



Webster Ice Arena

Building Owner:

Webster Ice Arena

Region: Finger Lakes

Number of Buildings: 1

FlexTech Consultant:
EMCOR Services Betlem

Sector:
Ice Rink

Square Footage:
91,362 sq.ft.

Pre-COVID Condition:

- Filters: MERV 8
- Ventilation: One air handling unit (AHU-1) with an economizer that serves eight variable air volume (VAV) boxes. One dehumidification unit (Munters unit) that serves the ice rink. The Munters unit operates in 100% outside air mode when occupied and 100% return air mode otherwise via demand control ventilation (DCV) settings. There are six exhaust fans.
- Outside Air: AHU-1: 1,950 CFM (13%); Munters unit: 100% or 0% outdoor air depending on building occupancy.

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 40%-60% Relative Humidity for AHU-1	Not Recommended	-334	0	-\$31	\$40,600
Run AHU-1 Two Hours Pre- and Post- Occupancy	Recommended	-5,831	-96.2	-\$997	\$150
Maximize Outdoor Air Levels for AHU-1	Recommended	-14,407	-545.8	-\$3,919	\$300
Disable DCV on the Munters Unit (Increases OA to 100%)	Recommended	0	-523.0	-\$2,472	\$300
MERV 13 filters in AHU-1 and the Munters Unit	Recommended	-3,026	0	-\$281	\$640
Portable HEPA Units in Select Areas	Recommended	-52,025	0	-\$4,836	\$23,200
Totals:		-75,289	-1,165.0	-\$12,505	\$24,590
Energy Efficiency Package Measures Evaluated					
Upper-Room UVGI in Select Areas	Not Recommended	-18,570	0	-1,726	\$52,800
In-Unit UVGI in AHU-1 and Munters Unit	Not Recommended	-9,224	0	-\$857	\$9,100
Upper-Room UVGI in Place of Portable HEPA Units	Not Recommended	34,683	0	3,224	-\$15,700
Lower Outside Air Levels by 0.5 ACH in AHU-1 due to In-Unit UVGI	Not Recommended	1,085	16.7	\$180	\$0
Lower Outside Air Levels by 0.5 ACH in Munters Unit due to In-Unit UVGI	Not Recommended	0	331.9	\$1,569	\$0
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

¹The 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

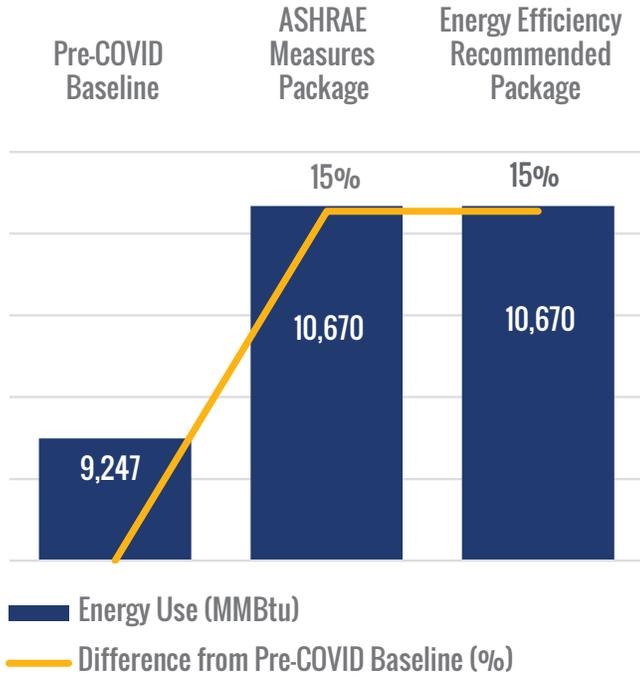


Key Notes

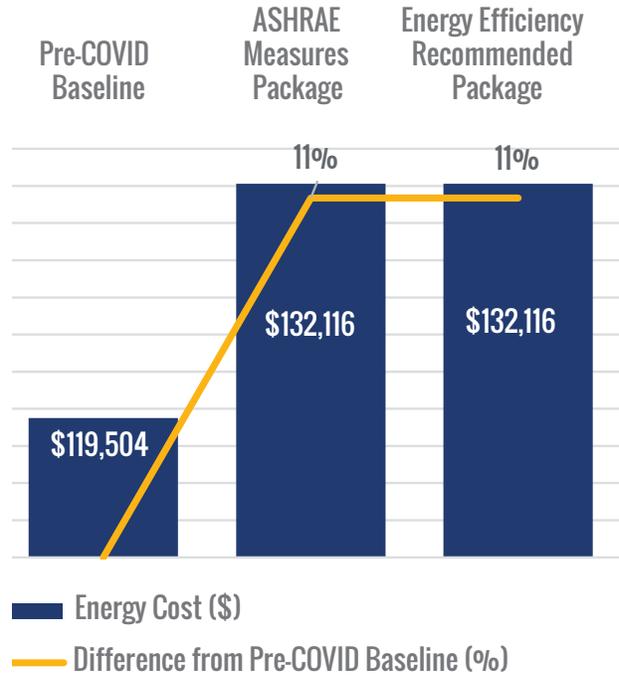
Five ASHRAE measures were recommended for implementation due to either their low install cost or incremental roll-out potential. The high annual maintenance needs and costs of UVGI products make them much more cost-prohibitive in general over ASHRAE measures such as adjusting outdoor air levels and installing higher MERV filters.

Impact Results

Energy Use Impacts



Energy Cost Impacts



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