

# NEW YORK'S LEADING METROPOLITAN REAL ESTATE COMPANY

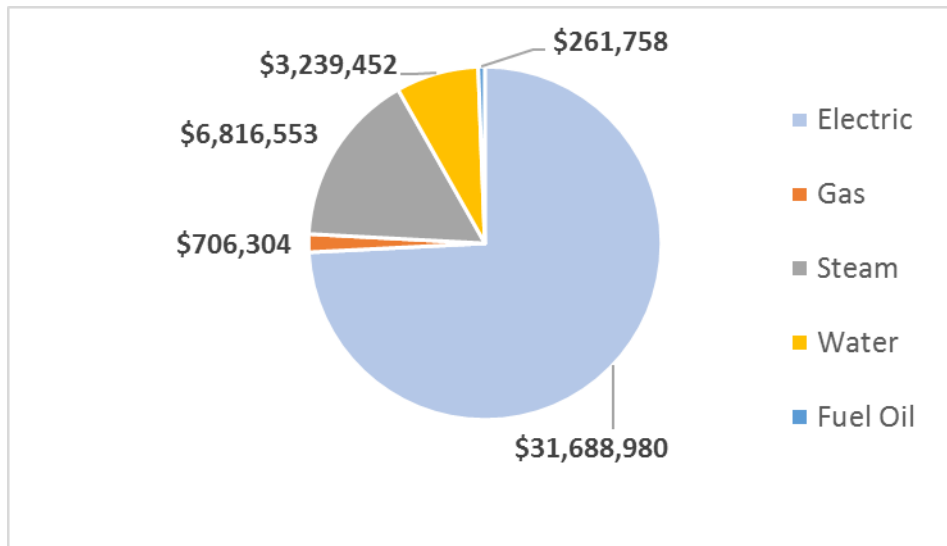
RXR Realty is a vertically integrated private real estate company with expertise in investment management, property management, development, design, construction, leasing and financing. RXR's core growth strategy is focused on New York City and the surrounding tri-state area markets.



### The RXR platform

- 74 commercial real estate properties and investments under management
- \$15.7 billion approximate aggregate gross asset value as of 6/30/17
- 22.1 million square feet of commercial operating properties
- 5200 multi family and for sale units under active development

### Commercial Office Utilities



Electric	\$ 31,688,980
Gas	\$ 706,304
Steam	\$ 6,816,553
Water	\$ 3,239,452
Fuel Oil	\$ 261,758
	<b>\$ 42,713,047</b>

## Tenant focus activities

1. High efficiency fit-outs: lighting, occupancy based scheduling, controls, tight construction.
2. Energy audits
3. Help understanding energy and sustainability issues and providing strategies to optimize.
4. Energy retrofits
5. Aligned interests
6. Data transparency

## Active engagement at Starrett Lehigh

- All tenants have real time access to their individualized energy performance data through a customized tenant energy platform.
- High level energy audits are provided to all tenants.
- Tenants are provided with education on energy efficiency and information on utility funded energy efficiency incentives and programs. Multipronged outreach: events, email campaigns, public area posters, direct one on one.
- Climate week event on roof.
- All PM staff actively engaged in increase efficiency
- Mitchell Grant founded the West Chelsea Energy Alliance to push out into the community.

## Active engagement

- Town hall events, data transparency, encouragement, outreach through mailings, aligned interests
- NYSERDA Commercial Tenant Program engagement
- Consulting through the process by landlord
- On lease financing considered
- Project management
- High efficiency fit outs
- Building will provide data to support tenant sustainability goals and tracking

Encouraging and working as a team to help 2 major tenants with their goals.

- Large lighting retrofits, daylight harvesting, sensors
- LEED EB Silver
- Proactive encouragement
- Right sized chiller plant
- Retro commissioning (Tenant equipment)
- Data Center setpoint adjustments
- Free waterside cooling
- Supplemental equipment scheduling
- Office equipment scheduled



# The Next Frontier: Tenant Engagement in Commercial Buildings

**Gary Fescine FMA, RPA**

Global Director of Enterprise Services Building Operations

October, 2017



BLACKROCK®

# BLACKROCK NEW YORK CITY REAL ESTATE INVENTORY

**668,000**

Rented Square Feet

**3**

Locations

**30**

Floors

**3,182**

Full Time Employees

3

2

1

E-52nd St  
Park Ave



# NYC CARBON CHALLENGE – BLACKROCK OFFICES CARBON INVENTORY

Basic Information	
Name	BlackRock
Normalization	FTE
Base Year	2011
End Year	2023
Submission Year	2016
Challenge Goal	<b>30%</b>

