

Annual Sustainability Report FY-2016



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SUSTAINABILITY
AT THE NEW SCHOOL

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FOREWORD

The sustainability mission of academic institutions is necessarily broad. We lead conversations in our local communities, inspire change through the work and behavior of our students and faculty, and model energy efficiency practices and technology in our buildings. The New School is a leader in many aspects of sustainability.

The New School Buildings Department focuses on the efficient design of building systems and operations on campus. Our goal is to foster environments where our community can thrive, while using the least amount of resources- energy, water, and waste. We strive to reduce carbon emissions generated by our campus buildings and operations. Improvement involves setting clear goals for near and long term progress and providing transparency for our students and community regarding the goals and our progress toward meeting them, through the presentation of data derived from measurements; that is the mission of this annual report.

Sustainability metrics are made available within this report, and also within our recently launched [Sustainability Dashboard](#). The dashboard was envisioned as a tool for analysis with regular updates on the many facets of the data we monitor, including progress toward our 5 and 10-year goals. Going forward, this dashboard will also serve as a portal for The New School community to view live energy and water data collected throughout our academic and dormitory spaces.

As this report is being published, 2016 was declared the hottest year on record, surpassing 2015 and 2014- a troubling trend that highlights the importance of The New School's mission to make substantive progress toward mitigating our impact on the local environment and global climate.

EXECUTIVE SUMMARY

Fiscal year 2015 (July 2014 – June 2015) is The New School's baseline for all sustainability data, making this year's report (FY2016) the first full year of data that can be compared to our baseline. Progress has been made toward our long-term goals on a number of fronts. The sections to follow detail those successes, future planned work, and areas we're focusing on improving.

FY2016 Sustainability Goals Overview

- Reduce total energy consumption by 3%
- Reduce water use by 2%
- Cut CO₂ emissions by 3%.
- Increase waste diversion by 2%

Five Drivers of Sustainability

Our sustainability report is organized into 5 categories. **Energy & Emissions** (pg. 7), **Water** (pg. 17), and **Waste** (pg. 21) have an important role in resource consumption; **Building Operations** (pg. 26) is a crucial overarching enterprise for controlling resource flow on campus and integrating with the community; **Commitments & Initiatives** (pg. 28) inform many of the strategies we employ.

Philosophy

Our sustainability efforts are focused on several key actions: to transition to **cleaner fuels**; to create more **efficient primary heating, cooling systems** and **end-use equipment**; to **educate community members** about practices that will minimize resource consumption; and to **encourage sustainability-conscious behavior** that can be championed by stewards of the campus.

Data Highlights for Fiscal Year 2016

- There has been a 3.3% increase in electricity consumption- however, 2.7% of this increase was directly the result of warmer weather, and a further 0.8% was due to lower yield of the CoGeneration plant at the University Center. Considering these factors, there was an actual **adjusted reduction of 0.2% as compared with the 2015 baseline.**
- Natural gas consumption was reduced by 18.9% (**11.5% adjusted for weather**), of which 2.8% was due to a reduction in CoGeneration output. Oil consumption dropped by 24.3%, (**9.7% adjusted for weather**)
- On-Site energy consumption- the energy consumed in all of our buildings -- was **reduced by 9.4%**, and total indirect energy consumption- which also includes the additional energy consumed by the production and transport of energy -- was **reduced by 3.6%**.

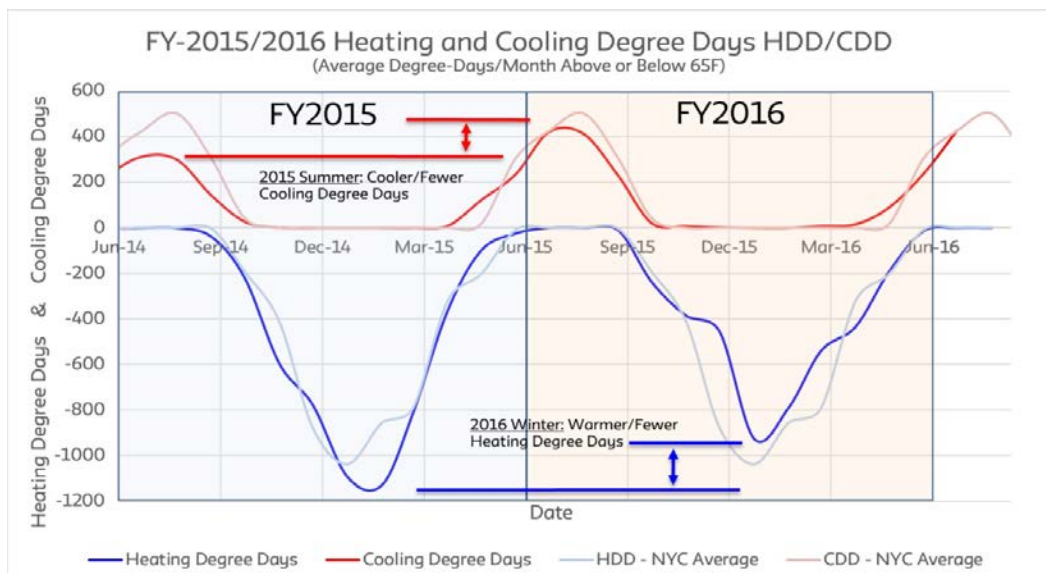
- Carbon emissions per square foot were reduced by 5.6%, with an additional 5.0% reduction attributable to the purchase of qualified renewable energy certificates (RECs) for a **total reduction of 10.6%**.
- **Water consumption rose by 1.9%** adjusted for weather, primarily the result of a water leak at Johnson/Kaplan Hall.
- The campus waste diversion rate **increased by 2.0%**, in part due to more composting this year than last (an increase of 27% by weight).

FY2016 Project Accomplishments

1. **LED Lighting & Controls:** Upgrade at 2W 13th St. reduced electricity consumption in that building by 17%.
2. **University Center Demand Response Events:** Cut 600kW (65% of total electricity demand) in the building twice during July- reducing strain on the grid.
3. **New Chiller:** Installed at the Sheila Johnson Design Center. It is expected to reduce electricity consumption there substantially.
4. **High-Efficiency Water Fixtures:** Completed at Johnson/Kaplan Hall, expected to save 600,000 gallons of water per year.
5. **Zero Waste Challenge:** The New School was the sole university participant in New York City- helping to improve waste diversion.

Temperature Anomaly as a Driver

To put much of what will follow into context, it's important to first note the climatic differences between FY2016 and FY2015 (baseline). Relative to 2015, the year 2016 was significantly warmer in New York City, throughout the winter and summer. This means that in winter less heating energy is needed, resulting in lower heating fuel (oil and natural gas) consumption, but in summer more energy is needed for cooling, resulting in higher electricity consumption used for air conditioning.



To better measure energy consumption on campus, the effects attributable to weather are calculated throughout the report and presented as “Weather-normalized data”. In the graphic representation above, the temperature in typical ‘average’ summers (light red) and winters (light blue) are contrasted with actual historical data in solid red and blue. Warmer temperatures in winter are represented by fewer/lower “Heating Degree Days” and warmer temperatures in summer are represented by more/higher “Cooling Degree Days”.

Long-Term Campus Carbon Reduction Strategy

- 1. Heating System Upgrades**
 - Cleaner heating fuels, heating system maintenance
- 2. Cooling Efficiency**
 - High-efficiency cooling equipment, chiller replacements
- 3. IT Equipment Management**
 - Computer-shutdown software, data-center consolidation
- 4. Metering & Data**
 - Metering infrastructure expansion
- 5. Lighting & Controls**
 - LED lighting & controls, dormitory energy management
- 6. Continuous Optimization**
 - Issues-log tracking, energy audits, equipment commissioning
- 7. Weatherization**
 - Perimeter sealing, glass treatments, interior insulation
- 8. Operational Policies**
 - Occupant behavior, demand response, green building practices

Sustainability Report Format

Each section of this report is organized as follows:

1. Key findings
2. FY2016 Actions Completed
3. Initiatives planned for FY2017
4. Data & Graphics
5. Progress toward goals
6. Key Performance Indicators (KPI's)



ENERGY & EMISSIONS

Half of the energy consumed by The New School is in the form of electricity, and two thirds of total carbon emissions are the result of electricity consumption. An additional amount of emissions, generally referred to as “Scope 3” emissions, are released as a result of other activities such as travel but are not formally catalogued in the analysis to follow. New school employee air travel generates an additional 6% CO₂ emissions, and our waste streams create another 5% of total emissions, not included in the calculations.

Key Takeaways

- **Overarching Goal: Reduce energy consumption (mostly electricity) 30% by 2025, vs 2015 baseline.**
- FY2016 3.3% increase in electricity consumption, however 2.7% of this increase is the result of warmer weather. A further 0.8% was due to reduced CoGeneration output at the University Center, meaning that the true **adjusted electricity was 0.2% below the 2015 baseline.**
- Natural gas consumption was reduced by 18.9% (**11.5% reduction adjusted for weather**), of which 2.8% was due to changes in UC CoGeneration output.
- Oil consumption dropped by 24.3%, (**9.7% adjusted for weather**).
- Steam consumption at 318 E. 15th St. **rose by 17.5% adjusted for weather.** This increase is suspected to be the result of a faulty meter- a possibility that is still being investigated.
- On-Site energy consumption- the energy consumed in all of our buildings -- was **reduced by 9.4%**, and total indirect energy consumption - which includes the additional energy consumed by the production and transport of energy -- was **reduced by 3.6%**.
- Carbon emissions per square foot were reduced **by 5.6%**, with an additional 5.0% reduction factored for the purchase of renewable energy certificates (RECs) per NYC Mayor’s Office calculation for a total **reduction of 10.6%**.
- **11.8% annual reduction** in electricity consumption at 2 W. 13th St. after an LED lighting and controls upgrade.
- University Center Demand Response Event shed 65% of building electricity consumption.

FY2016 Actions Completed

LED Lighting Upgrade: 2 W. 13th St. & 66 5th Ave

The Sheila Johnson Design Center LED retrofit involved three main components. First, stairwells, which are required to be lit 24/7 for safety reasons were outfitted with new occupancy-based LED dimming fixtures that reduce light to minimal levels when the stairs are unused. Second, all other fluorescent and incandescent fixtures were converted to LED lamps, which generally have energy savings of greater than 50%. Last, all rooms and most hallways and common areas were outfitted with wireless vacancy controls or timers to avoid energy use when the spaces are not occupied. This project was completed almost entirely by in-house staff trained to install and maintain appropriate hardware.

Results:

- 17% electricity savings since project completion
- Project payback: 1.6 years
- Over 3,000 LED lamps, and over 300 occupancy controls installed

Johnson/Kaplan hall also began a similar lighting and controls upgrade with returns expected to be comparable to those above. This project began in mid-2016 and is expected to conclude in early 2017.

Data center temperature optimization

IT equipment in total consumes 19% of electricity on campus, of which data centers are responsible for 8%. Each server/switching room requires a cooling system to dissipate heat. Substantial reductions in energy consumption were made by changing the university-wide temperature policy for data centers to slightly raise the temperature of equipment rooms, thereby lowering the demand for cooling and associated energy consumption.

