



Rochester Museum & Science Center – Genesee Community Charter School

Building Owner:

Rochester Museum and Science Center

Region:

Finger Lakes

Number of Buildings:

2

FlexTech Consultant:

EMCOR Services Bellem

Sector:

PreK-12 School

Square Footage:

51,007 sq.ft.

Pre-COVID Condition:

- Filters: MERV 8 filters, washable mesh filters in the variable refrigerant flow systems (VRF)
- Ventilation:
 - Ster-1: makeup air unit that serves the VRF LG ceiling cassettes, operated at 10% outside air but assumed capable of 100% outside air, assumed 24/7 operation
 - AC-1: makeup air unit not currently in use, but assumed operational and intended for 24/7 operation with 10% outside air
 - AHU-1: assumed 24/7 operation with 10% outside air serving water source heat pumps
 - ERV-1: 100% outside air makeup air unit with energy recovery ventilation
 - Rez-1 and Rez-2: 100% outside air constant volume makeup air units with energy recovery ventilation that serve VRF Mitsubishi ceiling cassettes, operating 24 hours a day, seven days a week—nine exhaust fans in operation during occupied hours

• Outside Air:

5840 CFM total; mix of 100% and 10% outside air

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					
Maintain Humidity at 40%-60%	Not Recommended	-90	0.0	-\$10.72	\$162,188
Portable HEPA Units in all Classrooms	Not Recommended	-50,768	0.0	-\$6,047.58	\$77,500
Upgrading MERV 8 Filters to MERV 13	Recommended	-1,821	0.0	-\$215.85	\$421
Flush Cycle	Recommended	9,998	-579.1	-\$1,857.04	\$1,200
100% Outside Air During Occupied Hours	Recommended	-42,557	-1,592.5	-\$13,451.52	\$1,200
Run Bathroom Exhaust Fans 100%	Recommended	-3,322	0.0	-\$395.72	\$300
Totals:		-37,702	-2,171.6	-\$15,920.13	\$3,121
Energy Efficiency Package Measures Evaluated					
In-Duct UVGI	Not Recommended	-6,784	0.0	-\$808.12	\$0
In-Duct UVGI with Reduced Outside Air	Not Recommended	34,871	131.5	\$4,845.85	\$10,623
Upper-Room UVGI	Not Recommended	-25,324	0.0	-\$3,016.64	\$0
Upper-Room UVGI in Place of HEPA Units	Not Recommended	42,370	0.0	\$5,047.20	\$73,574
Recommended Measures Totals:		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

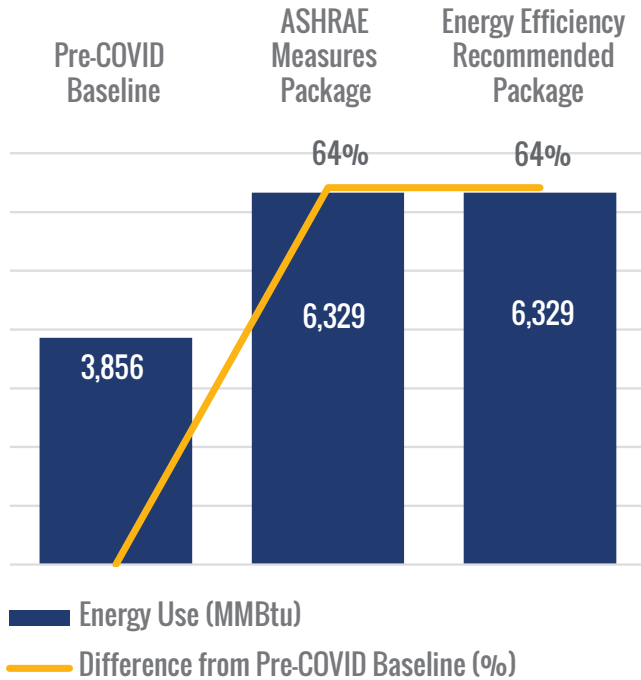


Key Notes

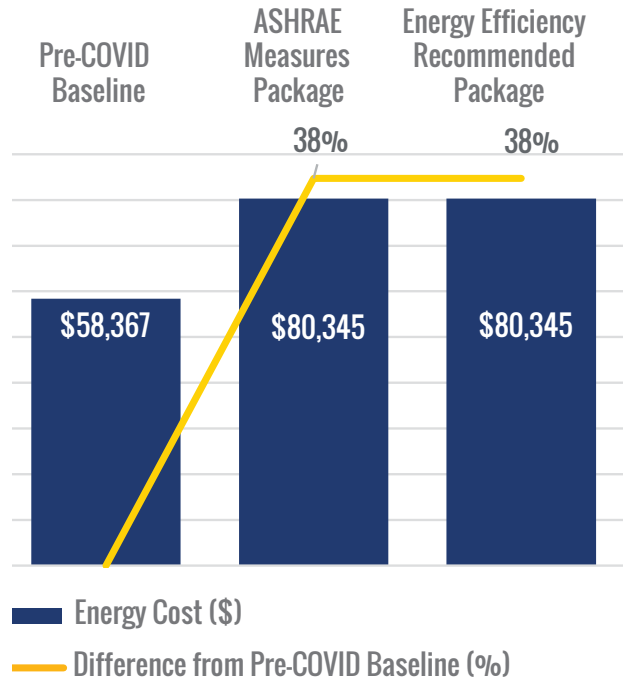
The high annual maintenance needs and costs of UVGI products are much more cost-prohibitive in general over ASHRAE measures, such as adjusting outside air levels and installing higher MERV filters.

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 nyserderda.ny.gov/FlexTech/IAQ

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