WHAT’S INSIDE?

Information on what’s being done about our most pressing air quality and climate change issues including:

- Trends in air quality
- The ‘state of the air’ in 2014
- Neighbourhood air quality
- Agricultural emissions
- Addressing ground-level ozone
- Toxic air pollutants in the region
- Assessing impacts on air quality
- Climate protection
THE LOWER FRASER VALLEY AIRSHED

Metro Vancouver is situated within the Lower Fraser Valley. Air pollution can freely cross our borders both from and into the surrounding areas. These include the Fraser Valley Regional District to the east, Whatcom County in the State of Washington to the south, Vancouver Island to the west and Howe Sound and the Sunshine Coast to the north.

Managing air quality requires successful collaboration with our neighbours and other levels of government, and participation from businesses, public institutions, non-government organizations, and residents. Many of the articles in this publication reflect these partnerships.

WE WOULD LIKE TO ACKNOWLEDGE THE CONTRIBUTIONS MADE TO THIS PUBLICATION BY:

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Logs (page 5): Prince George Air Improvement Roundtable
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Air Quality monitoring news (page 10): Ken Reid
Focus on VOC (page 13): Annika Langeloo
Protecting our climate (page 20): Markus Merkens
AIR POLLUTION

The Global Picture

When pollutants are carried away in the breeze it’s easy to think that the problem has gone away. But scientists measuring air pollutant levels around the world have shown that air pollution does not just disappear. From hemispheric ozone increases; to industrial activity; to smoke from fires occurring on distant shores, our air quality can be influenced by air pollutants emitted elsewhere as a result of natural events and human activity.

We have seen increases in “background” concentrations around the globe of greenhouse gases, that are negatively affecting our climate, and air pollutants, that are known to have direct impacts on our health (e.g. ground-level ozone and organic pollutants that persist in the environment). At times, pollutants coming across the ocean from other continents as well as from elsewhere on our own continent affect our ability to stay within regional air quality objectives (p. 7) and protect human health and our environment.

We can’t directly change pollutants coming from other parts of the world, but do take responsibility for the things we can change. The Lower Fraser Valley Emissions Inventory shows that, with the exception of greenhouse gases, air emissions in the region are generally lower today than they were 20 years ago. Overall, air quality monitoring data show that air quality has generally improved. Metro Vancouver and partners continue to work on improving our air quality and protecting our climate, to benefit residents and visitors here as well as in other parts of the world.

The articles in this edition of Caring for the Air describe the projects underway to improve neighbourhood air quality, understand our own air pollutant emissions, and to reduce our impact on climate change now and in the future. You’ll also find information about managing air quality by updating air quality standards, industrial emission controls and air pollutant measurements in the airshed.
Metro Vancouver's air quality and climate change programs have aimed to make a difference in our lives.

**NEIGHBOURHOODS**

- **#1 SOURCE OF PM$_{2.5}$**
  - Dirty Woodstoves or Fireplaces
  - Since 2009 over 325 Woodstove Exchange Program
  - PM$_{2.5}$ Emissions by 5,800 kg each year

**REGION'S GREENHOUSE GASES**

1/3

- **1/3**
  - Between 2007 and 2015, these emissions
  - Over 235 electric vehicle charging stations have been installed in the region
  - Over the past 10 years, emissions of diesel particulate matter
    - 60%
    - Cleaner marine diesel fuel
    - More stringent diesel vehicle emission standards
    - Non-road diesel engine bylaw

**ECONOMY**

- **1/3**
  - Since 2005, sulphur dioxide emissions
    - 79%
    - Ships and vehicles are now burning cleaner fuel
  - 600 small businesses engaged in reducing their greenhouse gas emissions
    - Find out more about our small and medium business program at metrovanouver.org

**TRANSPORTATION**

- **14%**
  - Between 2007 and 2015, these emissions
  - Over 235 electric vehicle charging stations have been installed in the region
  - Over the past 10 years, emissions of diesel particulate matter
    - 60%
    - Cleaner marine diesel fuel
    - More stringent diesel vehicle emission standards
    - Non-road diesel engine bylaw

**FOOD AND WASTE**

- **#1 SOURCE OF AMMONIA EMISSIONS IN OUR REGION**
  - Learn more on page 11

**HEALTH**

- Over the past few years, the health risk from air quality was
  - Low more than 99% of the time

**NATURE & RECREATION**

- Healthy bogs can help reduce our impact on the climate
  - Read how restoration and conservation of Burns Bog and other parkland is helping on page 20.

**Visual air quality is important for the region’s recreation and tourism economy**
  - Check how clear the air is at clearairbc.ca.

