

Regional Airshed Roundtable State of the Air Memo

Comox Valley Regional District

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Submitted to: **Regional Airshed Roundtable**, Comox Valley Regional District

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Cover photo: Illustration of smoke trapped in the Comox Valley, source: Comox Valley Regional District

1. Context

Background

Since 2008, there has been an increasing body of evidence demonstrating that air quality in the Comox Valley is concerning due to high levels of fine particulate matter, especially during the fall and winter seasons when levels of this pollutant exceed national standards. Fine particulate matter is a pollutant that contains microscopic particles that can be inhaled and cause serious health problems affecting your lungs and your heart. There is no known safe level of fine particulate matter.

Recognizing the importance of this issue, local efforts have been implemented to reduce levels of fine particulate matter, including the Comox Valley Regional District's (CVRD) Wood Smoke Reduction Program, local government bylaw updates, and education and outreach initiatives by both the CVRD and the local advocacy groups. Despite these efforts, local air monitoring results show no significant improvement in fine particulate matter levels.

In 2019, the CVRD Board included air quality as a key project under the Regional Growth Strategy service and formed a working group with representation from four local governments, Island Health, the BC Ministry of the Environment and the Comox Valley Community Foundation. This working group recommended that a Regional Airshed Roundtable be formed – a collaborative group of representatives from government, industry and community – to identify, evaluate and recommend opportunities for reducing air pollution in the Comox Valley. In 2020, the CVRD Board resolved to create a Regional Airshed Roundtable and supporting Steering Committee tasked with developing and supporting implementation of a Regional Airshed Protection Strategy (see Appendix A for a list of participants and description of these two groups).

Purpose of this memo

This State of the Air memo provides the background to prepare the Airshed Roundtable for participation in a three-year process to develop and implement a Regional Airshed Protection Strategy. This memo summarizes the current state of the air in the Comox Valley (air quality data, pollutant sources, studies and work completed to date), highlights how air pollutant sources are regulated and managed, and provides examples of what an airshed protection strategy may include. It provides members of the Roundtable a common understanding of this information in preparation for collaboratively developing an airshed protection strategy for Comox Valley. Key messages from this memo and the Roundtable discussions will be communicated with the public during the process.

Impacts of air pollution

Air pollution can come from many different sources and can result in a wide spectrum of impacts, including affecting local air quality and human health, contributing to acid rain, depleting the ozone layer and contributing to global climate change. Air pollution may concentrate in specific areas such as valleys, or may travel a great distance, depending on wind patterns and geography. When pollutants concentrate in an area, local air quality is impacted and this can cause serious impacts on human health. The World Health Organization estimates that one third of deaths from stroke, lung cancer and heart disease are due to air pollution worldwide.¹ The International Agency for Research on Cancer classified outdoor air

¹ <https://www.who.int/airpollution/news-and-events/how-air-pollution-is-destroying-our-health>

pollution as a carcinogen in 2013², while emergent studies have been linking air pollution with declining cognitive ability in older adults, as well as birth defects.³ In Canada, Health Canada estimates that 14,600 premature deaths per year can be attributed to air pollution from fine particulate matter, nitrogen dioxide and ozone.⁴

Everyone is affected by air pollution; however, it has a disproportionate impact on some people. Air pollution can have more impact on older adults, younger children, those who are active outdoors, and those with existing heart, breathing or lung conditions. Further, because air pollution can concentrate in specific areas, people that live closer to industries, busy roadways or other concentrated sources of pollution (such as residential wood stoves) are more impacted.

Climate change is also linked to air quality in two ways. In most cases, when greenhouse gas emissions are released into the atmosphere from sources such as vehicles, industry and agriculture, other harmful pollutants are released at the same time. Second, some impacts resulting from climate change can result in increased air pollution, such as extreme heat and more frequent and intense wildfires.⁵

Air pollution may also impact visual air quality, as well as produce nuisance odours, making a region less attractive to residents and tourists.

Complexity of addressing air quality

Although the impacts of air pollution are well documented and significant, it is not simple to manage air emissions for many reasons. Improving air quality involves a blend of changing personal choices, cultural values and government regulations – including many different departments and levels of government. As this memo will outline, major sources of air pollutants include using wood stoves to provide heat in homes, open burning to manage debris and reduce fire risk, vehicles and equipment that serve our daily needs, and more. Addressing this variety of sources requires collaboration across many organizations and community members.

Wood stoves, for example, provide an affordable source of heat for many residents in the region and it may cause financial strain to shift to other heating units. A survey conducted by the CVRD found that while 38% of respondents use wood stoves, 75% of those wood stove users would like to change their heating source. The majority of those wishing to change would like to install a heat pump if they could afford it.⁶

The Airshed Roundtable will be tasked with learning about the complexities of these sources of emissions, considering the options for managing them, and developing recommendations for many different organizations to implement in order to achieve the goal of improving air quality in the Comox Valley.

