



CNCA

EXECUTIVE SUMMARY

CARBON NEUTRAL CITIES ALLIANCE

Framework for Long-Term Deep Carbon Reduction Planning

Developed for the Carbon Neutral Cities Alliance
by the Innovation Network for Communities

About the Carbon Neutral Cities Alliance

The Carbon Neutral Cities Alliance (CNCA or “Alliance”) is a collaboration of leading global cities working to cut greenhouse gas emissions by 80% or more by 2050 or sooner (“80x50”)—the most aggressive GHG reduction targets undertaken by any cities across the globe. The Alliance aims to address what it will take for leading international cities to achieve these deep emissions reductions and how they can work together to meet their respective goals more efficiently and effectively.

The Alliance was born in Copenhagen in June 2014 at an organizing meeting of the following cities:

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| Berlin, Germany | Portland OR, USA |
| Boston MA, USA | San Francisco CA, USA |
| Boulder CO, USA | Seattle WA, USA |
| Copenhagen, Denmark | Stockholm, Sweden |
| London, United Kingdom | Sydney, Australia |
| Melbourne, Australia | Vancouver, Canada |
| Minneapolis MN, USA | Washington DC, USA |
| New York City NY, USA | Yokohama, Japan |
| Oslo, Norway | |

These cities came together to share lessons in planning for and implementing deep carbon reductions and agreed upon opportunities to accelerate best practices through collaboration in the Alliance’s first year, including:

- *Developing Carbon Neutrality Planning Standards*—Developing approaches, analysis, and tools to support carbon neutrality; standardizing measurement and verification methodologies for tracking progress.
- *Advancing “Transformative Change” in Key Urban Sectors*—Sharing and implementing best practices for achieving “transformative” deep carbon reduction strategies in urban transportation, energy use, and waste systems.
- *Advocating for Policy Change*—Identifying and advocating for policies at the state, regional, and federal levels to reduce emission sources not controlled directly by cities and engaging with other external stakeholders who are critical to cities’ success.
- *Speaking with a Common Voice*—Helping CNCA cities demonstrate their leadership and communicate with a common voice.
- *Creating a CNCA “Innovation Fund”*—Investing in high-potential, city-led projects that develop, test, implement, and amplify deep decarbonization strategies and practices.
- *Increasing Alliance Impact*—Sharing Alliance learnings with a broader audience to benefit the “next wave” of cities striving for carbon neutrality.

The Alliance is staffed by the Urban Sustainability Directors Network (USDN) in partnership with the Innovation Network for Communities (INC) and C40 Cities Climate Leadership Group (C40), and is supported by The Kresge Foundation, Barr Foundation, Summit Foundation, Rockefeller Brothers Fund, V. Kann Rasmussen Foundation, MacArthur Foundation and Bullitt Foundation.

