



Guide 1 Air quality



Blue Dot

Municipal Toolkit
Protecting Human Health

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.

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.

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Protecting Human Health

Guide 1: Air quality

Air pollution affects the health, quality of life and economy of every Canadian municipality to varying degrees. The right to clean air is an essential component of the right to a healthy environment. Federal and provincial governments manage air pollution by setting standards and controlling permits to polluting industries. Municipalities can further protect residents' right to clean air by addressing local concerns not adequately covered by federal and provincial regulations, including cumulative effects of low-impact industries and non-point sources of air pollution such as vehicles and residential burning. Municipalities can also protect more sensitive populations and ecosystems by determining where polluting facilities can locate through zoning or land-use policies.¹

Air quality can be measured when standards for criteria air contaminants (particulate matter, sulphur dioxide, nitrous oxides, ammonia, carbon monoxide and volatile organic compounds) are exceeded. Many municipalities focus policies on reducing criteria air contaminants and secondary pollutants produced by reactions between them, such as ground-level ozone. As exposure to even small amounts of particulate matter and ground-level ozone can have adverse health effects, municipalities may want to adopt stricter standards than current provincial and federal measures.

Canadian examples of good practices

a. Oakville, Ontario: Health Protection Air Quality Bylaw

- i. **Background:** Under its Municipal Act, Oakville can pass bylaws protecting the health, safety and well-being of persons. This allowed it to respond to the lack of provincial and federal action to limit cumulative fine particulate matter by creating a bylaw to protect residents' health.²
- ii. **Initiative:** The bylaw requires a municipal permit for all industrial polluters exceeding 300 kilograms of fine particulate matter, 10,000 kilograms of VOCs, 20,000 kilograms of NO_x, 20,000 kilograms of SO₂ or 10,000 kilograms of NH₃ a year.³ It encourages consultation with Oakville about emissions, and requires evaluation using a dispersion model and a public health assessment. An independent peer reviews each application and produces a report within a time limit. The town must consult with residents and the Halton Region Health Department by announcing a council meeting and listening to all delegations. Council can require existing facilities to reduce air pollutants deemed to have a significant public health effect by 25 per cent over five years. There is an application fee of \$25,000 and first-time offender fines of \$100,000 for failure to comply with the bylaw. The bylaw was amended in 2012 to allow existing facilities to choose between getting town approval or submitting a strategy demonstrating how major emissions would get below thresholds by 2014. With bylaw approval, all facilities are required to report emissions annually for the first three years.

1 Andrew Gage and Sagarika Saha, *The Clean Air Bylaw Guide* (Vancouver, 2006), [http://www.wcel.org/sites/default/files/publications/The Clean Air Bylaws Guide.pdf](http://www.wcel.org/sites/default/files/publications/The%20Clean%20Air%20Bylaws%20Guide.pdf)

2 Municipal Act, 2001, S.O. 2001, C. 25, s.10. <http://www.ontario.ca/laws/statute/01m25>

3 Town of Oakville, *A by-law to Assess and Control the Health Effects of Major Emissions of Fine Particulate Matter in the Town of Oakville*.

iii. Results: The 2014 state of the environment report indicates that although ground-level ozone has remained steady, particulate matter exceedances have declined since the bylaw was implemented.⁴ By 2012, three facilities had reduced emissions to comply with the bylaw. Adoption of this bylaw coincided with the town advocating for increased regulation of fine particulate matter under the Ontario Environmental Bill of Rights.

b. Metro Vancouver airshed management

i. Background: The province of British Columbia delegated air quality management to the Greater Vancouver Regional District (Metro Vancouver). The rest of British Columbia's airsheds are primarily managed provincially.

ii. Initiative: Non-Road Diesel Engine Emission Regulation Bylaw⁵

1. Details: Owners and operators of older non-road diesel engines must register, label and pay fees to operate in Metro Vancouver. The fees are held in reserve. The last three years of fees can be refunded if an engine is upgraded or replaced. In 2015, all older non-road diesel engines without authorization were banned.

