



## Guide 8

Transitioning to 100%  
renewable energy

Blue Dot

**Municipal Toolkit**  
Building a Low-Carbon Future



# Blue Dot Municipal Toolkit

People in Canada take pride in this country's natural landscapes, rich ecosystems and wildlife. But Canada's Constitution doesn't mention environmental rights and responsibilities. Municipalities across the country are recognizing and supporting their residents' right to a healthy environment. By adopting the Blue Dot declaration, more than 150 municipal governments now support the right to clean air and water, safe food, a stable climate and a say in decisions that affect our health and well-being.

For some municipalities, adopting the Blue Dot declaration is a clear statement about environmental initiatives already underway. For others, it's a significant first step. Either way, after passing a declaration, many ask "What happens next?"

This toolkit provides practical ideas for next steps. Its introduction and 13 downloadable guides cover topics related to human health, green communities and a low-carbon future. Written for policy-makers, each guide shares examples of policies and projects undertaken in communities in Canada and around the world. The goal is to inform, inspire and share good ideas and great practices that will lead to healthier, more sustainable communities now and in the future.

The following guides are available:

## **Introduction to the Blue Dot Municipal Toolkit**

### **Protecting Human Health**

- Guide 1: Air quality
- Guide 2: Clean water
- Guide 3: Non-toxic environment
- Guide 4: Healthy food

### **Creating Green Communities**

- Guide 5: Access to green space
- Guide 6: Protecting and restoring biodiversity
- Guide 7: Waste

### **Building a Low Carbon-Future**

- Guide 8: Transitioning to 100% renewable energy
- Guide 9: Green buildings
- Guide 10: Sustainable transportation
- Guide 11: Green economy
- Guide 12: Climate change adaptation
- Guide 13: Ecological footprint and land-use planning

To read more about municipal actions for environmental rights, and to access all the Blue Dot toolkit guides, visit <http://bluedot.ca/municipal-toolkits/>. To read more about the Blue Dot movement and work at the local, provincial and federal levels, visit [www.bluedot.ca](http://www.bluedot.ca).

Ensuring a healthy environment requires action in communities of all sizes and at all levels of government. This toolkit helps municipalities continue to take the lead.

## Acknowledgments

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# Building a Low-Carbon Future

## Guide 8: Transitioning to 100% renewable energy

Municipalities have direct or indirect control over approximately 44 per cent of Canada's greenhouse gas emissions.<sup>1</sup> Municipalities have direct control over emissions from municipal operations, landfill gas and residential waste management, and indirect control over commercial/industrial waste, buildings, energy use, industry and transportation. Some municipalities own energy utilities, giving them further autonomy in transitioning to 100 per cent renewable energy.<sup>2</sup> The Blue Dot toolkit includes other guides focused on sustainable transportation, waste management and buildings; this one focuses on best practices for emission reduction plans and the transition to renewable energy.

### Canadian examples of good practices

#### a. Vancouver renewable energy commitment

- i. **Background:** In 2015, Vancouver became the first Canadian city to commit to fully transition to 100 per cent renewable energy by 2050.<sup>3</sup> It aims to reduce community-based greenhouse gas emissions by 33 per cent from 2007 levels by 2020.
- ii. **Initiative:** Initiatives include the internationally recognized Southeast False Creek Neighbourhood Energy Utility district energy expansion, landfill gas capture and an intervention opposing the proposed Trans Mountain pipeline project. The utility began operating in 2010 and has since expanded to serve 395,000 square metres of residential, commercial and institutional space. The recycled energy eliminates more than 60 per cent of the greenhouse gas pollution associated with heating buildings.<sup>4</sup>
- iii. **Results:** As of 2014, GHG emissions had been reduced by 7 per cent from 2007 levels.<sup>5</sup>

#### b. Guelph Community Energy Initiative

- i. **Background:** Guelph's 2007 Community Energy Initiative aimed to reduce energy consumption and emissions by 50 per cent by 2031 from 2005 levels. Its District Energy Strategic Plan is the first long-term thermal energy network plan in North America.
- ii. **Initiative:** The city's goal is to supply 25 per cent of energy requirements with locally created renewable sources. In addition to 20 provincial feed-in tariff projects, in 2012 Guelph Hydro recorded 170 locally developed microFIT projects. The city needs to increase its solar capacity by 42 times to meet its goal of meeting 20 per cent of electricity requirements using solar power.<sup>6</sup> It's financing district energy projects by investing