Base Year Inventory	
Average FTE	2,041
Emissions (Metric Tons of CO <sub>2</sub> e)	5,935
Energy Use (MMBtu)	134,036
Carbon Intensity (lbs CO <sub>2</sub> e / FTE)	6,411.02
Energy Use Intensity (KBtu / FTE)	65,671.70
<b>30% Challenge Goal</b> (lbs CO <sub>2</sub> e / FTE)	<b>4,487.71</b>

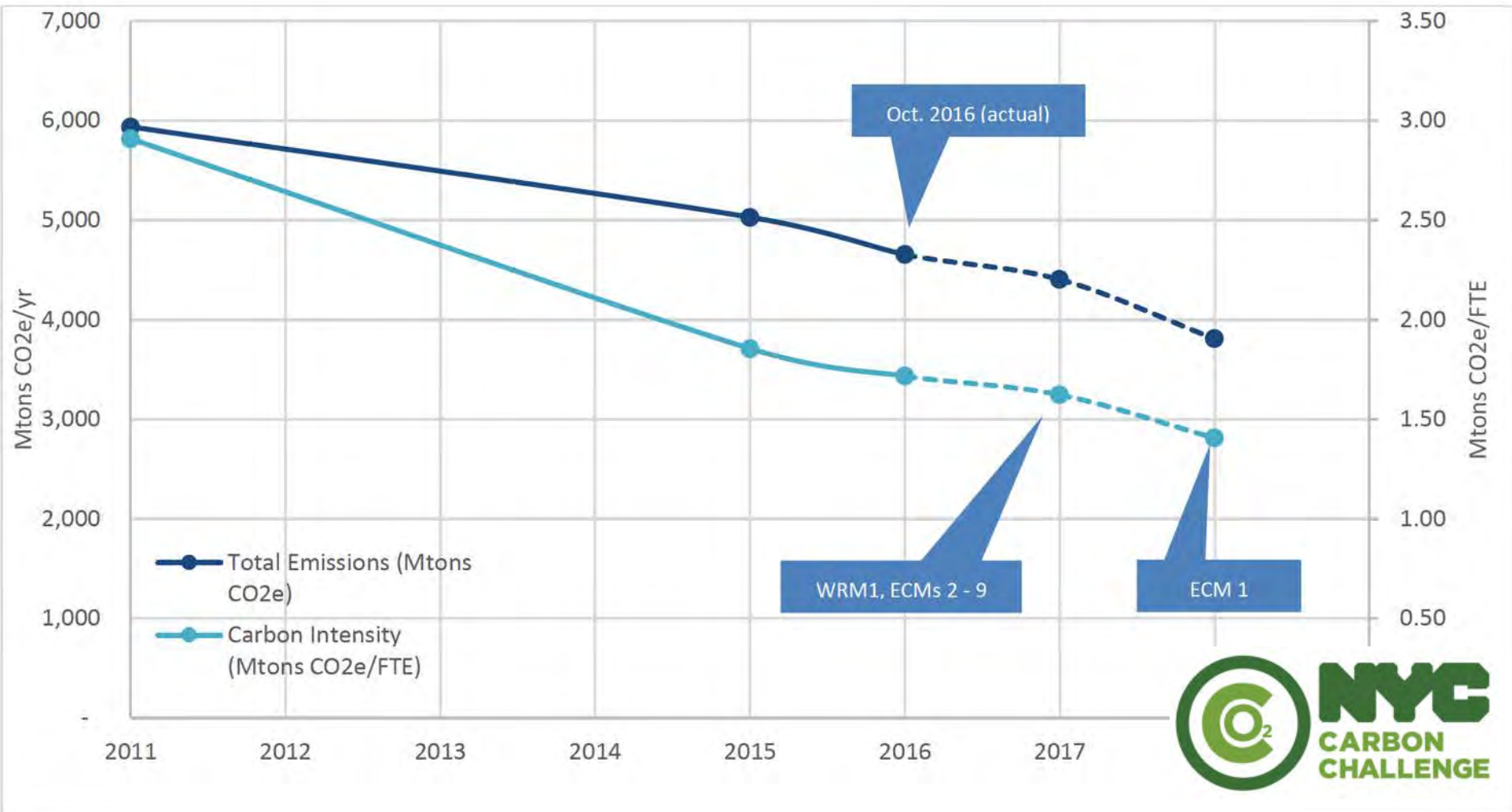
2016 Inventory	
Average FTE	2,864
Emissions (Metric Tons of CO <sub>2</sub> e)	4,622
Energy Use (MMBtu)	104,368
Carbon Intensity (lbs CO <sub>2</sub> e / FTE)	3,557.50
Energy Use Intensity (KBtu / FTE)	36,441.48
Carbon Reduction % Change from Base Year	<b>-44.51%</b>
Energy Use Reduction % Change from Base Year	<b>-44.51%</b>

