

Under2MoU : Appendix : City of Vancouver

Jurisdictional Profile

The City of Vancouver (herein referred to as “Vancouver” for the municipality as a whole or “the City” for the municipal government body) is located in the Province of British Columbia, Canada. Vancouver is a central component in Metro Vancouver, a regional government comprised of 21 municipalities, one treaty First Nation and one electoral area.

Vancouver has a population of approximately 605,000 within an area of 115 km². Gross Domestic Product is approximately US\$109.8bn, or US\$44,337 per capita.

Emission Reduction Targets

The City’s *Greenest City 2020 Action Plan* is its overarching sustainability strategy that specifies its emission reduction targets to 2020. The City’s goal is, by 2020, to reduce community-wide greenhouse gas emissions by 33 per cent compared with 2007. For reference, the City’s 2007 emissions were equal to those of 1990.

From a corporate perspective, the City is presently carbon neutral in its operations and has been so since 2012.

The *Renewable City Strategy*, the long-term extension of the *Greenest City 2020 Action Plan*, – was recently passed unanimously by City Council, the first of its kind for any major city in the Americas. The *Renewable City Strategy* provides a framework to ensure that all buildings, transportation and the energy supply that supports them will be obtained from non-fossil fuel sources. Through the resulting actions, Vancouver will obtain all of its energy from renewable sources by 2050, with a concurrent goal of reducing emissions 80 per cent compared with 2007.

Vancouver’s 2014 emissions are estimated at 2.6 Mt CO₂e, a 7 per cent reduction compared with 2007. Vancouver presently has some of the lowest per capita greenhouse gas emissions in the developed world, at approximately 4.2 tCO₂e/person.

Tools to Meet Emissions Reduction Targets

The City’s primary tool in reducing community emissions comes from its ability to direct land-use in ways that are less emissions-intensive. The *Renewable City Strategy* focuses on first reducing overall energy demand, then shifting remaining energy demand to renewable sources, and finally where necessary, increasing the supply of renewable energy. This is seen as the most equitable and cost effective means of meeting the City’s long-term goals.

Owing to British Columbia’s significant use of hydroelectricity that is mandated by the provincial government to be at least 93 per cent renewable, Vancouver already receives 31 per cent of its energy from renewable sources.

Vancouver is fortunate in having its own building code (the Vancouver Building Bylaw) that allows it to specify, among other things, the energy performance of new and retrofitted buildings. This has allowed for progressively more efficient buildings to be constructed within the City; and, as older buildings undergo major retrofits, to be brought up to higher levels of performance. It has also allowed the City to become the first jurisdiction in North America to require electric vehicle charging capacity in new buildings, paving the way for greater deployment of electric vehicles in Vancouver. Electrification can reduce personal vehicle emissions by up to 97%, owing to the clean power grid.

The City will also work with other levels of government to increase the supply of other renewable fuels such as sustainable biodiesel, biomethane and hydrogen for use in transportation modes that are unlikely to be electrified, such as commercial freight, rail and air travel. Vehicle and fuel standards are outside of the City’s jurisdiction and have broader geographic implications, and therefore cannot be directly mandated by the City alone.

As a city that is bounded by water on three sides and the City of Burnaby on the other, a focus on densification of neighbourhoods has allowed Vancouver’s population and economy to grow steadily. Densification has also supported transportation mode shifts from personal autos to car-sharing, public transit, cycling and walking. Through the

Renewable City Strategy, a focus on complete, compact communities will further increase this mode shift. As of March 2015, Vancouver had already achieved its 2020 goal of having over 50 per cent of trips made by walking, cycling or public transit.

High density neighbourhoods can (and in some cases, already do) benefit from access to Neighbourhood Renewable Energy Systems, also known as district energy. The City presently operates the Neighbourhood Energy Utility (“NEU”), which provides heating and cooling to the Olympic Village and several commercial and institutional properties in southeast False Creek. The NEU has reduced emissions of the buildings it serves by 60 per cent using sewage heat recovery. In 2014 the NEU connected an additional 6,500 m² of buildings to its system, to a total of more than 390,000 m² of buildings now connected.

Under its Neighbourhood Energy Strategy that was passed by city council in 2012, the City will continue to expand the southeast False Creek system, convert the downtown and hospital steam systems from natural gas to renewable sources, and develop new Neighbourhood Renewable Energy Systems in strategic parts of the city.

The City will also continue to reduce landfill gas emissions through organics diversion and waste reduction programs; and, through the beneficial use of landfill gas.

Climate Change Adaptation Strategy

The City’s Climate Change Adaption Strategy was approved by Vancouver Council in 2012 and the implementation focus since then is on nine priority actions. The process to develop the strategy involved internal and external stakeholders and walked through the following steps: identifying anticipated change, describing potential impacts, prioritizing impacts through a vulnerability and risk assessment and lastly action planning. Currently, the anticipated change in climate variables is being updated by the University of Victoria’s Pacific Climate Impact Consortium so as to respond to new GHG emissions scenarios published by the Intergovernmental Panel on Climate Change. The Strategy will be reviewed accordingly.