**SMALL BUSINESSES ENGAGED IN REDUCING THEIR GREENHOUSE GAS EMISSIONS**

- Since 2005, sulphur dioxide emissions
  - 79%
  - Ships and vehicles are now burning cleaner fuel
  - 600 small businesses engaged in reducing their greenhouse gas emissions
    - Find out more about our small and medium business program at metrovanouver.org

**SOME OF THE 20,000 TONNES OF METHANE BEING CAPTURED FROM LANDFILLS IN OUR REGION IS BEING SUPPLIED TO GREENHOUSES.**

**GO TO PLUGSHARE.COM TO SEE WHERE THEY ARE**

**VISUAL AIR QUALITY IS IMPORTANT FOR THE REGION’S RECREATION AND TOURISM ECONOMY**

**CHECK HOW CLEAR THE AIR IS AT CLEARAIRBC.CA.**

**METRO VANCOUVER 2015**

**Caring for the Air Metro Vancouver 2015**
Pockets of degraded air quality can occur in neighbourhoods even when overall regional air quality is acceptable. Here are four reasons why levels of air pollutants can be higher in some neighbourhoods.

**IS IT A BEAUTIFUL DAY IN YOUR NEIGHBOURHOOD?**

According to local health researchers, people who live close to major roadways and truck routes are more likely to be exposed to harmful traffic-related air pollutants and experience negative health effects. Children, pregnant women, seniors and people with lung and heart conditions are the most vulnerable.

The smoke released when wood is burned contains a mixture of potentially harmful gases and particles. The smallest particles (PM<2.5) found in wood smoke can worsen health problems such as asthma, bronchitis and heart and lung diseases.

Diesel particulate matter is emitted from diesel-powered construction equipment. This air pollutant is responsible for 67% of the lifetime cancer risk from air pollution in Metro Vancouver.

The nature of emissions from industrial facilities depends on each facility’s process. Some emit harmless puffs of steam, while other processes may release harmful air pollutants.

Metro Vancouver has been looking at options to deal with emissions from heavy duty diesel vehicles. Metro Vancouver is also working with municipalities, health authorities and other partners to develop guidance about how to consider a community’s holistic health needs when expanding the road network or developing along busy roads.

Action is underway to reduce the impact of wood smoke in our neighbourhoods. Metro Vancouver’s wood stove exchange program (p. 5) and education and outreach initiatives have helped reduce harmful emissions. Metro Vancouver is also exploring other ways to reduce emissions from residential wood burning with partners from health and other agencies.

Since the beginning of 2012 the dirtiest non-road diesel engines have had to pay fees and be labelled and registered to operate in Metro Vancouver. The dirtiest engines pay higher fees under the non-road diesel engine regulation bylaw. Search non-road-diesel at www.metrovancouver.org

In most cases, an industry, trade or business requires authorization from Metro Vancouver to discharge air contaminants. Metro Vancouver actively promotes compliance with its emissions regulations and site-specific permits.

Portable monitoring equipment can be used to provide information about air quality at the neighbourhood level. The results can then be used to develop local air quality action plans. See page 10 for more information about specialized studies.
Metro Vancouver’s

WOOD STOVE EXCHANGE PROGRAM

Many people believe that wood smoke is natural and not harmful to breathe. Actually, wood smoke is made up of fine particulate matter (PM$_{2.5}$) and a mix of chemicals that can be hazardous to human health. Also, wood smoke is estimated to be the leading contributor of PM$_{2.5}$ emissions in the region.

Smoke from wood burning appliances has caused air quality concerns in many Metro Vancouver neighborhoods. To help reduce wood smoke emissions, Metro Vancouver has offered a popular wood stove exchange program since 2009. A rebate of $250 is available towards the replacement of a fireplace or uncertified wood stove with a newer low emission unit. Over 325 exchanges have been made, resulting in ongoing PM$_{2.5}$ reductions of approximately 5,800 kg each year. These are distributed across the 300 neighbourhoods in which the old wood burning appliances previously operated. This reduction is equivalent to removing 350 older heavy diesel trucks, or over 5,000 new, low emission trucks.

Replacing a fireplace or old uncertified unit with a natural gas unit or new wood burning appliance has several benefits:

- At least a 70% reduction in PM$_{2.5}$ pollution, and other contaminants, indoors and out.
- Increased energy efficiency, which saves you money, fuel and time.
- Reduction in creosote build-up in chimneys that helps to reduce the risk of fire.

