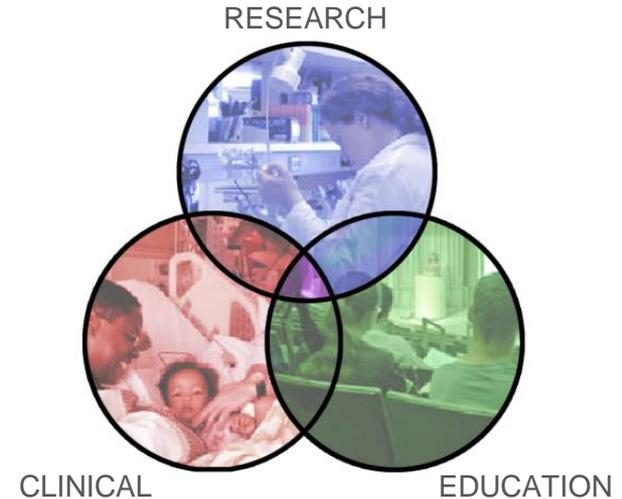


# NYU Langone Health Overview

- Founded in 1836, 11-acre main campus created by NYC and deeded to NYU Medical Center in 1949
- Tri-fold Mission: Clinical Care, Research & Education
  - 1,519 licensed beds
  - \$280+ million in research grants
  - 574 medical students
  - 29,000 employees
- More than 8 million SF currently with another 3.6 million SF being added through 2020
- Varied portfolio of sites with different energy profiles – ex/ acute in-patient, ambulatory surgery, medical office, wet and dry lab, vivarium, advanced imaging, residential, office/admin, classrooms



## OUR EXPANDING FOOTPRINT

● NYU Langone locations

★ Inpatient Locations

- Tisch Hospital
- Rusk Rehabilitation
- Hassenfeld Children's Hospital
- NYU Langone Orthopedic Hospital
- NYU Langone Hospital—Brooklyn
- NYU Winthrop (affiliate)



**230+** Locations  
in the New York Area

**2,700+** Doctors

# Sustainability and Resiliency Awards



2016 #1 hospital for water reduction – NYU Hospital for Joint Diseases  
2015 #13 team for overall energy reduction in the country  
2015 #1 medical office building for water reduction  
2014 #1 dormitory for energy reduction



2017 Partner for Change & Partner Recognition  
2016 Emerald Health Award – Top 50 sustainability performance  
2016 Energy Circle of Excellence – Top 10 energy performance  
2016 Making Medicine Mercury Free Award & Partner Recognition  
2015 Partner Recognition  
2014 Partner Recognition  
2009 Partner Recognition



2010 Outstanding Achievement by a Commercial End-User Award  
2007 Outstanding Achievement by an Institutional End-User Award



