

NYCTMTalks

& Company

Sustainability and Your Business

Additional Resources and Information

- Empire State Building's online [sustainability resource center](#)
- Broadway Green Alliance's online [sustainability resource center](#)
- Con Edison's business and residential [resources](#)
- Hotel Association of NYC's online [sustainability resource center](#)
- New York City's [GreeNYC](#) program
- New York City's growth, sustainability, resiliency, and equity plan, [One New York](#)



Elizabeth Balkan

Director of Policy and
Senior Advisor to the Commissioner
NYC Department of Sanitation

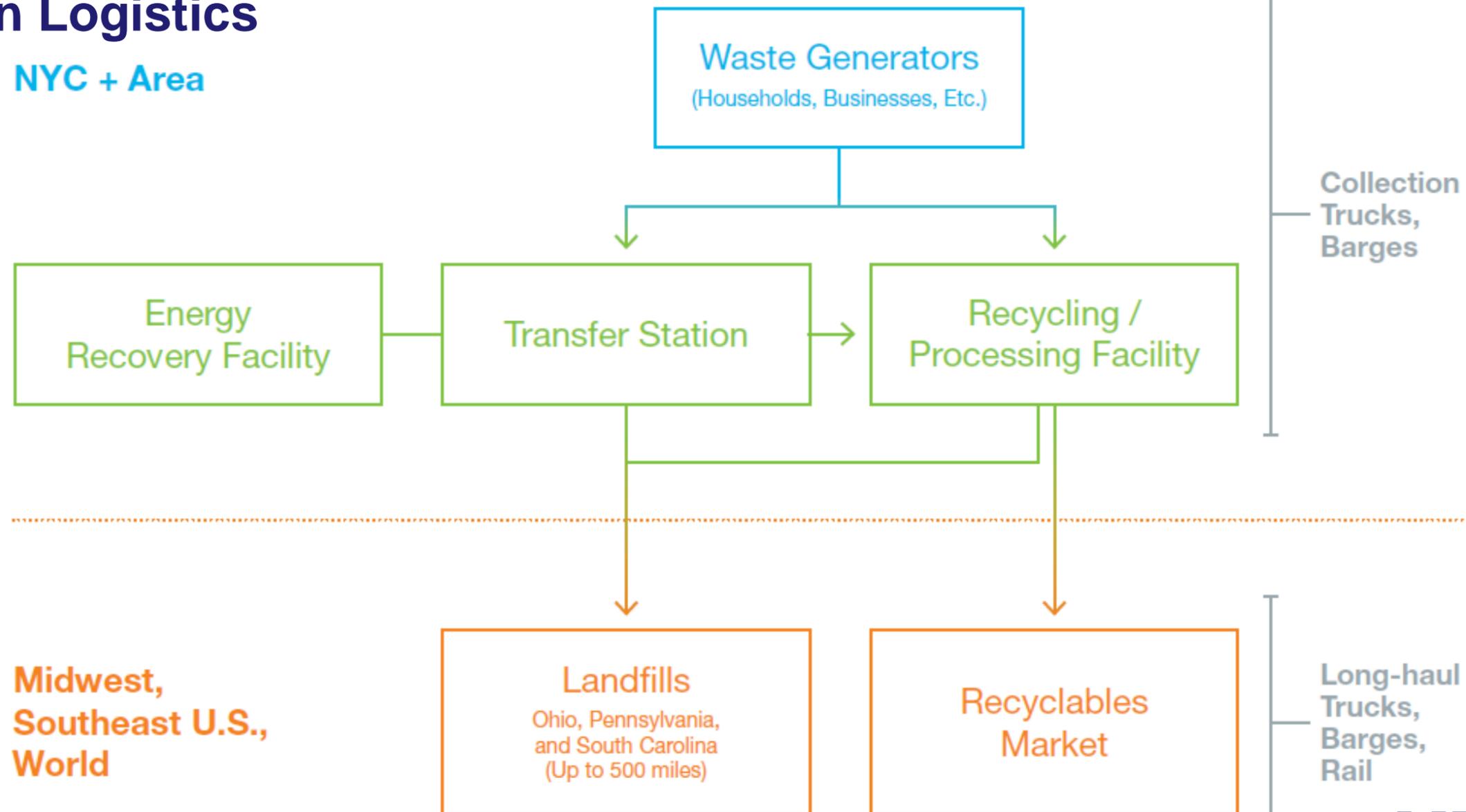
www.nyc.gov/dsny

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NYC Solid Waste Management System