A NORTH VANCOUVER RESIDENT CHANGED OUT AN OLD UNCERTIFIED INSERT FOR A NEW CERTIFIED APPLIANCE IN 2013 AND HAD THIS TO SAY ABOUT THE PROGRAM:

“The program requirements and rebate form are easy to understand. We save money in fuel costs because the old unit used to ‘gobble up’ the wood, whereas the new unit uses much less wood. If I can do it, then anybody can.”
Sulphur dioxide (SO₂) emissions are coming down and the levels of SO₂ measured in communities have been decreasing. High levels of SO₂ may cause people with lung conditions, such as asthma, to experience breathing problems, increases in hospital admissions, and even premature death. SO₂ can also affect our environment and economy by acidifying soil and water, damaging crops and trees, and damaging property. SO₂ can react with other substances in the air to form fine particulate matter, which also impacts our health and contributes to the haze that sometimes obscures scenic views in the region.

WHERE SO₂ EMISSIONS COME FROM
Marine vessels and petroleum refining are the largest sources of SO₂ emissions in our region.

WHY SO₂ EMISSIONS ARE COMING DOWN
In 2013, international regulations required ships in North American waters to use fuel with less than 1.00% sulphur content. As of 2015, vessels are required to use fuel with even less sulphur, in fact ten times less (0.10%). These regulations will reduce SO₂ emissions from marine vessels by 95% (compared to 2005 levels).

Since 2005, Canadian federal regulations have required significant reductions in the sulphur content of fuels used to power cars, trucks, non-road equipment and rail.

We expect that all of these improvements will reduce overall SO₂ emissions in our region by 79% (compared to 2005 levels).

HOW WE KNOW REGULATIONS ARE WORKING
Improvements in SO₂ levels have already been observed at air quality monitoring stations and further improvements are expected.

Close to the Burrard Inlet area, Metro Vancouver is working with Port Metro Vancouver to enhance monitoring so we can track the effectiveness of marine fuel regulations.

WHAT ELSE METRO VANCOUVER IS DOING ABOUT SO₂
Consistent with its commitment to continuously improve air quality, Metro Vancouver is considering a new SO₂ objective to better protect public health and the environment. For more information about how and why we set objectives, check out the story in Caring for the Air 2014.
Air Quality in 2014

Air quality objectives describe the generally accepted limits on air pollutants that protect our health. Air quality advisories can be issued when objectives are exceeded. In 2014, two air quality advisories were issued in our airshed.

On July 13th 2014, levels of ground-level ozone built up during a heat wave, and an air quality advisory was issued. The advisory was in place for 48 hours until levels returned to well within air quality objectives. A second air quality advisory was issued on August 12th when smoke from wildfires outside our region caused an increase in levels of fine particulate matter.

Stagnant air developed in parts of the region in November 2014 causing fine particulate matter, emitted from local sources such as heating, transportation and burning, to build up. The highest levels occurred at nighttime. Over the course of a week, exceedances of the objective were measured at various stations between Richmond and Hope on different days. New instruments helped us detect these exceedances better than in the past and monitor air quality more sensitively than previously.

Regional Trends in Air Quality

Measurements made at monitoring stations from Horseshoe Bay to Hope represent the outdoor air quality experienced in the region most of the time. Trends in these measurements show that air quality, averaged across the region, has generally improved over the last ten years (see charts on the right).

Even with population growth in the region, improvements have been achieved through key actions. For example, sulphur dioxide levels improved as sulphur was reduced in vehicle and marine fuels, several refineries closed, and emissions from the cement industry decreased. Improved vehicle emission standards and the AirCare program are largely responsible for the lower carbon monoxide and nitrogen dioxide levels.

Peak ground-level ozone levels (not shown), which occur during hot and sunny summer afternoons, are better now than in the 1980s and early 1990s. Ground-level ozone forms when nitrogen oxides and volatile organic compounds react in the air in the presence of sunlight. But despite levels of the pollutants that form ground-level ozone being lower, average levels of ground-level ozone are increasing. Although this is partly a result of the increase in ground-level ozone found throughout the world, Metro Vancouver and partners have developed a ground-level ozone strategy to tackle local contributions to the increasing levels of this pollutant.
MONITORING RESULTS

FINE PARTICULATE MATTER (PM2.5) IN 2014

Fine particulate matter (PM2.5) levels throughout the region were better than the Canadian Ambient Air Quality Standard in 2014 (see map above). Averaged over the year, measurements were also within Metro Vancouver’s annual objective but levels were worse than the short-term objective (25 μg/m3) for brief periods of time at two stations in August and numerous stations in November. In August these exceedances were caused by smoke from wildfires outside our region. In November, emissions from local sources, such as heating, transportation and burning, along with stagnant weather conditions are thought to have contributed to the elevated levels of PM2.5 measured.

