FlexTech IAQ

Indoor Air Quality

St. John Fisher College

Building Owner:
St. John Fisher College

Region: Finger Lakes

Number of Buildings: 12

FlexTech Consultant:
Bergmann Associates

Sector:
College/University

Square Footage:
605,328 sq.ft.

Pre-COVID Condition:

- Filters: MERV 13
- Ventilation: There are various ventilation configurations across the 12 buildings, consisting of rooftop units and air handling units with variable air volume and reheat, make-up air units, heating and ventilation units, and water source heat pumps
- Outside Air: 18%, 67,500 CFM

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					
Baseline Adjustment: Pre- and Post-Occupancy Building Flush of 2 Hours	Not Recommended	-266,402.1	-830.6	-$25,777	$0
Baseline Adjustment: Increased Outside Air: Per ASHRAE Recommendation	Not Recommended	-1,019,936.7	-37,805.5	-$257,029	$0
Totals:		-1,286,339	-38,636	-$282,806	$0
Energy Efficiency Package Measures Evaluated					
ECM-1 Filters and UVGI Installation: MERV 13 to MERV 8 plus UVGI	Not Recommended	-88,511.0	0.0	-$7,302	$454,500
ECM-3B Pre- and Post-Occupancy Building Flush: 2 Hour to 95% Virus Elimination with MERV 8 and UVGI	Not Recommended	176,573.6	589.7	$17,264	$9,000
ECM-5 Equivalent Air Changes with UVGI	Not Recommended	169,690.0	18,123.6	$96,879	$9,000
ECM-2 HVAC Scheduling	Recommended	137,435.6	1,758.8	$19,381.56	$9,000.00
ECM-3A Pre- and Post-Occupancy Building Flush: 2 Hour to 95% Virus Elimination with MERV 13	Recommended	147,327.7	486.6	$14,379.61	$9,000.00
ECM-4A: Decreased Outside Air From ASHRAE Recommendation to Code Minimum	Recommended	1,013,490.7	36,238.8	$249,332.84	$21,000.00
ECM-4B Decrease Outside Air to Ventilation Code - DCV for Skalny Welcome Center, Salerno American Enterprise, and ISHS RTU-1, 2	Recommended	4,771.0	455.1	$2,475.00	$8,000.00
Retro-Commissioning Savings	Recommended	7,081.8	372.4	$2,287.20	$9,500.00
Recommended Measures Totals:		1,310,106.8	39,311.7	$287,856.22	$56,500.00

- *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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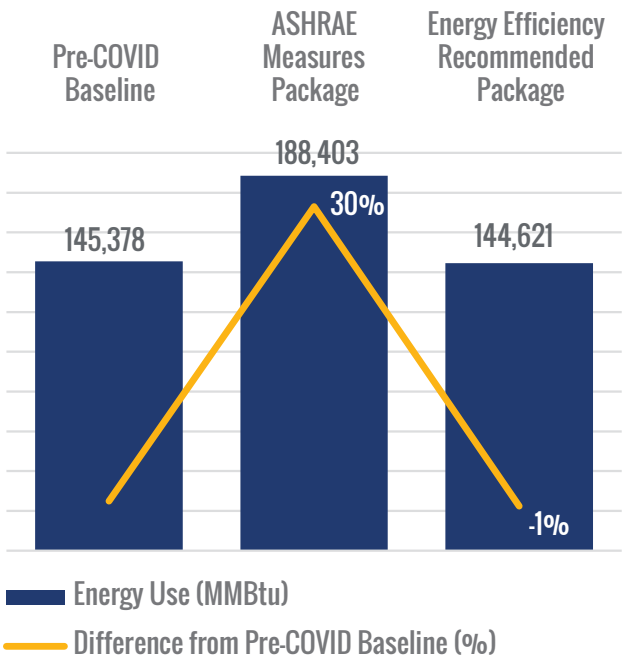
Key Notes

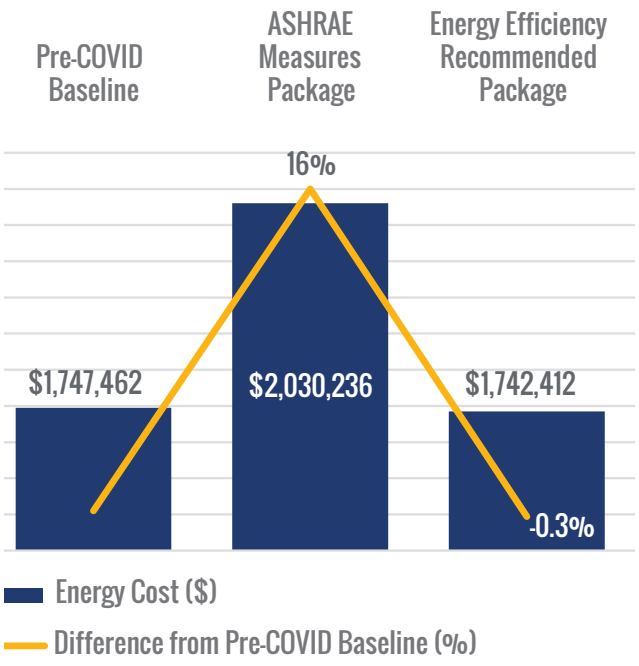
- The additional energy usage associated with UVGI is not offset by the energy savings from the static pressure differential between MERV 13 and MERV 8 filters. The UVGI evaluated provided a 99% deactivation rate on coronaviruses.
- The additional energy associated with UVGI is not offset by the energy savings from reducing the air handler run time to achieve 95% virus removal with MERV 8 filters when compared to utilizing MERV 13 filters.
- Reducing outside air levels from maximum AHU capacity operation to a level that achieves equivalent virus-free air via UVGI is not recommended. The increased energy required to operate UVGI does not provide a positive payback compared to the costs associated with installing UVGI.

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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