An Exercise in Logistics

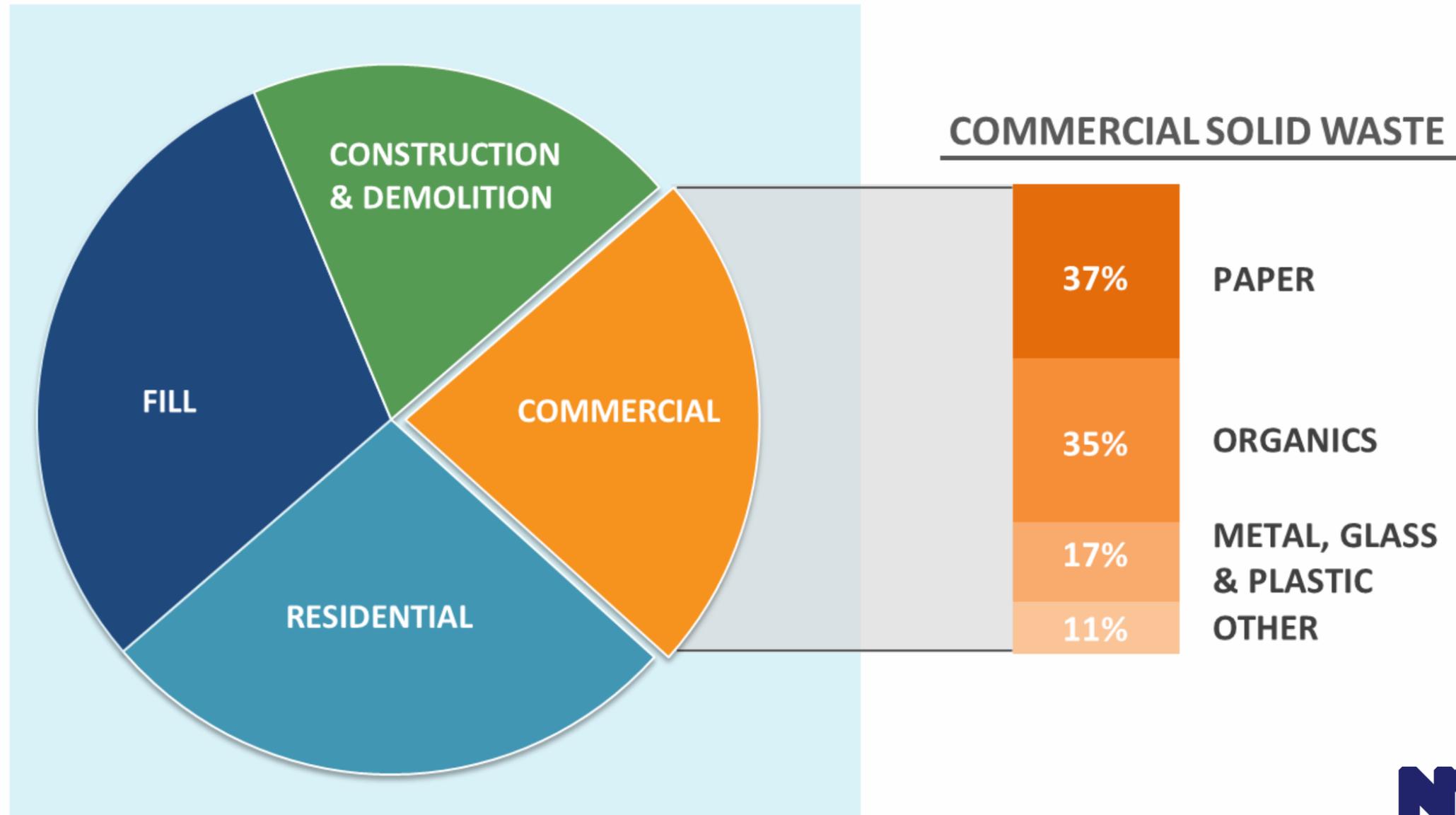
NYC + Area



Midwest,
Southeast U.S.,
World

NYC Solid Waste: A Snapshot

14 million tons annually



OneNYC: Zero Waste

**Reduce disposed waste 90% by 2030
From a 2005 baseline**

Residential

- Extend residential organics program to all New Yorkers by 2018
- Offer single-stream recycling by 2020
- Reduce the use of plastic bags and other non-recyclable waste
- Expand outreach to low income and minority communities
- Make all schools “Zero Waste Schools”
- Expand opportunities to reuse and recycle textiles and electronic waste
- Develop a blueprint for a Save-As-You-Throw program

OneNYC: Zero Waste

Reduce disposed waste 90% by 2030

From a 2005 baseline

Commercial

1–2 year horizon

- Create a Zero Waste challenge program for large commercial waste generators
- Revise the commercial recycling rules to make recycling easier for businesses

3–7 year horizon

- Conduct a comprehensive study of commercial collection zones
- Require all food service establishments to source-separate food waste

Opportunities for NYC Businesses

Food Waste Challenge: A Case Study

Six months into the program, participating restaurants had diverted >1,000 tons of food waste from landfills.

And achieved 40% recycling rate (metal, glass, plastic, paper)

DESTINATION OF PARTICIPANT WASTE, BY %



Much more is possible, every business matters



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Green Team Objectives

Con Edison's Energy Efficiency / Demand Management department has several programs and tools designed to help our customers:

- Use less **energy**
- Save **money**
- Help the **environment**



Customer Benefits

- Reduced Replacement Costs
- Identify EE Opportunities
- Reduced Operating Costs
- Infrastructure/Value Enhancements
- Carbon Footprint Reduction
- Codes/LEED/ENERGY STAR®
 - Alignment & Compliance Ratings
- Reclaim your money!

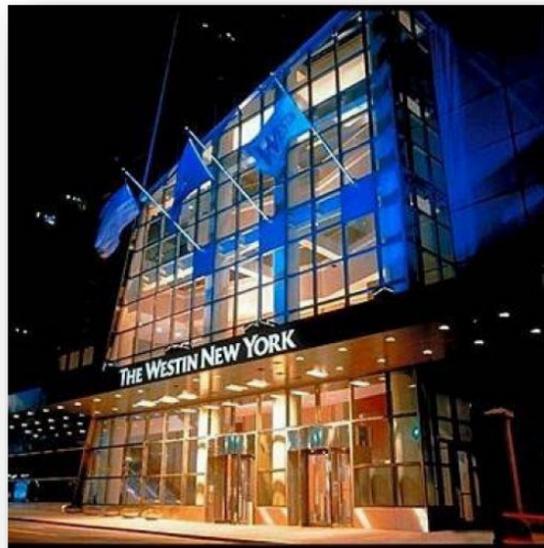


Commercial Case Study: Westin Times Square

The Westin Hotel, a 45-story building, contains 873 guest rooms and over 34,000 square feet of event space, including 32 meeting and breakout rooms and 13 theater-style presentation rooms.

Objective:

Focus on cultural sustainability and environmental responsibility



Energy Efficiency Measures Installed

Building upgrades have included:

- VFD controlled chilled water pump
- Lighting Project: 42 occupancy sensors, 2,200 LED MR16s, 2,473 LED Candelabra, and 197 LED stairwell lights
- New Telkonet thermostats and occupancy sensors in each of the hotel guest rooms
- Domestic hot water heater project (completion paperwork pending) involves the installation of five heaters and controls

Project Overview

Total Cost	\$1,876,600
Con Edison Incentive	\$473,389
Customer Cost	\$1,403,211
First Year Savings	\$704,200
Payback Period	2 Years

Estimated Annual Savings

Electric kWh	3,863,000
Gas	7,096 Th

Estimated Annual Cost Savings: \$704,200

Small Business Case Study: International Restaurant

Industry: Food Service

Location: Sunset Park, Brooklyn

Objective: Save on energy use while improving
ambiance and maintaining safety



Energy Efficiency Measures Installed

- Replaced over 30 inefficient T12 lamps with upgraded T8s
- Installed upgrades in the restaurant dining room, kitchen, basement, boiler room and restrooms
- Installed dimmable LED lamps throughout

Upgrades

Total cost:	\$4,057
Con Edison Incentive	\$2,879
Customer Cost	\$1,178
First Year Savings	\$3,241
Payback Period	4.4 months