GROUND-LEVEL OZONE IN 2014

The map above shows that the Canadian Ambient Air Quality Standard for ozone was met at all monitoring stations in 2014. However, Metro Vancouver has set a more stringent 8-hour objective to encourage better air quality in the Lower Fraser Valley. This objective was exceeded at several monitoring stations on July 13th and one station on August 11th. Metro Vancouver’s 1-hour objective was also exceeded at stations in Maple Ridge, Hope, and Agassiz on July 13th and in Mission on August 11th.

A new monitoring station in Mission began operating in August 2014. Because the station operated for less than half the year, data completeness criteria were not met so the station is not shown on these maps.
SULPHUR DIOXIDE IN 2014

Average concentrations of sulphur dioxide for 2014 are shown above. Levels were better than Metro Vancouver’s air quality objectives at all stations in 2014. The largest sources of sulphur dioxide in the region are marine vessels (mainly ocean-going vessels) and the oil refinery in Burnaby. The highest levels are observed near these sources, especially in the Burrard Inlet area. Further away from the Burrard Inlet area, sulphur dioxide levels are much lower.

NITROGEN DIOXIDE IN 2014

Nitrogen dioxide concentrations were better than Metro Vancouver’s long-term and short-term air quality objectives throughout 2014. Annual averages are shown on the map. Over 60% of the regional emissions of nitrogen oxides (which includes nitrogen dioxide) come from transportation sources. The highest average nitrogen dioxide concentrations are measured in highly urbanized areas near busy roads.

CARBON MONOXIDE IN 2014

Carbon monoxide levels remained better than Metro Vancouver’s air quality objectives at all stations in 2014. The main source of carbon monoxide in our region is motor vehicles.
AIR QUALITY MONITORING NEWS

MONITORING STATIONS
The regional air quality monitoring network expanded in 2014 with a new station opening in Mission in August. In 2015, monitoring will begin at a new station in the Sapperton area of New Westminster. Measurements of ground-level ozone, fine particulate matter and nitrogen oxides at both stations will provide us with a more complete picture of air quality throughout Metro Vancouver and the Fraser Valley. It will also improve our understanding of sources contributing to the key air quality issues, and track progress towards improving air quality. These stations will be able to report the Air Quality Health Index (AQHI), which provides information about the effects of air quality on your health.

Metro Vancouver is also working with BC Ministry of Environment and Environment Canada to maintain an air quality monitoring station in Ucluelet. This is providing us with a better understanding of air pollutants arriving from across the Pacific.

SPECIALIZED STUDIES
Metro Vancouver’s Mobile Air Monitoring Unit (MAMU) was busy in the Moodyville neighbourhood of North Vancouver in 2014 to help answer questions raised by local residents about air quality related to nearby transportation projects and industries. During September and October 2014, MAMU was parked near the seaside promenade in White Rock for five weeks to investigate the effects on local air quality from passing coal trains.

Particulate monitoring is taking place at three locations in Delta near railway lines carrying coal trains and in one residential location. This monitoring will enhance our understanding of coal dust in airborne particulate matter in the region.

Temporary monitoring stations have been set up in Vancouver to measure traffic-related pollutants close to a major roadway and at a reference site located away from traffic. The 18-month monitoring study is part of a pilot study with Environment Canada and the University of Toronto and will be used to investigate exposure to air pollutants near busy roads, and inform a national near-road monitoring strategy.

In Metro Vancouver, more than 20% of the region’s residents live within 100 metres of a major roadway.

Air quality and weather data from the 28 stations in the regional air quality monitoring network are posted at airmap.ca. Updates in 2014 improved access for mobile device users so you can now easily find out about air quality wherever you are.

Besides air quality monitoring information, a number of other tools, such as computer modelling, are available. One important example is the BlueSky wildfire smoke forecasting system. These tools help us identify potential impacts on our air quality from sources outside the region and predict changes in air quality that might give rise to air quality advisories.
Agriculture is big business in Metro Vancouver, with total annual sales of nearly 1 billion dollars. However, in addition to food for our tables, agriculture also generates air pollution. It is the largest source of ammonia in our airshed, and a significant source of particulate matter, as well as the potent greenhouse gases methane and nitrous oxide.

Livestock are responsible for the majority of agricultural ammonia and methane emissions. Although livestock are also responsible for some dust emissions, tillage of soil and wind erosion cause most of the dust emissions from agriculture. Fertilizer application is a major contributor to nitrous oxide emissions in the airshed.