Results:

- Temperature policy changed from 65-70F to 75F
- 17% of cooling-associated energy used in cooling data centers saved

Phase One Campus Metering Infrastructure & Online Portal

Energy consumption meters that provide real-time usage data are key to raising awareness and guiding energy-saving behavior. As an initial phase, six buildings including the University Center will have such metering installed (electricity and gas) and the data gathered will be viewable on the campus Sustainability Dashboard. The University Center in particular has

hundreds of sub-meters which will allow precise monitoring of energy flow throughout its academic and dormitory spaces.

Phase one work will be completed by the end of 2016, and the entire project, including the online portal that will enable viewing real-time data is scheduled to be completed for all buildings by the end of 2017.

Weather-Normalization Data Model

Changes in weather from year to year make it difficult to tell what proportion of energy consumption was caused by building functions, and what was caused by weather fluctuations. The New School built an energy consumption model for all buildings that is based on Energy Star methodology, and honed by more specific input and analysis of building systems and their historic response to thermal variations.

The result is a very accurate weather-normalization model that automatically calculates electricity, gas, steam, oil and even water usage independent of seasonal variations, producing data that more accurately reflects actual changes in building systems and operations. It is included alongside raw data in the analysis that follows.

Sheila Johnson Design Center Chiller Plant

Historically, the Sheila Johnson Design Center was cooled by a mixture of older units located throughout the building. In June of 2016, a new, highly efficient central Chiller plant was installed as part of the Buildings office capital infrastructure program. It is capable of providing chilled water for the entire building but it currently serves only those floors whose mechanical systems were upgraded as part of major floor renovations. As additional floors are renovated, they will also be connected to the central cooling system.

University Center Demand Response Events

For 4 hours on July 26th and 27th 2016 during Con Edison Demand Response Events, University Center successfully shed 600kW of load- helping to reduce strain on the NYC electricity grid. These events were an opportunity for the LEED Gold building to make use of much of the technology that allows it to lower consumption or disengage from the grid, such as ice storage (used in place of air conditioning), adaptive lighting, and cogeneration. It was also testament to the coordinated ability of the building's staff to respond quickly to such situations.

Results:

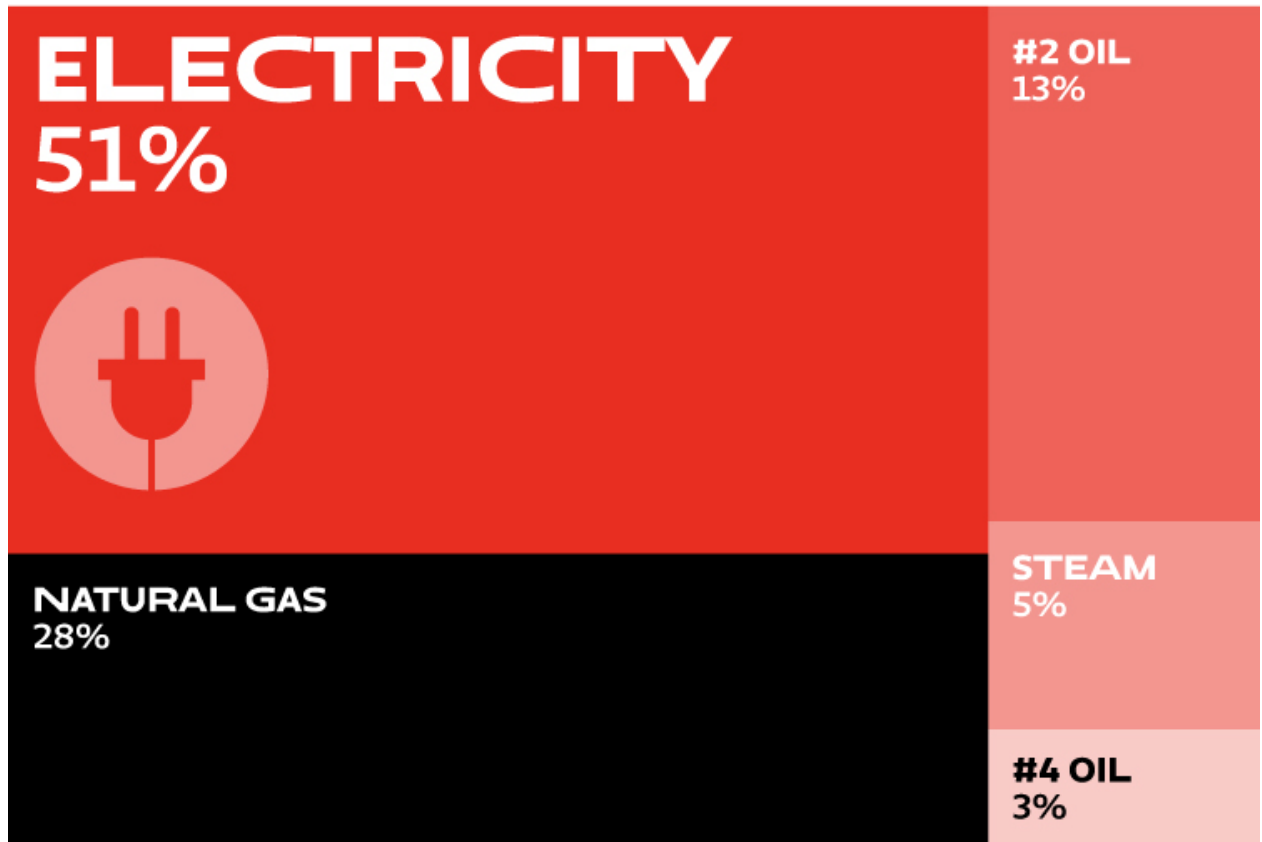
- Shed 600kW (65% of total electricity demand).
- Saved \$70,000 for participating in the program.

Initiatives Planned for FY2017

- 1. LED Lighting & Controls:** continuation of project started at the Johnson/Kaplan buildings (66 W. 12th St./65 W. 11th St./64 W. 11th St.), new projects to commence at 25 E. 13th St., Fanton Hall (72 5th Ave.), Arnhold Hall (55 W. 13th St.) and 151 Bank St.
- 2. Phase 2 Metering:** Installation of real-time metering of energy and water for the entire campus, to conclude by the end of 2017.
- 3. HVAC replacements:** Full plan is still being developed. Initially, several spaces in Johnson/Kaplan building at 66 W. 12th St. that are scheduled for HVAC replacement.
- 4. Boiler Conversions:** Converting remaining oil boilers to natural gas will reduce campus carbon emissions by 4-6%.
- 5. Motors and VFDs (variable frequency drives):** Replace older motors with higher efficiency motors, upgrade controls or modulate speed with VFD's.
- 6. Dormitory Smart Control Systems:** Similar to the InnCom system used in the University Center, such systems use occupancy and other sensors to improve occupant comfort and improve energy performance.
- 7. Weatherization improvements:** Install new weather-stripping, insulation, and low-emissivity window films.
- 8. IT Software & Consolidation:** Install new software to help shut down almost 3,000 computers and other IT equipment when not in-use. Develop a long-term plan to consolidate data center and server rooms.
- 9. Investigate the causes of the apparently excessive steam consumption at the Stuyvesant dormitory, 318 E. 15th St.**

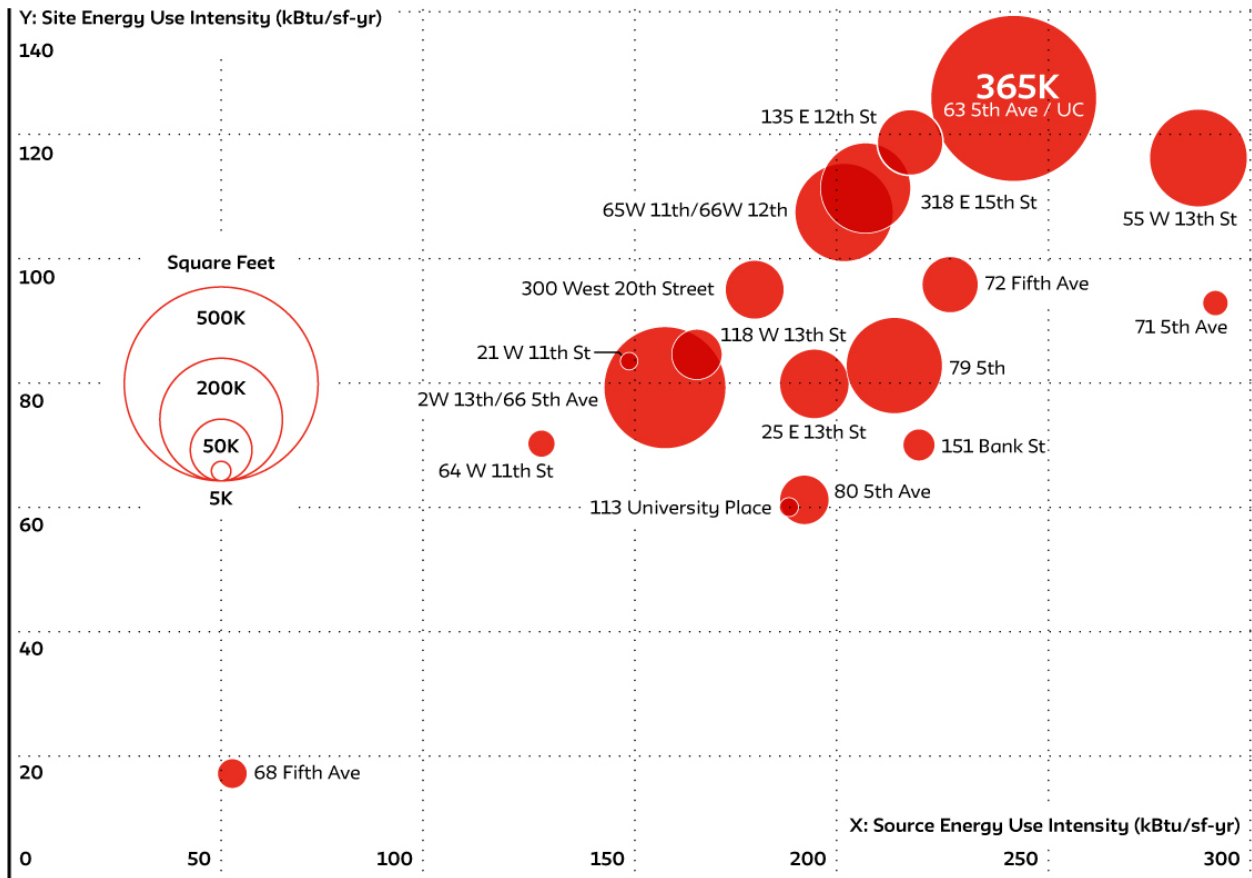
Data Visualizations

FY2016 ENERGY CONSUMPTION (by source)



The New School's energy sources include: oil and steam for heat, natural gas for heat and cogeneration, and electricity. Electricity makes up the largest portion of total energy use.

