

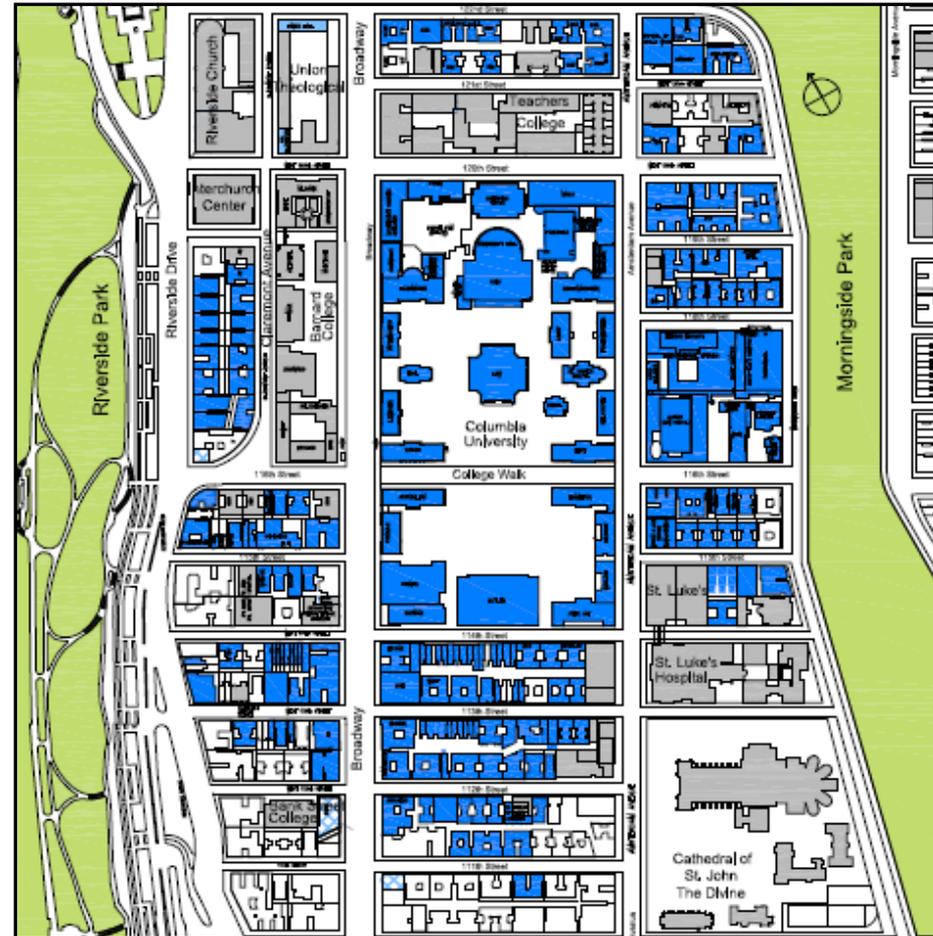
---

# Columbia University

**Frank Martino**  
**Vice President, Facilities Operations**  
Presentation for NESEA Conference  
October 12, 2017

# Columbia University Campus

- Main campus located in the Morningside Heights neighborhood of Manhattan
- 246 Buildings, 15.2 million square feet
- Residential portfolio approximately 5600 apartments
- Other Campuses in the Inwood neighborhood and Irvington, NY
- A new campus development is underway in the Manhattanville neighborhood



# Columbia University Campus

## Steam Plant

- Four (4) water tube boilers
- 360,000 lbs/hr @ 125 psi
- Dual Fuel Natural Gas/#2
- Plant was built in 1990



## Chilled Water Plant

- Nine (9) Chillers totaling 16,350 tons
- Hybrid Steam and Electric
- SCADA controlled



# Energy – What Does that Mean?

---

## Energy Program

- Purchasing of energy commodity (Gas, Fuel Oil, Electricity)
- Demand side management
- Grants, rebates and programs (NYSERDA, Con Edison, EPA)
- Fundamental infrastructure renewal
- Operating strategy
- Setting standards (Construction, design, temperature policy)
- Commissioning
- Culture

# Master Planning

---

- Chilled Water
- Steam
- Combined Heat & Power
- SCADA
- Thermal Storage
- Emergency Power
- Building Infrastructure Consolidation
- Metering

# Major Infrastructure Improvements

- Chiller Plant Renewal
- Boiler Plant Upgrades
- Building Level Submetering
- Industrial Grade Controls
- Oil to Gas Conversion
- Building Energy Audits
- Campus Wide Retrocommissioning