2. Results: The target was to reduce diesel particulates from vehicles, equipment and rail by 50 per cent from 2005 levels by 2015. Emissions for 2015 are expected to be completed in 2017.

iii. Initiative: The Wood Stove Exchange Program resulted in 325 stoves returned in exchange for a \$250 rebate towards a low-emission unit. Metro Vancouver estimates a reduction in PM2.5 of 5,800 kilograms per year⁶.

iv. Initiative: Metro Vancouver uses a permitting system with fees based on each air pollutant's per tonne emission that are higher than the provincial permitting system.⁷ Metro Vancouver's guidelines for land use and development reduced exposure of sensitive land uses to air pollution by 2015.⁸ The City of Vancouver has committed to use the most stringent air quality objectives with a goal to not have any exceedances.

v. Results: Vancouver ranked first for air quality in the U.S. and Canada Green City Index.⁹

4 Town of Oakville, State of the Environment Report, 2014, <http://www.oakville.ca/environment/state-of-oakville-environment-report.html>

5 Greater Vancouver Regional District, Non-Road Diesel Engine Emission Regulation Bylaw No. 1161, 2012, http://www.metrovancouver.org/boards/Bylaws1/GVRD_Bylaw_1161.pdf

6 Metro Vancouver, Caring for the Air, 2015, http://www.metrovancouver.org/services/air-quality/AirQualityPublications/Caring_for_the_Air-MV2015.pdf

7 Metro Vancouver, Air Quality Management Fees Regulation, Bylaw No. 1083, 2008, 2011, http://www.metrovancouver.org/boards/Bylaws1/GVRD_Bylaw_1083-Unofficial_Consolidation.pdf - Unofficial Consolidation.pdf.; Permit Fees Regulation, BC Reg 299/92, <http://canlii.ca/t/51ws4> retrieved on 2015-10-09

8 Metro Vancouver, Health impact assessment of transportation and land use planning activities guidebook, 2017, <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/HIA-Guidebook.pdf>

9 Economist Intelligence Unit, US and Canada Green City Index (Munich, 2011), <http://www.siemens.com/press/pool/de/events/2011/corporate/2011-06-northamerican/northamerican-gci-report-e.pdf>

c. Montreal air quality bylaws

- i. **Background:** Although Montreal experiences more air pollution than Metro Vancouver, it has stricter air standards than the province of Quebec.¹⁰ The province has delegated Montreal to manage its own air quality.
- ii. **Initiative:** As residential burning is the top emitter of fine particulates in the city, in 2013 Montreal banned the use and installation of wood fireplaces and stoves that emit more than 1.3 grams per hour by 2020.¹¹ It also banned use of solid fuel burning appliances during a smog warning by 2015. This bylaw is expected to reduce fine particulate matter in Montreal by a factor of 10.¹² Montreal has set air quality standards for other air contaminants, including formaldehyde.
- iii. **Results:** Since 1997, bylaws requiring detection and repair of fugitive emissions from refineries, petrochemical and chemical industries helped Montreal reduce benzene levels by 75 per cent.¹³ In the last five years, fine particulate matter and ground-level ozone have been declining in the airshed. It is expected that a transportation plan and wood burning bylaws will bring the city closer to meeting stricter federal standards by 2020.

International examples of good practices

d. South Coast Air Quality Management District, California

- i. **Background:** SCAQMD was created to comply with U.S. and California air quality standards. It has control over stationary pollutant sources in the one of the smoggiest areas in California. Although the airshed does not always meet the national and California standards, it is a leader in establishing strict emission standards for stationary emitters.
- ii. **Initiative:** Emission reductions are achieved through emission rules on industrial processes, equipment, paints and solvents, and consumer products. The district has a program called RECLAIM, a regional cap-and-trade program for NO_x and SO_x with decreasing emission limits, and charges high fees on emissions of air pollutants and use of certain equipment and processes.¹⁴
- iii. **Results:** The RECLAIM program achieved its emission reductions for 2013.¹⁵ Air quality has been steadily improving in the region, although federal ozone standards were still exceeded

10 Norm Zirnhelt et al., "Airshed Management," in *Air Quality Management: Canadian Perspectives on a Global Issue*, ed. Eric Taylor and Ann McMillan, 1st ed. (New York: Springer Science and Business Media, 2014), doi:10.1007/978-94-007-7557-2

11 Ville de Montreal, 2014 Environmental Assessment Report: Air Quality in Montreal, 2014, http://ville.montreal.qc.ca/pls/portal/docs/PAGE/ENVIRO_FR/MEDIA/DOCUMENTS/RSQA_BILAN2014_EN.PDF

12 Ville de Montreal, "By-Law Concerning Solid-Fuel-Burning Devices and Fireplaces," 2015, http://ville.montreal.qc.ca/portal/page?_pageid=7418,76005736&_dad=portal&_schema=PORTAL&t=1

13 Zirnhelt et al., "Airshed Management."

14 South Coast Air Quality Management District, Rule 301. Permitting and Associated Fees, 2015, <http://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-301.pdf?sfvrsn=14>