To reduce emissions from agriculture, improving livestock manure management, reducing soil tillage, and matching fertilizer application to crop nutrient requirements can all be considered.

### POLLUTANT IN FOCUS: AMMONIA

Ammonia is a colourless gas with a strong odour. Most ammonia emissions in Metro Vancouver come from farm animal and domestic pet waste management, with a small amounts coming from wastewater treatment plants and engines in mobile sources such as cars, trucks and ships.

Ammonia is poisonous if inhaled in very large quantities and is irritating to the eyes, nose, and throat in lesser amounts. It combines in the atmosphere with sulphur dioxide and nitrogen oxides to form secondary fine particulate matter (PM2.5), which causes visible atmospheric haze or smog. PM2.5 is also known to have harmful effects on human health and the environment.

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<th>Source</th>
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<tr>
<td>Agricultural Animals</td>
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<tr>
<td>Mobile Sources</td>
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<td>Other Sources</td>
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Caring for the Air  Metro Vancouver 2015  11
FOCUS ON VOC

Ground-level ozone is formed when volatile organic compounds (VOC) and nitrogen oxides (NOx) combine in the presence of sunlight. In previous editions of Caring for the Air, we have described some of the impacts of ground-level ozone. In this edition, we focus on VOC, a key contributor to the ozone issue.

WHAT ARE VOC?
The term VOC, or volatile organic compounds, refers collectively to the organic chemicals found as gases in the air. VOC can be man-made or natural and occur when solids or liquids evaporate. The scents you smell in a pine forest and when peeling citrus fruits are examples of natural VOC. Familiar man-made sources include the noticeable odours associated with visiting the gas station or painting your home.

Some VOC are toxic, leading to health effects ranging from eye irritation to cancer risk.

HOW DO VOC AFFECT GROUND-LEVEL OZONE?
The amount of ground-level ozone produced depends on the absolute and relative amounts of NOx and VOC:

- At the right ratio, we will get more ozone produced.
- When the amount of NOx that is present controls the amount of ozone formed, a region is said to be "NOx limited".
- When the amount of VOC present controls the amount of ozone formed, the area is "VOC limited".

Reducing the wrong pollutant can result in either no reduction in ozone levels or worse, inadvertently increase ozone. This can be explained using a drummer analogy:

REMOVE THE DRUM OR THE DRUMMER?
Imagine that the formation of ground-level ozone is like unpleasant, noisy drumming. Creation of an ear-offending situation requires matching the drummers to drum sets (like, VOC to NOx for ground-level ozone formation).

When one drummer is combined with one drum set, noisy drumming ensues. The more drummers and drum set combinations, the greater the racket.

In a situation where the number of drummers and drum sets matches (for example, 3 and 3 in the image below), removing either drum set or drummer will reduce the noise generated.

In many cases, however, the number of drummers and drum sets is mismatched. When this occurs, to quieten the room, you need to be more strategic. For example when there are more drum sets than drummers, to stop the noise getting rid of drum sets is ineffective. In this scenario, if you remove a drum set, the drummer will just move to an empty drum set and continue to make noise. To reduce noise, you need to get rid of drummers.

Alternately, if there are more drummers than drum sets, getting rid of drummers is ineffective in reducing the decibel level, as for every drummer you remove a standby drummer is available to take-over the noise-making. In this case, you need to get rid of drum-sets.

Similarly, in the western part of our airshed (most of Metro Vancouver’s geographic boundaries), VOC is the limiting factor. This is also the case in the eastern portion of the airshed except on the hottest summer days, when NOx is the limiting factor.
Scientists have confirmed that VOC are the critical limiting factor to suppress ground-level ozone formation in Metro Vancouver, so Metro Vancouver is working to develop policy and program options to reduce VOC emissions. In the meantime, these are some steps you can take to go VOC-free or low-VOC in your daily life:

- **Switch to a low-VOC option:** Where possible, look for the low-VOC option for household products. Paints are an example of a product where low-VOC latex-based options are readily available substitutes. For other products, such as nail polish remover, low-VOC options are available, but will require some sleuthing to find.

- **Avoid the aerosol:** The propellant used in aerosol cooking sprays, hairsprays, deodorants, and other household products are VOC – typically propane, n-butane and isobutene. This means that in addition to the VOC in the product itself, additional VOC are required to create the spray mist. Opt for hand pump or compressed air based sprays; or switch to direct application versions, such as roll-on perfumes and deodorants.

