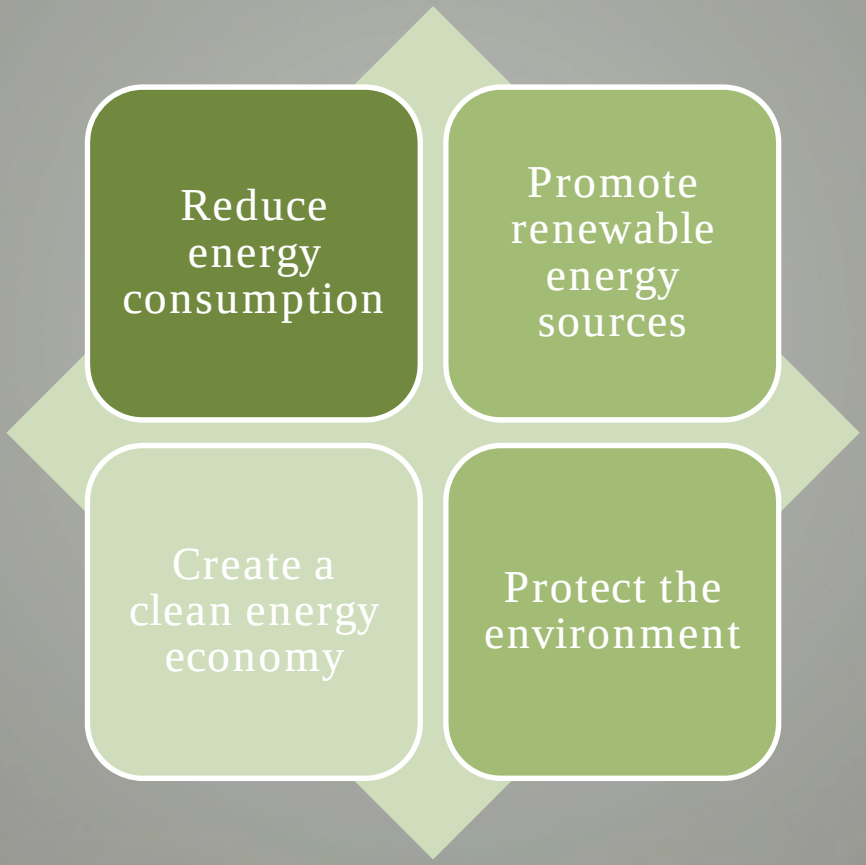
New York State Energy Research and Development Authority

Goals:



Funded by rate payers through System Benefits Charge (SBC)

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EDGE/Solar One

Economic Development Growth Extension Program

Solar One

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Planning effectively: Energy Efficiency & Water Conservation

Energy Efficiency

- Restaurants use 5 – 7 time more energy per sq. ft.
- Implementing water-efficient practices can decrease operating costs by approximately 11% and energy and water use by 10 and 15 %

Renewables

- Solar hot water systems can reduce your energy bill up to 20%
- Solar hot water systems can supply up to 70% of your hot water needs