Association of Energy Engineers

2017 Young Energy Manager of the Year  
2010 Energy Manager of the Year  
2009 Energy Manager of the Year – New York



“Hub of Resilience” designation for NYU Langone

# NYU Langone Energy & Resiliency Strategy

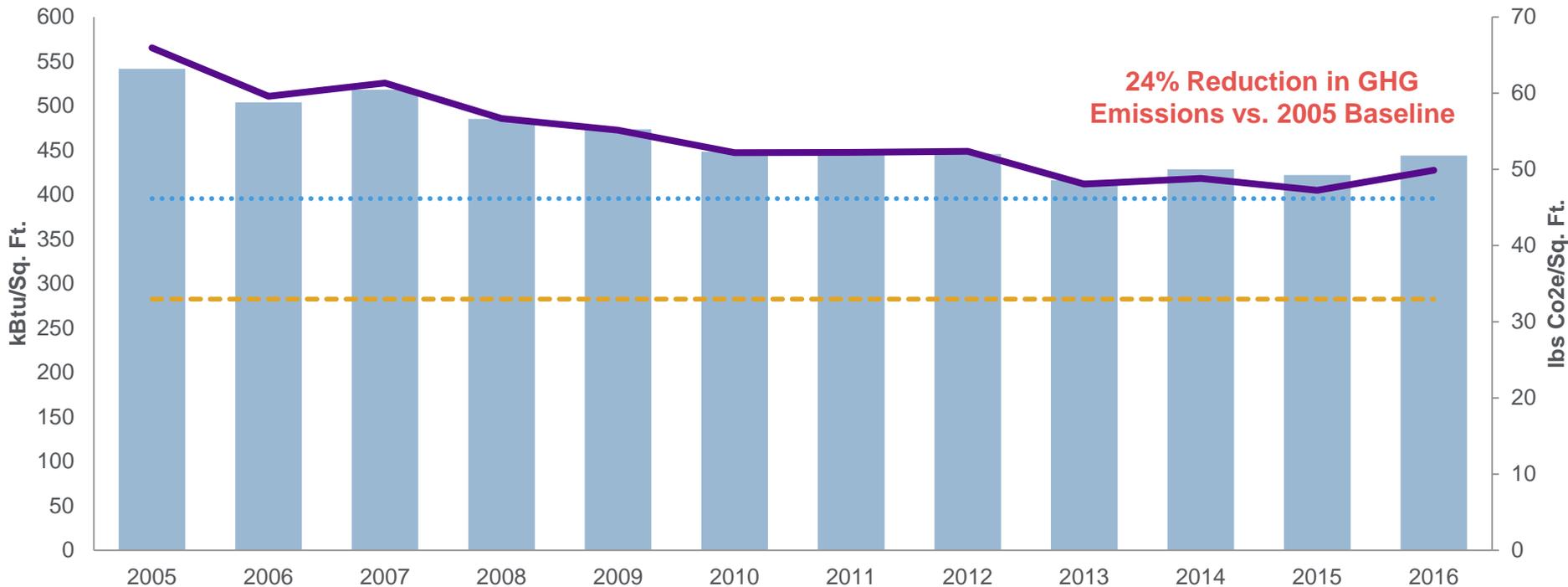
- Focus on robust energy management & carbon reduction
  - Reduce overall need while supporting growth and technology advancements
  - Decouple square footage growth from carbon intensity
  - Meet growing need for healthcare data and security
- Harden our campuses and protect the perimeter
- Enhance infrastructure capacity and redundancy (IT, energy, emergency generation)
- Elevate critical infrastructure, patient care, communications and support functions
- Install on-site heat and power generation / Micro grids
- Employ sustainable architecture, green infrastructure & LEED
- Increase demand management capabilities
- Introduce renewables & clean tech (quite challenging currently)

# Greenhouse Gas Emissions and Energy Intensity



Energy Use Intensity (kBtu / Sq. Ft.)  
 30% Reduction Goal

Carbon Intensity (lbs CO<sub>2</sub>e / Sq. Ft.)  
 Current 50% Reduction Goal



# Sample Projects From Campus Transformation



## ENERGY BUILDING (Finished 2016)

- 71,000 SF, 6 x 5.5 Megawatt - 13.2kV High Tension Electric Services
- 10.5 Megawatt Cogeneration Plant
- 7.5 Megawatt Emergency Power Plant
- Radiation Oncology Program for Cancer Treatment
- Loading Dock Facility with Flood Gates



## KIMMEL PAVILION (2018)

- 830,000 SF new, high acuity clinical facility (374 beds, 32 OR/Procedure rooms)
- 7.5 MW Emergency Power Plant
- 3 MW Cogeneration Plant
- LEED Platinum goal

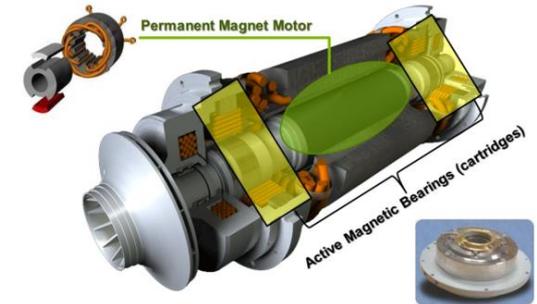


## SCIENCE BUILDING (2017)

- 365,000 SF
- New laboratory, vivarium and conference facilities
- 6 MW Emergency Power Plant
- LEED Platinum goal

