



PAYING IT FORWARD

WHY RESILIENCE IS A RISING PRIORITY

From the coronavirus to severe weather events, achieving resilience has become an urgent and strategic imperative for cities, writes AECOM's **Stephen Engblom** and **Caitlin MacLean** from the Milken Institute.

Even before the coronavirus crisis, the idea that we need to make our towns and cities more resilient was growing. From aging and deficient infrastructure to the challenges of climate change and population growth, we are clearly under-prepared to meet the increasingly unpredictable challenges of today. The pandemic has highlighted some of these weaknesses, but it also brings with it an opportunity to make our infrastructure fit for the future.

As a global society, we have spent the last decade identifying potential shocks and stresses, as well as strategies for addressing

them. However, insufficient budgets, lack of political will and weak public support have meant many of these resilience strategies were not implemented. Capital sources exist, but securing the right blend of capital and approving financing schemes amid other competing demands has proved challenging. Tackling the coronavirus pandemic is adding further complications.

The need to address the funding gap led AECOM to collaborate with the Milken Institute to ask what can be done to improve the ability of our cities to overcome the challenges of an increasingly uncertain world and continue to grow sustainably. The

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Financial Innovations Labs that we convened¹ brought together key stakeholders, decision makers and financial experts on resilient urban infrastructure. In this article, we highlight lessons learned and provide insights on how these can be applied in other cities.

In New York, we discussed Lower Manhattan Coastal Resiliency, the City's plan to adapt Lower Manhattan to climate change, for this generation and the next; in Los Angeles, we examined improvements in public transport; and in London, we addressed the shortfall in housing provision. In each case, described more fully below, we developed ways to pivot from talk to action by going beyond traditional resources, working across silos, and rethinking how we compile the necessary capital stacks. While all of these labs were held prior to the outbreak of coronavirus, the funding challenge remains. ➔



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Environmental resilienceto natural shocks

In 2012, Superstorm Sandy led to the deaths of more than 40 people and caused significant damage and economic losses totaling US\$19 billion² for New York City and the U.S. East Coast.

The storm demonstrated the extreme vulnerability of one of the world's key economic and cultural centers that the public and private sectors have been trying to address since, even as sea and groundwater levels continue to rise.

In March 2019, the City released its Lower Manhattan Climate Resilience Study.³ Developed by the City, with support from a large consultant team led by AECOM, the study identified US\$500 million of near-term climate adaptation projects and a long-term Climate Resilience Master Plan for the Financial District and Seaport.

In the absence of additional federal and state funding, carrying out the Climate Resilience Plan will require new and innovative funding and financing mechanisms.

The Milken Institute, in collaboration with AECOM, examined a variety of funding and financing options that could be applied at different scales. Various options for raising money through a bond program could be applied at a city level. At the regional or state level, more funds could be collected through a two percent surcharge on insurance policies, which could be saved in a trust fund managed by an independent entity. In addition, the city could include revenue-raising models in its plans, from selling private development rights to utilities to surcharges that are income dependent.⁴ The goal was to map out the right mix of capital sources and investment types to bridge funding gaps.

The Lab found that funding resilient infrastructure in the future will likely require alternative financing plans that pool from a range of public and private funding sources.

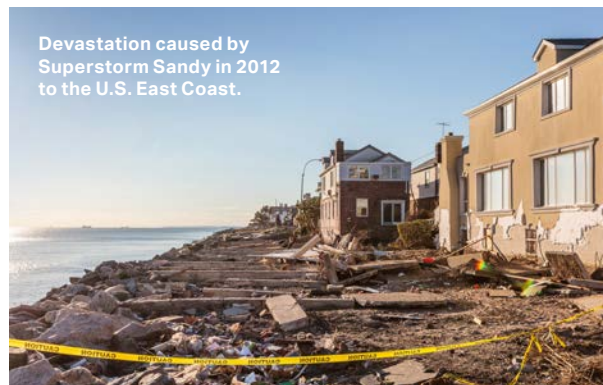
Mobility — addressing the unjust impacts of poor transportation networks

In Los Angeles, a city long recognized for its car culture, the greatest challenge to overall resilience is mobility. As part of our Financial Innovations Lab series, we examined the need to improve public transportation infrastructure to serve the needs of a growing population while improving air quality and reducing emissions.

California's population is expected to grow from just under 40 million today to almost 50 million by 2050.⁵ Residents are so fed up with traffic and poor air quality that they are willing to pay for the necessary improvements in public transport. In 2016, Los Angeles residents voted to finance a \$120 billion mobility improvement program known as Measure M.