BlackRock accepted the NYC Carbon Challenge for Commercial Offices in 2013 and is participating in the program as a commercial tenant. By accepting the Challenge, BlackRock committed to reduce its building-based greenhouse gas (GHG) emissions intensity by 30% (from 2011 levels) by 2023.

# ENERGY CONSERVATION MEASURES (ECM's) & CLIMATE ACTION PLAN

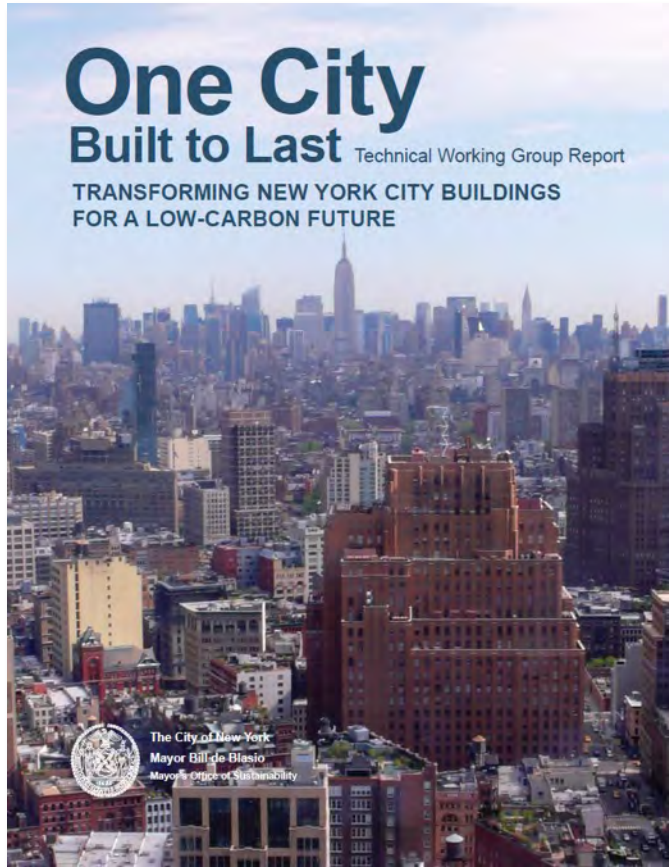
Project Information 3 Phases	
Energy Conservation Measure (ECM) Category	Project Description
<b><u>Phase 1</u></b> Data Centers and Server Rooms	Data Center Load Reduction
Process and Plug-Loads	Upgrade to More Efficient Energy Star Appliances, Print Smart Copiers
HVAC Controls and Sensors	HVAC Thermostat Recalibration,
Process and Plug Loads	Auto-Shutdown Program for Office Display TV's, Look at Technology for CPU Shut Downs
Lighting	LED Lighting Upgrade
Equipment	Upgrade to More Energy Efficient Equipment at useful end of life
<b><u>Phase 2</u></b> Motors	Installation of ten (10) Variable Frequency Drives in 40 East 52 <sup>nd</sup>
<b><u>Phase3</u></b> Internet Of Things	Install IoT Sensors on sixteen (16) floors in 40 East 52 <sup>nd</sup>
Big Data Analytics & Real-Time Optimization	Integrate IoT Sensors with NANTUM Operating System

# NYC CARBON CHALLENGE – BLACKROCK CARBON EMISSIONS 2011-2018



## ENERGY USE & CO<sub>2</sub>E PROJECTIONS

# TENANT AND OWNER ENGAGEMENT MAXIMIZES SUSTAINABILITY



- BlackRock partnered closely with Rudin Management Company to reduce energy consumption within their BlackRock spaces at 40 E 52<sup>nd</sup> Street
- Capital costs and savings were split between both parties for the installation of 10 VFD air handling units
- The project reduced electricity consumption by **850,000 kWh** and yielded **\$160,000** in annual savings.
- Opens up opportunity for future savings and real-time energy load reduction measures.

