



Westchester Commercial Office

Building Owner:

Westchester
Commercial Office

Region:

New York City

Number of Buildings:

1

FlexTech Consultant:

Syska Hennessy Group

Sector:

Commercial Real Estate

Square Footage:

867,305 sq.ft.

Pre-COVID Condition:

- Filters: MERV 8 filters on central air handlers (AHUs)
- Ventilation: Supply and ventilation air to the occupied areas is provided by large central air handlers, some variable volume some constant volume.
- Outside Air: 184,000 CFM/ 23% on average

- All energy use and energy cost values are presented on an annual basis
- Negative values represent increased use/cost
- The Energy Efficiency Package Measure savings are presented with the ASHRAE ETF Guidelines Measures Totals as the baseline

Study Overview

NYSERDA funded this energy efficiency indoor air quality study that identified the energy use associated with the ASHRAE Epidemic Task Force (ETF) Building Readiness guidance¹ HVAC-related measures aimed at preventing the risk of COVID-19 infection that are feasible at the building. Additionally, the study investigated alternate opportunities that were more energy efficient, yet equally risk adverse from an indoor air quality perspective, as the ASHRAE guidance measures.

Measures Evaluated

Measure Name	Measure Status	Electric Savings (kWh)	Fossil Fuel Savings (MMBtu)	Energy Cost Savings (\$)	Measure Cost (\$)
ASHRAE Epidemic Task Force (ETF) Guidelines Measures Evaluated					
MERV 13 Filters for All Main Air Handling Units	Not Recommended	-17,487	0	-\$2,098	\$21,838
3 Outdoor Air Changes Pre/ Post Flushout (MERV 13 + 80% Outdoor Air)	Not Recommended	-22,942	-2,861	-\$36,224	\$0
80% Outdoor Air During Occupied Hours	Not Recommended	-723,445	-12,525	-\$233,351	\$0
Portable Humidifiers in High Traffic Spaces	Recommended	-1,039	0	-\$710	\$9,161
Portable Air Cleaners in High Traffic Spaces	Recommended	-14,530	0	-\$1,744	\$111,814
Totals:		-779,443	-15,386	-\$274,127	\$142,813
Energy Efficiency Package Measures Evaluated					
Fixed Air Cleaners in High Traffic Spaces	Not Recommended	-93,884	0	-\$11,266	\$270,715
HEPA Filters for All Main Air Handling Units	Not Recommended	-362,860	0	-\$43,624	\$164,145
UVGI at Filter/Cooling Coil in All Main Air Handling Units	Recommended	-60,822	0	-\$7,229	\$45,736
MERV 16 Filters for All Main Air Handling Units	Recommended	-205,475	0	-\$22,559	\$53,985
3 Outdoor Air Changes Pre/ Post Flushout (MERV 16 + 80% Outdoor Air)	Recommended	1,889	2,092	\$24,698	\$0
30% Outdoor Air During Occupied Hours	Recommended	415,467	12,287	\$193,617	\$0
Permanent IAQ Sensors in Representative Spaces	Recommended	0	0	\$0	\$23,709
Recommended Measures Totals:		151,059	14,379	\$188,527.0	\$123,430.0

¹ The ASHRAE ETF guidance used for this study was based on one or more of the following document versions: Building Readiness v.5-21-2020, Commercial v.4-20-2020, Schools & Universities v. 5-5-2020, Healthcare v. 6-17-2020, Filtration & Disinfection v. 5-27-2020, ERV Practical Guide v. 6-9-2020

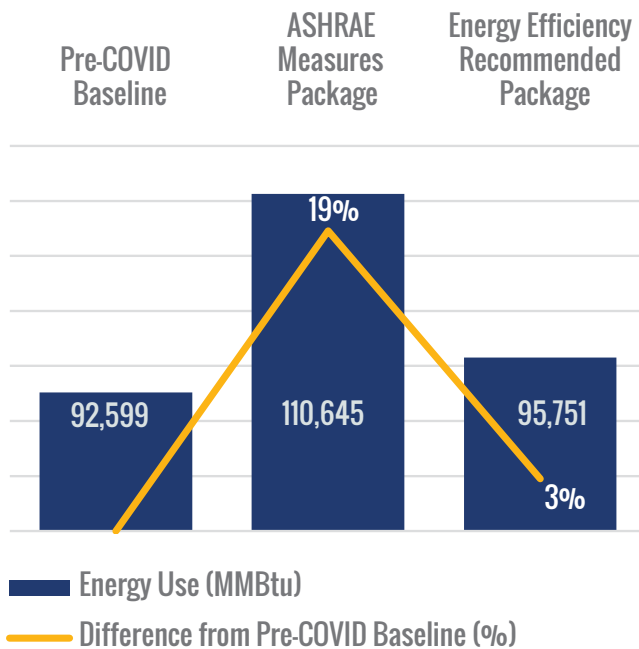


Key Notes

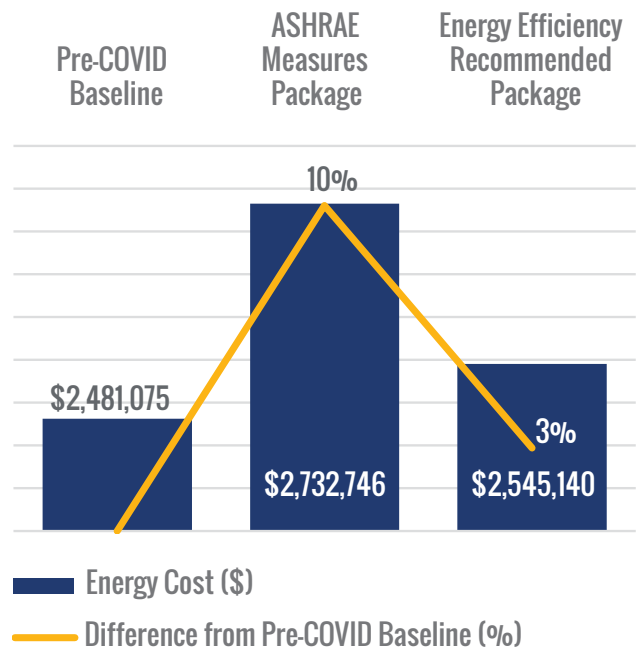
- The indoor air quality (IAQ) performance achieved by fully opening the outside air dampers and running all the main AHUs at this level with MERV 13 filters equipped can be matched by running the AHUs at only 30% outside air in the supply air with MERV 16 filters equipped.
- Based on airflow speeds and radiative power calculations, this study found that UV-C lamps are ineffective in disinfecting the airstream in a single pass and are best utilized at disinfecting surfaces (coils and filters).
- The increase in Air Changes per Hour and IAQ performance of installing HEPA filters on the main AHUs relative to the increase in energy usage is not optimal and a combination of lower MERV ratings with higher levels of outside air can achieve similar results with lower energy usage.

Impact Results

Energy Use Impacts



Energy Cost Impacts



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