Estimated Annual Savings

Energy Cost Savings	\$3,241
Energy Savings	21,607kWh

Estimated Annual Cost Savings: \$3,241



Rebecca Marshall

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The New Javits Center



Renovation of Javits Center

- Completed top-to-bottom, \$463 million renovation in 2014, including new glass façade, flooring, mechanical, sustainability and telecommunications systems
- State-of-the-art renovation has transformed the 2.1 million square-foot facility into a model of sustainability, including new features such as:
 - More than 6,000 high-performance, fritted glass panels along façade and roof
 - More than 100 energy-efficient HVAC units tracked by a single monitoring station
 - A 6.75-acre green roof – the second largest of its kind in the United States
- Renovation project has earned the Javits Center honors from New York City Audubon and Building Owner and Managers Association of Greater New York

Javits Center Green Roof



Sustainability at Javits Center

- **New mission.** Created a mission of sustainability – To go above and beyond government mandates and become a leader and educator in the sustainability movement by creating a paradigm shift in which sustainability is the normal behavior and thinking
- **New leaders.** Created a position of Sustainability Manager and developed mission, goals and a sustainability master plan under the NYS Executive Order 4
- **New partners.** Joined as a member of the Green Meetings Industry Council
- **New goals.** Created new sustainability goals such as:
 - Reduce the energy consumption by 20% by 2020
 - Reduce water usage by 20% by 2020
 - Reduce the waste stream by 10% annually

Sustainability Efforts

- **Recycling.** Implemented recycling and composting programs to reduce waste. In Fiscal Year 2014, 1,177.3 tons of waste was diverted from landfills and recycled.
- **Variable air volume boxes.** Installed digital variable air volume (VAV) boxes in the ducts of the HVAC system to maximize efficiency and adjust the amount of outside air coming inside based on ambient air temperatures, reducing need for heating or cooling.
- **Tracking Shows Sustainability.** Offers event organizers the ability to track sustainability of their own events at the Javits Center by monitoring a show's consumption of water, gas and electric, as well as rates of diversion, recycling and composting.

Sustainability Efforts

- **Energy Dashboard.** Cutting-edge energy dashboard that allows designated engineers and employees to monitor consumption levels for electric, gas and water.
- **Bird-Friendly Glass.** Fritted glass panels designed to prevent birds from sustaining injury by accentuating the structure in front of them. Since installation, the number of bird collisions has dropped 90%, creating a healthier environment.
- **Green Roof.** Composed of sedum mats grown in Syracuse, the 6.75-acre green roof contains an underground drip irrigation. The New York City Audubon and Fordham University found 524 birds from 11 species utilized the roof as a habitat in 2014.

Javits Center Energy Dashboard



Event Sustainability Metrics

Javits Center monitored five full-building events in 2014 to determine their impact on our goals and benchmark for future events:

- Events used 46% of the total kWh consumption at the Javits Center.
- Waste from these events is 1,101.57 tons – 27.68% of the total.
- Diversion rate for these shows is 9.68% – less than 3% of total diversion rate.

Future Initiatives

Future plans to improve sustainability of events:

- Consult with event managers about the sustainability of their events and encourage the use of our infrastructure to reduce consumption and waste
- Create specific meetings with event managers to develop customized sustainability plans
- Encourage event managers to include information about the Javits Center's sustainability program in exhibitor materials



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The Empire State Building

Demonstrate the business case for cost-effective energy-efficient retrofits through verifiable operating costs reductions and payback analysis



102 stories and 2.85 million square feet

4.5 million visitors per year

\$11 million in annual energy costs

Peak **electric** demand of **9.5 MW**
down from 11.6 (3.8 W/sf including HVAC)

88 kBtu per sf per yr for the office building

CO₂ emissions of **25,000 tons** per year (22 lbs/sq ft)

Motivation

The retrofit of the Empire State Building was motivated by the building ownership's desire to:

- 1) Reposition the world's most famous office building into a pre-war trophy asset
- 2) Prove or disprove energy efficiency retrofits' economic viability
- 3) Use our work to publicize and differentiate our building and attract tenants
- 4) Produce a replicable model for energy-efficiency retrofits of existing buildings, which will make up 85% of buildings in place in New York City in 2030
- 5) "If the only place we succeed is ESB, the effort is a failure."

Industry drivers for energy-efficient retrofits

Converging forces

Recognition of need to develop more sustainable and efficient business practices

Acceptance of energy supply constraints and national security issues posed by energy dependence

Ongoing federal, state and local legislative action

Corporate trend toward GRI reporting, self regulation and reduction in GHG emissions

Customer, employee and shareholder pressures

Business opportunity

Growing pressure to alter appraisals, values for lending and purchasing based on sustainability

Reduced operating costs through efficiency

Increased marketability, competitiveness

Improved work environments, productivity, recruitment and retention

Positive NPV and ROI

Fund improvements through energy savings

Maintain value

Industry drivers for energy-efficient retrofits

Demonstrate how to cost-effectively retrofit a large multi-tenant office building to inspire others to embark on integrated energy-efficiency retrofits.

1 Identify opportunities

- 60+ energy efficiency ideas were narrowed to 17 implementable projects
- Team estimated theoretical minimum energy use
- Developed eQUEST energy model

2 Evaluate measures

- Net present value
- Greenhouse gas savings
- Dollar to metric ton of carbon reduced
- Calculated for each measure

3 Create packages

- Maximize net present value
- Balance net present value and CO₂ savings
- Maximize CO₂ savings for a zero net present value
- Maximize CO₂ savings