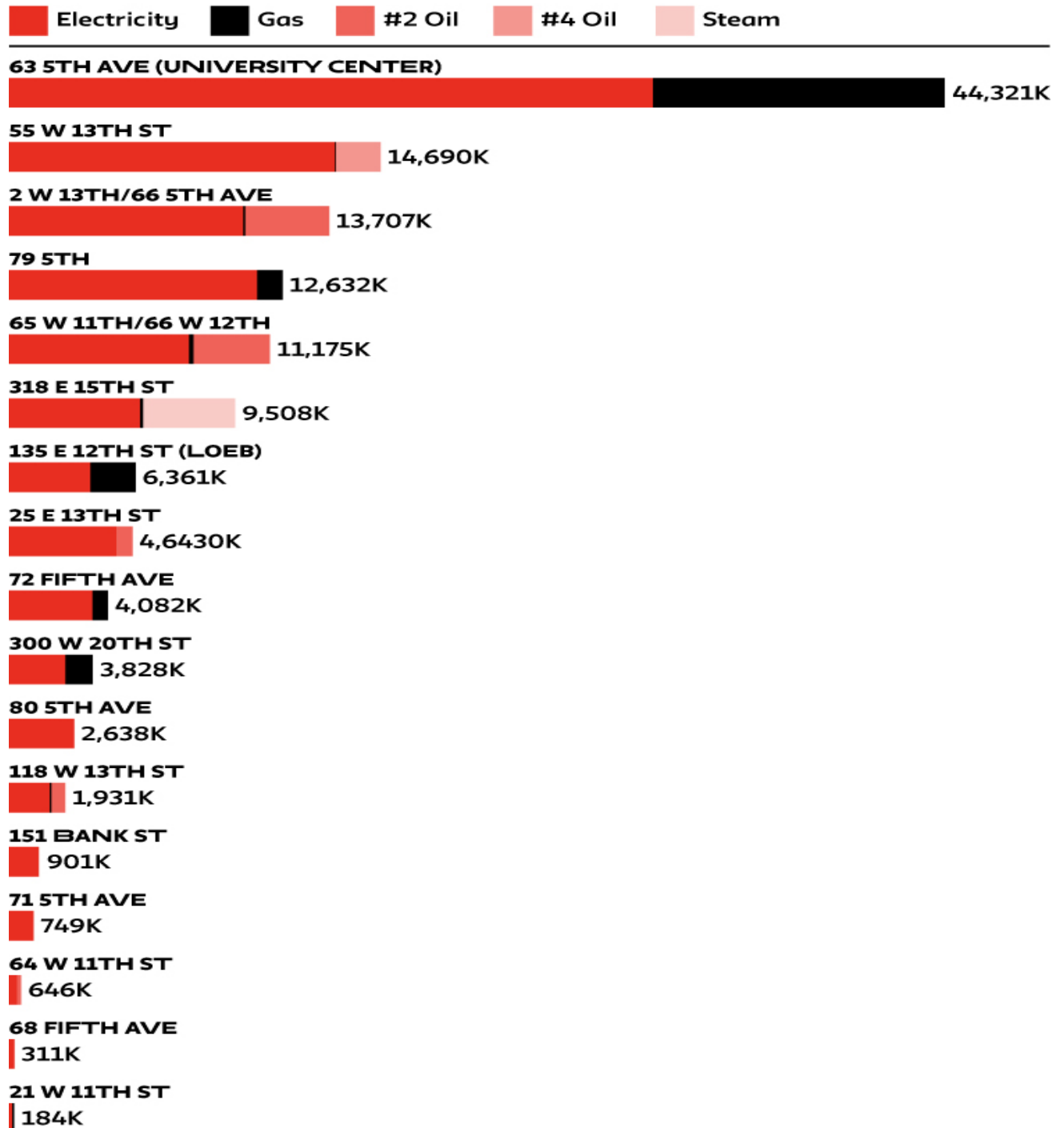
WEATHER-NORMALIZED PORFOLIO ENERGY IMPACT



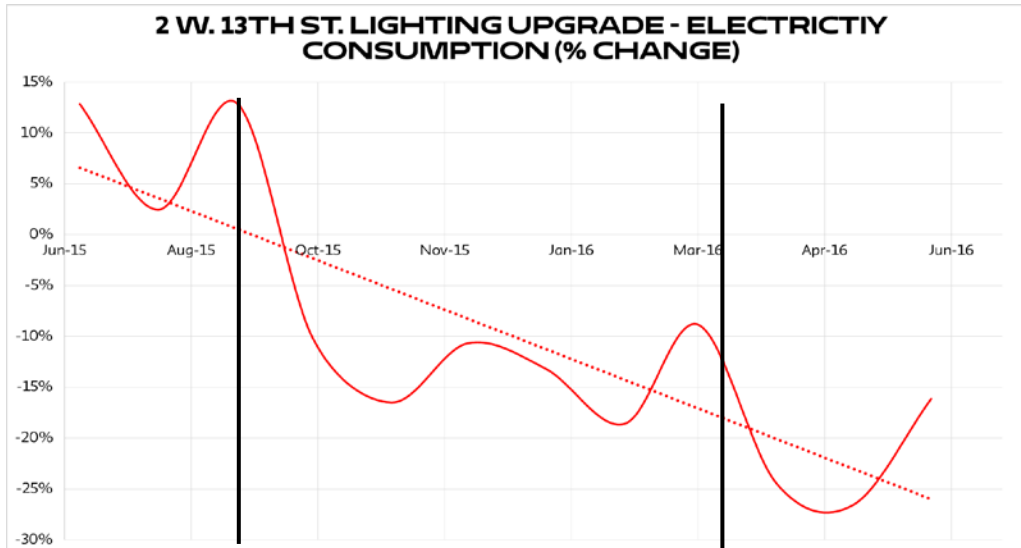
This chart describes energy consumption by building across The New School’s campus. The size of each building (square footage) is represented by the size of each bubble. The y-axis (Site Energy Use Intensity) represents building energy consumption per square foot. The x-axis (Source Energy Use Intensity) represents the total energy used to produce and transport energy to the building, per square foot. University Center is the only campus building open 24hrs a day, making it one of the most efficient, on a per-hour of operation basis.

TOTAL LIFECYCLE ENERGY CONSUMPTION

(by building, in kBtus)



This chart describes total energy consumption in each building by type of energy.



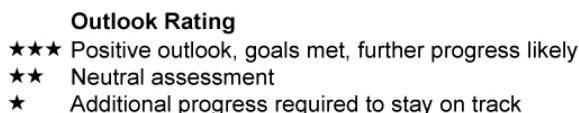
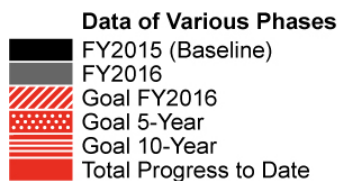
This graph shows the impact of LED lighting and controls upgrades throughout the year at 2 W. 13th St. The black lines show project start and completion dates, and the y-axis shows year over year change in electricity consumption- which has averaged an improvement of 17% since completion

FY2016 CO₂E EMISSIONS
(by source)

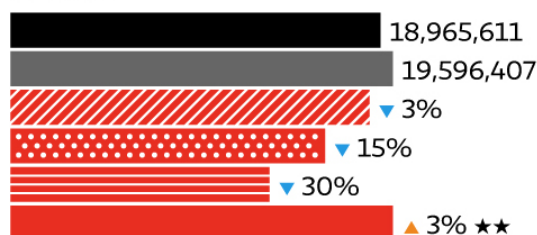


Emissions by Source: A snapshot of the sources (Scope 1 & 2) of carbon emissions. Electricity use is the dominant cause of The New School’s carbon emissions.

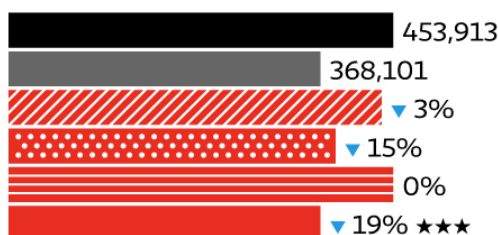
Progress Assessment Toward Goals:



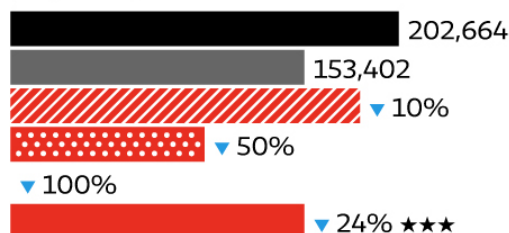
ELECTRICITY (in kWh)



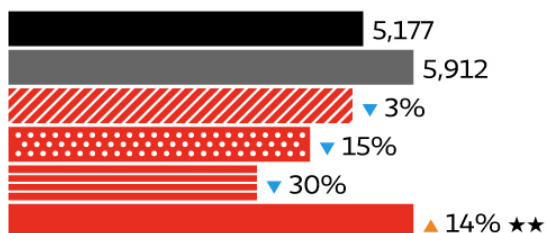
NATURAL GAS (in therms)



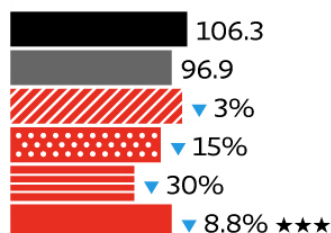
OIL #2 & #4 (in gallons)



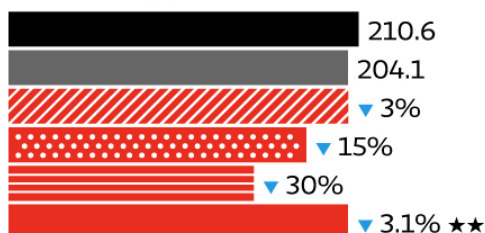
STEAM (in Mlbs)



ON-SITE ENERGY USE (in kBtu/sf-yr)



TOTAL INDIRECT ENERGY USE (in kBtu/sf-yr)

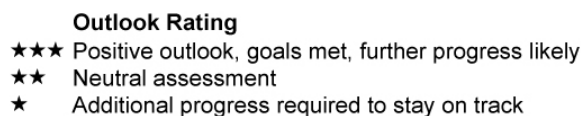
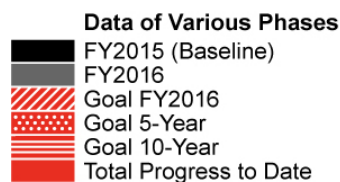


Outlook Analysis:

1. The small increase in electricity is less problematic than the percent increase suggests. Weather is the cause of 2.7% of the increase above the 2015 baseline, and an additional increase in electricity use is due to decreased cogeneration output at the University Center, compared with

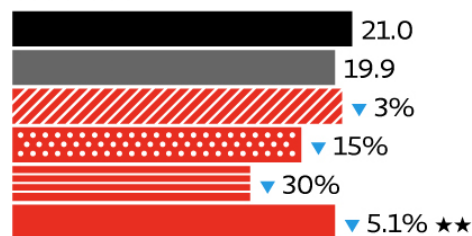
the 2015 baseline. Promising gains in electricity reduction can be seen in locations where specific projects are under way, such as LED lighting at 2W13th St (resulting in more than a 10% reduction for the year).

