

Building Strategies for Energy System Transformation

CNCA Cities Work Together to Scale Best Building Practices Across Continents

CNCA has heavily funded city collaborations that scale building performance strategies from around the globe. Impacts to date include new building codes in Vancouver and the planning of a San Francisco Energiesprong program launch, among others. This article details how practices are explored, borrowed, and adapted between countries.

Cities around the globe are committing to making their building stock more sustainable, through energy saving building retrofits and new building policies designed to ensure new structures can meet a more rigorous energy-consumption standard. Through a series of CNCA grants, cities have collaboratively identified methods to support [new business models for building market transformation](#) that can be scaled to cities around the globe. Since the fund's inception in 2015, the Carbon Neutral Cities Alliance (CNCA) has provided support to this effort. Ultimately, the purpose of this work is to help cities meet their increasingly aggressive carbon reduction goals. This article highlights the projects that have developed strategies for energy transformation in existing and new buildings alike.

Starting the Collaboration

In 2015, the cities of London and Copenhagen received funding from CNCA's first Innovation Fund Round, and collaborated to assess the feasibility of the Dutch Energiesprong retrofitting model for London. The work explored different financial instruments for deep building retrofits across multiple cities. Energiesprong originated in the Netherlands as a government-funded innovation program. Residential multi-family housing is the launch market for this style of building envelope, with the goal to later scale to the private home-owner market.



Figure 1. 2016 CNCA participants in the New Financial and Delivery Models for Retrofitting Buildings Scaling Building Retrofits workshop. From: CNCA Post Workshop Report.

The CNCA grant outcome is [a detailed assessment of the extent to which the Energiesprong retrofitting model is transferable to London](#). The assessment details development of a robust business case and barriers report. The City of London separately commissioned an Energiesprong Finance Model, which identified the financial feasibility of these retrofits. Because of this initial work, the Greater London Authority has committed to a phased plan to implement the program through 2018 and beyond.

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Image from: How-To Guide: Net Zero Retrofits Technical and Cost Benchmark Studies

Scaling Continents

Across

Building on London's work, the City of San Francisco was awarded a late-2016 CNCA grant to [develop a business model to bring the Energiesprong program to the U.S.](#) Participating CNCA cities assessed enabling conditions for the success of this model in the How-To Guide: Net Zero Retrofits Technical and Cost

Benchmark Studies. From this assessment, the City of San Francisco finalized the San Francisco Bay Area Program Strategy, which describes the expected scope, staff, and budget required to market Energiesprong state-side. This report also reveals targeted budget sources to operationalize the REALIZE program in the San Francisco Bay Area.

High Performance Building Strategies

While the Energiesprong program focuses mainly on making the existing building stock more energy efficient, CNCA has also supported projects to advance new building markets toward net-zero energy consumption. In 2016, the City of Sydney completed a project that identifies key opportunities for [accelerating market transformation to net-zero energy high-rise residential apartment buildings in Australia](#). This work reveals that net-zero high-rise residential buildings are technically feasible and highly cost-effective from a societal perspective in Australia, but that commercial uptake could be slowed due to gaps in the energy efficiency and climate policies. To overcome this barrier, the city is considering a strategic and integrated approach by industry and government to help rapidly transform the market for net zero high-rise residential buildings in Australia.

Simultaneously, the City of Vancouver led a project to accelerate market transformation towards carbon neutral buildings in North America. They leveraged demonstrated successes from European case studies, which show that greatly improving building envelopes results in significantly reduced energy use. Because of [this project](#), Vancouver substantially changes its building energy-efficiency regulation and policy. The greater Province of B.C. also shifted substantially to support high-performance building practices.