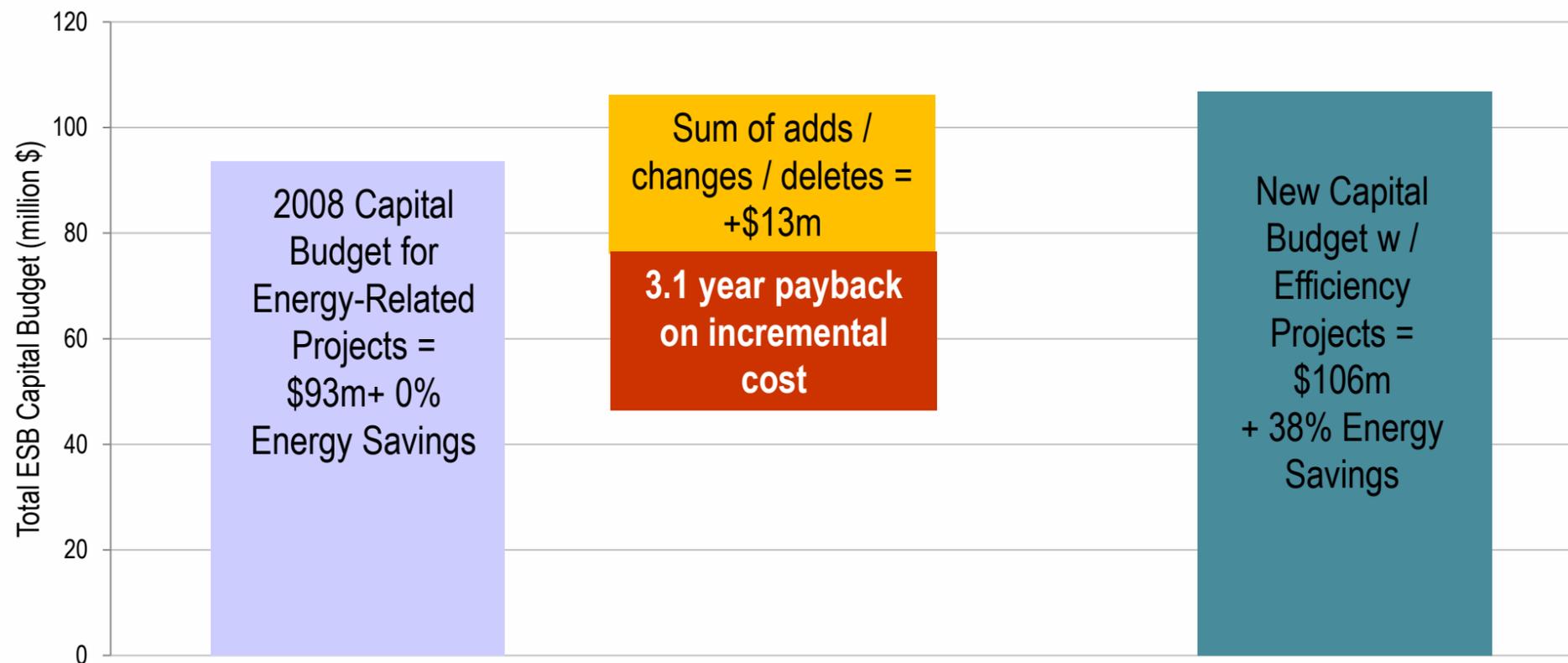
4 Model iteratively

- Iterative energy and financial modeling process to identify final eight recommendations

Demonstrate business case through verifiable operating costs reductions and payback analysis

With a \$550 million capital improvement program underway, ownership decided to re-evaluate certain projects with cost-effective energy efficiency and sustainability opportunities in mind.

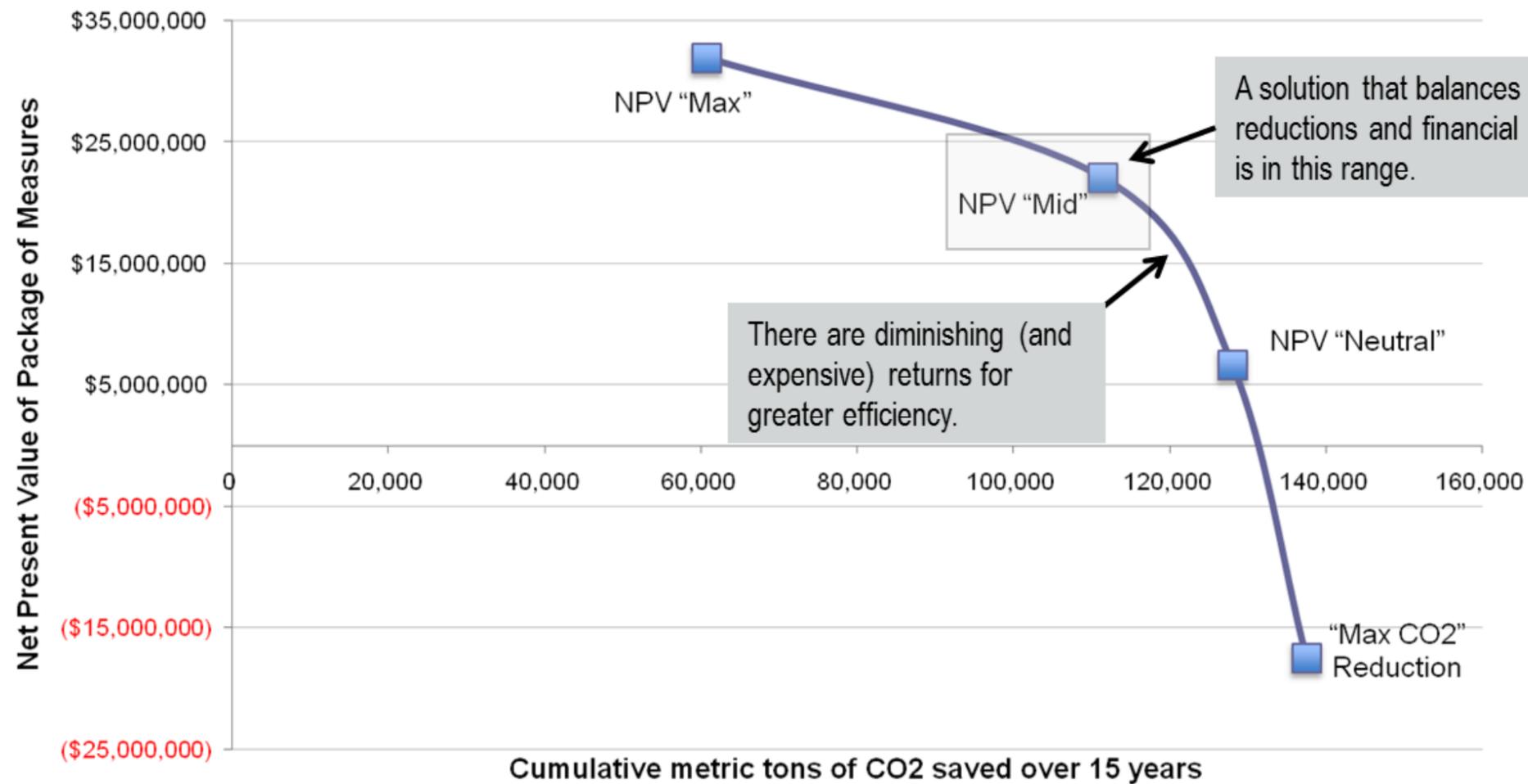
Capital Budget Adjustments for Energy Efficiency Projects