- Natural gas consumption has decreased in part because of a warm winter, which required less heating, and because of improved efficiency and operational measures.
- Oil consumption, similar to gas, is down in part because of warm winter weather, and improved efficiency measures. Reductions are likely to be a continued trend- enhanced by oil to gas boiler conversions, ongoing maintenance, steam trap overhauls, radiator valve installations, and steam system insulation.
- Steam consumption at this time is not precisely known and hence is being held as 'neutral'. Con Edison is currently looking into a possible meter fault at 318E 15th St, the sole user of purchased steam.
- On-site energy use is down significantly, mainly due to reduced gas and oil consumption.
- Indirect (Source) energy, dominated by electricity consumption, requires further reductions on our part in order to keep pace with goals.



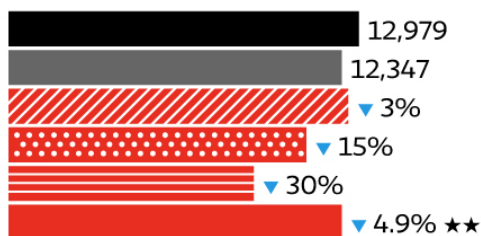
CO₂ EMISSIONS

(in lb/sf-yr)



TOTAL CO₂ EMISSIONS

(in metric tons)



Outlook Analysis:

- CO₂e reductions this year are in part due to fluctuations in weather: weather-adjusted values are closer to a 2% reduction. This reflects the continued need for vigilance in reducing electricity consumption.
- While total CO₂ reductions are on target, total CO₂ is in large part tied to overall campus size. If additional space is gained or lost, total CO₂ will rise and fall accordingly.

Key Performance Indicators (KPI's)

Raw Data:

FY2016	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St / 65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79 Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	113 University Place	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
	Energy																			
Electricity (kWh)	2,010,800	721,760	2,796,760	927,433	1,548,000	33,399	5,517,600	579,514	2,103,839	264,142	74,880	219,553	53,829	58,611	1,128,440	704,072	488,720	354,000	19,585,352	
Peak Electricity Load (kW)	683	277	716	328	571	19	1,385	-	-	128	41	-	24	-	313	196	138	104		
Natural Gas (therms)	2,099	13,646	1,106	269	3,834	1,971	254,779	-	22,342	-	-	-	2	-	2,652	39,562	24,133	1,707	368,102	
Oil #2 & #4 (gallons)	54,580	-	26,603	10,500	49,905	-	-	-	-	-	2,794	-	-	-	-	-	-	9,020	153,402	
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,912	-	-	-	5,912	
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	75.3	90.2	109.6	72.8	99.9	77.8	121.4	61.7	77.6	67.3	67.1	89.3	15.9	61.1	104.6	111.1	90.2	79.3	96.9	
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	151.0	216.1	273.1	179.1	190.0	141.2	235.3	193.7	205.2	211.2	124.4	280.4	49.9	191.8	195.0	204.3	171.7	157.7	204.0	
CO2e (lb/sf-yr)	16.1	19.6	26.1	17.3	20.7	13.6	22.3	16.8	18.3	18.4	13.8	24.4	4.3	16.7	20.7	19.6	16.3	16.7	18.8	
Weather-Normalized Utilities																				
Electricity (kWh)	2,053,093	736,400	2,855,319	950,693	1,580,533	34,050	5,585,196	582,767	2,116,852	269,022	75,531	223,457	57,888	59,425	1,156,093	723,592	498,480	360,507	19,928,526	
Weather-Normalized vs Actual (% Difference)	2.1%	2.0%	2.1%	3.5%	2.1%	1.9%	1.2%	0.9%	0.6%	1.8%	0.9%	1.8%	7.5%	1.4%	2.5%	2.8%	2.0%	1.8%	1.8%	
Natural Gas (therms)	2,099	15,444	1,106	-	3,834	2,228	270,124	-	24,294	-	-	-	-	-	2,652	43,672	26,188	1,707	393,619	
Weather-Normed vs Actual (% Difference)	0.0%	13.2%	0.0%	-	0.0%	13.0%	6.0%	-	8.7%	-	-	-	-	-	0.0%	10.4%	8.5%	0.0%	6.9%	
Oil (gallons)	59,204	-	30,200	12,556	57,098	-	-	-	-	-	3,051	-	-	-	-	-	-	10,304	172,412	
Weather-Normed vs Actual (% Difference)	8.5%	0.0%	13.5%	19.6%	14.4%	0.0%	0.0%	-	-	-	9.2%	-	-	-	-	-	-	14.2%	12.4%	
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,529	-	-	-	6,529	
Weather-Normed vs Actual (% Difference)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.4%	-	-	-	10.4%	
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	79.3	95.6	115.5	79.1	108.7	84.8	126.3	62.2	79.6	68.5	71.1	90.9	17.1	61.9	112.4	119.4	95.5	85.4	102.1	
Weather-Normed vs Actual (% Difference)	5.4%	6.0%	5.5%	8.7%	8.8%	9.0%	4.0%	0.9%	2.5%	1.8%	5.9%	1.8%	7.5%	1.4%	7.4%	7.5%	5.9%	7.6%	5.4%	
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	156.6	224.2	282.6	189.2	200.8	149.7	241.7	195.4	208.0	215.1	128.9	285.4	53.7	194.5	206.1	215.5	178.8	165.3	211.3	
Weather-Normed vs Actual (% Difference)	3.8%	3.8%	3.5%	5.6%	5.7%	6.0%	2.7%	0.9%	1.4%	1.8%	3.6%	1.8%	7.5%	1.4%	5.7%	5.5%	4.1%	4.8%	3.6%	
CO2e (lb/sf-yr)	16.8	20.4	27.2	18.5	22.2	14.5	22.9	17.0	18.6	18.7	14.5	24.8	4.7	16.9	22.0	20.7	17.0	17.7	19.7	
Weather-Normalized vs Actual (% Difference)	4.6%	4.2%	4.3%	7.0%	7.4%	6.7%	3.0%	0.9%	1.6%	1.8%	4.8%	1.8%	7.5%	1.4%	6.5%	5.9%	4.5%	6.3%	4.3%	

Baseline-Comparative Data

FY2016 vs FY2015	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
Energy																			
Electricity (kWh)	-9.5%	10.9%	-1.1%	13.5%	3.4%	-6.4%	7.8%	5.5%	2.6%	0.0%	-6.7%	7.2%	5.1%	6.6%	3.1%	4.7%	-8.5%	3.3%	
Peak Electricity Load (kW)	4.8%	8.2%	-15.3%	-8.4%	-3.2%	0.0%	12.2%	-	-	-8.6%	0.0%	-	-14.3%	6.1%	7.1%	0.0%	0.0%	-	
Natural Gas (therms)	-31.4%	-28.2%	-42.3%	-13.8%	-16.0%	-27.2%	-20.6%	-	-4.4%	-	-	-	-	13.6%	-10.8%	-18.0%	-16.7%	-18.9%	
Oil #2 & #4 (gallons)	-24.5%	-100.0%	-3.3%	-47.2%	-20.7%	-	-100.0%	-	-	-	-3.4%	-	-	-	-	-	-32.7%	-24.3%	
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.4%	-	-	-	-0.4%	
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	-18.3%	-13.0%	-2.3%	-16.9%	-11.9%	-20.8%	-11.0%	5.2%	0.8%	0.0%	-4.7%	7.2%	5.2%	2.2%	-6.0%	-10.0%	-22.3%	-9.4%	
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	-14.1%	-0.9%	-1.6%	-1.3%	-5.4%	-15.3%	-3.3%	5.2%	1.9%	0.0%	-5.7%	7.2%	5.1%	3.7%	-2.3%	-4.0%	-16.1%	-3.6%	
CO2e (lb/sf-yr)	-16.2%	-4.8%	-1.8%	-9.1%	-8.9%	-16.6%	-5.2%	5.2%	1.7%	0.0%	-5.2%	7.2%	5.2%	3.0%	-3.2%	-5.4%	-19.5%	-10.6%	
Weather-Normalized Utilities																			
Electricity (kWh)	-11.8%	7.1%	-4.0%	6.9%	0.1%	-8.8%	5.6%	4.6%	1.6%	-2.7%	-7.8%	4.1%	11.9%	2.5%	-1.1%	1.4%	-10.6%	0.6%	
Natural Gas (therms)	-31.4%	-15.3%	-42.3%	-	-16.0%	-12.6%	-13.2%	-	-14.0%	-	-	-	-	13.6%	4.5%	-7.0%	-16.7%	-11.5%	
Oil (gallons)	-14.7%	-100.0%	19.5%	-32.6%	-2.3%	-	-100.0%	-	-	-	11.6%	-	-	-	-	-	-18.3%	-9.7%	
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	17.5%	-	-	-	17.5%	
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	-13.7%	-8.8%	1.8%	-11.3%	-1.8%	-11.3%	-6.8%	4.6%	-2.9%	-2.7%	3.4%	4.1%	12.0%	12.0%	2.4%	-3.9%	-15.0%	-4.4%	
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	-12.8%	-0.5%	-1.7%	-1.7%	-0.9%	-10.3%	-1.6%	4.6%	-0.2%	-2.7%	-1.9%	4.1%	11.9%	8.5%	0.9%	-1.6%	-13.0%	-2.0%	
CO2e (lb/sf-yr)	-13.2%	-3.6%	-0.1%	-6.4%	-1.3%	-10.5%	-2.9%	4.6%	-0.7%	-2.7%	0.9%	4.1%	11.9%	10.1%	1.2%	-2.1%	-14.0%	-7.6%	



Water

Water scarcity throughout the world is a growing problem for population centers and for agriculture. While water is relatively inexpensive and abundant in New York City, it is still a noteworthy issue. The New School consumed more than 41 million gallons in FY2016. Major initiatives to reduce water usage include the installation of more efficient fixtures throughout campus, and better tracking of water consumption in individual buildings, and of specific water-consuming equipment. The University Center Green Roof is designed to absorb water, which minimizes runoff that would otherwise strain the NYC sewer system.

Key Takeaways

- **Overarching Goal: Water consumption has wide-reaching impacts far beyond its financial costs. Infrastructure is costly, and supplies are prone to disruptions related to climate change. The New School is committed to reducing water consumption 20% over the next 10 years.**
- Water consumption in FY2016 was roughly even with baseline consumption.
- Several issues contributed to setbacks in this area, including an irrigation leak, faulty toilet flush-valves, and a hot summer, which drives water-dependent air conditioning loads.
- On average, New School dormitories use 2.5x more water per square-foot than commercial or administrative spaces.

FY2016 Actions Completed

High-Efficiency fixture installation at Johnson/Kaplan Hall

Restrooms in 65 W. 11th St. and 66 W. 12th St. were retrofitted with high-efficiency fixtures, including faucets, urinals, and water closets- specified to use the least amount of water possible.

Results:

- Over 100 fixtures replaced throughout the building.
- Expected to save 600,000 gallons of water annually.

Internal Monitoring

Several water leaks on campus have had an adverse impact on our water conservation goals: an irrigation leak at 66 W. 12th St. and several failed flush valves in the University Center. As a result, a new daily check protocol was created that involves graphical monitoring of each building's water account to check for such problems. In general, keeping water consumption in check is heavily sensitive to timely elimination of leaks. They often are hard to see or detect, and can have a devastating impact. We acknowledge this and are adjusting our systems and procedures accordingly.

