Lefrak City Plaza

59-17
Junction Boulevard

- Queens, NY
- 396,000 SF
- 20 stories commercial
- office building built in 1970

Empire Building Challenge
PARTNER
Reimagining Low-carbon Buildings

Leveraging end-of-life building upgrades to support decarbonization and ensure climate resiliency.

Project Team:

LeFrak COMMERCIAL

Steven Winter Associates, Inc.

ryan soames engineering

Disclaimer: The project plan outlined in this presentation is in its early design stage and can be subject to potential changes in the future.

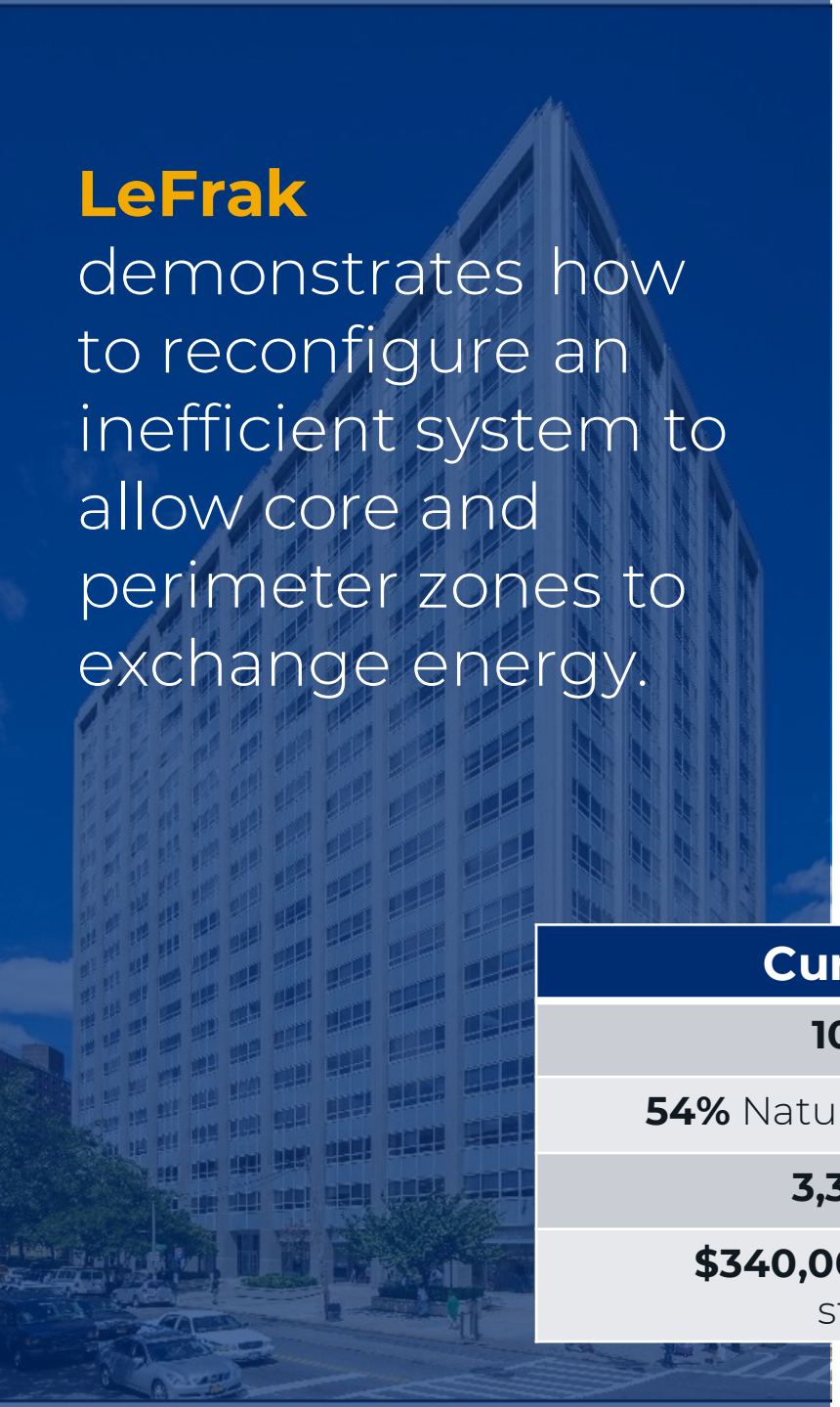
59-17 Junction Boulevard is a commercial office building located in Queens, New York. The building is heated and cooled by a dual temperature 2-pipe hydronic system and a central plant that has reached the end of its useful life, due in part to damage sustained during Hurricane Ida in 2021.