Balance financial return & carbon reduction

ESB can achieve a high level of energy reduction cost-effectively

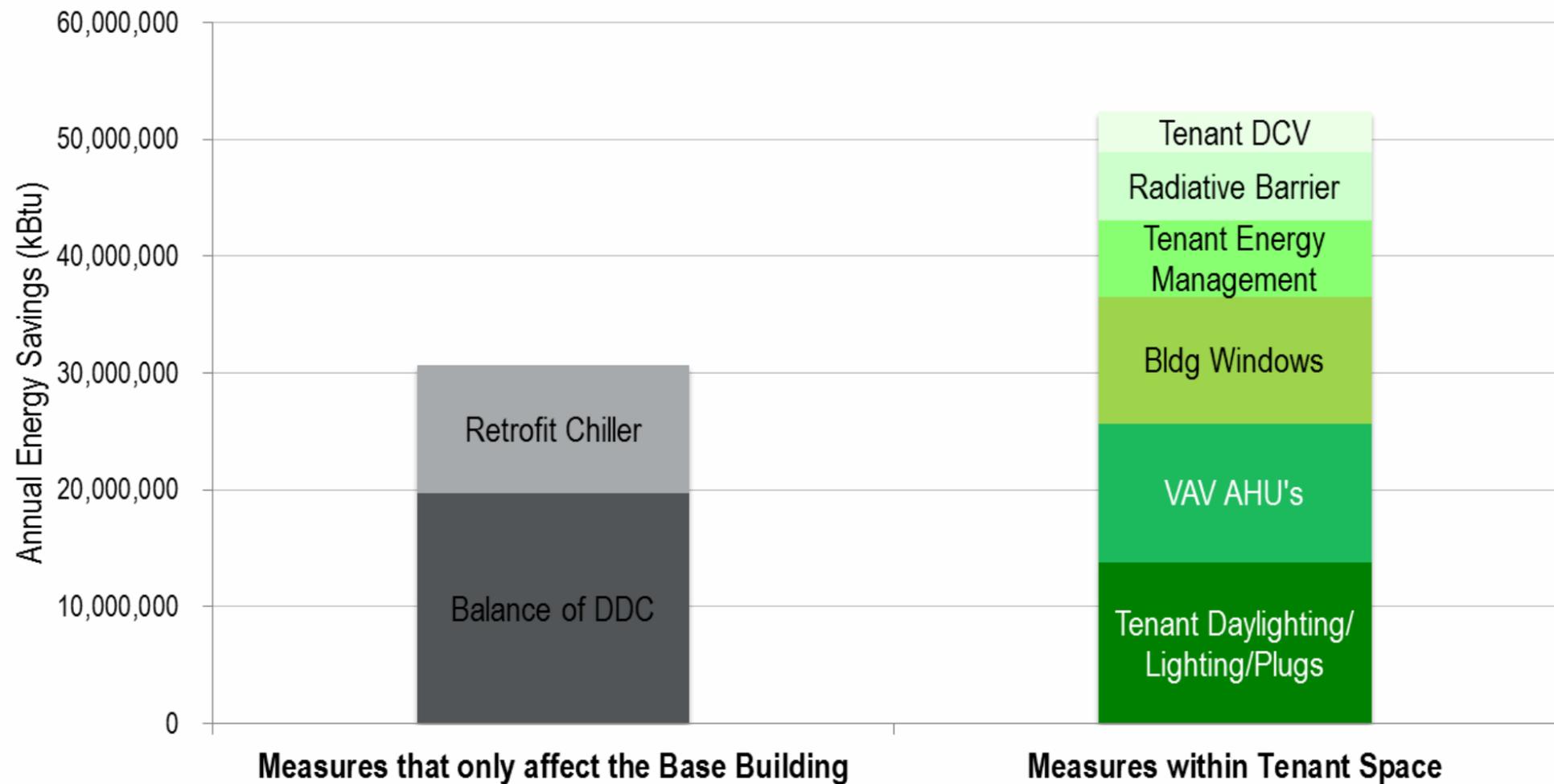
15-Year NPV of Package versus Cumulative CO2 Savings



The business case – integrated approach

More than half the savings exist within tenant spaces

Energy Savings: Base Building vs. within Tenant Space



Measured and Verified Energy Savings

Utility Consumption Comparison

136 Madison Avenue
(Class "A" Office)

	2008					Total Annual Actual
	JAN Actual	FEB Actual	MAR Actual	APR Actual	MAY Actual	
Cost	\$3,677	\$3,921	\$4,209	\$3,721	\$4,905	\$57,506
Consumption (KWH)	13,760	15,520	17,920	14,880	19,893	220,853
Avg. Cost per KWH	0.27	0.25	0.23	0.25	0.25	0.26
Energy Cost (Per Rentable Square Feet)	0.22	0.24	0.26	0.23	0.30	3.49

Comparison Annual Adjusted*

\$85,039

326,595

0.26

3.49

*Adjust Class "A" office to the same RSF as ESB

Empire State Building
(LEED Platinum)

	2009					Total Annual Projected
	JAN Actual	FEB Actual	MAR Actual	APR Actual	MAY Actual	
Cost	\$1,989	\$1,987	\$2,500	\$2,151	\$2,525	\$32,015
Consumption (KWH)	10,516	10,506	11,686	10,523	12,220	165,764
Avg. Cost per KWH	0.19	0.19	0.21	0.20	0.21	0.19
Energy Cost (Per Rentable Square Feet)	0.08	0.08	0.10	0.09	0.10	1.31