The centerpiece of the regional rail network, Union Station, is key to interregional and local transportation strategies. Required improvements include a new passenger concourse and other amenities expected to cost as much as \$2.5 billion — a total not covered by Measure M.

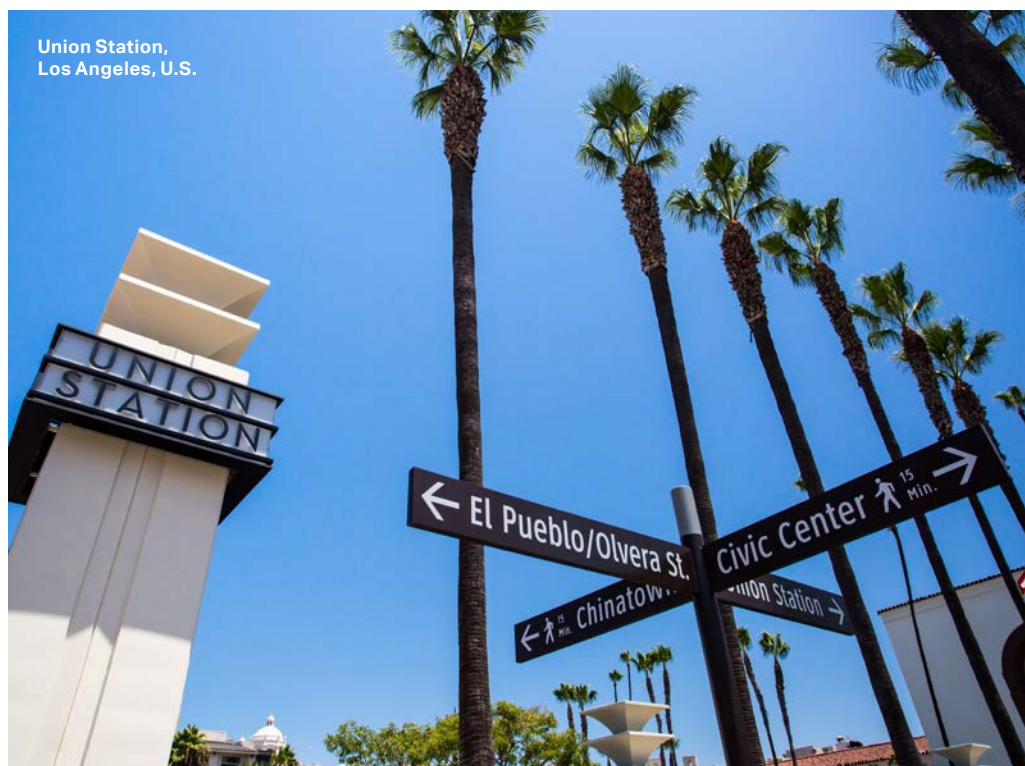
Public and private-sector stakeholders at the innovation lab in Los Angeles discussed several strategies, from tax increment financing to nearby commercial development. They also encouraged the project's sponsor to re-examine capital and operating plans to make them less prescriptive, widening the sphere of potential funding.⁶ Since then, the pandemic is likely to influence how government advances these transportation projects. →



Devastation caused by Superstorm Sandy in 2012 to the U.S. East Coast.

50M

California's expected population by 2050



Union Station, Los Angeles, U.S.

AECOM's INNO solution, developed in partnership with Rogers Stirk Harbour + Partners (RSHP).



Affordability — ensuring long-term viability of our cities by accelerating access to affordable housing

Our Financial Innovations Lab in London looked at resilient housing strategies to address a housing crisis caused by decades of underdelivering the number of homes people need. The impact of this crisis is a housing market that excludes many, catering to higher-end developments over genuinely affordable housing stock for the low- to middle-income market.

Current practices result in long lag-times and slow delivery: across Greater London and the city region, an average of 75,000 homes have been built annually in the last decade. If this rate of delivery remains consistent, this will result in a shortfall of as much as 800,000 homes by 2026, and more than one million homes by the end of the following decade.

Optimism exists that modular construction has the potential to solve the supply shortage. Today's off-site manufactured homes are far from 'prefabs' and system-built blocks that significantly increased housing supply in the 1970s. Digital tools and precision engineering are delivering high-quality, eco-efficient homes with lower running costs for residents. Not

only does assembly within a factory environment mean developments can be delivered much faster than traditional building methods, the system also avoids noise and waste that accompanies traditional onsite construction — not to mention the delays caused by adverse weather or access conditions.