Water Metering

In addition to the above leak checks, metering hardware is being installed on building cooling towers, which are another source of possible leaks and other problems. As these meters are integrated into the campus metering platform, monitoring of these systems will become more robust.

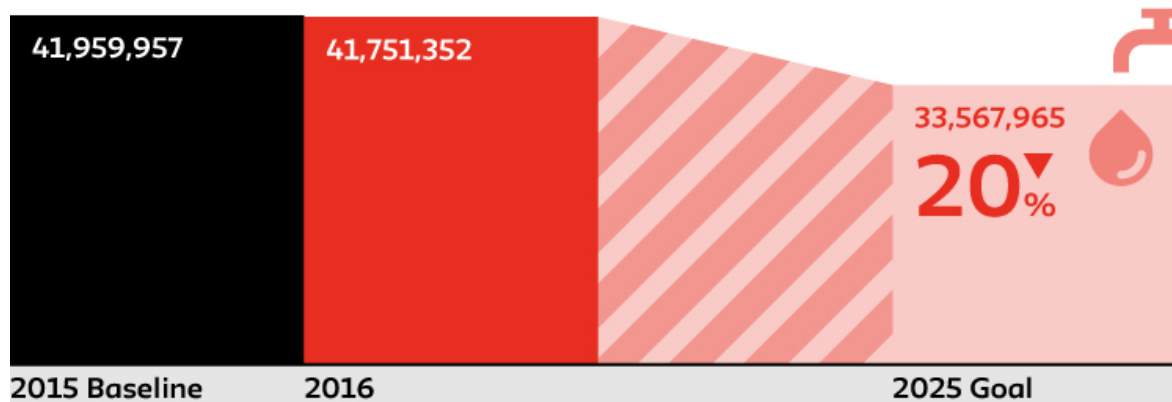
Initiatives Planned for FY2017

1. **Real-Time Metering:** All buildings should have real-time water meters installed by the end of 2017.
2. **Water Fixture Upgrades:** The next buildings on campus slated for fixture upgrades are 25 E. 13th St., and 55 W. 13th St.
3. **Behavior & Education Campaign:** Water consumption is highly dependent on occupant behavior. As such, we will be launching a campaign to improve awareness around water usage, particularly in dormitories.

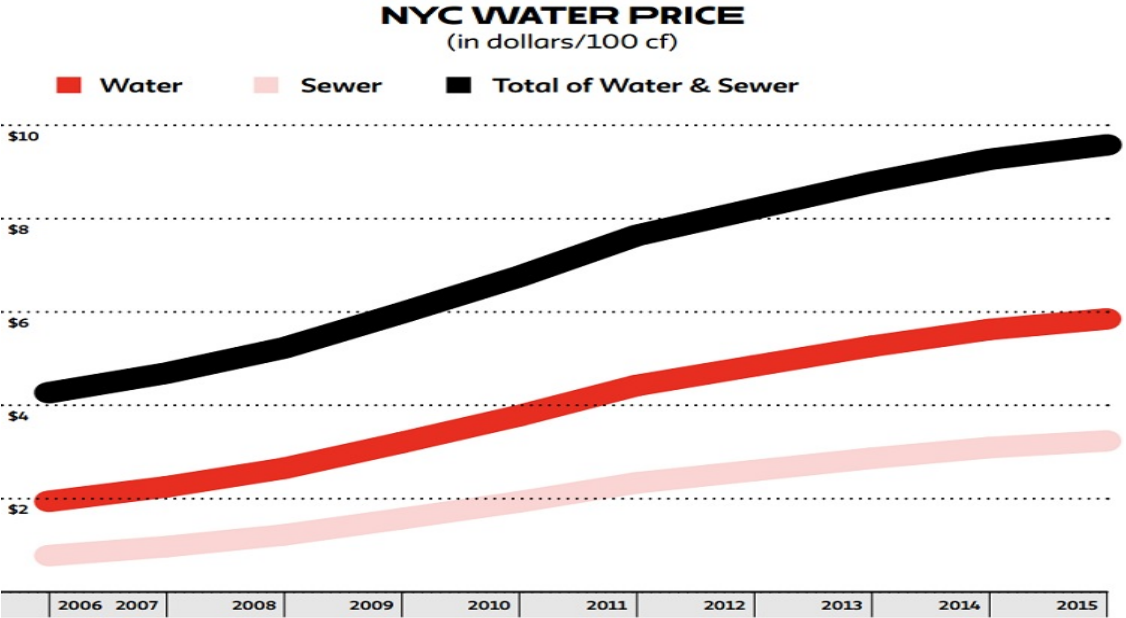
Data & Graphics

WATER CONSUMPTION TREND & GOAL

(in gallons)

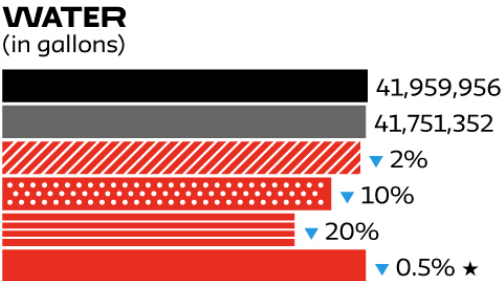


The New School’s goal is to reduce total water consumption by 20% over the coming decade.



Rising Cost of Water: The price of water in NYC has doubled over the last decade, however, it is still quite inexpensive, in comparison with other parts of the country. This price increase reflects the growing environmental and societal costs of water; water shortages are an increasingly common concern in many areas across the world.

Progress Assessment Toward Goals:



Outlook Analysis:

Water consumption in 2015 was roughly even with our consumption in 2015. Several issues contributed to a lack of progress on this front, including an irrigation leak, a large number of faulty toilet flush-valves, and a hot summer. Additional progress is needed to keep pace with goals. This years' plans include additional installations of high-efficiency retrofits, and an upgraded metering system to better track water consumption.

Key Performance Indicators:

Raw Data

FY2016																			
	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	113 University Place	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total
Water																			
Water (gal)	1,912,823	734,536	1,786,224	910,196	3,751,213	82,729	13,240,837	891,232	3,483,539	373,719	187,748	234,006	225,766	101,340	5,195,850	3,858,184	3,169,470	1,611,940	41,751,352
Gallons/Person	828	2,274	707	1,434	1,861	27,576	5,683	1,786	2,001	976	3,832	3,656	2,327	20,268	8,182	11,183	12,678	5,558	2,982
Gallons/sq.ft.	10	17	14	14	30	21	36	20	20	20	20	20	20	22	49	67	70	48	28.8
Weather-Normalized Utilities																			
Water (gal)	1,980,600	760,562	1,836,831	5,195,850	3,803,265	82,729	13,370,968	891,232	3,483,539	373,719	187,748	234,006	225,766	101,340	5,195,850	3,858,184	3,169,470	1,611,940	42,077,946
Weather-Normed vs Actual (% Difference)	3.5%	3.5%	2.8%	0.0%	1.4%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%

Baseline-Comparative Data

FY2016 vs FY2015																			
	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
Water																			
Water (gal)	11.4%	11.4%	-2.8%	12.8%	6.6%	22.9%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	-4.4%	-2.4%	-7.4%	-16.8%	-0.5%	
Gallons/Person	11.4%	11.4%	-2.8%	13.6%	6.6%	22.9%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	-4.4%	-2.4%	-7.4%	-16.8%	-0.5%	
Gallons/sq.ft.	11.4%	11.4%	-2.8%	13.6%	6.6%	22.9%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	-4.4%	-2.4%	-7.4%	-16.8%	-0.8%	
Weather-Normalized Utilities																			
Water (gal)	5.0%	5.0%	-6.5%	8.2%	4.2%	22.9%	-1.2%	18.2%	18.2%	18.2%	18.2%	18.2%	18.2%	8.2%	-2.4%	-7.4%	-16.8%	1.9%	



WASTE

Waste is an important aspect of sustainability. Not only does it add an additional 5% to campus carbon emissions, it has numerous other environmental consequences. A recent audit concluded that up to 2/3rds of The New School's waste stream is recyclable, however, less than half is currently recycled. This section presents our plans for increasing as much as possible the proportion of waste we recycle or otherwise divert from landfills.

Key Takeaways

- **Overarching Goal: To improve our diversion rate by 10% over the next 10 years.**
- The New School was the only University participant in the NYC Zero Waste Challenge.
- Total waste production was up by 7.5% in 2016, but waste diversion was also up by 2.0%.
- Compost volume on campus increased by 27%, with most of that increase coming from the University Center.

FY2016 Actions Completed

Participation in the NYC Zero Waste Challenge

The New School was the sole participant in the NYC Zero Waste Challenge. This initiative tracked waste out of every building on campus, and tracked progress over a period of several months. It raised awareness on campus among students, and highlighted the difficulty of monitoring and measuring waste. The New School's participation provided valuable data and feedback to NYC.

Waste Signage Redesign

In response to community comments regarding the clarity of waste signage on campus, a full redesign of waste signs has been commissioned, including icons, categorization, and coloring. The redesign is complete and will be rolled out across campus in early 2017 to support our waste diversion efforts.

End of Year Materials Reuse Drive

A large amount of waste is generated in our dorms during end-of-year move-outs. Much of this waste is non-recyclable or bulky in its current state, resulting in a large amount of waste. We are collaborating with the Tishman Environment & Design Center to devise and promote waste-saving activities such as reuse drives..

Initiatives Planned for FY2017

1. **Waste Signage Implementation:** Roll out the recently redesigned waste signage across campus.
2. **Improve Waste Data Collection Methods:** Currently, waste data is compiled from Action Carting- The New School's waste hauler and from other sources. We are looking for ways to further improve our collection and modeling of this complex and difficult to obtain data..
3. **Accessibility:** We are investigating ways to increase waste diversion by providing improved materials, such as compostable containers in our dining halls.

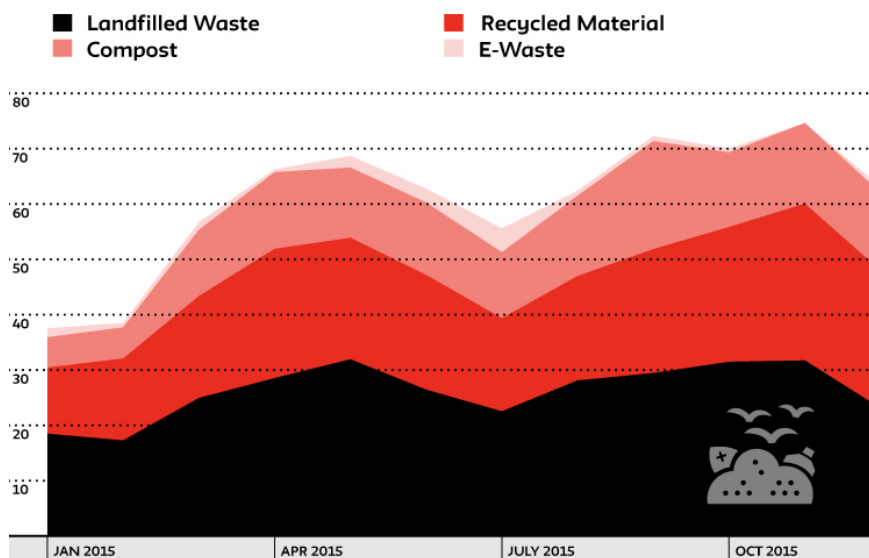
Data & Graphics



The percentage of waste that The New School diverts from landfills (our diversion rate), currently sits at approximately 47%. A recent audit of The New School's waste stream revealed that up to 2/3rds of waste could be diverted simply with better sorting at the waste bin.