ESB LEED® Office Annual Adjusted**

\$43,099

165,764

0.26

1.77

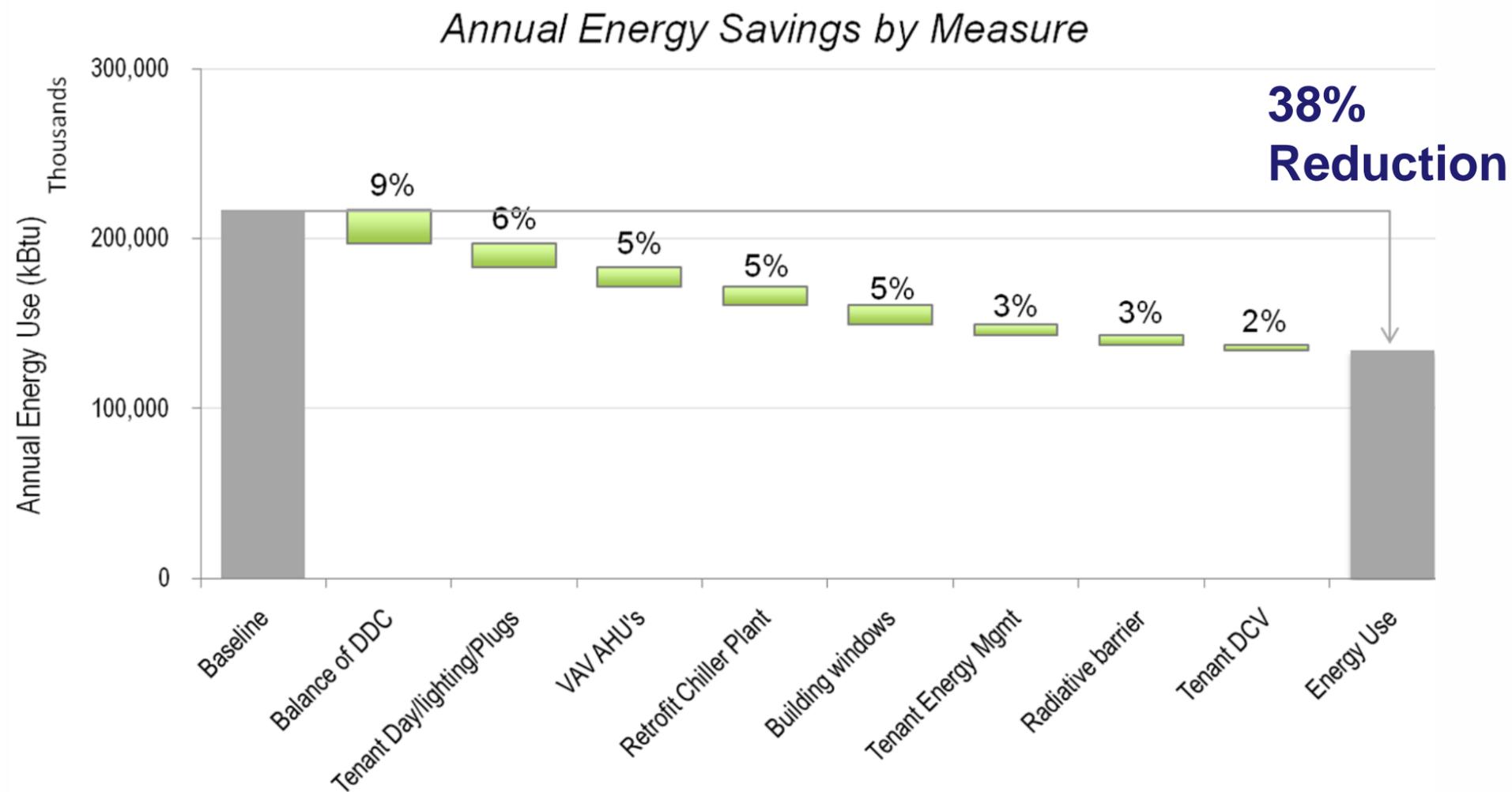
**Madison rate utilized

**57%
Energy Savings**

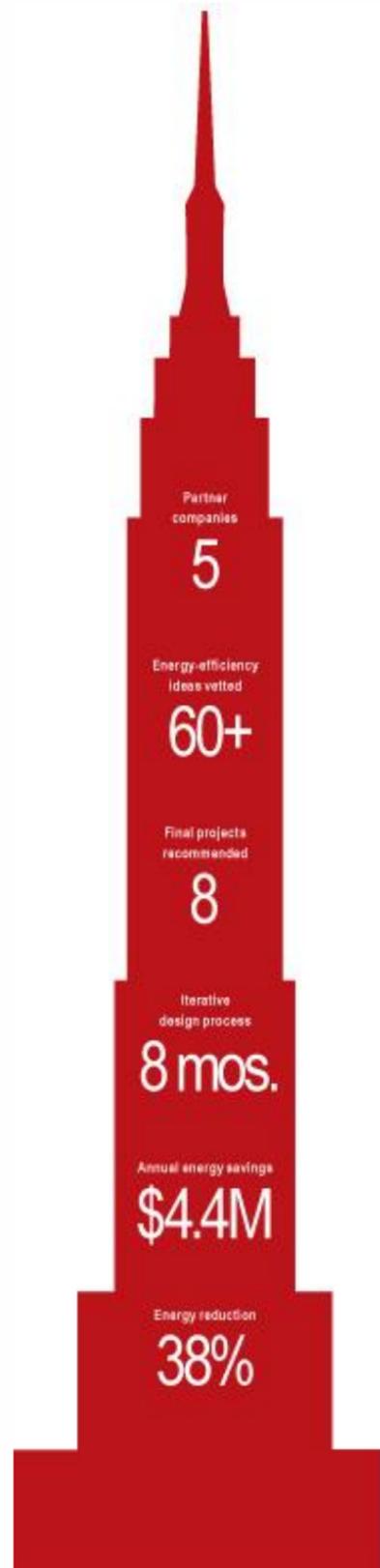
Data provided by Skanska based on performance of their 32nd floor office at the ESB

Implementing recommended measures

Eight interactive levers chosen iteratively from more than 60 options ranging from base building measures to tenant engagement deliver these results



The Empire State Building: A groundbreaking energy and sustainability program



- Reduce energy use by 38 percent
- Annual savings of \$4.4M
- 3.1 year payback
- Reduce carbon emissions 105,000 metric tons
- Energy Star 90
- LEED EBOM Gold
- Energy Performance Contract
- Quantifiable transparent results
- Serve as a model for owners of existing buildings

Practical Next Steps

What you can do to take action:

- 1) Triage your building portfolio based on renovation cycle
- 2) Create a sustainability master plan including retrofit projects, design standards, lease structure changes, tenant energy management programs and marketing initiatives
- 3) Commit to an integrated, whole-building retrofit approach: conduct whole-building audits rather than single measure projects
- 4) Require performance guarantees with ongoing measurement and verification of savings to reduce risk and maintain performance
- 5) Engage tenants, employees and building occupants in energy-saving efforts through training, tools, technology
- 6) Create concrete successes at the building and pre-built level to build momentum and enthusiasm