Current Tools for Climate Adaptation

Heavy rain events and stormwater management: The City has been building green rainwater infrastructure for years, such as parks, rain gardens, permeable surfaces and infiltration corner bulges, but is now taking a more strategic approach through our Integrated Rainwater Management Plan. Intensity-Duration-Frequency (IDF) curves used to size sewer infrastructure have traditionally been calculated based on historic data. The City has updated these curves to today’s data and projected them to the year 2100 to ensure sewer infrastructure is sized appropriately for expected rainfall throughout the design life. Lastly, staff are improving public communication about heavy rain and both proactive and reactive property-level actions to prepare.

Resilience to sea level rise: In 2014 the City completed phase 1 of our Coastal Flood Risk Assessment (CFRA) and immediately increased our Flood Construction Levels (how high habitable space must be built in flood-prone areas from 3.5m to 4.6m). Floodplains under various future scenarios were mapped and consequences assessed. In 2015, Phase 2 of the CFRA focused on potential adaptation options for each of eleven coastline areas in the City of Vancouver. Preliminary options will be reviewed with Council before starting projects to engage the community in area-specific responses. City staff continue working with other levels of government and municipal neighbours on regional flood resilience through the Lower Mainland Flood Management Strategy and many other initiatives. Sustainability Group staff also coordinated with project leads of all City of Vancouver coastline projects such as the viaducts, False Creek Flats and shoreline park planning to ensure the latest information on sea level rise is incorporated. A Greenest City Scholar from UBC researched options for public engagement on sea level rise which staff are reviewing for actionable next steps. The CFRA is supported by the Federal Gas Tax Fund and Natural Resources Canada.

Preparing for heat: On behalf of the City of Vancouver, doctoral students at Simon Fraser University mapped surface temperatures in Vancouver and heat-related health vulnerability indicators (i.e. elderly, low income and at risk communities). When overlaid with tree canopy cover mapping this information can help identify priority areas for tree planting and other heat interventions. Health Canada partnered with the City on a study of potential options for cooling

older multi-family buildings and determined the most effective responses are those accessible to the whole community as opposed to those targeting building systems such as air conditioning. In response, the City, in partnership with BC Housing, is funding a pilot project to install a 'cooling parklet'. The objective of the cooling parklet is to borrow from the successful parklet program aimed at animating streetscapes to provide a cool outdoor 'room' in areas with high urban heat island effect and vulnerable populations. The pilot project will provide learnings to shape an approach to creating cool networks of streets, parks and other spaces that provide the co-benefits of cooling, green space, permeable surfaces (see rainfall above) and a social amenity.

The Adaptation Strategy was the impetus for the Urban Forest Strategy and new canopy cover mapping and targets. Tree deficit areas are being identified for priority planting, species selection and disease management are being assessed with a climate change lens and the co-benefits of stormwater management, access to nature, biodiversity etc. are key drivers. Sustainability staff are also working with the staff leading the Healthy City Strategy implementation and staff in Emergency Management on projects with the potential to catalyze neighbourhood connections and disaster preparedness.

Since the adoption of the Adaptation Strategy, the adaptive capacity of staff within the organization and within partner organizations such as BC Housing and Port Metro Vancouver, has increased exponentially. Adaptation is mainstream across the City and departments are independently taking initiative to ensure their projects consider the latest climate change projections.

Capacity

Financial

British Columbia has a revenue neutral carbon tax, priced at \$30/t CO₂e on all fossil fuel combustion in the province. It has supported emission reductions throughout the province, and has supported Vancouver as becoming a technology innovation hub. Vancouver's brand is heavily reliant on its reputation for sustainability, and the success of the *Greenest City 2020 Action Plan*, in concert with the carbon tax and legally mandated low-carbon electricity, have allowed Vancouver's economy to grow while emissions have declined.

In partnership with the Vancouver Economic Commission, the City launched its Green and Digital Demonstration Program to accelerate the pace of innovation, commercialization and job growth in Vancouver's clean technology and digital sector. Through the GDDP, participants are granted temporary access to City-owned assets—like buildings, streets, or vehicles—for demonstrations and proof-of-concept trials of their technology.

The False Creek Flats area is home to more than 500 businesses and is transitioning from a traditional industrial zone into an area that showcases green innovation, features green buildings and smart infrastructure, supports sustainability-related industries, and attracts new impact investment. In 2014 and early 2015, approximately 120 businesses participated in VEC led workshops in and around the False Creek Flats, looking at ways to enable smart logistics, reduce barriers to innovative green business, and promote a shift to a circular economy where more materials and products are reused, repaired and recycled.

The City will continue to work with other levels of government to generate funding for key infrastructure, such as a Broadway corridor subway line; and, to advance market mechanisms such as mobility pricing in the region.

Partnerships

The City has partnered with a number of other municipalities in the region on an individual basis and through regional groups such as the Regional Engineers Advisory Committee Climate Protection Subcommittee through Metro Vancouver. Other community organizations such as Renewable Cities, the BC Sustainable Energy Association, the Community Energy Association and the Vancouver Electric Vehicle Association.

The City also works with a number of international organizations such as C40, the Urban Sustainability Directors Network, the Carbon Neutral Cities Alliance, and ICLEI.