- **Store smart:** When storing products that contain VOC, do so in tightly-sealed, original containers. For gasoline, replace your old gas cans with cans that comply with emission and spill control standards. Or better yet, buy small amounts as you need so you don’t have to store these products!

- **Recycle:** Properly dispose of products containing VOC. Many of these products are considered household hazardous wastes and should be disposed of at special facilities. For more information, see http://www.metrovancouverrecycles.org for where to dispose of various products.

- **Say goodbye to gas:** Your gasoline vehicle is likely your most significant source of VOC in your home. Do away with gasoline altogether, by switching to electricity for your lawn and garden equipment and your vehicle. Or go manual and get exercise too!
Caring for the Air
Metro Vancouver 2015

Toxic Air Pollutants

In addition to common air pollutants such as fine particles (PM2.5), nitrogen oxides (NOx) and ozone (O3), the air we breathe contains tiny amounts of hundreds of other substances, many of which may be harmful to health. These pollutants are often referred to as “toxic air pollutants”, and their potential health effects include cancer and a variety of non-cancer effects.

In 2014, Metro Vancouver looked at the potential harm to health posed by 40 different toxic air pollutants that are present in our air. We found that diesel particulate matter (diesel PM) is still the largest contributor to incremental lifetime cancer risk in Metro Vancouver of any toxic air pollutant. There are also nine additional pollutants with estimated cancer risks that exceed Health Canada’s threshold of concern. The risks for these additional pollutants are 10 times less than diesel PM, but still warrant looking at measures to reduce emissions.

Except carbon tetrachloride, the toxic air pollutants shown below are emitted primarily by mobile sources, wood burning, and industrial operations.

Metro Vancouver’s Non-Road Diesel Engine Emission Regulation is helping to reduce diesel PM emissions, and will also lead to reductions in emissions of formaldehyde and benzene. Similarly, our Wood Stove Exchange Program (p.5) targets wood smoke emissions and will also lead to reductions in emissions of four of the other top seven toxic air pollutants.

Carbon tetrachloride is not emitted from sources within the region. An international treaty banned the production and use of carbon tetrachloride after 2010. As a result, atmospheric levels and the associated cancer risk are expected to decrease slowly over the coming decades.

WHAT ELSE IS IN MY AIR?

Cancer risks are shown here as the relative incremental lifetime cancer risk. The blocks represent the relative additional cancer cases expected if a million people were exposed over a 70 year lifetime to the level of the pollutant present. Health Canada considers cancer risks below 10 in a million to be “essentially negligible.”
ASSESSING THE IMPACT OF MAJOR PROJECTS

In British Columbia, large industrial, mining, energy, water management, waste disposal, food processing, transportation and resort developments typically require an environmental assessment. When a project requires an environmental assessment, a government agency designated as the “responsible agency” takes a lead role in the environmental review process. Depending on the type of project, the responsible agency could be the Canadian Environmental Assessment Agency (CEAA), the National Energy Board (NEB), the Canadian Nuclear Safety Commission (CNSC), and in British Columbia, the BC Environmental Assessment Office (BC EAO).

The different responsible agencies have different ways of engaging people and organizations that may be affected by a project. For example, the BC EAO forms working groups with members from First Nations and government agencies. These working groups review project materials and advise the EAO about issues related to the project. In contrast, the NEB and CEAA processes allow agencies and people with expertise, or that may be directly impacted by the project, to apply for intervenor or commenter status to ensure they participate in the review process.

Projects in the Lower Fraser Valley that have gone through an environmental assessment since 1996.

APPROVED | NOT APPROVED
IN PROCESS | PRE-ASSESSMENT

1. Burnaby Lake Rejuvenation
2. Burns Bog Ecosystem Review
3. Canada Line
4. Deltaport Third Berth Project
5. Eagle Mountain - Woodfibre Gas Pipeline Project
6. Evergreen Line Rapid Transit Project
7. Fraser Surrey Docks
8. Lafarge Cement Plant Modernization
9. New Fraser River Crossing Project (Golden Ears Bridge)
10. Port Mann/Highway 1 Project
11. Roberts Bank Terminal 2 Project
12. SkyTrain Extension Review
13. South Fraser Perimeter Road Project
14. Trans Mountain Pipeline Modification Project
15. Trans Mountain Pipeline Expansion Project
16. Vancouver Airport Fuel Delivery Project
17. Vancouver Convention Centre Expansion
18. George Massey Tunnel Replacement Project
19. Sumas 2 (by NEB)
20. BP Cherry Point Refinery
21. Gateway Pacific Terminal
22. Sea-To_Sky Highway Upgrade Project
Air permits are key tools used by Metro Vancouver to control the discharge of air contaminants from industrial facilities. Businesses must apply to the “District Director” for new permits, or to amend existing permits.