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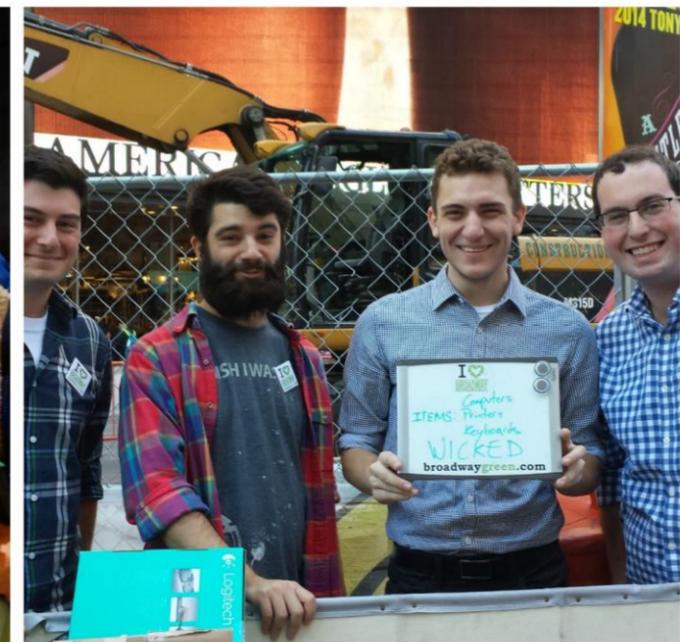
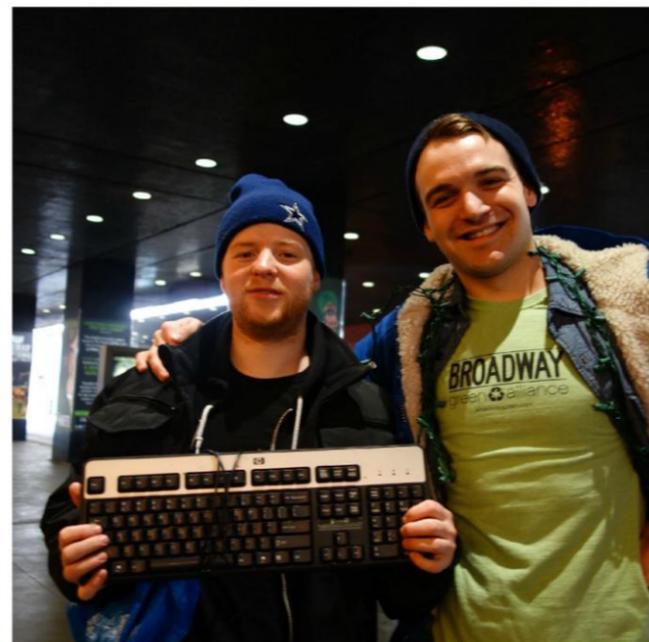


Introduction

The Broadway Green Alliance (BGA) inspires, educates and motivates the entire theatre community and its patrons to implement environmentally friendlier practices.

The BGA was publicly launched at a press conference in November 2008 featuring Mayor Bloomberg.

We are an ad hoc committee of The Broadway League and a fiscal program of Broadway Cares/Equity Fights AIDS. The NRDC is our environmental advisor.



Key Principles

- No one can be “green,” only greener
- Small actions add up
- There are 3 types of greener actions:
 - Immediate savings
 - Savings after investment
 - Greener, but higher cost



Committees



Integrating Sustainability into Audience Experience

- Lobby signage
- Program notes
- Earth hour
- Ticket purchases (Givenik)



The Audience Experience



Broadway theaters changed to energy-efficient outside and marquee lighting.



Broadway marquees go dark for WWF's Earth Hour every year



Nearly all venues' Playbills list them as a member of the BGA on a back page



The Givenik program gives 5% of the ticket purchases to participating non-profit programs

Green Captains

GREEN CAPTAINS 2014-2015

Beth Malone Jacquie Antaramian Elise Kibler Bethany Russell Ally Carr
Sarah King Chris King Mark Lotito Erik Altemus Karen Pittman Ana Garcia
Terry Lavada Jahi Kearse Marva Hicks Emily Skeggs Chris Williams
Martha Donaldson Jim Joseph Steven Boyer Justin Scribner
James Fitzsimmons Anne Brummel Elizabeth Cohen Marisa Friedman
Roberta Colindrez Elizabeth Meyers Matthew Marks Joanna Glushack
Blythe Danner Audra McDonald Sarah Conyers Ruth Wilson
Bryan Cranston Karen Armstrong Brien Brannigan Cullen Titmas
Sophie Okenedo Kathy Santen Anthony Rapp Nancy Opel Alan Cumming
Courtney Reed Chris O'Dowd Michael C. Hall Rachel Wolff Timothy Wright Elena Shaddow
Rachel Dratch Brandalyn Fulton Michelle Gutierrez Carol Kane
Rebecca LaChance Satomi Hofmann Judy Kuhn Adinah Alexander Jennifer Bowles
Samantha Watson Rhea Patterson Kelvin Moon Loh Denise Yaney
Michael Passaro Ralph Farris Melissa O'Neil Nathan Madden Alfie Parker Jr.
Jill Abramovitz John Carrafa Scott Lowell Micah Stock Michael Rosen
Tito Sanchez Emma Pfaeffle Brian D'Arcy James Kim Faure Harriet Harris
Steve Jones AJ Fisher Montego Glover Hannah Florence Blake Hammond
Ruthie Ann Miles

Every show on Broadway has a BGA liaison helping it get greener all the time – from stars to dressers to crew members.

Community Involvement

Green Merchandise



Newsletter



THE GREEN SHEET - MARCH 2015 HIGHLIGHTS



First Green Broadway Award Presented to Jujamcyn Theaters!

The Broadway Green Alliance was pleased to present the very first Green Broadway Award to Jordan Roth, President of Jujamcyn Theaters, at the Broadway League Biennial in February. Jujamcyn received the award in acknowledgement of their exceptional leadership in the Broadway community's ongoing initiative to become greener.



Inaugural College Green Captain Prize given out at USITT 2015

The Broadway Green Alliance has just announced the winner of another new award. The College Green Captain Prize was created to reward College Green Captains for their greening efforts on campus productions. We are pleased to announce that Travis Blackwell, Green Captain at the University of Memphis Theater Department, has won the 2015 prize.



Winter E-waste Drive a big success!

We are happy to report that we collected over 7,000 pounds of electronic waste from the Broadway community at our annual winter drive in February. A big thank you to our volunteers -Elizabeth Cohen, Susan Lupow, Katherine McNamee, Dave Roth, and Mary Wooten. NYC's green mascot, Birdie, joined us to collect the e-waste from dozens of shows, offices, and allied theater businesses on a cold day.



The Return of the Green Captains

One of the lovely measures of the success of our Green Captain Program is how many Green Captains return to serve again on their next shows. Welcome back to Bethany Russell (DR. ZHIVAGO), Montego Glover and Harriet Harris (IT SHOULD BEEN YOU), Ruthie Ann Miles (THE KING & I) and Sarah Strimel (AN AMERICAN IN PARIS). We're thrilled to have you back and excited to see what veteran GCs can accomplish.