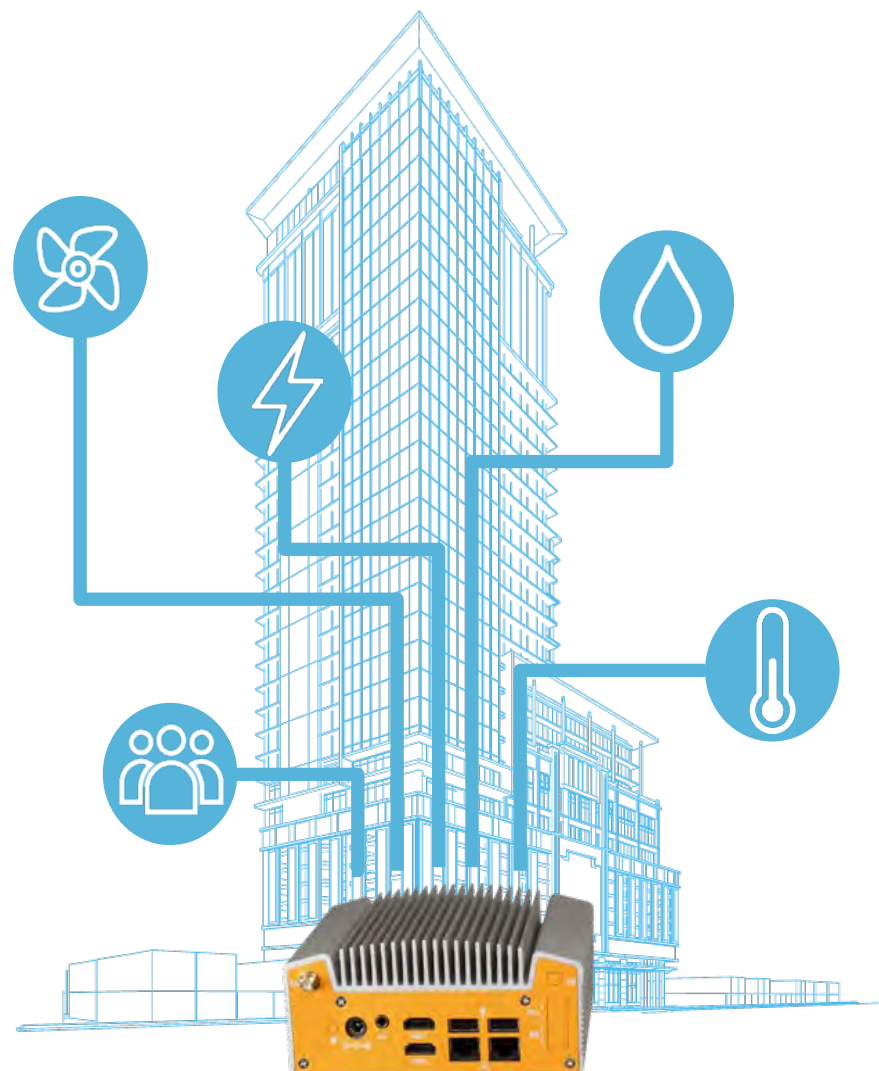
**BLACKROCK & RUDIN MANAGEMENT LEAD THE WAY IN REDUCING GHG EMISSIONS THROUGH COLLABORATION & INNOVATION**

In order to further the benefit of the VFDs at 40 East 52<sup>nd</sup> Street, Rudin Management introduced BlackRock to Prescriptive Data and its flagship operating system, **Nantum**, which pairs thermodynamics of space with machine learning to provide additional energy savings.

**NANTUM**  
by prescriptive data

# BLACKROCK & RUDIN FACILITIES INTEGRATED IN NANTUM

- Building Management Systems (**BMS**)
- **Utility Meters** – Water, Steam, Electrical, Gas, Oil
- **Network Analytics**
- Cisco Energy Manager **IP Plug Load Management**
- Smart Lighting Systems
- Dedicated **Occupancy Counters**
- **Comfort Controls**
- **IoT Sensors**
- Fire Alarm and Communication Systems (FACS)
- Isolated & Building-Integrated HVAC Units
- External Weather