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1 Federation of Canadian Municipalities, Act Locally: The Municipal Role in Fighting Climate Change, 2009, [https://www.fcm.ca/Documents/reports/Act\\_Locally\\_The\\_Municipal\\_Role\\_in\\_Fighting\\_Climate\\_Change\\_EN.pdf](https://www.fcm.ca/Documents/reports/Act_Locally_The_Municipal_Role_in_Fighting_Climate_Change_EN.pdf)

2 Federation of Canadian Municipalities, Research Report-Energy Sector, 2009, [http://www.fcm.ca/Documents/reports/GMF/2009/Research\\_Report\\_Energy\\_Sector\\_EN.pdf](http://www.fcm.ca/Documents/reports/GMF/2009/Research_Report_Energy_Sector_EN.pdf)

3 City of Vancouver, "Renewable City: Our Future to 2050."

4 City of Vancouver, "Southeast False Creek Neighbourhood Energy Utility", 2017, <http://vancouver.ca/home-property-development/southeast-false-creek-neighbourhood-energy-utility.aspx>

5 City of Vancouver, "Climate and Renewables," Greenest City Action Plan, 2015, <http://vancouver.ca/green-vancouver/climate-and-renewables.aspx>

6 Guelph Hydro, Energy Usage and Greenhouse Gas Emissions: Summary Report 2012.



some city-owned utility revenue into the district energy project and by negotiating with commercial investors.<sup>7</sup>

- iii. **Results:** By 2012, per capita energy use declined by 17.6 per cent from 2006 levels and per capita greenhouse gas emissions declined by 26.3 per cent. Use of natural gas, diesel and gasoline all decreased between 2011 and 2012. This initiative was awarded the Federation of Canadian Municipalities' 2014 Sustainable Communities Award for Energy.

#### c. Kimberley, B.C. SunMine

- i. **Initiative:** The City of Kimberley collaborated with Teck Resources Ltd. and the EcoSmart Foundation to develop a one-megawatt solar power plant on the former industrial lands of Sullivan Mine. It's the first major on-grid solar plant in B.C. and the largest in Western Canada. The City of Kimberley invested \$2 million into the \$5.3 million project. The referendum to take out a \$2 million loan in support of this project passed in November 2011.<sup>8</sup>
- ii. **Results:** The plant started generating electricity on June 25, 2015. The development aligns with the city's Imagine Kimberley Integrated Community Sustainability Plan.<sup>9</sup>

#### d. Nelson, B.C. community solar garden

- i. **Background:** Nelson Hydro, a city owned and operated utility, supports the solar garden project.
- ii. **Initiative:** Nelson plans to allow community members to purchase a portion of a solar array. Electricity generated would be credited to their Nelson Hydro bill. A solar garden is a cheaper, easier option for most homeowners than installing solar panels. The project has a proposed location and is waiting for approved bylaw amendments before presale to Nelson Hydro members; 250 people have expressed interest in participating.<sup>10</sup>

#### e. Halifax Solar City program

- i. **Initiative:** Solar City provides homeowners with municipal financing for installing solar-powered water heaters. The city used light detection and ranging to create a city-scale solar energy potential map. Homeowners can get Property Assessed Clean Energy loans for equipment and installation that are tied to the property and paid back over time.

