

U.S. public buildings – hospitals, universities, schools, military bases, assisted-living facilities, airports, ports, and others – are critical infrastructure that enable federal, state, and local governments to fulfill their missions while serving as essential community resources in times of disaster. These buildings form a foundation of security for the American people. Whether in a hurricane, earthquake or health crisis, public buildings can help governments deliver effective and safe recovery operations while providing potentially life-saving capacity for temporary shelters, medical care facilities and other community relief operations. To fully leverage these buildings in future crises, these buildings must be resilient, smart, and adaptable to changing circumstances.

Over many years, this critical infrastructure has been allowed to decay, building up a deferred maintenance backlog that is estimated to be more than \$1 trillion. Many existing public facilities also lack modern IT infrastructure, distributed energy resources, smart building technologies and digital tools to improve safety, efficiency, resiliency and flexibility. The guiding principle for infrastructure renewal should be build back better, not to simply replace failed building systems and components.

A systematic approach to renewing public facilities should be an integral element of the economic recovery from the COVID-19 pandemic. This is a proposal for federal appropriations of \$22 billion over three years through the U.S. DOE State Energy Program (SEP) to leverage private investment through Public-Private Partnerships (P3), performance-based contracts, energy as a service, and other financial vehicles. Leveraged with private financing at a 4:1 ratio, this \$22 billion federal investment will deliver \$100 billion of infrastructure improvements. Federal funds would be reserved for health and safety, resiliency, IT infrastructure, cybersecurity, and emergency response capabilities while private funding would be leveraged to deliver efficiency and smart building technology improvements paid over time through energy and operational savings.

To address the principle of building back better, this infrastructure renewal program will help make critical facilities:

Safe – Many public buildings have antiquated ventilation systems that were not designed to address the indoor air quality challenges we are facing today and existing building systems have not been properly maintained. This has resulted 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 building equipment and systems made in the U.S. 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 – a 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, smart building systems and digital tools.

The costs of natural disasters is rising sharply. The [Congressional Budget Office forecasts](#) that hurricanes alone will incur U.S. damages of \$54 billion annually, including \$17 billion in federal costs. The Army Corps of Engineers has spent hundreds of millions of dollars constructing 32 temporary healthcare facilities, demonstrating a critical need for public facilities that can quickly be converted into temporary disaster recovery and emergency medical care facilities.

Additionally, the potential market for these retrofits is well-documented. The projected leveraged investment in this proposal is less than half of the \$223 billion potential performance contracting activity [estimated by the Lawrence Berkeley National Laboratory](#). The study found \$178 billion in potential activity in what is known as the MUSH market (Municipal/State, Universities, Schools and Hospitals) and \$15.6 billion in federal facilities. There are several existing legislative authorizations (e.g., State Energy Program, 42 U.S.C. § 6321-6325; AFFECT, 42 U.S.C. § 8256(b)) through which the funding can flow. At least \$2.5 billion of the funding will be directed to federal projects.