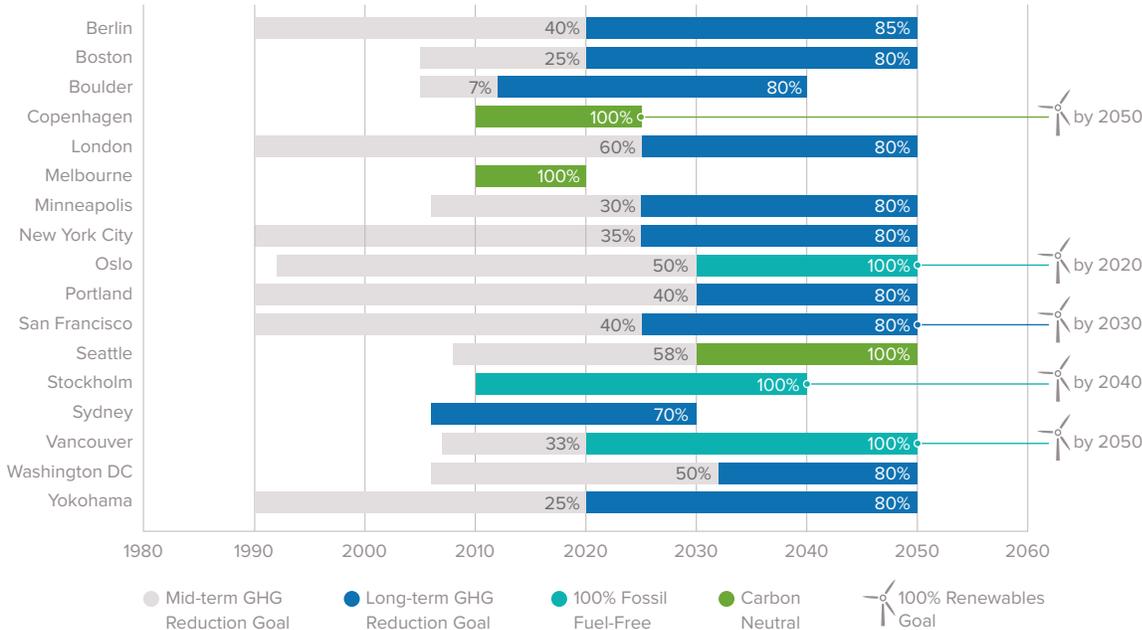
Executive Summary

The Carbon Neutral Cities Alliance’s **Framework for Long-Term Deep Carbon Reduction Planning** (“Framework”) provides municipal leaders with a detailed synthesis of the processes, strategies, practices, tools, and institutional structures used by leading-edge cities worldwide to plan long-term, deep reductions in carbon emissions. The Framework draws almost entirely from the work of the cities in the Carbon Neutral Cities Alliance (CNCA or “Alliance”). It focuses exclusively on deep reductions, which typically require transformative rather than incremental approaches and take years to achieve. It is intended to serve as an initial streamlined template that cities can use to take a more robust, consistent, and comprehensive approach to developing deep carbon reduction plans. It also identifies specific strategic challenges that cities continue to face in making further progress on deep carbon reductions.

Context

Avoiding the most destructive effects of climate change requires reimagining and reinventing our great urban centers—which account for nearly three-quarters of humanity’s greenhouse gas (GHG) emissions—to put them on a path toward a zero-carbon future. Transformative changes in energy systems, transportation networks, commerce centers, neighborhoods and even governance practices are essential to meeting the challenge of cutting greenhouse gas emissions by at least 80% by 2050—the goal of the global cities that make up the Carbon Neutral Cities Alliance.

CNCA Cities’ Long-Term and Interim GHG Reduction Targets



Achieving deep decarbonization is a daunting task with few clear roadmaps, and leading global cities have pursued this in relative isolation from each other. That's why we created the Carbon Neutral Cities Alliance. CNCA was designed as a venue for vanguard cities to work together in practical and mutually beneficial ways to address significant decarbonization challenges. By sharing resources and ideas and collaborating on strategic approaches, CNCA cities can accelerate progress in meeting their aggressive goals; develop more rigor and consistency with which these plans are developed; garner support among key stakeholders critical to their success; and inspire other cities to reach for similarly aggressive goals by providing them with tested, "leading edge" know-how.

The State of Urban Deep Decarbonization Planning

A growing number of cities around the world are adopting "80x50" or carbon neutrality goals and undertaking deep decarbonization strategizing and implementation. Many have been successful in reducing carbon emissions on the way to meeting their short-term goals, and these reductions are occurring even as most of the cities' economies and populations have been growing (see table on the next page).

Deep decarbonization planning is starting to emerge as a sophisticated, data-driven, adaptive, performance management approach increasingly integrated with other city planning processes. The Framework synthesizes these approaches into an overarching "strategy architecture," and applies it to the four major urban carbon emissions systems: energy supply, building energy efficiency, transportation and solid waste.

Decarbonizing Key Urban Systems

ENERGY SUPPLY

The energy-supply profiles and situations of cities vary considerably; however despite these differences, cities

tend to share a set of general energy supply system conditions, a vision for what the redesigned system will look like, and common barriers to system change. The Framework's "Transforming Energy Supply Systems" chapter discusses the ways leading cities are working to:

- Decarbonize imported electricity;
- Increase local production of renewable power;
- Reduce demand for and consumption of electricity;
- Eliminate fossil-fuel heating sources;
- Pursue "Utility of the Future" models;
- Enable smart grids; and
- Integrate citywide energy management.

BUILDING ENERGY EFFICIENCY

Cities' building energy efficiency profiles also vary, as do their regulatory authority over building codes and standards. However, the basic methods for building-level Energy Conservation Methods (ECM) are broadly applicable to different climatic conditions, power sources, heating and cooling, windows and lighting, and the building envelope. The Framework's "Transforming Building Energy Efficiency Systems" chapter discusses the ways leading cities are working to:

- Transform existing buildings into highly efficient and renewably-powered structures;
- Incentivize and require net zero or renewable energy positive new buildings;
- Increase the availability of building energy performance information in the marketplace;
- Advance/require performance-driven management of building energy; and
- Grow the "green buildings" economic sector.