# Sample Project: Hospital Chiller Plant Upgrade

- NYU Langone Orthopedic Hospital – 300,000 Sq ft
- 340 and 400 ton York YMC2 magnetic bearing chillers installed to replace inefficient Multistack units
- Free cooling HX upgraded from 80 to 200 tons
- Expanded free cooling eliminates the need to run chillers during much more of the winter
- Superior part load and low CW temperature efficiency will allow for superior performance during shoulder season
- Chiller plant can be optimized to always run plant at “sweet spot” on all chillers
- Overall 19% reduction in MMBtu from baseline



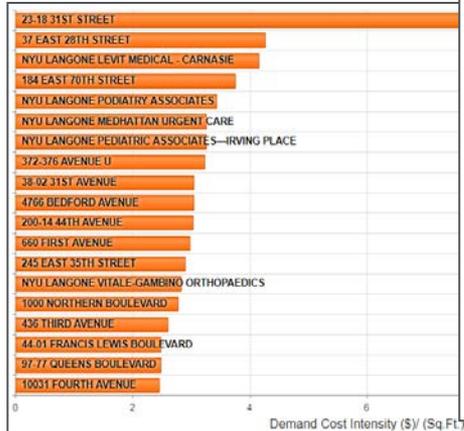
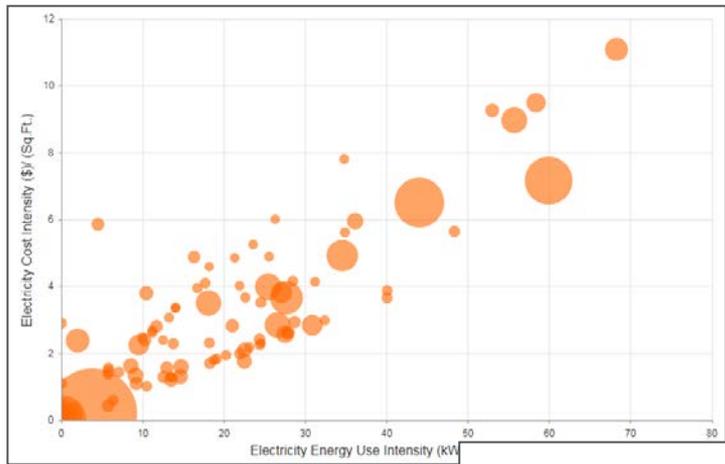
# Energy Program ROI