A public notification process starts once Metro Vancouver accepts a final application. The notification process provides information to the public so people can present informed comments about the application to the District Director.

For a new air permit or a major amendment to an existing permit, the applicant must post a notice on site, and publish in local newspapers and the BC Gazette. The District Director may also require the applicant to organize meetings to explain the application and proposed environmental protection measures. Metro Vancouver also asks the host municipality and health authority to comment on the application.

If you think you may be adversely affected by the granting of a permit, you have the right to have your concerns considered by the District Director. There is a minimum public comment period of 30 days after the last public notification, including meetings. Comments should be provided in writing. The District Director can consider public comments up until a decision has been made.

In determining whether to grant a permit, the District Director may consider relevant information provided by the applicant, concerned persons, government or private agencies, Metro Vancouver staff and others. To be fair, the applicant is given an opportunity to respond to all comments so that their position on issues can also be considered by the District Director.

Once a decision has been made about a permit application, the District Director will notify the applicant and any concerned persons of the decision. The District Director’s decision may be appealed as described in the Environmental Management Act.

For more information on Metro Vancouver’s air permitting process, please visit metrovancouver.org (search: apply permit).
THE END OF AIRCARE

So what now?

The AirCare program ended on December 31, 2014. The end of this program, which had been keeping Lower Mainland vehicle emissions in check since 1992, means that drivers are no longer required to take their vehicles to an AirCare facility for regular testing.

To maintain the good quality of air we generally enjoy in this region, vehicle emissions still need to be controlled. It’s now up to vehicle owners to make sure that our cars and trucks don’t contribute to poor air quality.

Metro Vancouver is working on launching a pilot program in late 2015 to help vehicle owners voluntarily monitor their vehicle emissions. Meanwhile, here are some ideas about what everybody can do to make sure our vehicles don’t pollute:

1. Don’t ignore the check engine light! It lets you know something is wrong and the fix could be simple.

2. Scan your car’s computer with an OBD reader to check emissions performance.

3. Follow the manufacturer’s recommended maintenance schedule to preserve your engine.

4. Don’t modify your vehicle - modifications can increase emissions.

5. Don’t try to drive your vehicle forever.

6. Consider a clean, low maintenance electric vehicle.

Finding ways to drive less will also reduce pollution. Consider walking, riding, taking transit or carpooling if you have the option.
Clean Vehicles

EMOTIVE:
The Electric Vehicle Experience

Did you know that over one third of our region’s greenhouse gas pollution comes from personal cars and trucks burning fossil fuels? Did you also know that almost half of Canadians don’t know that Electric Vehicles (EVs) are driving around on roads today? These are two statistics that Metro Vancouver and others are working hard to change.

With no tailpipe, many EVs do not emit greenhouse gases or harmful air pollutants such as diesel particulate matter and carbon monoxide. Although they make up a small fraction of the cars on the road, EV purchases have more than doubled each year since 2012. There are now over 10 makes and models of EVs to choose from, – ranging from full battery electric (BEV), to plug-in hybrid electric (PHEV), to hybrid electric (HEV), so there’s an EV to suit just about any lifestyle. What’s more, in April 2015, the provincial government renewed funding for Clean Energy Vehicles, providing point-of-sale incentives for electric vehicles (cevforbc.ca).

WHICH ELECTRIC VEHICLE BEST FITS YOUR NEEDS?

Often the deciding factor for purchasing an EV is how far you can typically drive before needing to recharge the car.

- **YES, THAT’S MORE THAN ENOUGH**
  - Consider Battery Electric Vehicles
  - 100-160 range of km
  - 6-8 hours to charge with 240 V charger
  - Cost between $27,000 and $45,000 (Rebates of up to $5,000 available.)

- **NO, I NEED MORE RANGE**
  - Consider Plug-in Hybrid Electric Vehicles
  - Offer more range as they can be charged from an onboard motor
  - 3-4 hours to charge with 240 V charger
  - Cost starts around $36,000 (Rebates of up to $2,500 to $5,000 available.)

As members of Plugin BC – an organization created to support the adoption of electric vehicles – Metro Vancouver, the Province of British Columbia, the Fraser Basin Council, the City of Vancouver and the City of Surrey have spent the past year developing Emotive: the electric vehicle experience, a digital campaign focused on improving public knowledge and interest in EVs. Check out Emotive online at www.emotivebc.ca or on Facebook at www.facebook.com/emotivebc. These sites will have announcements about local EV events where you can talk to Emotive ambassadors or maybe even test drive an EV!
WHAT IS HOME ENERGY LABELLING?

