FlexTech IAQ

Indoor Air Quality

Large Midtown Manhattan Commercial Office Building #1

Building Owner:
Real Estate Trust Company

Region: New York City

Number of Buildings: 1

FlexTech Consultant:
Goldman Copeland Associates, P.C.

Sector:
Commercial Real Estate

Square Footage:
894,171 sq.ft.

Pre-COVID Condition:

- Filters: MERV 13
- Ventilation: 6 air handling units serve tenant spaces throughout the facility, with a seventh serving the lobby. Four of the tenant space units are variable air volume (VAV) with variable frequency drives (VFDs) that serve the interior zones. The other two are high pressure AHUs that serve the perimeter induction units. Both air systems are capable of drawing in 100% outside air although approximately two-thirds of the induction unit air is recirculated.
- Outside Air: 113,641 CFM/ 17%

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 guidance[1] 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					
Increase outside air levels	Not Recommended	-920,871	-37,964	-$1,495,931	$0
Add interior humidification	Not Recommended	0	-4,713	-$160,334	$592,900
Upgrade filters from MERV 13 to 14	Recommended	-77,017	0	-$13,911	$10,200
Increase ventilation hours of operation	Recommended	-347,848	0	-$62,827	$0
Test and balance toilet exhaust system	Recommended	Not Evaluated			$7,300
Test and balance supply fans	Recommended	Not Evaluated			$14,500
Totals:		-1,345,736	-42,677	-$1,733,003	$624,900
Energy Efficiency Package Measures Evaluated					
Add upper room UVGI for tenant spaces	Not Recommended	-835,529	0	-$150,911	$5,193,400
Install UVGI lights at supply air coils	Recommended	146,111	0	$26,390	$101,600
Reduce outdoor air levels	Recommended	920,871	37,964	$1,495,931	$0
Monitor indoor air quality	Optional	Not Evaluated			$114,500
Local HEPA filter units	Optional	Not Evaluated			$0
Recommended Measures Totals:		1,066,982	37,964	$1,522,321	$101,600

• 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

[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

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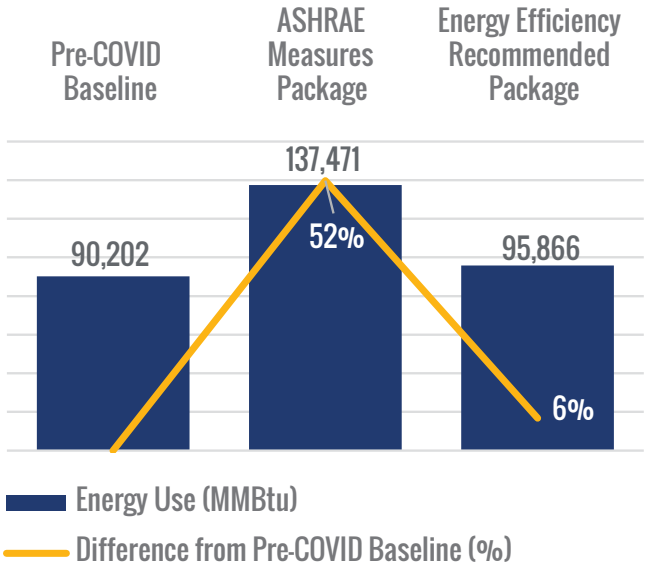
Key Notes

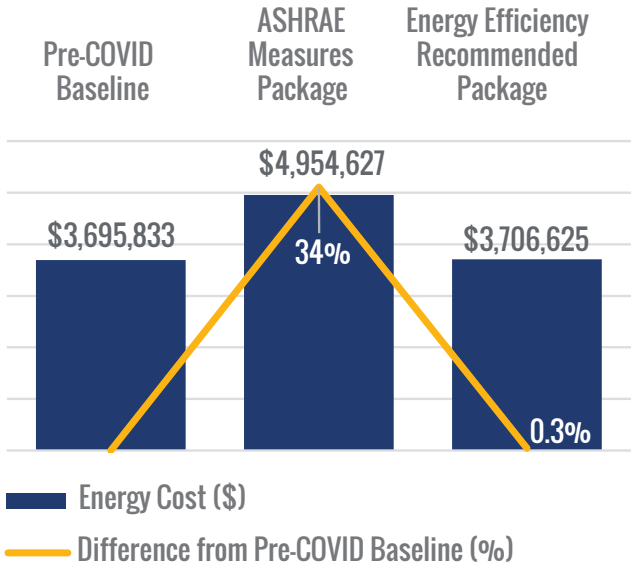
- Increasing outdoor air levels to 100% will significantly increase cost and stretch the building's heating and cooling capacity.
- Adding interior humidification will be relatively expensive and requires significant labor. During winter months a high difference in humidity between the interior and exterior of the building could lead to mold and interstitial condensation.
- Placement of local HEPA filter units in areas with more concentrated groups of people is impractical for use in larger tenant floors but could be beneficial for areas such as lobbies or conference rooms. Further investigation is required to determine costs and effectiveness.
- Upper room UVGI installation is not recommended due to cost, access, and expected resistance from stakeholders.

Impact Results

Energy Use Impacts



Energy Cost Impacts



The NYSERDA Flexible Technical Assistance (FlexTech) Program

Through the FlexTech Program, NYSERDA provides cost-sharing for objective, site-specific, and targeted studies on how to best implement clean energy and energy efficient technologies. A NYSERDA-approved FlexTech Consultant will work with customers to complete an energy study and provide expert, customized services and information.

See the results of other Energy Efficient Indoor Air Quality Pilot Studies. Visit nyserda.ny.gov/FlexTech/IAQ

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