	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	Total
<b>Capital/Operating Expenses</b>	\$ 478,187	\$ 1,257,146	\$ 1,476,414	\$ 3,808,087	\$ 2,799,717	\$ 1,887,556	\$ 1,298,000	\$ 3,591,697	\$ 5,586,128	\$ 4,366,917	\$ 26,549,850
Salaries	\$ 364,544	\$ 397,782	\$ 417,870	\$ 606,764	\$ 608,000	\$ 688,000	\$ 990,000	\$ 633,675	\$ 657,500	\$ 775,000	\$ 6,139,135
Consultants	\$ 210,000	\$ 220,000	\$ 235,000	\$ 500,000	\$ 250,000	\$ 368,354	\$ 469,390	\$ 850,048	\$ 777,175	\$ 242,734	\$ 4,122,701
Other Non-Salary Operating Expense	\$ 250,000	\$ 35,687	\$ 133,950	\$ 325,000	\$ 125,000	\$ 4,910	\$ 48,385	\$ 9,012	\$ 38,758	\$ 13,419	\$ 984,121
Memberships and Seminars	\$ 35,000	\$ 40,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 9,925	\$ 9,171	\$ 27,600	\$ 12,426	\$ 12,975	\$ 282,097
<b>Total Expense</b>	<b>\$ 1,337,731</b>	<b>\$ 1,950,615</b>	<b>\$ 2,308,234</b>	<b>\$ 5,284,851</b>	<b>\$ 3,827,717</b>	<b>\$ 2,958,745</b>	<b>\$ 2,814,946</b>	<b>\$ 5,112,032</b>	<b>\$ 7,071,987</b>	<b>\$ 5,411,046</b>	<b>\$ 38,077,904</b>
<b>Grants/Rebates/Incentives</b>	\$ 790,000	\$ 89,635	\$ 439,200	\$ 760,000	\$ 76,159	\$ 62,415	\$ 216,960	\$ 254,108	\$ 2,398,218	\$ 1,834,017	\$ 6,920,711
Demand Response Revenue	\$ 163,049	\$ 202,787	\$ 264,878	\$ 500,000	\$ 305,755	\$ 41,460	\$ -	\$ 145,006	\$ 811,573	\$ 186,718	\$ 2,621,226
Main Campus Energy Savings	\$ 1,546,031	\$ 3,264,780	\$ 4,600,241	\$ 5,850,766	\$ 6,175,902	\$ 2,830,170	\$ 5,780,022	\$ 6,318,011	\$ 7,867,826	\$ 8,629,145	\$ 52,862,894
Offsite Energy Savings	\$ -	\$ -	\$ 6,285	\$ 5,432	\$ 241,012	\$ 851,736	\$ 798,295	\$ 1,238,416	\$ 1,301,193	\$ 1,123,567	\$ 5,565,936
<b>Total Savings</b>	<b>\$ 2,499,080</b>	<b>\$ 3,557,202</b>	<b>\$ 5,310,604</b>	<b>\$ 7,116,198</b>	<b>\$ 6,798,828</b>	<b>\$ 3,785,781</b>	<b>\$ 6,795,277</b>	<b>\$ 7,955,541</b>	<b>\$ 12,378,809</b>	<b>\$ 11,773,448</b>	<b>\$ 67,970,767</b>
<b>Net Savings</b>	<b>\$ 1,161,349</b>	<b>\$ 1,606,587</b>	<b>\$ 3,002,370</b>	<b>\$ 1,831,347</b>	<b>\$ 2,971,111</b>	<b>\$ 827,036</b>	<b>\$ 3,980,331</b>	<b>\$ 2,843,509</b>	<b>\$ 5,306,822</b>	<b>\$ 6,362,402</b>	<b>\$ 29,892,863</b>
<b>Simple Return on Investment</b>	<b>87%</b>	<b>82%</b>	<b>130%</b>	<b>35%</b>	<b>78%</b>	<b>28%</b>	<b>141%</b>	<b>56%</b>	<b>75%</b>	<b>118%</b>	<b>79%</b>

FY2017 ROI does not include the savings or expenses of the 7.5MW cogeneration facility on the Main Campus

# Data is Key For Securing Investment

Medical Office Comparative Breakdown



## Executive Energy Report NYU Langone Orthopedic Hospital Electric, Steam Aggregate August 2017

Real Estate Development & Facilities  
Energy Management

### Financial Summary

2017 FY Budget vs Actual Energy Costs				2017 FY Budget Variance Analysis				Baseline: FY 2010
Budget	Actual	Variance	Prior Year Actual	Unit Cost Impact	Weather Impact	Conservation Impact	SqFt Change Impact	Energy Program Impact
Current Month:	\$232,314	\$216,949	\$15,365	\$216,323	(\$25,752)	\$14,050	\$27,066	\$0
Fiscal Year to Date:	\$2,880,262	\$2,669,076	\$211,186	\$2,639,916	(\$78,764)	\$85,884	\$204,066	\$0
Projected Year End:	\$2,880,262	\$2,669,076	\$211,186	\$2,639,916	(\$78,764)	\$85,884	\$204,066	\$0
								Program to Date:
								\$5,516,641

Unit Cost Variance Factors	August 2017	FYTD
Electric Rate Change	\$0	\$0
Electric Fuel Adj. & Other	\$0	\$0
Steam Rate Change	\$0	\$0
Steam Fuel Adj. & Other	\$17,212	(\$5,624)