15 South Coast Air Quality Management District, Annual RECLAIM Audit Report for 2013 Compliance Year, 2015, <http://www.aqmd.gov/docs/default-source/reclaim/reclaim-annual-report/2013-reclaim-report.pdf?sfvrsn=8>

on 94 days in 2014. Children's lung growth has been observed to be improving as air pollution has declined.¹⁶

e. State of California: School siting legislation

- i. **Background:** California regulates mobile emission sources and has led states in adopting legislation creating setbacks between schools and roads.
- ii. **Initiative:** The California Education Code prohibits the development of a school within 400 metres (one-quarter mile) of freeways, busy traffic corridors, railyards, large agricultural operations and any other facilities anticipated to create hazardous air emissions or handle acutely hazardous materials. Schools may only be sited within 400 metres of these sites if an environmental impact assessment concludes that emissions cannot and will not have short-term or long-term impacts on student health. Schools sited within 150 metres (500 feet) of a freeway or busy traffic corridor must use air dispersion modelling and mitigation measures to ensure that air quality does not affect student health in the short- or long-term. A caveat in the bill allows school siting near polluting facilities if all other options have been exhausted.¹⁷

f. Berlin, Stockholm and London low-emission zones and congestion charges

- i. **Initiative:** In 2008, Berlin banned all diesel and gas vehicles without closed loop catalytic converters from its environmental zone. All vehicles are identified by coloured stickers; only those with green stickers are allowed in the environmental zone.¹⁸ Stockholm has had a low-emission zone since 1996, and is continually tightening regulations on the types of diesel trucks and buses permitted. This only addresses part of the vehicle fleet, but a fossil fuel ban within the low-emission zone by 2025-35 has been proposed. To bid on projects, contractors must meet environmental requirements for off-road engines. The port also has differentiated port fees and a zero per cent CO₂ goal for 2025. There has been a congestion charging zone in place since 2007.¹⁹

In London, vehicles entering the congestion zone are charged a flat rate of \$20.40 (£11.50) from 7 a.m. to 6 p.m. An ultra-low emission zone is currently being developed, requiring vehicles in the congestion charge zone to meet emission standards or pay a fee. London is currently consulting on incentives to decommission older taxis and requirements for taxi emission licensing.²⁰

16 California Air Pollution Control Officers' Association, California's Progress Towards Clean Air, 2015, http://www.capcoa.org/wp-content/uploads/2015/04/2015_PTCA_CAPCOA_Report_-_FINAL.pdf

17 State of California, SB-352 Schoolsites: Sources of Pollution, 2003, http://leginfo.ca.gov/faces/billCompareClient.xhtml?bill_id=200320040SB352

18 Berlin State Department for Urban Development and the Environment, "The Environmental Zone-What Is It?," accessed August 1, 2015, <http://www.stadtentwicklung.berlin.de/umwelt/luftqualitaet/umweltzone/en/allgemeines.shtml>

19 SootFree for the Climate, "Stockholm," 2011, <http://sootfreecities.eu/city/stockholm>

20 Mayor of London, "Congestion Charge," Transport for London, accessed August 1, 2015, <https://tfl.gov.uk/modes/driving/congestion-charge>



ii. **Results:** In Berlin, more than 60,000 diesel vehicles were retrofitted with particle filters. Diesel particulate emissions were reduced by almost half and nitrogen oxide emissions were reduced by about 20 per cent.²¹ In Stockholm, average inhalable particulate matter decreased by 30 per cent and nitrogen dioxide decreased by 7.5 per cent between 2008 and 2012.²² In London, levels of nitrogen oxide and particulate matter decreased between 2008 and 2013. From 2008-15, the estimated number of Londoners living in areas exceeding the annual EU limit of nitrogen dioxide exposure dropped from 3.6 million to one million. This decrease is partially attributed to the low-emission zone.²³

21 Berlin State Department for Urban Development and the Environment, "The Environmental Zone-What Is It?"

22 SootFree for the Climate, "Stockholm."

23 Mayor of London, Cleaning up London's Air, https://www.london.gov.uk/sites/default/files/analysing_air_pollution_exposure_in_london_-_technical_report_-_2013.pdf



Good Practices Documents and Links

- o [The Clean Air Bylaws Guide](#) — Westcoast Environmental Law.
- o [Soot-Free Cities](#) — provides an annual ranking and review of European cities efforts to reduce soot in cities.
- o [Develop with Care 2012 Supporting Information](#) — Air Quality 2012 — environmental guidelines for urban and rural land development in British Columbia

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>