

PORTABLE HEPA FILTER

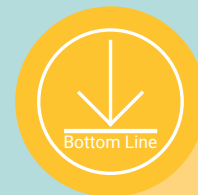
DESIGN GUIDELINES

- Change filter regularly according to manufacturer's guidelines.
- Best placed in high traffic areas.
- Choose a portable air cleaner with an adequate CADR (clean air delivery rate) for the space size.
- CADR only refers to particles. Some systems come with an activated carbon filter, which can be effective at removing gases and VOC's, although there is no widely used performance rating systems.

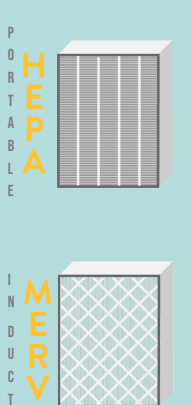
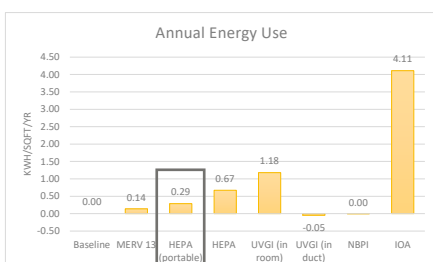
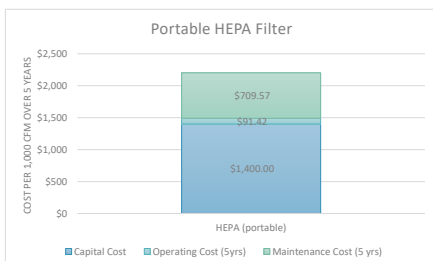
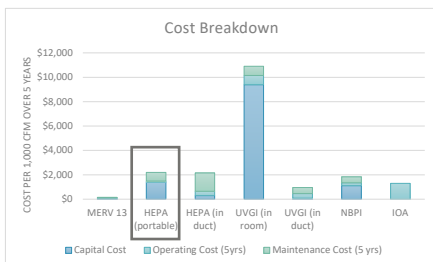
⚡ + 0.29 kWh/sqft

💰 + \$18.28 /1000cfm

👍 99.7% effective [1].



Portable HEPA filters are the simplest way to maximize filtration without modifying the existing building ventilation system. However, due to the high costs associated (both capital and operating costs), in-room filters are best suited for areas where contamination risk is higher or when outdoor air does not meet air quality standards (i.e. wildfire smoke)



PROS

- Portable, "plug and play" option
- More effective at filtering sub-micron and nanoparticles
- Units can be moved throughout a space in order to optimize effectiveness
- Single-point intervention. No extra space needed
- Minimal change to maintenance requirements
- Easy to install into existing HVAC systems

CONS

- Takes up floor space and outlets
- Noisy at high speeds
- Additional maintenance to care for units and change out filters when needed
- Less effective at filtering sub-micron and nanoparticles.
- Effectiveness is limited by air flow since particles and aerosols still travel within the space before being pulled into the return air vent

1. ASHRAE "Filtration and Air Cleaning Summary," ASHRAE, 25 May 2021, COVID-19@ashrae.org, Accessed 10 Sept. 2021.
 2. ASHRAE "ASHRAE Epidemic Task Force" Core Recommendations for Reducing Airborne Infectious Aerosol Exposure, 2021, Accessed 2021.
 3. Xiang, Jianbang, et al. "Energy Consumption of Using HEPA-Based Portable Air Cleaner in Residences: A Monitoring Study in Seattle, US" Energy and Buildings, vol. 236, 2021, p. 110773, https://doi.org/10.1016/j.enbuild.2021.110773.
 4. Fisk, W. J, et al. "Performance and Costs of Particle Air Filtration Technologies" Indoor Air, vol. 12, no. 4, 2002, pp. 223-234, https://doi.org/10.1034/j.1600-0668.2002.0136.x.