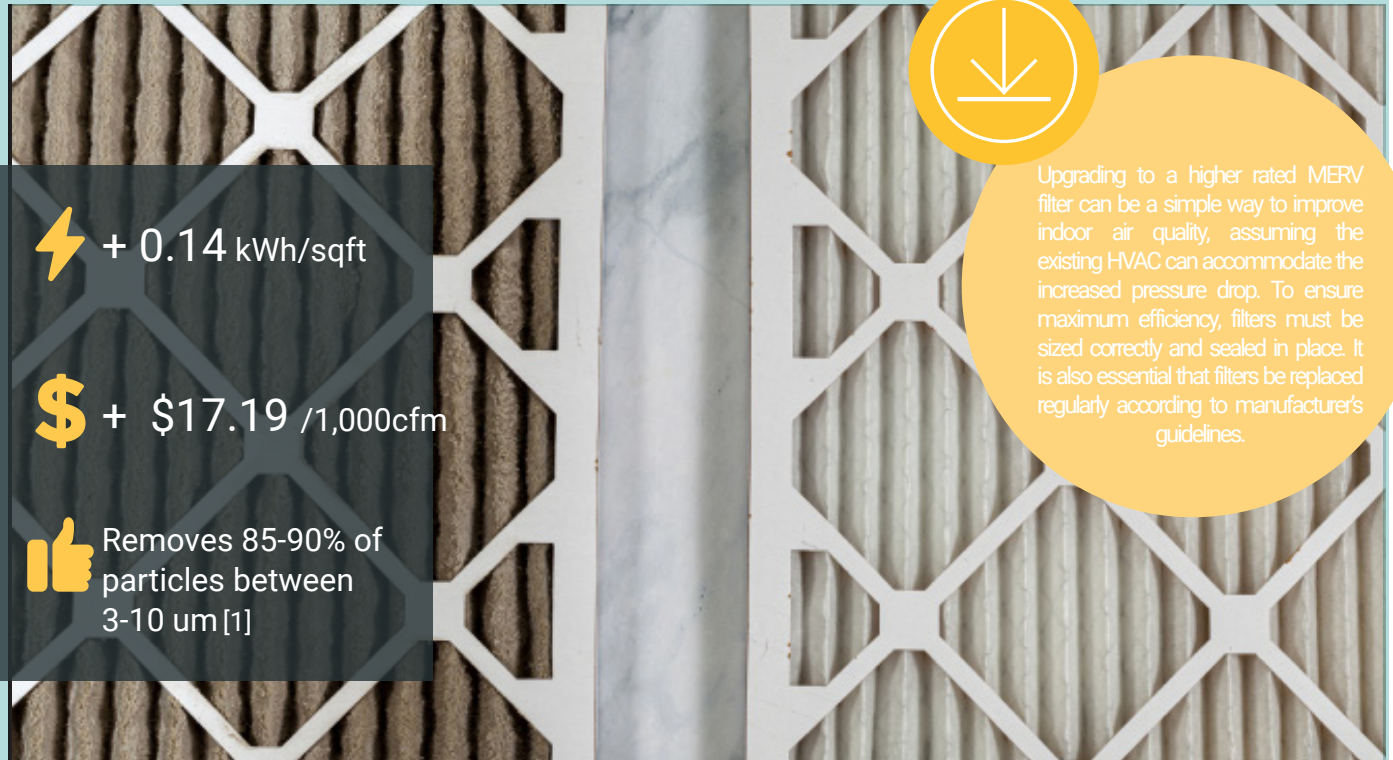


# MERV FILTER

## Minimum Efficiency Reporting Value



Upgrading to a higher rated MERV filter can be a simple way to improve indoor air quality, assuming the existing HVAC can accommodate the increased pressure drop. To ensure maximum efficiency, filters must be sized correctly and sealed in place. It is also essential that filters be replaced regularly according to manufacturer's guidelines.

**⚡ + 0.14 kWh/sqft**

**\$ + \$17.19 /1,000cfm**

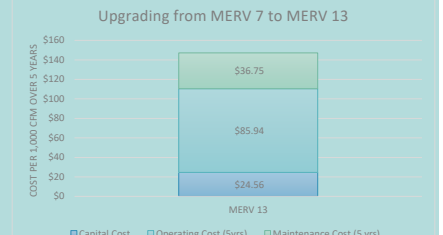
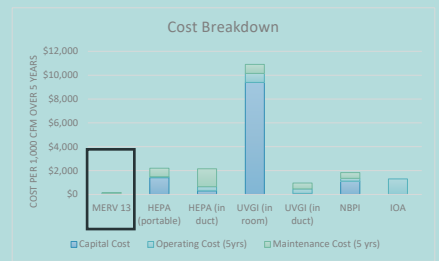
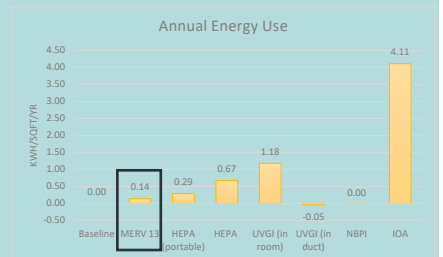
**👍 Removes 85-90% of particles between 3-10 um [1]**

### DESIGN GUIDELINES

- ASHRAE recommends MERV-13 or higher for commercial buildings [2].
- When upgrading to a higher MERV rating, look for a filter with a similar pressure drop to your current filter, or makes sure your HVAC system can accommodate the upgrade.
- To ensure filter efficiency, be sure your filter fits precisely in your system or is sealed in place to prevent leakage.
- Replace your filter regularly according to the manufacturer's recommendations.
- In practice, viruses are almost always embedded in particles that are much bigger than the virus itself. ASHRAE reports the virus mostly occurring in particles between 1 um to 5 um [3].
- Particle filters don't remove VOC's or ozone

	EFFICIENCY	PRESSURE DROP (IN. H <sub>2</sub> O)
MERV 5	32%	0.17
MERV 12	78%	0.15
MERV 13	89%	0.18
MERV 14	97%	0.24

	EFFICIENCY	PRESSURE DROP (IN. H <sub>2</sub> O)
HEPA	99.9%	0.5



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 3. Owen, Kathleen, and Carolyn G. Kerr. "Debunking Myths About MERV Air Filtration." ASHRAE, 8 Dec. 2020.  
 4. ASHRAE Handbook-HVAC Systems and Equipment, 2016, pp. 292-293.  
 5. Azimi, Parham, and Brent Stephens. "HVAC Filtration for Controlling Infectious Airborne Disease Transmission in Indoor Environments: Predicting Risk Reductions and Operational Costs." Building and Environment, vol. 70, 2013, pp. 150-160, <https://doi.org/10.1016/j.buildenv.2013.08.025>.  
 6. ASHRAE. "Filtration and Air Cleaning Summary." ASHRAE, 25 May 2021, COVID-19@ashrae.org. Accessed 10 Sept. 2021.