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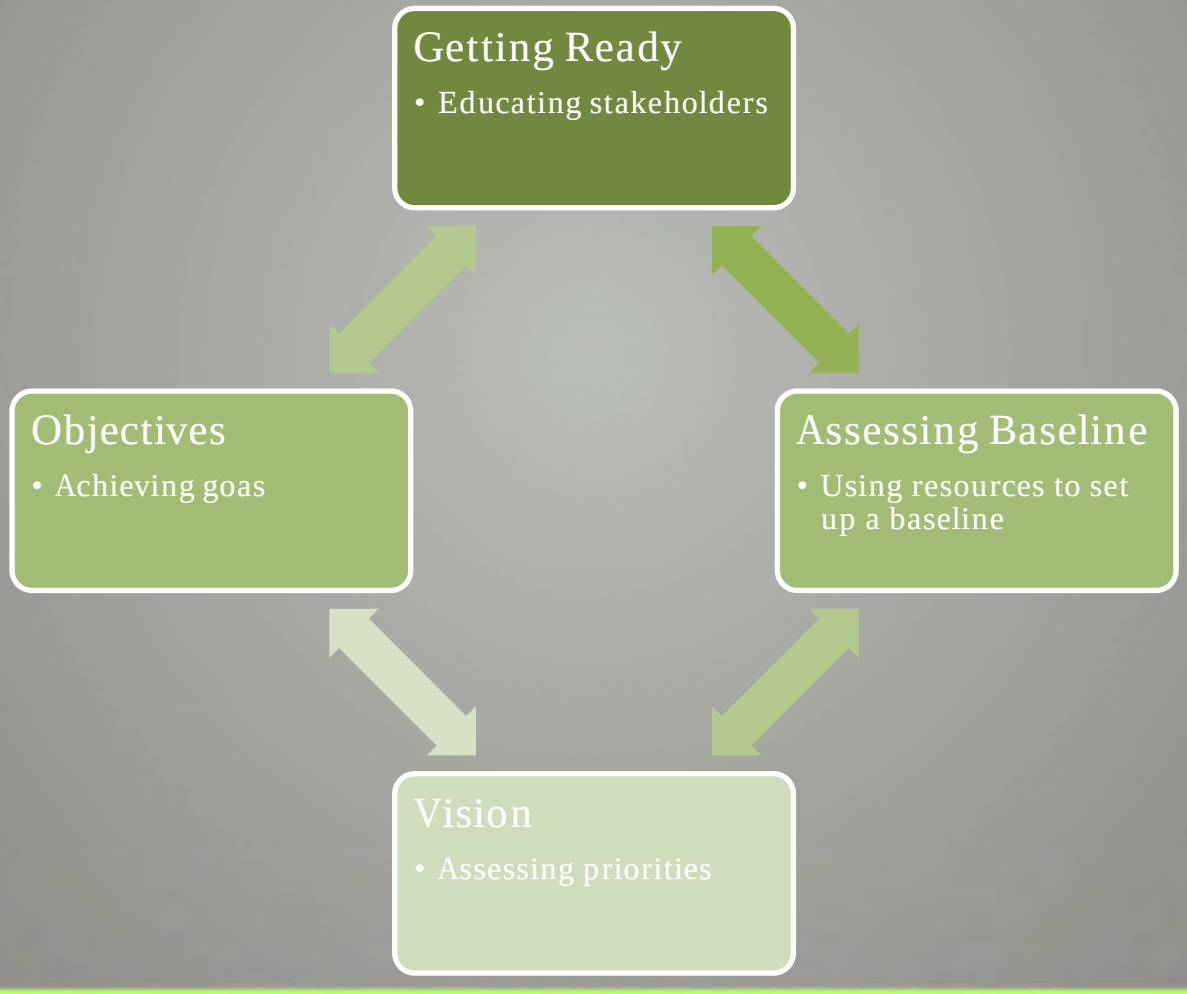
Planning effectively: Energy Efficiency & Water Conservation



Commercial Equipment Incentivized by NYSERDA

ENERGY STAR qualified ice machines can save:

- $130 for electricity annually
- $18 for water annually

ENERGY STAR qualified commercial dishwashers can save:
$720 for electricity annually
$300 for water annually

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GREEN ENERGY, ARTS & EDUCATION CENTER

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An Independent Contractor to: nyserda Energy. Innovation. Solutions.

Commercial Funding Opportunities

Energy Analysis & Financing Programs:

Small Commercial Energy Assessments

- Free energy assessments for small businesses with 10 employees or fewer and below an average 100 kW demand
- http://bit.ly/scea_info

GJGNY Financing

- Participation Loan
- On-Bill Financing

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Renewables Funding Opportunities

Electric & Gas Energy Efficiency Programs:

Solar PV

- NY-Sun Initiative
- $1 billion investment for solar PV

Solar Thermal

- Displaced kWh Incentives
- Capped at $25,000 per project

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Acknowledgements

Thank You.
For more information contact the NYC Water Challenge to Restaurants here.