

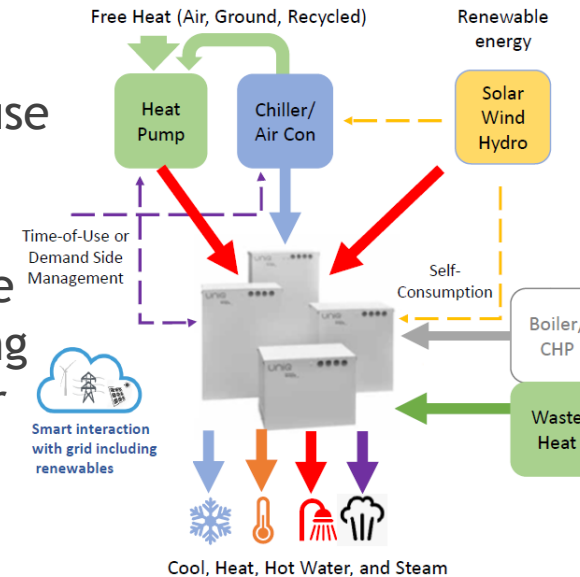


Company overview

- ▶ Chartered Properties owns and develops affordable apartments for residents of Bedford-Stuyvesant, Crown Heights, Bushwick, Park Slope and Flatbush Brooklyn, in 6- to 29-unit buildings. Legacy mechanicals at the properties are typically gas-fired, central steam boilers with hot water coils. These old inefficient, oversized boilers rely on obsolete venting strategies delivering unbalanced steam distribution, that causes water hammer and wasteful boiler overfiring during shoulder heating seasons.
- ▶ 30 Years in the business.
- ▶ \$50 million value of assets owned.
- ▶ Chartered Properties will use highly-targeted mechanical equipment designs to optimize both the climate and economic benefits of retrofits: Replacement mechanical systems will cut annual building energy expense with low cost electricity to deliver in-apartment heat and hot water using simplified modular systems and easy end-user operation. Reduced operating cost and climate impact will in turn drive widespread owner decarbonization.

Approach to carbon neutrality

- ▶ Replace obsolete gas-fired steam systems with heat pumps connected to thermal storage systems that use off-peak electric for space and water heating energized at an 85% discount. The heat pump's rejected heat charges in-apartment thermal storage that in turn provides water heating, further reducing energy cost and power consumption in a manner far cleaner than carbon alternatives. Solar power integration is a long-term objective.



- ▶ NYSERDA's EBC Challenge provides economic resources and a professional design forum that encourages creation of easy-to-install mechanicals—that, with only slight variations will provide a replicable “template” for owners to leverage off-peak electricity and thermal storage across diverse building types, thereby fostering widespread deployment of energy retrofits.



Sustainability track record & EBC carbon commitment

- ▶ Ahead of the EBC final round, Chartered Properties has already specified mechanicals, purchased equipment and has a test installation up and running to provide data to support its final EBC design submission. The first three of seven buildings in Chartered's EBC challenge portfolio have begun retrofitting.
- ▶ Carbon neutrality is the effort to reduce or offset the output of carbon emissions by any source in order to provide a net neutral impact on the environment.
- ▶ At present, Chartered's multifamily property portfolio has an average site EUI of 118.1 kbtu/sq. ft. Our commitment targets a 25.5% reduction to the goal of 88 kbtu/sq. ft.
- ▶ Energy retrofits that save money must also improve the property's environmental footprint. The combined goal accomplishes Chartered Properties' energy-value investment objective. Replacement mechanicals that improve COP, reclaim and store waste heat all powered by cleaner energy purchased at costs below existing carbon fuels fulfills the firm's targeted economic and environmental value propositions.



Committed buildings

- ▶ Nearly 100 Brooklyn occupants residing in seven 100-year old brick buildings located in predominantly economically disadvantaged areas will benefit by the replacement of existing, obsolete carbon-intensive, gas-fired steam and hydronic heating systems. These 3- and 4-story buildings employ outdated heating systems nearing the end of their useful lives. Heat, inefficiently-created in the basement is further degraded by losses along the connected piping on the way to the apartments. Similar distribution losses occur for hot water also created in basements and delivered long distances to apartment taps. None of the buildings presently have cooling systems that capture waste heat. Together these heating, hot water and cooling inefficiencies result in EUI's of 118.1 kbtu/sq. ft.



Committed buildings



1336-40 Bergen



462 Nostrand



1342 Bergen



78 Herkimer



55 Arlington



586 Wilson



226 Schaeffer



Testimonial

- ▶ NYSERDA brings together economic stakeholders with engineering experts into a guided collaboration that challenges participants to produce groundbreaking mechanical designs that deliver leading-edge decarbonization solutions for New York buildings.