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7 City of Guelph, "District Energy, Energy Prices, and Property Taxes," 2014, <http://guelph.ca/2014/04/district-energy-energy-prices-property-taxes/>

8 City of Kimberley, SunMine Solar Project Referendum, 2011, [http://www.kimberley.ca/sites/default/files/%7BD60DE1E1-9FA2-423F-B11E-76952F4E86AE%7DSunMine Project Referendum FAQ FINAL.pdf](http://www.kimberley.ca/sites/default/files/%7BD60DE1E1-9FA2-423F-B11E-76952F4E86AE%7DSunMine%20Project%20Referendum%20FINAL.pdf)

9 City of Kimberley, "Sun Mine," Planning and Development, 2015, <http://www.kimberley.ca/services/planning-development/sun-mine>

10 City of Nelson, "Community Solar Garden," 2015, <http://www.nelson.ca/EN/main/services/electrical-services/energy-grants/solar-garden.html>





## International examples of good practices

### i. Copenhagen 2025 climate plan

- i. **Background:** Copenhagen aims to become the first carbon neutral metropolis by 2025. The plan is supported by Denmark's legally binding commitment to reach 100 per cent renewable power and heat by 2030 and overall renewable energy by 2050.
- ii. **Initiative:** The plan has four pillars: energy consumption, energy production, green mobility and city administration. The city set specific reduction targets for energy consumption (residential and commercial) and heat consumption. Goals of the plan include: carbon neutral district energy, biogasification of organic waste, power generation exceeding city requirements through biogas and wind, separation of plastics, and 75 per cent of journeys in the city by transit, bike or walking. The city is expanding wind farms and biomass plants and implementing efficiency measures. Shares of its wind turbine collectives are owned by community members. It curbed residents' objections through public awareness campaigns and tours of wind turbines to address noise concerns.<sup>16</sup>
- iii. **Results:** The city has profited from the sale of a wind farm and opened its first of seven district cooling plants. It has already achieved a 40 per cent reduction in carbon dioxide emissions since 1990 while continuing to grow its economy. Emissions reductions were mainly a result of a district heating grid, which now provides 98 per cent of demand.<sup>17</sup>

### j. Stockholm, fossil free goal

- i. **Background:** The city committed to be fossil fuel free by 2050. Its short-term goal is to reduce per capita GHG emissions from 3.5 tonnes in 2007 to 3.0 tonnes in 2015.<sup>18</sup>
- ii. **Initiative:** In 2014, the city finished a roadmap outlining how it will become fossil fuel free by 2050. From 1990 to 2010, it converted oil heating to district heating and heat pumps and switched to biofuels in district heating. Energy utility Fortum Värme joined the city board, allowing the city to push for converting energy production systems to biofuels. It also replaced diesel buses with renewable-powered vehicles; 75 per cent of energy for public transport now comes from renewables. Electricity use must meet Swedish Environmental Management Council eco-labelling requirements.
- iii. **Results:** In 2009, the city had reduced its emissions by 23 per cent from 1990 levels.<sup>19</sup>

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16 C40 Cities and Siemens, "Copenhagen Climate Close-Up," City Climate Leadership Awards, 2013, <http://www.c40.org/2013-close-up/copenhagen-closeup.pdf>

17 City of Copenhagen, CPH 2025 Climate Plan.

18 Stockholms stad, Roadmap for a Fossil Fuel-Free Stockholm 2050, 2014, [http://www.stockholm.se/PageFiles/463655/Roadmap for a fossil fuel-free Stockholm 2050.pdf](http://www.stockholm.se/PageFiles/463655/Roadmap%20for%20a%20fossil%20fuel-free%20Stockholm%202050.pdf)

19 Stockholms stad, Stockholm Action Plan for Climate and Energy 2012-2015, 2011, [http://www.stockholm.se/PageFiles/463655/Roadmap for a fossil fuel-free Stockholm 2050.pdf](http://www.stockholm.se/PageFiles/463655/Roadmap%20for%20a%20fossil%20fuel-free%20Stockholm%202050.pdf)