WASTE STREAM BY MONTH

(in metric tons)



The New School’s waste stream changes throughout the year. Total waste is highest toward the end of the each semesters, and dips during the winter recess and summer months. Electronic waste, or e-Waste, peaks toward the move-out during our e-Waste drives.

Progress Assessment Toward Goals:

Outlook Rating

- ★★★ Positive outlook, goals met, further progress likely
- ★★ Neutral assessment
- ★ Additional progress required to stay on track

WASTE DIVERSION RATE

(in %)

FY2015 (Baseline)	45%
FY2016	47%
FY2016 Goal	▲ 2%
5-Year Goal	▲ 5%
10-Year Goal	▲ 10%
Total Progress to Date	▲ 2% ★★★

Outlook Analysis:

Waste diversion efforts were buoyed this year by The New School’s participation in the NYC Mayor’s Zero Waste Challenge. Over the next year, we plan to continue to redesign waste bin signage throughout campus, to divert more waste during residence hall move-outs, and to improve data gathering techniques.

Key Performance Indicators:

Raw Data

FY2016	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	113 University Place	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
Waste																				
Recycled Materials (lb)	162,990	20,645	109,760	67,340	168,925	-	68,280	23,744	103,287	3,150	2,968	2,909	6,520	1,187	37,990	20,479	14,840	17,214	832,229	
Compost (lb)	-	-	-	-	22,560	-	294,313	-	-	-	-	-	-	-	-	-	-	-	-	316,873
e-Waste (lb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,779
Total Waste Production (lb)	310,020	39,269	289,464	170,320	323,260	-	719,173	61,221	266,313	36,400	7,653	7,500	12,401	3,061	97,954	52,803	38,263	40,652	2,481,491	
Diversion Rate (%)	53%	53%	38%	40%	59%	-	50%	39%	39%	9%	39%	39%	53%	39%	39%	39%	39%	42%	47.1%	

Baseline Comparative Data

FY2016 vs FY2015	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total		
Waste																				
Recycled Materials (lb)	8.9%	8.9%	61.6%	-5.2%	5.7%	-	-8.9%	10.1%	10.1%	-10.0%	10.1%	10.1%	8.9%	10.1%	10.1%	10.1%	10.1%	10.1%	10.3%	
Compost (lb)	-	-	-	-	-18.0%	-	32.2%	-	-	-	-	-	-	-	-	-	-	-	-	26.7%
e-Waste (lb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-49.7%
Total Waste Production (lb)	-3.0%	-2.9%	9.2%	-5.3%	19.1%	-	13.0%	6.0%	6.0%	-0.2%	6.0%	6.0%	-2.9%	6.0%	6.0%	6.0%	2.9%	2.9%	7.5%	
Diversion Rate (%)	5.8%	5.7%	12.3%	0.0%	-9.8%	0.0%	3.7%	1.5%	1.5%	-0.9%	1.5%	1.5%	5.7%	1.5%	1.5%	1.5%	2.8%	2.8%	2.0%	



BUILDING OPERATIONS

The manner in which we operate our buildings has wide-ranging consequences, from occupant comfort and health, to energy consumption. This section considers ways in which campus operations can improve sustainability.

Key Takeaways

- **Overarching Goal: To operate campus buildings in the most sustainable way possible while creating healthy learning and work environments.**
- The New School campus includes 19 buildings with 1.45 million square feet of space, serving 10,000FTE students and additional faculty and staff.
- Equipment operation and scheduling, and staff training are all crucial to campus sustainability.
- Facilities staff are fully engaged in supporting sustainability. For instance, they have completed several in-house sustainability projects including lighting upgrades and steam system overhauls.

FY2016 Actions Completed

Local Law 87 Compliance at two Buildings

NYC law requires that buildings greater than 50k square feet complete an energy audit and mechanical system retro-commissioning. The Sheila Johnson Design Center and Johnson/Kaplan hall have both had energy audits and will complete the required retro-commissioning by the end of 2016. These actions will help improve the efficiency of these buildings and will inform future upgrade projects.

Steam System Upgrades

Each building on campus is undergoing a comprehensive assessment of the condition of steam heating infrastructure and controls. As part of this program, three buildings (25E. 13th St., 2W. 13th St. and 66W. 12th St.) have had all new steam traps, air vents, and Thermostatic Radiator Valves installed where applicable. These actions will help save energy, and improve heat distribution.

Continuous Commissioning & Optimization

Building systems can always be improved. We take an active approach we call constant commissioning, which involves going building by building,

and assessing the operation of major mechanical systems, identifying areas of energy improvement opportunity, and execution. This procedure is always taking place on campus, with several specific systems on schedule to be addressed in 2016 and 2017, such as ventilation equipment scheduling and boiler control systems in several buildings. .

Staff Training

The expertise and experience of facilities management staff are critical for efficient building operations. In addition to regular meetings focused on best practices, we hosted a USGBC-organized Green Operations and Maintenance training on campus for all of our staff in the fall of 2015. We plan to host similar training for staff in the future on an annual basis.

Academic Programs Coordination

The Buildings Department coordinated with several student and faculty teams on various sustainability programs.

1. Thermal studies & occupant comfort throughout the University Center
2. Studies of the impact of computer labs on energy consumption
3. Campus bike storage effectiveness study
4. Energy Data provided to support the Tishman Center Hackathon event

Initiatives Planned for FY2017

1. **Building System Optimizations:** We plan to focus on several high-impact systems of note on campus, including the UC CoGeneration.
2. **Staff training:** Additional courses, such as the CUNY Building Operator Certification.
3. **Local Law 87 Work Continuation:** Further compliance work for 2017, include energy audits and commissioning at 55W 13th St.
4. **Equipment Scheduling:** Working with building engineers to optimize run-schedules of heating and cooling equipment.
5. **Controls upgrades:** Improve various controls systems, and integrate additional spaces into the campus building management systems (BMS).
6. **Heating System Upgrades:** Additional maintenance of systems such as steam traps and radiator control valves.
7. **Green Cleaning:** Develop a more robust protocol for the use of green cleaning products.
8. **Building Construction Standards:** Develop enhanced protocols for energy performance & material use in new spaces.



COMMITMENTS & INITIATIVES

The New School has joined several formal sustainability commitments over the years, including the pledge to become carbon-neutral by 2040, and the NYC Mayor’s Challenge to reduce emissions by 35% over 2014 levels by 2025. By tracking goals and the data that supports them, we can stay on track to meet our long-term commitments. This year The New School joined the NYS REV (Reforming the Energy Vision) Challenge, and created our own set of additional sub-goals in areas of energy, water, and waste- as described previously.

Key Takeaways

- **Overarching Goal: To meet our CO₂ emissions reduction targets in addition to intermediary sub-goals.**
- In 2016 the New School joined the REV Challenge to champion clean energy in New York State.
- Goal to remain on-track to meet the Mayor’s Carbon Challenge was met this year.

Current Commitments

3-Year Rolling Plan

As a way of prioritizing, organizing, and assessing the value of various sustainability actions at The New School, we use a 3-year rolling planning cycle. In short, this means that we are always identifying potential projects, and planning for those projects to take place in the future. At the same time, we evaluate ongoing initiatives to determine whether they produce the expected results

Typical initiative cycle:



Internal Goals

In addition to carbon emissions goals, Buildings now sets internal targets for energy, water and waste- on an annual, 5-year, and 10-year basis. These targets, and progress toward them is described in corresponding

sections above. Those targets can also be actively explored on the university [Sustainability Dashboard](#).

NYC Mayor's Carbon Challenge

The New School has actively been engaged in the Mayor's Climate Challenge since its inception in 2006. Due to the many changes in the campus portfolio of both leased and owned spaces, The New School committed to a new target of 35% reduction in carbon emissions (as measured on a per square foot basis) by 2025, as compared with a 2014 calendar year baseline. This means that we need to achieve an average 3.5% yearly carbon emissions reduction.

While calculated on a calendar year (January – December) rather than our fiscal year (July – June), this target is consistent with our other goals. This year, we achieved a 3% reduction in carbon emissions (FY number is larger), in addition to a 5% credit that results from the purchase of RECs (Renewable Energy Credits).

ACUPCC

The American College & University Presidents Climate Commitment to become carbon neutral by 2040 requires roughly a 4% reduction in CO₂ per year in order to stay on pace. While currently on pace, the distant future brings with it the challenge of diminishing marginal returns, and the difficulty in finding additional energy efficiency opportunities.

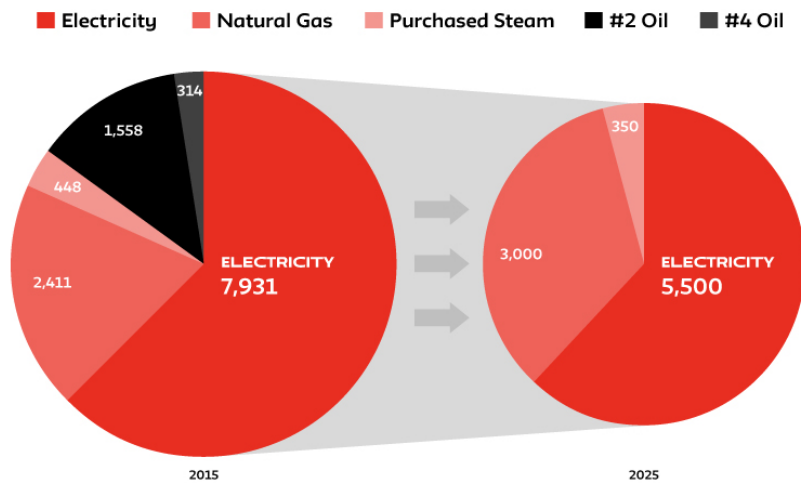
As part of its long-term strategy, The New School will look toward renewable energy, and a cleaner grid to become carbon neutral.

NYS REV Campus Challenge

New York State and NYSERDA jointly released plans to create a State-wide University challenge of their own, which will in some ways overlap with the NYC Carbon Challenge, but adds a new a degree of depth and flexibility. The New School became a member of this challenge in 2016. REV provides universities with the opportunity to champion clean energy, while providing opportunities for recognition and funding, as well as collaboration with other universities in the area.

