

## COVID Recovery -- Mission Critical Infrastructure Renewal

US public buildings -- military, municipal, university, school and hospital buildings, among others -- are critical infrastructure that enable federal, state and local governments to fulfill their missions. These buildings form the foundation for resilience for the American people. Over many years, this mission critical infrastructure has been allowed to decay, building up a deferred maintenance backlog that is estimated to be more than \$1 Trillion.

A systematic approach to renewing public facilities infrastructure should be an integral element of the economic recovery from the coronavirus pandemic. The guiding principle is **BUILD BACK BETTER**, not to simply replace failed building systems and components. We want our renewed public facilities to be more Safe, Efficient, Flexible and Resilient.

**Safe** -- Many public buildings have antiquated ventilation systems that were not designed to address the indoor air quality challenges we are facing today and are not properly maintained, resulting in poor indoor air and drinking water quality and threats to public health: unsafe levels of lead in drinking water, outbreaks of Legionnaire's disease, and the constant threat of contamination from viruses, bacteria and mold. The federal infrastructure program should focus on retrofitting facilities to modern standards for ventilation and drinking water to protect the health students, workers and users of public facilities.

**Efficient** -- Renewed facilities should be designed or retrofitted to be as efficient as possible in their use of energy, water, and other critical natural resources, which lowers the long-term operating and maintenance costs and enhances occupant productivity and wellness. The federal infrastructure program should focus on using US building equipment and systems whenever possible, to stimulate the revitalization of domestic manufacturing and assembly companies.

**Resilient** -- Renewed facilities should be designed or retrofitted to maintain critical operations during severe weather, seismic events, electric grid outages, cybersecurity breaches, and public health emergencies (such as the present coronavirus pandemic). Backup power generation, energy storage, distributed generation, and micro-grids not only increase resilience, but also increase sustainability, increase demand flexibility, and grid efficiency.

**Flexible** -- Renewed facilities should be designed to quickly transform occupant space in a public building -- college dormitory, military barracks, K-12 school, or convention center -- into a temporary critical care facility or emergency shelter. This requires flexible, adaptable designs that allow for quickly adding critical ventilation (HVAC) filtration equipment and room pressurization systems, provision of extra power capacity to accommodate clinical equipment and uninterruptible power (UPS) systems, and sufficient network capacity and security to accommodate clinical and building technology systems.

We believe that \$22 Billion of federal appropriations can leverage private investment -- performance-based contracts, Public-Private Partnerships (P3s), and other vehicles -- to deliver \$110 Billion of infrastructure and resiliency improvements to mission-critical public facilities.

This \$110 Billion target is reasonable because it is only about half of the \$223 billion potential estimated by the Lawrence Berkeley National Laboratory: \$178 Billion in what is known as the MUSH market (Municipal/State, Universities, Schools and Hospitals), \$15.6 Billion in federal facilities, and \$29 Billion in public housing.

There are a number of existing legislative authorizations (*e.g.*, State Energy Program, 42 U.S.C. § 6321-6325; AFFECT, [42 U.S.C. § 8256\(b\)](#)) programs through which the federal infrastructure renewal funding can flow to each type of mission-critical public facility.