

Zero Cities Project

Urban areas are ground zero in turning the tide against climate change. To varying degrees, cities are leading the way to a carbon-neutral economy. Some have passed or committed to aggressive greenhouse gas (GHG) emissions reduction targets and climate action plans; many have adopted building benchmarking policies.

Unfortunately, the policymakers and politicians spearheading these efforts often don't know how to translate their vision into measurable GHG reductions. In some cases, the way forward is technically or politically difficult. With benchmarking, cities lack a standardized way to compare building performance, limiting the impact of the ordinances in the marketplace.

New Buildings Institute, Architecture 2030 and Resource Media are launching an ambitious project to help cities translate climate thinking into on-the-ground progress. The *Zero Cities Project* features a roadmap and suite of tools cities can use to translate vision into measurable progress.

THE STRATEGY

Benchmarking is a key strategy for cities seeking to accelerate energy efficiency in buildings. The Zero Cities Project helps cities chart a path beyond benchmarking to an end point of carbon-neutral, zero net energy buildings. These buildings use no more energy than can be produced onsite (or nearby) through renewable energy resources such as photovoltaics (PVs) or wind. The Zero Cities Project is built on three core strategies and an overall framework captured in an adaptable *Achieving Zero* roadmap.

I. zEPI – Charting the Path to Zero

Over a dozen U.S. cities have adopted benchmarking, with more on the way. Cities are working to leverage building data to drive energy efficiency improvements, but because there is no universal standard for comparing building performance, the data do not yet tell a compelling story. Building performance is typically measured as “percentage-savings-better-than-code,” a relative measurement unlikely to trigger the catalytic changes needed. zEPI is a simple,

THE FACTS

- Nine hundred billion square feet of buildings will be newly-constructed or rebuilt between now and 2030.
- The vast majority of population growth and building development will happen in urban areas.
- Cities and urban areas are responsible for approximately 75 percent of global CO₂ emissions, mostly from buildings and transportation.
- In the next two decades, an equivalent of 60 percent of the world's current building stock will be built and lock in emission patterns for 80 to 120 years.

easy-to-understand scale that can be applied universally to represent progress toward larger performance goals and zero net energy.

II. Reach Codes – Innovating to Zero

Reach codes are a proven strategy to drive market capacity and acceptance for higher efficiency energy codes. Demonstrated in Vermont, Massachusetts, Oregon, California and elsewhere, reach codes prime the market for future adoption of more stringent energy efficiency codes. They offer an opportunity to train the building and development communities on measures before the underlying energy code is improved. Reach codes are voluntary and often work in tandem with utility and other incentive programs.

III. Point-of-Sale Codes – Renovating to Zero

Pioneering cities have demonstrated that the point-of-sale or lease is an ideal time to require energy efficiency upgrades in existing buildings. To meet GHG reduction commitments and targets by the year 2050, most existing buildings in urban areas must be renovated to high-performance standards over the next 35 years. With point-of-sale code requirements, responsibility for renovation lies with the new building owner, an ideal target given that many new owners renovate buildings prior to occupancy.

ACHIEVING ZERO – Emissions Reductions and Resiliency in the Built Environment

Achieving Zero is a roadmap for government entities to enact incremental actions over a fifteen-year timespan to phase out CO₂ emissions in the built environment by mid-century. It will utilize the zEPI scale, fundamental building construction intervention points, building energy conservation and reach codes, and renewable energy applications as primary implementation tools. Actions outlined in the roadmap will save property owners and building occupants energy and money, as well as create thousands of local clean energy and construction jobs.

OUR APPROACH

Architecture 2030, New Buildings Institute and Resource Media will provide model policy language, technical guidance and hands-on support to help cities and allies make the case for Zero Cities Project Strategies.

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Zero Energy Performance Index (zEPI)

Unlike Energy Star, which rates buildings on a curve relative to the current building stock, zEPI is an absolute scale with two end-points:

On the one hand, with a score of 100, is a building or policy equal to the energy use of an average building in the year 2000 (as established by the federal CBECs 2003 database).

On the other, with a score of zero, is a building or policy with a zero net energy rating.