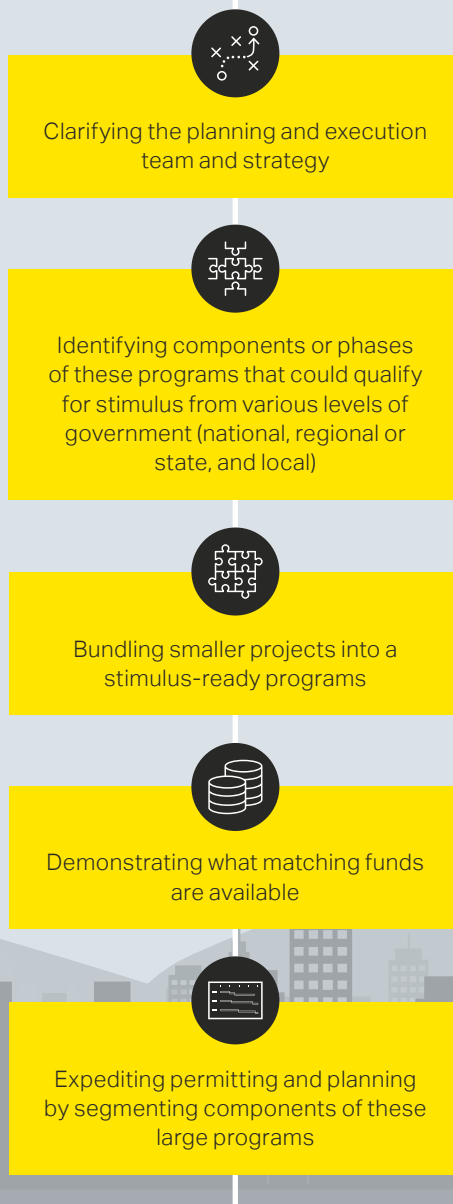
AECOM's INNO solution is one of the most advanced modular systems, developed in partnership with Rogers Stirk Harbour + Partners (RSHP), to initially address the housing shortage across the UK. Incorporating manufacturing and process engineering experts, projects progress from concept, design, assembly to construction on site, integrating the entire supply chain.

One of the first projects to be delivered is for YMCA Thames Gateway in Romford, East London. The 39 single-occupancy units support YMCA's independent living program, enabling individuals to move on from supported living. All 39 units are assembled off site and fully fitted out in factory conditions. It takes five days to complete a one-bedroom unit with delivery on site accelerated. Scalable to meet UK housing market demands, the INNO system could easily be adapted for international markets. ➔



GETTING STIMULUS READY

All of the programs and projects discussed in this article are of strategic importance. However, schemes such as these are often long term, involving multi-agencies and cross jurisdiction. This could mean they risk being overlooked by decision makers when determining what programs qualify for stimulus programs. To avoid this, stakeholders should consider:



STIMULUS CHECKLIST ✓

ECONOMIC

- / Direct job generation
- / Local impact/spending multipliers
- / Targeting highly impacted clusters and industries
- / Encouraging transformative capital investments
- / Driving growth in disadvantaged areas and regions
- / Dispersing benefits to a large pool of users

ENVIRONMENTAL

- / Resilience and disaster preparedness
- / Long-term stresses, greenhouse gas, air/water quality
- / Shocks, climate events, future pandemics, terrorist attacks

EQUITY

- / Prioritizing communities of concern
- / Community support for project
- / Access to recreation/open space
- / Access to jobs
- / Access to housing
- / Workforce training and upskilling

FUNDING AND FINANCE

- / Federal, state, regional, local grants
- / Public financing (debt)
- / Self-generated TIF, BD/SSA, toll, land sales, etc.
- / Private investments, public-private interaction
- / General Funds

REGULATORY

- / Design or concept well progressed
- / Legislative or regulatory approvals
- / Active community and stakeholder engagement
- / Environmental permitting
- / Local planning efforts

GOVERNANCE AND IMPLEMENTATION

- / Project champion and sponsor
- / Interagency support
- / Available workforce and supply chain
- / Special purpose vehicles
- / Risk mitigation (track record, procurement, oversight)

Making our future resilient

The full impacts of the current pandemic are yet to be fully understood. What we do know is that the need to address our infrastructure inadequacy in the face of extreme weather, political and social unrest has not gone away. If anything, the need for resilience is now even stronger.

In many cases, resilience strategies have been prepared, but gathering enough money to implement them has proved difficult. Accelerated

funding strategies may now be possible with the stimulus packages being prepared by governments around the world. When this stimulus funding is harnessed correctly and combined with new and innovative approaches, such as those highlighted in our Financial Innovations Labs, this could be the lightning rod needed to address the large-scale and complex resilient infrastructure projects that are required. **WU**

Cristian Bevington, Jon Dearing, Garrett Harper, Joel Sonkin, and Joy Woo contributed to this article.