# NANTUM TENANT FRACTAL – ENERGY OPTIMIZATION SOFTWARE



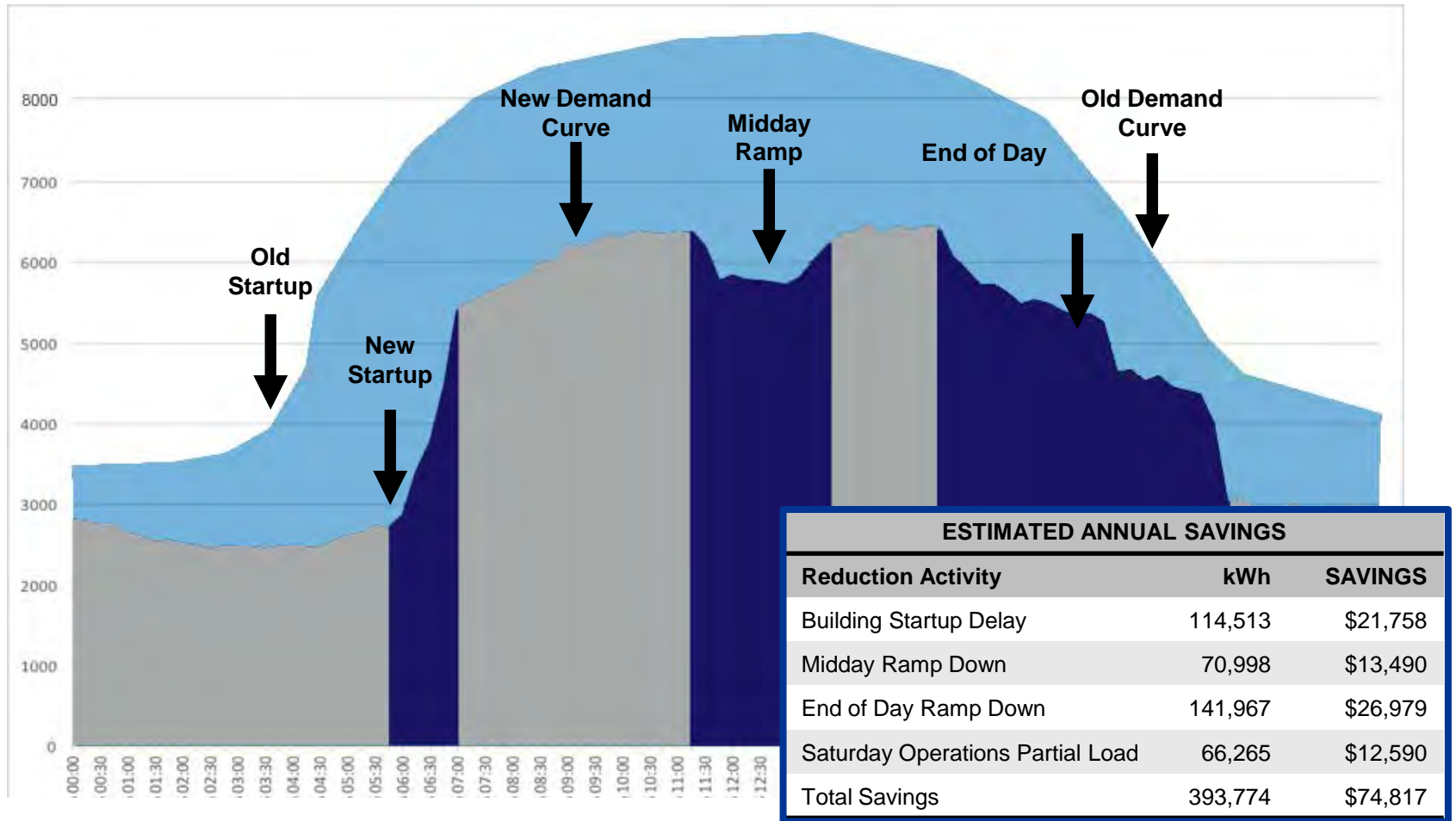
Nantum is an operating system that can integrate into any built space, **providing predictive and prescriptive pathways for operational success.**

Nantum's algorithms **continuously improve building efficiency over time**, so BlackRock won't miss out on opportunities for cost savings.

Leveraging the power of the IoT, Nantum creates real-time correlation between occupancy and HVAC, **empowering BlackRock to heat or cool only what is necessary**, increasing employee satisfaction and reducing carbon footprint.


**REDUCE COSTS. IMPROVE COMFORT. PROVIDE REAL SUSTAINABILITY.**

# EXPANDING TO ALL 16 FLOORS AT 40 EAST 52<sup>ND</sup> STREET



## ELECTRIC DEMAND OVER 24-HOUR PERIOD





A successful outcome of the Nantum project in 40 East 52<sup>nd</sup> St., could lead to the installation of Nantum at all of our large sites, including new large offices. This will provide insights into real-time energy usage at the portfolio level to further reduce greenhouse gas emissions and give us the ability to view all sites on the Nantum dashboard.

**BLACKROCK**