
COVID RECOVERY – MISSION CRITICAL FACILITY RENEWAL

U.S. public buildings – hospitals, military facilities, schools, municipal buildings, and others – are critical infrastructure that enable federal, state, and local governments to fulfill their missions. Over many years, much of this 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 this infrastructure should be an integral element of the economic recovery from the coronavirus pandemic.

We propose federal appropriations of \$22 billion over five years to retrofit these facilities. The federal funding – along with energy cost savings from efficiency improvements – would leverage an estimated private investment of \$88 billion to deliver a total of \$110 billion in economic activity. Not only would this put people back to work – largely in construction, engineering, and manufacturing – but it would better prepare us for disasters in the future.

The guiding principle is **BUILD BACK BETTER**, not to simply replace failed building systems and components. The private 80% investment finances the majority of the project and is repaid over time with guaranteed savings from improved energy efficiency and reduced operating costs. The federal 20% investment adds resiliency, safety and flexibility measures to each project, such as making windows storm resistant, upgrading HVAC controls so that they can interact with the utility grid, or adding a microgrid to add power flexibility.

We propose the federal investment be allocated as follows:

- \$18 billion for state/local, K-12, university/college and healthcare buildings by funding the State Energy Program using 42 USC 6322(d) over five years.
- \$2.5 billion for federal buildings by funding the Federal Energy Efficiency Fund (AFFECT) using 42 USC 8256(b), the U.S. Departments of Army, Navy, and Air Force at \$500 million each, and the U.S. Department of Veteran's Affairs and General Service at \$250 M each over four years.
- \$1.5 billion for public housing by funding 42 USC 1437g(d).

This proposal paves the way for robust investment by utilizing performance contracting and performance-based service contracts that – using legislative authority that exists at the federal level and in every state – can leverage \$4 of private spending for every \$1 in public funding. As a result, upgraded facilities under this proposal will be:

SAFE – Renewed facilities should be retrofitted to modern standards for ventilation, drinking water, emergency lighting, and other essential functions to protect the health and safety of students, workers, and users of public facilities.

EFFICIENT – Renewed facilities should be rebuilt 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.

RESILIENT – Renewed facilities should be redesigned to maintain critical operations during severe weather, seismic events, electric grid outages, cybersecurity breaches, and public health emergencies (such as the present coronavirus pandemic).

FLEXIBLE – Renewed facilities should be renovated 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.

We propose the federal investment be made in two phases. A short-term, time-limited stimulus will move state, local and federal projects currently in development but delayed by the coronavirus pandemic to construction within 18 months. A medium-term stimulus will move projects deferred due to state and local government budget uncertainty to development in a five-year time frame.

Following are examples of projects that could be completed under this proposal. Resiliency measures are extremely difficult to apply a cost-effectiveness year to, and such measures require federal funding. The other energy improvements could be implemented with private financing, and would be paid back through the savings. Fortunately, the cost of these measures is reduced when they are integrated with the other improvements.

Many **school buildings** need new windows. Resilience is added to the school when the operating cost reductions produced by standard window replacements are augmented by a stimulus grant that upgrades the windows to be storm resistant.

Airports, through which viruses can be quickly spread around the world, could upgrade HVAC systems to save money through improved efficiency while spending federal dollars upgrading air filtration to improve air quality and reduce the spread of disease. Additional efficiencies and cost savings could be gained through digital controls and artificial intelligence to better understand space utilization patterns, paving the way for greater operational flexibilities and real-time energy management.

Many **college campuses** have unreliable electric systems that don't meet current building code, can't handle the increased load from upgraded information technology and laboratory systems, and are open to cyberattacks. Resilience is increased when a microgrid with distributed generation, advanced power metering, and controls are added to enhance power supply reliability and security. Cost reductions produced by better energy management reduce the cost of the improvements, and a federal stimulus investment pays for the cybersecurity enhancements.

Many **community centers** have obsolete or below-code HVAC (Heating, Ventilation, and Air Conditioning) systems. Resilience is added to these buildings with new HVAC systems and advanced controls that can both provide a healthier and more comfortable building for normal uses (recreation, public meetings, voting, etc.) but are flexible enough to provide appropriate space conditioning and indoor air quality when the buildings are used as emergency shelters. Cost reductions from the new HVAC system and controls can repay most of the costs of the improvements, and a federal stimulus investment pays for the flexibility enhancements.

Police and fire stations need reliable backup power in case of storms, grid outages, or cyberattacks. Resilience is added to these first-responder facilities when renewable generation and storage is combined with comprehensive building improvements to lower the size and cost of the required backup power system. The building improvements can be repaid from savings, and the new system allows the facility to recoup costs by supplying power to the grid when it is not needed by the facility.