LeFrak will leverage these necessary upgrades to install modern, low-carbon solutions that will bring the property to carbon neutrality by 2035, and safeguard critical building systems from future climate events.

The decarbonization approach employed by the project team involves electrifying the central plant, incorporating heat recovery measures to utilize heat that would otherwise be wasted, and transition thermal loads away from inefficient steam usage. It will do so with limited disruption to its anchor tenant which occupies the entire building.

As part of the overall decarbonization roadmap, the Empire Building Challenge is funding the enabling steps for heat recovery, involving hydronic piping work to separate core and perimeter loops.

NYSERDA Investment	EBC Funded Measure Private Investment
$3 Million	$6.7 Million



LeFrak demonstrates how to reconfigure an inefficient system to allow core and perimeter zones to exchange energy.

Thermal zoning and enabling heat recovery:

The existing, inefficient 2-pipe system, which only allows the building to be in heating or cooling mode, will be re-pipped to create two separate hydronic zones. This will allow the newly independent core and perimeter zones of the building to exchange heat as needed.

This piping work will incorporate heat exchangers to possibly connect with adjacent buildings also owned by LeFrak that are mostly residential and create a community thermal network to share loads.

Electrification:

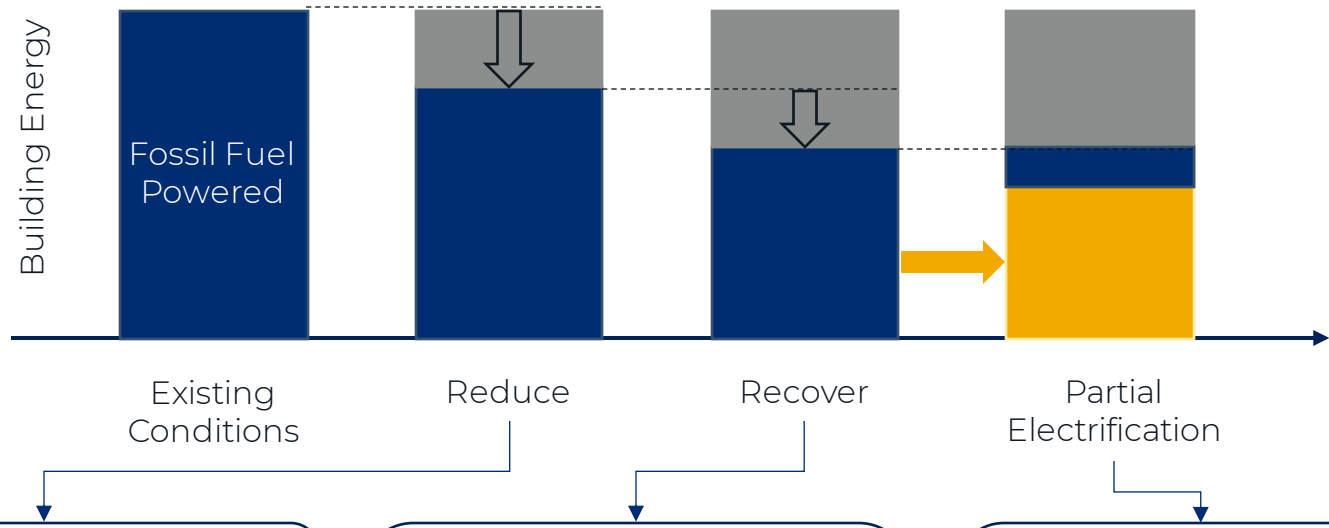
Beginning in 2023, the existing fossil fuel driven plant will be decommissioned, and a new plant that enables decarbonization will be installed, including modular electric chillers with heating and cooling capabilities.