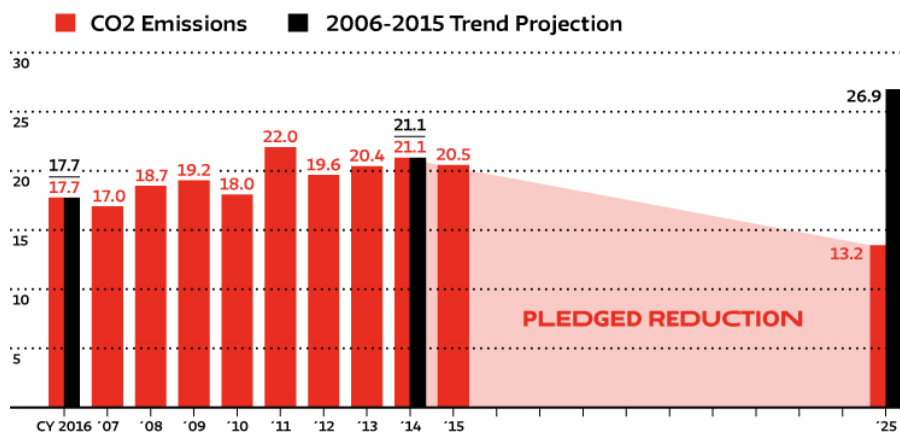
Data & Graphics

CURRENT V.S. PROJECTED: CO₂ EMISSIONS
(in metric tons)



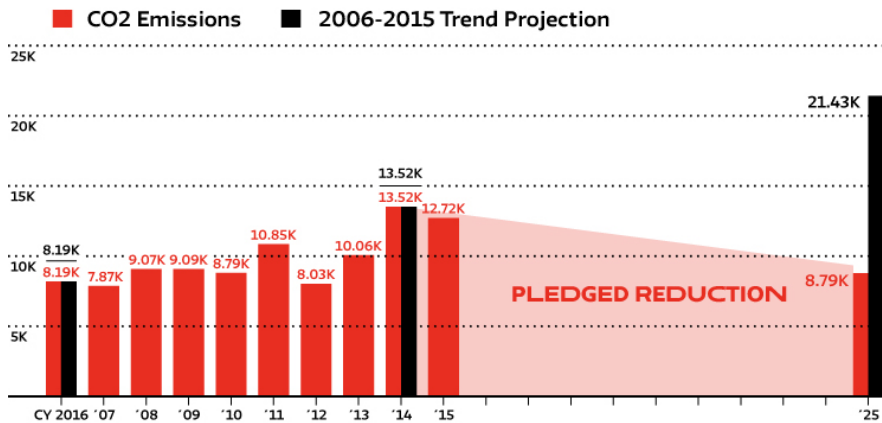
A 10-year outlook on The New School’s CO₂ reduction commitment, and anticipated change in portfolio profile. Oil will be replaced by natural gas and thus gas consumption will increase over time, however, gas is less carbon-intensive fuel than oil.

NORMALIZED CO₂e EMISSIONS
(in metric tons/sq. ft.)



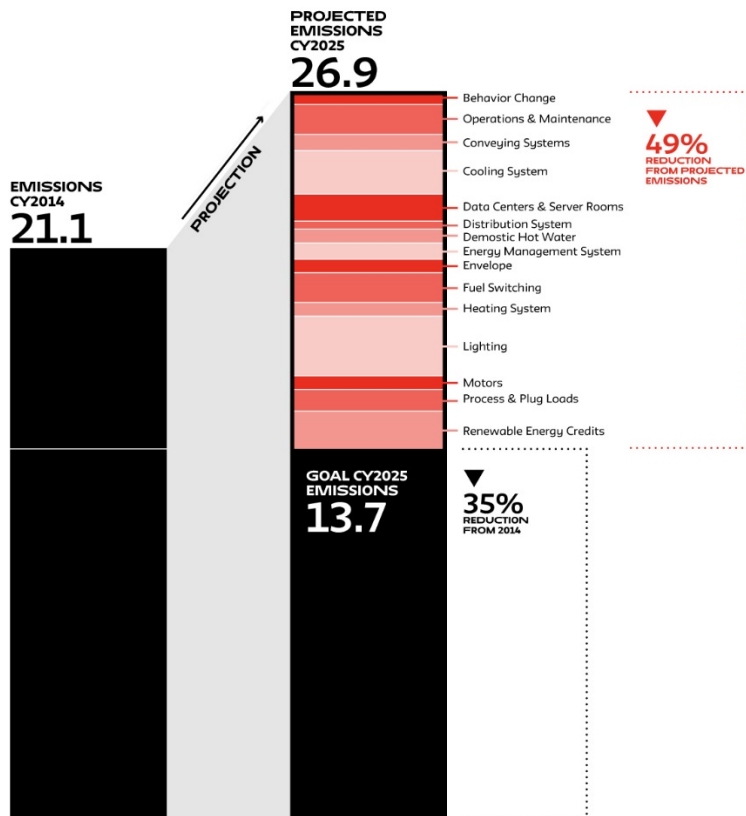
Emissions are normalized on a per-square foot basis. This is among the most important sustainability metrics, and takes growth and contraction of the University into account. The red trend line represents our current commitment over the coming decade.

TOTAL CO₂e EMISSIONS (in metric tons)



Total historical emissions since 2006 at The New School, and our goal to reduce emissions 30% over the next decade.

EMISSIONS PROJECTIONS (in lbs/sq. ft.)



Roadmap to 35% Carbon reduction by 2025: A look at some of the measures The New School is taking, and the projected long-term impact they will have in reducing emissions.



APPENDIX

KEY PERFORMANCE INDICATOR (KPI) SUMMARY

Raw Data

FY2016	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79 Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	113 University Place	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
	Energy																			
Electricity (kWh)	2,010,800	721,760	2,796,760	927,433	1,548,000	33,399	5,517,600	579,514	2,103,839	264,142	74,880	219,553	53,829	58,611	1,128,440	704,072	488,720	354,000	19,585,352	
Peak Electricity Load (kW)	683	277	716	328	571	19	1,385	-	-	128	41	-	24	-	313	196	138	104		
Natural Gas (therms)	2,099	13,646	1,106	269	3,834	1,971	254,779	-	22,342	-	-	-	2	-	2,652	39,562	24,133	1,707	368,102	
Oil #2 & #4 (gallons)	54,580	-	26,603	10,500	49,905	-	-	-	-	-	2,794	-	-	-	-	-	-	9,020	153,402	
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,912	-	-	-	5,912	
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	75.3	90.2	109.6	72.8	99.9	77.8	121.4	61.7	77.6	67.3	67.1	89.3	15.9	61.1	104.6	111.1	90.2	79.3	96.9	
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	151.0	216.1	273.1	179.1	190.0	141.2	235.3	193.7	205.2	211.2	124.4	280.4	49.9	191.8	195.0	204.3	171.7	157.7	204.0	
CO2e (lb/sf-yr)	16.1	19.6	26.1	17.3	20.7	13.6	22.3	16.8	18.3	18.4	13.8	24.4	4.3	16.7	20.7	19.6	16.3	16.7	18.8	
Water																				
Water (gal)	1,912,823	734,536	1,786,224	910,196	3,751,213	82,729	13,240,837	891,232	3,483,539	373,719	187,748	234,006	225,766	101,340	5,195,850	3,858,184	3,169,470	1,611,940	41,751,352	
Gallons/Person	828	2,274	707	1,434	1,861	27,576	5,683	1,786	2,001	976	3,832	3,656	2,327	20,268	8,182	11,183	12,678	5,558	2,982	
Gallons/sq.ft.	10	17	14	14	30	21	36	20	20	20	20	20	20	22	49	67	70	48	28.8	
Waste																				
Recycled Materials (lb)	162,990	20,645	109,760	67,340	168,925	-	68,280	23,744	103,287	3,150	2,968	2,909	6,520	1,187	37,990	20,479	14,840	17,214	832,229	
Compost (lb)	-	-	-	-	22,560	-	294,313	-	-	-	-	-	-	-	-	-	-	-	-	316,873
e-Waste (lb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,779
Total Waste Production (lb)	310,020	39,269	289,464	170,320	323,260	-	719,173	61,221	266,313	36,400	7,653	7,500	12,401	3,061	97,954	52,803	38,263	40,652	2,481,491	
Diversion Rate (%)	53%	53%	38%	40%	59%	-	50%	39%	39%	9%	39%	39%	53%	39%	39%	39%	39%	42%	47.1%	

Baseline-Comparative Data

FY2016 vs FY2015		2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St	University Center	80 Fifth Avenue	79 Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	318 E 15th Street	135 E 12th Street	300 W 20th Street	128 W 13th Street	Campus Total
Energy																			
Electricity (kWh)	-9.5%	10.9%	-1.1%	13.5%	3.4%	-6.4%	7.8%	5.5%	2.6%	0.0%	-6.7%	7.2%	5.1%	6.6%	3.1%	4.7%	-8.5%	-8.5%	3.3%
Peak Electricity Load (kW)	4.8%	8.2%	-15.3%	-8.4%	-3.2%	0.0%	12.2%	-	-	-8.6%	0.0%	-	-14.3%	6.1%	7.1%	0.0%	0.0%	0.0%	-
Natural Gas (therms)	-31.4%	-28.2%	-42.3%	-13.8%	-16.0%	-27.2%	-20.6%	-	-4.4%	-	-	-	-	13.6%	-10.8%	-18.0%	-16.7%	-16.7%	-18.9%
Oil #2 & #4 (gallons)	-24.5%	-100.0%	-3.3%	-47.2%	-20.7%	-	-100.0%	-	-	-	-3.4%	-	-	-	-	-	-	-32.7%	-24.3%
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.4%	-	-	-	-	-0.4%
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	-18.3%	-13.0%	-2.3%	-16.9%	-11.9%	-20.8%	-11.0%	5.2%	0.8%	0.0%	-4.7%	7.2%	5.2%	2.2%	-6.0%	-10.0%	-22.3%	-22.3%	-9.4%
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	-14.1%	-0.9%	-1.6%	-1.3%	-5.4%	-15.3%	-3.3%	5.2%	1.9%	0.0%	-5.7%	7.2%	5.1%	3.7%	-2.3%	-4.0%	-16.1%	-16.1%	-3.6%
CO2e (lb/sf-yr)	-16.2%	-4.8%	-1.8%	-9.1%	-8.9%	-16.6%	-5.2%	5.2%	1.7%	0.0%	-5.2%	7.2%	5.2%	3.0%	-3.2%	-5.4%	-19.5%	-19.5%	-10.6%
Water																			
Water (gal)	11.4%	11.4%	-2.8%	12.8%	6.6%	22.9%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	-4.4%	-2.4%	-7.4%	-16.8%	-0.5%
Gallons/Person	11.4%	11.4%	-2.8%	13.6%	6.6%	22.9%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	-4.4%	-2.4%	-7.4%	-16.8%	-0.5%
Gallons/sq.ft.	11.4%	11.4%	-2.8%	13.6%	6.6%	22.9%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	-4.4%	-2.4%	-7.4%	-16.8%	-0.8%
Waste																			
Recycled Materials (lb)	8.9%	8.9%	61.6%	-5.2%	5.7%	-	-8.9%	10.1%	10.1%	-10.0%	10.1%	10.1%	8.9%	10.1%	10.1%	10.1%	10.1%	10.1%	10.3%
Compost (lb)	-	-	-	-	-18.0%	-	32.2%	-	-	-	-	-	-	-	-	-	-	-	26.7%
e-Waste (lb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-49.7%
Total Waste Production (lb)	-3.0%	-2.9%	9.2%	-5.3%	19.1%	-	13.0%	6.0%	6.0%	-0.2%	6.0%	6.0%	-2.9%	6.0%	6.0%	6.0%	2.9%	2.9%	7.5%
Diversion Rate (%)	5.8%	5.7%	12.3%	0.0%	-9.8%	0.0%	3.7%	1.5%	1.5%	-0.9%	1.5%	1.5%	5.7%	1.5%	1.5%	1.5%	2.8%	2.8%	2.0%

