Background
The Caroline is one of the most prestigious residential apartment buildings in New York City, located in The Flatiron district on 23rd Street, between 5th and 6th Avenues. The 20-story building features 433 apartments with premium kitchen and bath amenities, 50-foot sky-lit swimming pool, on-site laundry, fitness center and central climate control. Built in 2000, the building used a central hot water delivery system using four commercial direct fired water heaters. After 12 years, one of the water heaters failed and the existing DHW system was not meeting the demands of the tenants and needed replacement.

Installation Summary
The building owners were looking to upgrade their DHW system but were challenged with space constraints for new equipment and variable loading due to changing occupancy. Adding additional storage capacity was not an option as the mechanical room was already filled to the maximum. They opted to install 17 Bosch C 1210 ESC condensing gas tankless water heaters cascaded in parallel for a tank loading application. Two zones were required for DHW – lower zone with eleven C 1210 ESC units and five storage tanks and upper zone with six C 1210 ESC units and three storage tanks (each storage tank has 240 gallon capacity). This commercial series tankless unit is the only one that can operate at over 140°F outlet water temperature and still be vented with PVC.

Energy Saving Therm Tankless Water Heaters in Multi-Family Residential Application

Project Goals:
- Energy Savings
- Space-saving Technology
- Reliable Retrofit
Some design consideration for tank loading include:

► Ensure flow through each water heater is between 3.5-5.0 gpm
► Isolation valves or boiler drains should be installed to facilitate descaling in applications with hard water
► Whenever possible, plumb the system or configure the tank to draw cold supply water into the water heater during hot water use

Summary and Conclusion

Unlike conventional water heaters, these condensing units capture latent heat from condensation of the exhaust gas and use it to preheat the incoming cold water, making Bosch condensing tankless water heaters 10% more efficient than traditional tankless water heaters.

The building owners are very pleased with the performance, energy savings and flexibility of the THERM C 1210 ESC condensing tankless water heaters, and not a single day of hot water supply was lost during installation.