FlexTech IAQ

Indoor Air Quality

Rudin Management Company - 345 Park Avenue

Building Owner:
Rudin Management Company

Region: New York City

Number of Buildings: 1

FlexTech Consultant:
Jaros, Baum & Bolles Consulting Engineers, LLP

Sector:
Commercial Real Estate

Square Footage:
1,900,006 sq.ft.

Pre-COVID Condition:
- Filters: MERV 15
- Ventilation: 22 Constant Volume Central Air Handling Systems; perimeter induction units with demand control ventilation.
- Outside Air: 142,820 CFM/ Approximately 37%

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					
ASHRAE Epidemic Task Force (ETF) Guidelines Measures Evaluated					
2 hr. Outdoor Air Changes Per Hour Flush	Not Recommended	-1,595,635	-42,589	-$1,023,450	$2,000
Disable Demand Control Ventilation	Recommended	0	-5,531	-$99,977	$2,000
Maximum Outdoor Air	Not Recommended	0	-47,829	-$864,464	$2,000
Totals:		-1,595,635	-95,949	-$1,987,891	$6,000
Energy Efficiency Package Measures Evaluated					
MERV 16 Filters - Interior Upper Office Only	Recommended	-94,126	0	-$14,966	$568
Portable Filtration Units - All Offices	Not Recommended	-2,558,270	0	-$406,765	$4,112,400
Portable Filtration Units - All Offices except Interior Upper	Recommended	-1,716,960	0	-$272,997	$2,760,000
3 Outdoor Air Changes Flush - with existing MERV 15 filters	Not Recommended	646,098	28,501	$617,848	$3,000
3 Outdoor Air Changes Flush - with added fan power from MERV 16 filters in the Interior Upper Office space	Recommended	624,260	28,501	$614,376	$3,000
Practical Outdoor Air (Interior Upper Office Only) & Design Outdoor Air (all other spaces)	Recommended	0	46,745	$844,855	$3,000
Design Level Outdoor Air - All Offices	Not Recommended	0	47,829	$864,447	$0
Recommended Measures Totals:		-1,186,826	75,246	$1,171,268	$2,766,568

- *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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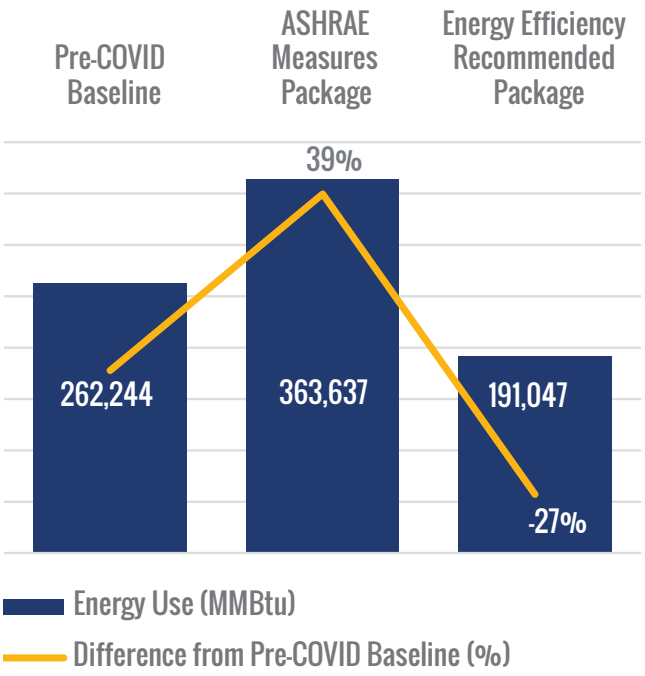
Key Notes

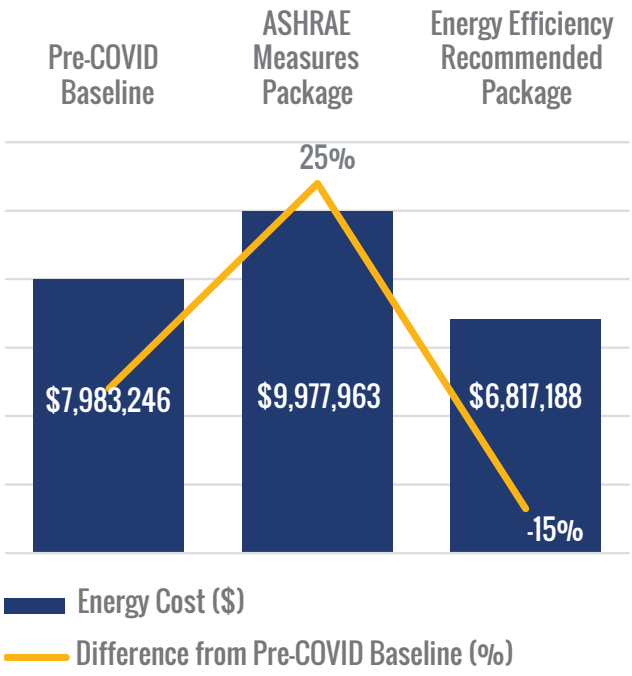
- All central AHUs have 100% outside air economizer capabilities and are not restricted by louver or duct size limitations. As a result, higher feasible outside air percentages are possible for more hours of the year depending on outdoor ambient conditions and downstream coil capacities.
- AHUs serving perimeter office spaces have larger cooling coil capacities than AHUs serving interior office spaces, allowing for more outside air at these units without impacting comfort criteria. This accounts for large variations in outside air percentages, ranging from 37% minimum design levels up to 100% outside air when conditions permit.
- Maximizing steam preheat coil capacities on all AHUs allows for virtually 100% outside air during the heating season.
- The low energy performance of a steam turbine chiller, which has an estimated annual COP of 1.2, results in a much larger energy impact to cooling energy because of additional outside air.

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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