Weather-Normalized Energy & Water

Raw Data

FY2016	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	113 University Place	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
	Weather-Normalized Utilities																			
Electricity (kWh)	2,053,093	736,400	2,855,319	950,693	1,580,533	34,050	5,585,196	582,767	2,116,852	269,022	75,531	223,457	57,888	59,425	1,156,093	723,592	498,480	360,507	19,928,526	
Weather-Normalized vs Actual (% Difference)	2.1%	2.0%	2.1%	3.5%	2.1%	1.9%	1.2%	0.9%	0.6%	1.8%	0.9%	1.8%	7.5%	1.4%	2.5%	2.8%	2.0%	1.8%	1.8%	
Natural Gas (therms)	2,099	15,444	1,106	-	3,834	2,228	270,124	-	24,294	-	-	-	-	-	2,652	43,672	26,188	1,707	393,619	
Weather-Normed vs Actual (% Difference)	0.0%	13.2%	0.0%	-	0.0%	13.0%	6.0%	-	8.7%	-	-	-	-	-	0.0%	10.4%	8.5%	0.0%	6.9%	
Oil (gallons)	59,204	-	30,200	12,556	57,098	-	-	-	-	-	3,051	-	-	-	-	-	-	10,304	172,412	
Weather-Normed vs Actual (% Difference)	8.5%	0.0%	13.5%	19.6%	14.4%	0.0%	0.0%	-	-	-	9.2%	-	-	-	-	-	-	14.2%	12.4%	
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,529	-	-	-	6,529	
Weather-Normed vs Actual (% Difference)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.4%	-	-	-	10.4%	
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	79.3	95.6	115.5	79.1	108.7	84.8	126.3	62.2	79.6	68.5	71.1	90.9	17.1	61.9	112.4	119.4	95.5	85.4	102.1	
Weather-Normed vs Actual (% Difference)	5.4%	6.0%	5.5%	8.7%	8.8%	9.0%	4.0%	0.9%	2.5%	1.8%	5.9%	1.8%	7.5%	1.4%	7.4%	7.5%	5.9%	7.6%	5.4%	
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	156.6	224.2	282.6	189.2	200.8	149.7	241.7	195.4	208.0	215.1	128.9	285.4	53.7	194.5	206.1	215.5	178.8	165.3	211.3	
Weather-Normed vs Actual (% Difference)	3.8%	3.8%	3.5%	5.6%	5.7%	6.0%	2.7%	0.9%	1.4%	1.8%	3.6%	1.8%	7.5%	1.4%	5.7%	5.5%	4.1%	4.8%	3.6%	
CO2e (lb/sf-yr)	16.8	20.4	27.2	18.5	22.2	14.5	22.9	17.0	18.6	18.7	14.5	24.8	4.7	16.9	22.0	20.7	17.0	17.7	19.7	
Weather-Normalized vs Actual (% Difference)	4.6%	4.2%	4.3%	7.0%	7.4%	6.7%	3.0%	0.9%	1.6%	1.8%	4.8%	1.8%	7.5%	1.4%	6.5%	5.9%	4.5%	6.3%	4.3%	
Water (gal)	1,980,600	760,562	1,836,831	5,195,850	3,803,265	82,729	13,370,968	891,232	3,483,539	373,719	187,748	234,006	225,766	101,340	5,195,850	3,858,184	3,169,470	1,611,940	42,077,946	
Weather-Normed vs Actual (% Difference)	3.5%	3.5%	2.8%	0.0%	1.4%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	

Baseline-Comparative Data

FY2016 vs FY2015	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St.	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
	Weather-Normalized Utilities																		
Electricity (kWh)	-11.8%	7.1%	-4.0%	6.9%	0.1%	-8.8%	5.6%	4.6%	1.6%	-2.7%	-7.8%	4.1%	11.9%	2.5%	-1.1%	1.4%	-10.6%	0.6%	0.6%
Natural Gas (therms)	-31.4%	-15.3%	-42.3%	-	-16.0%	-12.6%	-13.2%	-	-14.0%	-	-	-	-	13.6%	4.5%	-7.0%	-16.7%	-11.5%	-11.5%
Oil (gallons)	-14.7%	-100.0%	19.5%	-32.6%	-2.3%	-	-100.0%	-	-	-	11.6%	-	-	-	-	-	-	-18.3%	-9.7%
Steam (Mlbs)	-	-	-	-	-	-	-	-	-	-	-	-	-	17.5%	-	-	-	-	17.5%
On-Site Energy Use (Site EUI) - (kBtu/sf-yr)	-13.7%	-8.8%	1.8%	-11.3%	-1.8%	-11.3%	-6.8%	4.6%	-2.9%	-2.7%	3.4%	4.1%	12.0%	12.0%	2.4%	-3.9%	-15.0%	-4.4%	-4.4%
Total Indirect Energy Use (Source EUI) - (kBtu/sf-yr)	-12.8%	-0.5%	-1.7%	-1.7%	-0.9%	-10.3%	-1.6%	4.6%	-0.2%	-2.7%	-1.9%	4.1%	11.9%	8.5%	0.9%	-1.6%	-13.0%	-2.0%	-2.0%
CO2e (lb/sf-yr)	-13.2%	-3.6%	-0.1%	-6.4%	-1.3%	-10.5%	-2.9%	4.6%	-0.7%	-2.7%	0.9%	4.1%	11.9%	10.1%	1.2%	-2.1%	-14.0%	-7.6%	-7.6%
Water (gal)	5.0%	5.0%	-6.5%	8.2%	4.2%	22.9%	-1.2%	18.2%	18.2%	18.2%	18.2%	18.2%	18.2%	8.2%	-2.4%	-7.4%	-16.8%	1.9%	1.9%

Costs

Raw Data

FY2016	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	123 University Place	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total	
	Utility Expenditures																			
Electricity (\$)	\$ 401,107	\$ 157,079	\$ 539,161	\$ 196,743	\$ 320,173	\$ 8,226	\$1,025,222	\$115,528	\$ 403,702	\$63,387	\$18,212	\$44,352	\$14,559	\$11,722	\$ 209,406	\$ 129,115	\$ 92,976	\$ 67,161	\$ 3,817,830	
Natural Gas (\$)	\$ 1,707	\$ 12,230	\$ 1,766	\$ 644	\$ 3,195	\$ 2,237	\$ 161,533	-	\$ 17,314	-	-	-	\$ 1,041	\$ -	\$ 2,642	\$ 22,020	\$ 14,259	\$ 2,400	\$ 242,987	
Oil #2 (\$)	\$ 81,037	\$ -	\$ -	\$ 15,812	\$ 74,349	\$ -	\$ -	-	-	-	\$ 4,224	-	-	\$ -	\$ -	\$ -	\$ -	\$ 14,210	\$ 189,692	
Oil #4 (\$)	-	-	\$ 38,091	-	-	-	-	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 38,091	
Steam (\$)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	\$ 151,704	\$ -	\$ -	\$ -	\$ 151,704	
Water (\$)	\$ 23,846	\$ 9,690	\$ 20,038	\$ 11,229	\$ 49,487	\$ 1,088	\$ 174,855	\$ -	-	-	-	-	-	\$ -	\$ -	\$ 50,899	\$ 41,813	\$ 21,265	\$ 404,209	
Total Utilities (\$)	\$ 507,697	\$ 178,999	\$ 599,056	\$ 224,428	\$ 447,203	\$ 11,550	\$1,361,609	\$115,528	\$ 421,016	\$63,387	\$22,436	\$44,352	\$15,599	\$11,722	\$ 363,752	\$ 202,033	\$ 149,048	\$ 105,036	\$ 4,844,452	

Baseline-Comparative Data

FY2016 vs FY2015	2 West 13th Street & 66 5th Ave	72 Fifth Avenue	55 West 13th Street	25 East 13th Street	66 W 12th St/65 W 11th St	21 W 11th St	University Center	80 Fifth Avenue	79Fifth Avenue	151 Bank Street	64 West 11th Street	71 Fifth Avenue	68 Fifth Avenue	318 E 15th Street	135 E 12th Street	300 W 20th Street	118 W 13th Street	Campus Total		
	Utility Expenditures																			
Electricity (\$)	-8.1%	11.4%	0.4%	12.2%	5.9%	1.3%	4.2%	1.9%	-6.5%	-2.6%	-1.7%	2.2%	7.1%	9.0%	4.9%	6.8%	-5.7%	-	2.0%	
Natural Gas (\$)	-54.3%	13.6%	-36.9%	-8.5%	-44.9%	-23.4%	-29.4%	-	-18.7%	-	-	-	168.4%	-2.3%	-48.6%	-50.9%	-19.3%	-	-31.5%	
Oil #2 (\$)	-55.2%	-100.0%	-	-66.6%	-51.1%	-	-100.0%	-	-	-	-36.8%	-	-	-	-	-	-	-58.5%	-56.2%	
Oil #4 (\$)	-	-	-36.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-36.7%	
Steam (\$)	-	-	-	-	-	-	-	-	-	-	-	-	-	-14.8%	-	-	-	-	-14.8%	
Water (\$)	30.3%	15.2%	-10.1%	15.7%	10.0%	26.1%	46.8%	-	-	-	-	-	-	-	1.2%	-2.9%	-14.4%	-	17.1%	
Total Utilities (\$)	-20.6%	7.8%	-3.7%	-3.7%	-11.5%	-2.9%	1.8%	1.9%	-7.0%	-2.6%	-11.0%	2.2%	11.6%	-2.4%	-6.5%	-6.4%	-21.2%	-	-5.3%	

Related Metrics

Raw Data

Average Utility Unit Costs	
Electricity (\$/kWh)	\$ 0.195
Natural Gas (\$/Therm)	\$ 0.660
Oil #2 (\$/Gallon)	\$ 1.50
Oil #4 (\$/Gallon)	\$ 1.43
Steam (\$/Gallon)	\$ 25.66
Water (\$/Gallon)	\$ 0.013
Other Energy-Related	
% Electricity Offset with RECs	100%
# Cooling-Degree Days (F-day)	1,591
# Heating-Degree Days (F-day)	4,706
Total Space (sq.ft.)	1,449,625
Normalized Space (for Energy) (sq.ft.)	1,367,336
Occupancy (FTE)	10,236

Baseline-Comparative Data

Average Utility Unit Costs	
Electricity (\$/kWh)	1.0%
Natural Gas (\$/Therm)	-25.0%
Oil #2 (\$/Gallon)	-34.5%
Oil #4 (\$/Gallon)	-37.8%
Steam (\$/Gallon)	-25.4%
Water (\$/Gallon)	8.3%
Other Energy-Related	
% Electricity Offset with RECs	0%
# Cooling-Degree Days (F-day)	37.9%
# Heating-Degree Days (F-day)	-8.7%
Total Space (sq.ft.)	0.3%
Normalized Space (for Energy) (sq.ft.)	0.2%
Occupancy (FTE)	0.0%