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

as of July 2017
# Sustainability and Resiliency Awards

| Award                                                                                       |
|============================================================================================|
| 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                          |
| 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.)
- Carbon Intensity (lbs CO2e / Sq. Ft.)
- 30% Reduction Goal
- Current 50% Reduction Goal

24% Reduction in GHG Emissions vs. 2005 Baseline

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**
---|---|---|---|---|---|---|---|---|---|---
**Capital/Operating Expenses** | $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 | $45,000 | $45,000 | $45,000 | $9,925 | $9,171 | $27,600 | $12,426 | $12,975 | $282,097
**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
**Total Expense** | $1,337,731 | $1,950,615 | $2,308,234 | $5,284,851 | $3,827,717 | $2,958,745 | $2,814,946 | $5,112,032 | $7,071,987 | $5,411,046 | $38,077,904
**Grants/Rebates/Incentives** | $790,000 | $89,635 | $439,200 | $760,000 | $761,599 | $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
**Total Savings** | $2,499,080 | $3,557,202 | $5,310,604 | $7,116,198 | $6,798,828 | $6,795,277 | $6,795,277 | $12,378,809 | $11,773,448 | $67,970,767
**Net Savings** | $1,161,349 | $1,606,587 | $3,002,370 | $1,831,347 | $2,971,111 | $827,036 | $3,980,331 | $2,843,509 | $5,306,822 | $6,362,402 | $29,892,863
**Simple Return on Investment** | 87% | 82% | 130% | 35% | 78% | 28% | 141% | 56% | 75% | 118% | 79%

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

Financial Summary

2017 FY Budget vs Actual Energy Costs

<table>
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<tr>
<th>Budget</th>
<th>Actual</th>
<th>Variance</th>
<th>Prior Year Actual</th>
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2017 FY Budget Variance Analysis

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<th>Conservation Impact</th>
<th>Total Change Impact</th>
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<td>($76,764)</td>
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<td>$204,046</td>
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</tbody>
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Energy Program Performance Analysis

Monthly Energy Cost

Baseline Consumption
Consumption with Savings Solutions