Off-Broadway Goes Green

The BGA worked with the Off-Broadway League and A.R.T./New York to gather dozens of people to talk about environmentally friendlier practices off-Broadway at an event on March 16th. The D-Lounge at the Daryl Roth Theatre was the location for this event, which included a key-note speech from environmentalist Helena Durst and a welcome from Off-Broadway League President Adam Hess.

[f/broadwaygreenalliance](#) [t/@broadwaygreenalliance](#) [@broadwaygreen](#) [greenalliance](#) [Read the full green sheet here](#)



Community Events

BC/EFA Easter Bonnet

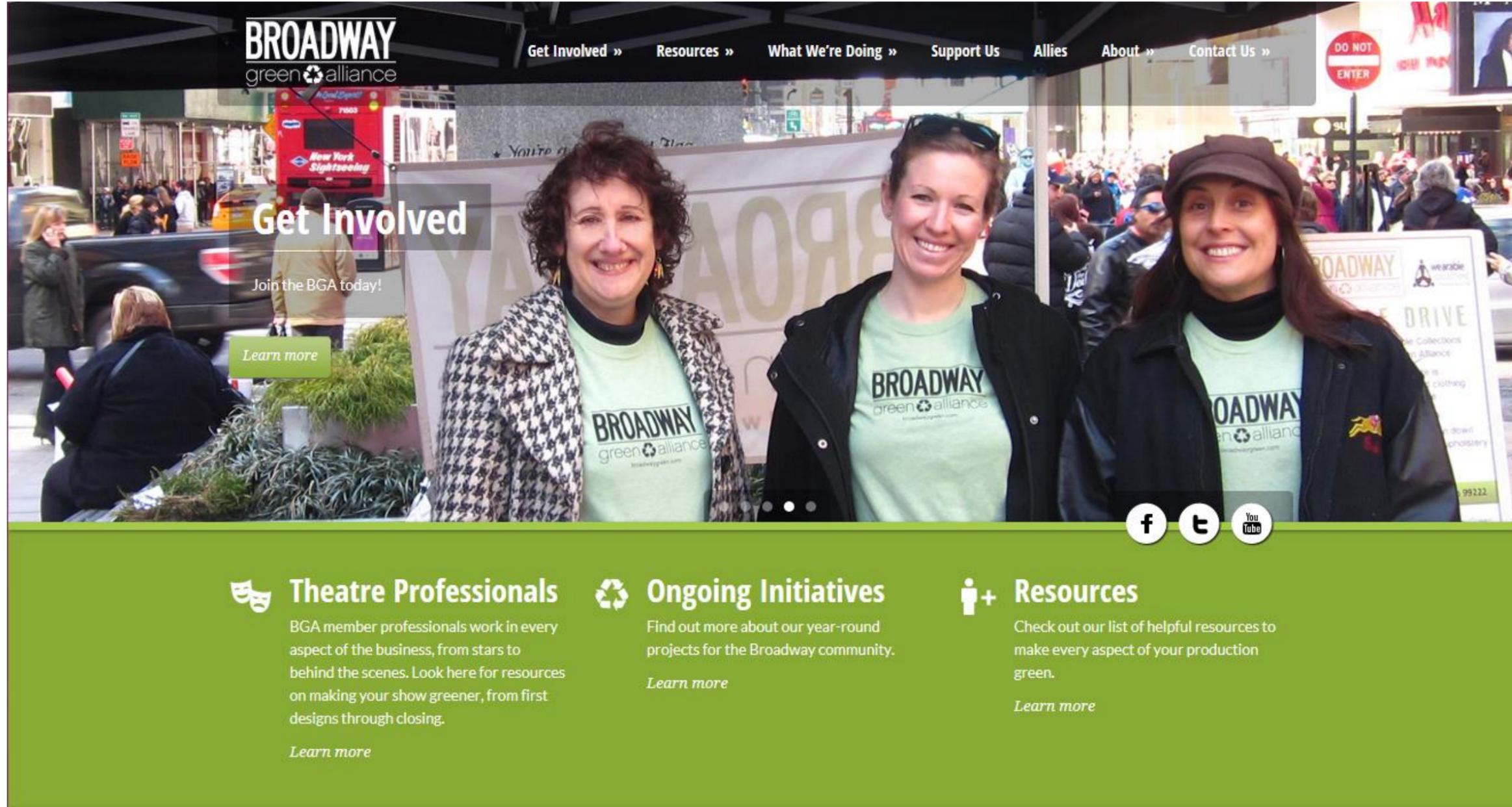


Kids Night on Broadway



NYC Talks
& Company

Website



Hervé Houdré

Regional Director of Operations
& General Manager

InterContinental New York Barclay

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Sustainable Development

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” –1987

Brundtland UN commission

Triple Bottom Line (TBL)

- Economic Prosperity (Profit)
- Social Responsibility (People)
- Environmental Protection (Planet)

How can we transform a theory into reality?

- Commitment from the top
- Education
- Champion, Committees
- Measurements
- Five-year roadmap
- Certifications
- Communication
- Recognition

Hotel: Crowne Plaza Times Square, New York

Solution:

- Replaced 3,300 incandescent bulbs (40W) from the façade billboard with LEDs (8W)

Cost:

- \$40,000
- Rebate from Con Edison: \$13,200

Results:

- \$120,000 savings the first year
- Labor cost dropped \$20,000/year

Hotel: New York Palace

Solution:

- Micro turbines with heat exchangers (Cogeneration)
- Supply 43% of the heating needs of the hotel and 15% of its air condition needs
- Compensate 42% of the hotel electricity needs

Cost:

- Capital expenditure: \$4M
- Incentive from NYSERDA (NYS Energy Research & Development Authority): \$2M

Results:

- \$840K annual savings (21% of current energy expenses)

InterContinental Barclay

Electricity costs 2009–2013

Year	Occupancy	Electricity	Cost POR
2009	84%	\$1,177K	\$5.58
2010	82%	\$1,119K	\$5.41
2011	86%	\$937K	\$4.34
2012	85%	\$914K	\$4.31
2013	86%	\$811K	\$3.78

NYC Resources

- HANYC Sustainability Website (hanyc.org)
- Green Key Global Certification
- Department of Sanitation
- Mayor's Sustainability Office: Carbon Challenge
- GreenNYC
- OneNYC (formerly PlaNYC)

Thank You!



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