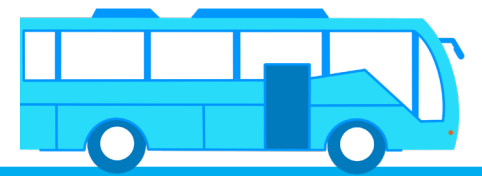
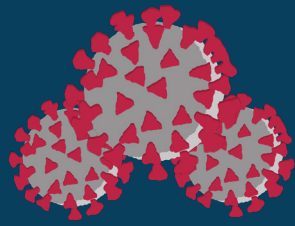


On the Road to COVID-19 Mitigation on Public Transportation

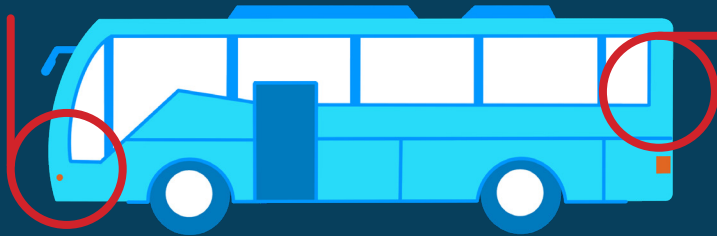


Air Circulation



Social distancing alone may not work on buses. The virus spreads throughout the bus in **seconds** and takes **minutes** to clear. Without proper **precautions**, airflow in buses could make transit ridership risky.

HVAC 1

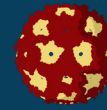


HVAC 2

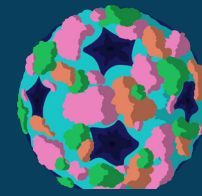
If the bus has dual HVAC systems, physical separation of the driver space (e.g. using a clear plastic sheet) can be effective in protecting the driver, especially with positive pressure in the driver cabin.

The air should be cleaned, to be safe.

Mitigating the Virus



MS2 Virus



Phi 6 Virus

Similar to Coronavirus



T7 Virus

3 different (bacteriophage) viruses were used to assess the efficacy of different technologies. Viruses were measured in the **air** and on **surfaces**.

Effective Technologies



Photocatalytic Oxidation



UV-C Lights

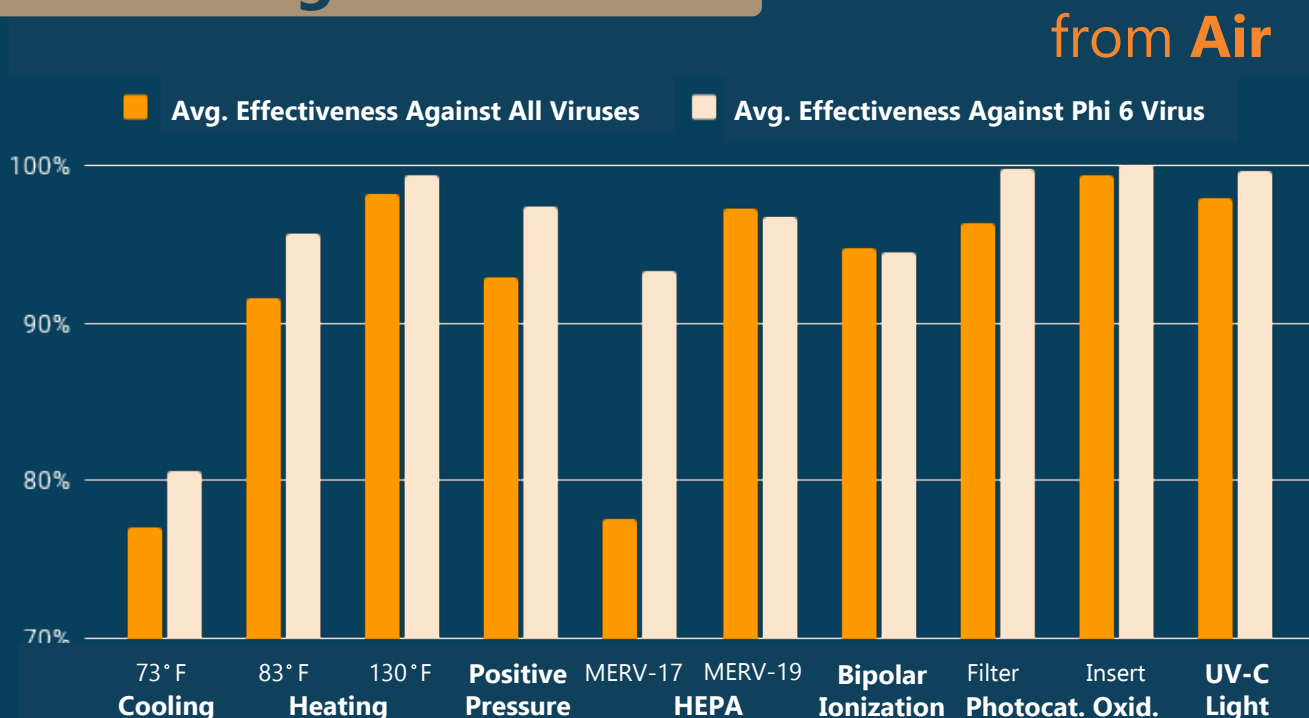
Both technologies will protect passengers and drivers from both the coronavirus and other air-borne viruses, such as the flu. These technologies would be valuable in post-corona times.

ONLY effective after the virus enters the HVAC.

Face masks **should** be worn. They are the first line of defense.



Virus Mitigation Results



Notes: Transit could be safer in winter, since higher HVAC heating temperatures alone mitigate large percentages of the viruses.

These findings could equally be applicable to any confined space with HVAC, such as offices, classrooms, court houses, shops, restaurants, etc.

from Surfaces

Positive pressure mitigated all viruses on surfaces by **100%**.

Copper foil tape and fabrics with high-percentage of copper mitigated the Phi6 virus by **99.7%**. Results were **inconclusive** with the other two viruses.