- k. **Hannover master plan of the city and region for 100 per cent climate protection**
- i. **Background:** The city and region of Hannover committed to be climate neutral by 2050, building on a goal to reduce CO<sub>2</sub> emissions by 40 per cent by 2020.<sup>20</sup>
  - ii. **Initiative:** The master plan builds on an energy action plan which used climate action instruments, including a holding in the city energy utility, a \$7.5 million (€5 million) climate protection fund, a regional climate protection agency, a city climate protection unit and 160 private Ecoprofit enterprises. The energy action plan requires all municipal buildings to be retrofitted for energy efficiency by 2020 (as of 2013, 52 buildings and three schools has been retrofitted); all new buildings to be built to the international passive house standard; conversion to district heating; decentralized cogeneration and renewable energy; and other educational and procurement actions. In 2010, the Zero:e Park development began constructing 320 passive houses and created a solar energy atlas and incentives for homeowners.
  - iii. **Results:** The master plan, which also commits to reducing GHG emissions by 95 per cent and energy consumption by 50 per cent, was developed by 240 industry, science, non-profit and administration experts. They developed a vision and measures for seven strategies. For example, the energy supply group's vision includes energy goals for wind farm expansion, photovoltaic and solar thermal energy expansion, and shallow geothermal energy development.<sup>21</sup>
- l. **Other interesting ideas**
- i. Munich has committed to achieving 100 per cent renewable electricity by 2025. The city-owned utility acquired five wind parks as part of its \$1.3 billion (€9 billion) renewable energies expansion campaign, which meet energy requirements for 40,000 households and prevents 90,000 tonnes of CO<sub>2</sub> emissions per year. The energy utility is also developing a network of small-scale power plants that operate as a single system of more than 50 megawatts.<sup>22</sup> Munich won the 2013 C40 City Climate Leadership green energy award.
  - ii. London developed a more accurate method of quantifying and reporting GHG emissions using a wider range of indirect emissions such as food, aviation and other goods and services. This data is reported publicly online.<sup>23</sup>
  - iii. To encourage private companies to invest in photovoltaic power generation, Seoul's solar initiative provides unused public facilities for rent; rental costs are based on power generation. In 2013, it developed a solar map and gave out 160 permits for PV systems.

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20 City of Hannover, "Master Plan of the City and Region of Hannover 100% for Climate Protection," in Nationale Klimaschutz Initiative, 2014, [http://passregos.passiv.de/images/1/13/2014-04-10\\_MP\\_Vortrag\\_TD\\_en.pdf](http://passregos.passiv.de/images/1/13/2014-04-10_MP_Vortrag_TD_en.pdf)

21 City of Hannover, "Master Plan 100% for Climate Protection" [http://www.hannover.de/content/download/575256/13169018/file/23352\\_B\\_100+Prozent+Klimaschutz-engl-WEB.pdf](http://www.hannover.de/content/download/575256/13169018/file/23352_B_100+Prozent+Klimaschutz-engl-WEB.pdf)

22 C40 Cities, "Munich: 100% Green Power," 2013 Winners, 2014, <http://www.c40.org/profiles/2013-munich>

23 C40 Cities, "London: Assessment of City-Wide Greenhouse Gas Emissions," 2014 Winners, 2015, <http://www.c40.org/profiles/2014-london-carbon>



## Good practices documents and links

- o [Five-Milestone Framework for Reducing Greenhouse Gas Emissions](#) — from FCM Partners for Climate Protection
- o [Greenhouse gas emission assessment guidebook](#) — Province of British Columbia
- o [Community Energy Planning Best Practices](#)
- o [FCM Research Report: Energy](#)



## Advisory services

The **Natural Step Canada (TNSC)** is a national charity whose mission is to tackle climate change and accelerate the transition to a truly sustainable society that thrives within nature's limits. Its academy, advisory services and Sustainability Transition Labs use best-in-class science, systems thinking and facilitation to help individuals and organizations collaborate, solve complex problems, foster innovation, optimize performance and drive systems change.

TNS Canada offers a **Service Cycle for Sustainable Communities** to help municipal governments plan for long-term sustainability and resiliency, embed sustainability into their culture and operations, and engage community stakeholders in their sustainability plans.

To learn more go to: <http://naturalstep.ca/>

The **Whistler Centre for Sustainability (WCS)** is a non-profit organization with the mission to "inspire and facilitate effective planning and meaningful conversations for a better world." WCS provides innovative community engagement, planning and implementation services to local governments across Canada, drawing on its expertise and experience in more than 40 communities. The Centre's work is rooted in future-focused social, environmental and economic values, so that final deliverables embed sustainability throughout.

To learn more go to: <http://whistlercentre.ca>