TRANSPORTATION

In most cities the dominant mode of mobility is fossil-fuel vehicles; transportation is usually one of the city's top two carbon-emitting systems. In most major cities, the streetscapes, networks of roads, and parking and fueling infrastructures—the overall urban form—have been designed to promote and respond to the needs of cars and trucks at a massive scale. Public transit can also contribute to carbon emissions, because fossil fuels are often the

Carbon Reduction Performance in Some Alliance Cities

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|------------------------|---|
| Berlin | Since 1990, GHG emissions have dropped 29%, while GDP has grown 19% and population has increased 1%. |
| Copenhagen | Since 2005, GHG emissions have decreased 31%, while population increased 15% and the local economy grew by 18%. |
| London | Since 1990, GHG emissions have decreased 11%, 14% since 2008. Population increased by 600,000 since 2008—the fastest rate in the city’s history. As a result, per-person carbon emissions reduced 30% from 1990 level and 19% since 2008. |
| Minneapolis | Between 2006-2013, GHG emissions have decreased 9.4%, while population increased 6.5% and the regional GDP increased 22%. |
| Oslo | Since 2013, GHG emissions have decreased 22%. |
| Portland | Since 1990, GHG emissions have decreased 14%, while population increased 31% and jobs increased 20%. |
| San Francisco | Since 1990, GHG emissions have decreased 23%, while population has increased 15% and there has been a 49% increase in the local economy. |
| Seattle | Since 1990, through 2012, GHG emissions have decreased 4% (after accounting for offsets), while population has grown 23% and the number of jobs increased 14%. On a per-person basis, GHG emissions have declined 22% since 1990 and 6% since 2008. |
| Stockholm | Between 2011-2013, GHG emissions have decreased by approximately 9%, while population grew by approximately 4% and the local economy grew by approximately 3%. |
| Sydney | From 2006 to 2012, GHG emissions have decreased 12%, while population increased 16% and GDP grew 23%. |
| Vancouver | From 1990, to 2014, GHG emissions have decreased 7%, while population has grown 34% and the number of jobs increased 30%. On a per-person basis, GHG emissions have declined 30% since 1990 and 13% since 2007. |
| Washington D.C. | Between 2006-2013, GHG emissions have decreased 16%, and per capita emissions 24%, while population increased 11%, employment grew 8%, and GDP grew 9%. |

energy source for buses and trains, or because electricity used to power transit systems is typically produced from fossil fuels. Finally, city government vehicle fleets and private taxi fleets licensed by cities, while just a small portion of a city's total mobility, are another important source of carbon emissions. The Framework's "Transforming Transportation Systems" chapter discusses the ways leading cities are working to:

- Shift to a radically different mode share;
- Provide an array of modern, affordable, accessible mobility choices;
- Foster "market dominance" of clean technologies and fuels;
- Move quickly toward complete, connected, regionalized mobility systems; and
- Change the way they think about and advance alternative urban forms.

SOLID WASTE

In many leading-edge cities, the approach to solid waste system transformation starts with the goal of "zero waste"—waste recovery systems that prevent waste, reduce and reuse materials, recycle and compost, recover energy in ways that don't release carbon emissions, and affect "upstream" purchasing decisions to consume less and consume smartly. The Framework's "Transforming Solid Waste Systems" chapter discusses the ways leading cities are working to:

- Get to "zero waste;"
- Promote sustainable consumption; and
- Incentivize and require producer responsibility.

Institutionalizing Deep Decarbonization Planning and Implementation

Cities face many challenges as they work to implement their strategies for decarbonizing urban systems, and often this requires rethinking institutional structures, operational plans and budgets, and the way cities work with the community and business sectors. The Framework's final chapter discusses the ways leading cities are working to:

- Organize oversight and accountability in city government;
- Build technical capacity and stimulating innovation;
- Engage stakeholders and the community;
- Influence other levels of government;
- Fund climate action plans;
- Stimulate innovation in city government; and
- Sustain long-term endeavors.

These models are crystallizing in leading-edge cities worldwide. Long-term systems transformation requires both leadership by the city's top elected and management officials, and "out of the box" thinking about the way cities provide services, invest in infrastructure, and engage with stakeholders. Cities must innovate, because few proven solutions exist and because any solution has to be adapted to the city's specific context. In the pages that follow, visionary leaders from vanguard cities share their lessons and strategies for deep carbon reductions, including new practices that cry out for standardization and replication around the world. These pioneers illuminate a future path that engages residents, reduces disparities, and protects public health while addressing the threats of climate change.

**CNCA's full Framework for Long-Term Deep
Carbon Reduction Planning is available at
www.carbonneutralcities.org**