Current Baseline	Expected by 2035	
103.5 kBtu/SF/yr	**51.3** kBtu/SF/yr	↓ 50%
54% Natural Gas + **46%** Electricity	**100%** Electricity	
3,330 Ton CO2e/yr	**358** Ton CO2e/yr	↓ 89%
$340,000 /year of LL97 fines starting in 2030	**$0** LL97 fines starting in 2030	

Resource Efficient Decarbonization (RED):

An incremental methodology and integrated design process combined with strategic capital planning creates a path towards carbon neutral buildings.

A holistic approach and phasing can make decarbonization technically and economically feasible.



Reduce Energy Load

- **Building Management System (BMS):** Install new BMS for better integrated control of HVAC equipment and lower distribution temperature

Recover Wasted Heat

- **Enabling Heat Recovery:** New piping work to separate core and perimeter hydronic systems and operate them independently. Install heat exchangers to facilitate heat recovery between core and perimeter using electric modular chillers
- **Heat Recovery Ventilation:** Install Energy Recovery Ventilators (ERV) to recapture wasted heat and pre-condition fresh air.

Partial Electrification

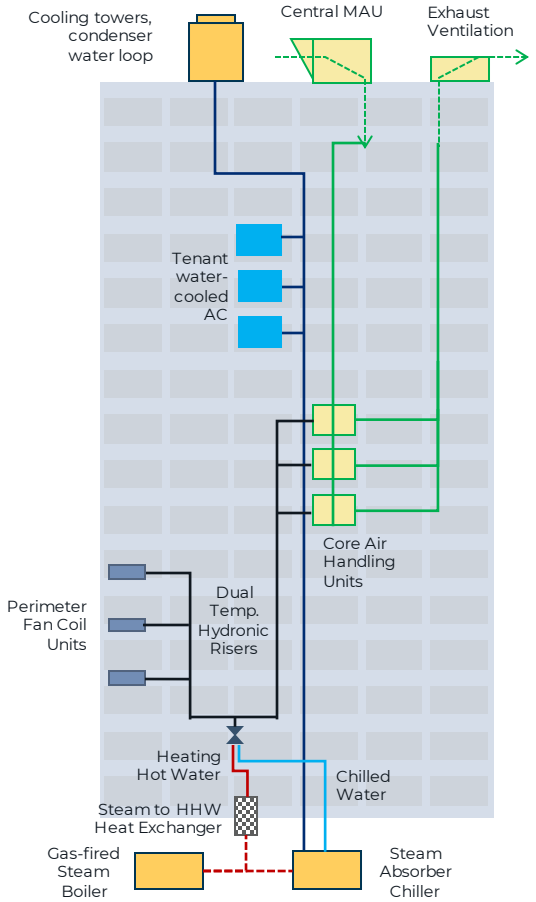
- **Electric Chillers**: Replace existing fuel fired steam absorption chillers with electric modular chillers that can provide heat recovery
- **Thermal Network Connection:** Install heat exchangers and auxiliary connection to allow a future connection to a campus-wide thermal energy network.

LeFrak City Plaza Decarbonization Plan

Heating
Cooling
Ventilation

Key Takeaways: Re-piping to enable heat recovery, Heat Recovery Chillers, Elimination of Steam Boilers and absorber chillers, Thermal Energy Network connection, Building Management System (BMS)

BEFORE



2024:

Electric Modular Chillers and BMS
Replace damaged steam chillers with electric modular chillers for electric cooling and enable waterside heat recovery. This is a first step toward eliminating on-site natural gas use. A new BMS system will allow better, integrated control of HVAC systems.

Enabling Heat Recovery
New piping work to separate core and perimeter hydronic systems and operate them independently. Install heat exchangers to facilitate heat recovery between core and perimeter using electric modular chillers

2024-2025:

Enabling Thermal Energy Network Connection
The heat recovery chiller plant will have an auxiliary connection and heat exchanger allowing a future connection to a campus-wide thermal energy network.

2025:

Electric Capacity
Expand electrical capacity and provide backup generation for resiliency. The measure will allow additional, layered heat generation needed to meet peak heating loads.

2026+:

Heat Recovery Ventilation
Extract additional heat and cool from outgoing exhaust and redirect back into the building.

AFTER