



Rochester Museum and Science Center - Strasenburgh Planetarium

Building Owner:

Rochester Museum and Science Center

Region: Finger Lakes

Number of Buildings: 1

FlexTech Consultant:

EMCOR Services Betlem

Sector:

Museum

Square Footage:

37,256 sq.ft.

Pre-COVID Condition:

- Filters: MERV 8 prefilters and MERV 13 bag filters (AHUs 1-3), MERV 8 (AHUs 4-7)
- Ventilation: Air handling units (AHUs) 1 through 3 utilize variable frequency drives (VFDs) to control supply fans that are rated at 10,600, 7,500, and 10,200 CFM, respectively. Return air is supplied by a 13,000 CFM fan that serves AHUs 1 and 2 while return air for AHU-3 is supplied by a separate 8,300 CFM unit. AHU-3 is variable air volume (VAV) with VAV boxes located in various space types. AHUs 4 through 7 are constant speed heat pumps that either supply supplemental heating and/or cooling or provide filtration.
- Outside Air: Minimum outside air is set to 10% on AHUs 1 and 3. No outside air utilized by the other AHUs.

Study Overview

NYSDERDA 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					
Maintain Humidity at 40%-60%	Not Recommended	-228	0.0	-\$27	\$108,125
Portable HEPA Units in Select Areas	Not Recommended	-22,424	0.0	-\$2,663	\$20,000
Flush Cycle	Recommended	-29,697	-144.2	-\$4,338	\$300
100% OA during Occupied Hours	Recommended	-2,988	-109.1	-\$969	\$300
MERV 13 Installation AHUs 5 through 7	Recommended	-2,325	0.0	-\$276	\$184
Run Exhaust fans 24/7	Recommended	-3,651	0.0	-\$434	\$300
VAVs at Max. Setting When Economizing	Recommended	-11,557	0.0	-\$1,372	\$300
Totals:		-50,218	-253.3	-\$7,390	\$1,384
Energy Efficiency Package Measures Evaluated					
In-Duct UVGI for AHUs 1 & 3	Not Recommended	-2,516	212.6	\$899	\$7,442
Upper-Room UVGI in Select Areas	Not Recommended	457	45.7	\$312	\$31,989
Replace HEPA Units with Upper-Room UVGI	Not Recommended	7,469	0.0	\$887	\$42,383
Recommended Measures Totals:		0	0.0	\$0	\$0

• 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

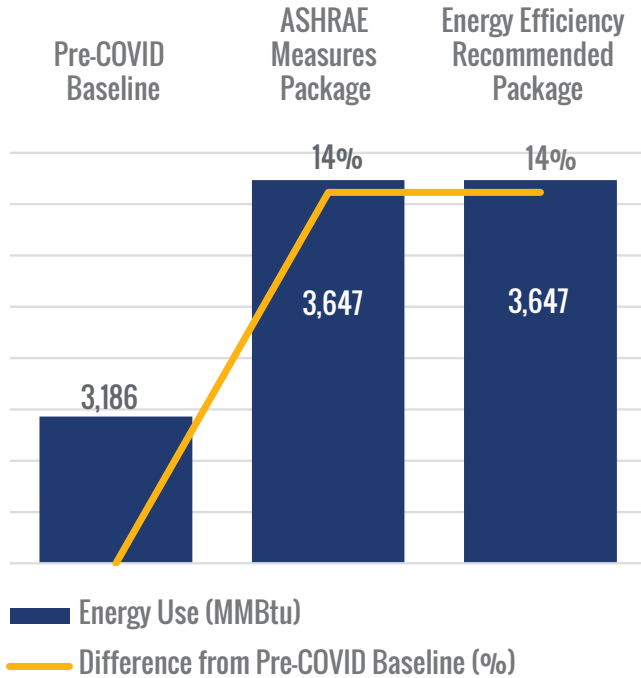


Key Notes

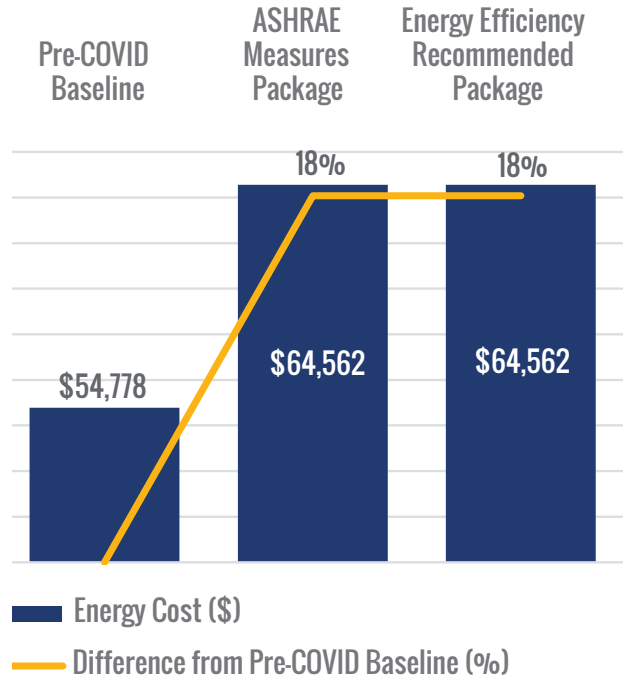
Recommended measures are designated as such due to minimal implementation costs as well as the increase in IAQ. Measures that are not recommended were listed as such due to the implementation costs.

Impact Results

Energy Use Impacts



Energy Cost Impacts



The NYSERDA Flexible Technical Assistance (FlexTech) Program

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