Would you buy a car without knowing how much gas it’s going to use? This is what most British Columbians do when purchasing a new home. It makes sense to know how much your energy bills are likely to cost you before you make one of the most important financial decisions of your life. With home energy labels, you can do just that.

Natural Resources Canada’s new EnerGuide label for homes will be launched in British Columbia within the coming year. Like the fuel economy rating for a car, home energy labels are essentially a report card showing how energy efficient a home is. They will display information on estimated energy use and greenhouse gas emissions and compare a house’s energy performance characteristics to that of a similar house built to meet all of the energy efficiency requirements in the BC Building Code. The home energy rating will give people a way to compare home energy performance and costs between homes on the market.

Labels showing a home energy score give home sellers and developers with energy efficient homes another way to make their homes stand out in the crowd.

To help increase the use and understanding of home energy labels, Metro Vancouver and its partners are working together to develop an outreach campaign for 2016 to promote the idea of labelling new homes with an EnerGuide label. Working with builders, realtors and home energy advisors, this project should increase the use of publicly visible EnerGuide labels that have essential information for people that are buying or selling new homes.
Our region's parks provide many functions and services, from habitat for wildlife to scenic hiking routes for outdoor enthusiasts. Now we are learning that we can add "carbon storage" to the list.

Metro Vancouver manages 22 regional parks, park reserves and conservation areas covering over 140 km² – an area about the same size as Richmond! Most of the land is accessible for everyone to enjoy, except park reserves, which are being assembled and prepared for park use, and ecological conservancies, which are closed to the general public to protect sensitive wildlife and ecosystems from damage.

A variety of ecosystems can be found in our parks, ranging from old growth forests to salt-water marshes to raised peat bogs. Ecosystems in some parks have a valuable role to play in protecting our climate.

**ECOSYSTEM CONSERVATION: FORESTS**

Trees are natural “carbon storage devices” that have been removing carbon dioxide for a long time – sometimes hundreds of years. Stored carbon can be released back to the atmosphere relatively quickly when trees are removed.

Fire and enhanced decomposition caused by ground disturbance are examples of processes that can cause relatively quick release of stored carbon.

Local governments can now get carbon credits for protecting forested areas from logging and conversion.

**ECOSYSTEM RESTORATION: BURNS BOG**

Burns Bog Ecological Conservation Area in Delta is part of a unique raised bog ecosystem, and one of the world’s largest protected natural areas in an urban landscape. In a healthy bog, new peat is laid down (or "sequestered") each year. This removes carbon dioxide from the atmosphere, and can keep it stored for many thousands of years, if the bog is not disturbed. While much of Burns Bog is healthy, some areas have been degraded by agriculture and peat extraction in the past. Metro Vancouver is looking at a number of damaged sites within Burns Bog to explore restoration practices that would improve ecological function and increase its ability to sequester carbon.

Damaged sites in Burns Bog have been found to produce elevated methane emissions, which could be reduced through restoration practices.
HOW’S THE VIEW TODAY?

People throughout the Lower Fraser Valley are concerned about the hazy views associated with degraded visual air quality. Visual air quality depends on the level of pollutants present in the air and affects quality of life and the economy as well as our prized vistas.

To describe current visual air quality, a scale called the Visual Air Quality Rating (VAQR) is being developed. Over 300 residents of Metro Vancouver and the Fraser Valley Regional District were asked to “rate” different visual air quality conditions. The ratings were then compared to levels of the pollutants that impair visual air quality. This input from local residents has helped to define five categories of visual air quality - “excellent”, “good”, “fair”, “poor” and “very poor”.

It’s important to remember that the VAQR tells us about the impacts of air pollution (not clouds, fog, rain or darkness) on the clarity of the view. For this reason, the VAQR is “Not Available” during the night or when humidity is over 75%.

Although the VAQR is based on measurements at one location, the rating also represents conditions in the surrounding area. After it is launched in 2015, you will be able to check out the VAQR in your area online through www.clearairbc.ca/community.

The British Columbia Visibility Coordinating Committee (BCVCC) was formed to protect and improve visual air quality. It is a partnership between the Ministry of Environment, Metro Vancouver, the Fraser Valley Regional District, Environment Canada and Health Canada.

THE BCVCC’S VISION:
The ability to see our natural and urban environment is an important part of the British Columbia experience, thus the BCVCC is committed to achieving clean air and pristine visibility for the health and enjoyment of present and future generations.