² <https://www.iarc.fr/news-events/iarc-outdoor-air-pollution-a-leading-environmental-cause-of-cancer-deaths/>

³ Ailshire, J. A., & Clarke, P. (2015). Fine particulate matter air pollution and cognitive function among U.S. older adults. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, 70(2), 322–328. <https://doi.org/10.1093/geronb/gbu064>

Yuan, L., Zhang, Y., Gao, Y., & Tian, Y. (2019). Maternal fine particulate matter (PM 2.5) exposure and adverse birth outcomes: an updated systematic review based on cohort studies. *Environmental Science and Pollution Research*, 26(14), 13963–13983. <https://doi.org/10.1007/s11356-019-04644-x>

⁴ <http://publications.gc.ca/site/eng/9.874080/publication.html>

⁵ <https://climateatlas.ca/climate-change-air-quality-and-public-health>

⁶ Comox Valley Home Heating and Air Quality Survey Report

2. Air pollutants and sources in Comox Valley

The primary pollutants that impact human health include: fine particulate matter, nitrogen dioxide and ground-level ozone. Although the primary focus of the Regional Airshed Roundtable will be placed on fine particulate matter, as it is currently the only air pollutant to exceed standards in the Comox Valley, it will also be important to consider other air pollutants that affect air quality and opportunities to reduce impacts of these.

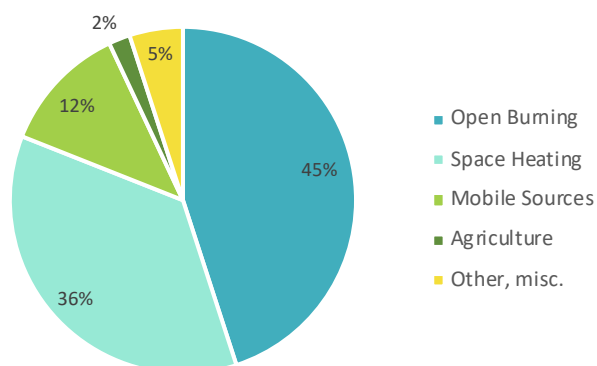
Fine particulate matter

What is PM_{2.5}?

Particulate matter that is 2.5 microns wide or smaller is called fine particulate matter, or PM_{2.5}. Fine particulate matter is directly emitted from combustion (e.g. forest fires, woodstoves, vehicle engines), and can also form when other pollutants in the air undergo chemical reactions under certain conditions (e.g. ammonia, nitrogen oxides, sulphur oxides). These fine particulates can be inhaled deep into your lungs, passing into and traveling through your bloodstream to all parts of your body. Exposure to fine particulate matter can lead to asthma attacks, chronic bronchitis and heart attacks. It is most dangerous to children with asthma, older adults, and people with an underlying breathing and/or heart condition.

In 2017, the Ministry of Environment and the CVRD retained RWDI to complete an air emissions inventory of particulate matter in the Comox Valley (including City of Courtenay, Town of Comox, Village of Cumberland, CVRD Electoral Areas A, B, C and the First Nations within these geographical areas).⁷ Emissions inventory data estimates major sources; however, it is bounded by limitations, including time base and estimation methods. The inventory shows that the primary sources of PM_{2.5} in the Comox Valley are open burning and space heating (see **Figure 1**). More detailed sources are listed to the right of the figure, with the four most significant sources underlined. These are important to be aware of when considering how to manage emissions because they are often regulated by different agencies.

Figure 1. Sources of PM_{2.5} in the Comox Valley in 2015



Open burning: provincially-regulated pile and area burns (42%), municipally-regulated backyard burns and pile burns (4%), recreational and wildfires (<1%)

Space heating: wood burning in homes (35%), natural gas, propane and heating oil (<1%)

Mobile: non-road equipment (5%), marine vessels (3%), light-duty vehicles (2%), heavy-duty vehicles (2%), aircraft (<1%)

Agriculture: tilling (1%), wind erosion (1%), crop burning, livestock and other (<1%)

Other, misc: meat cooking (3%), landfills (1%), construction (1%), cigarettes, industry and structural fires (<1%)

There are other open-burning sources that may have not been captured by the emissions inventory study (unregulated backyard and pile burns, as an example). While their total contribution may be relatively small, their air quality impact may still be significant due to proximity to residential areas. The

⁷ https://www2.gov.bc.ca/assets/gov/environment/air-land-water/air/reports-pub/comox_valley_pm_emissions_inventory.pdf

amount of PM_{2.5} that is emitted from open burning and space heating depends on the **burning practices** used. Fires that burn hot release less PM_{2.5}, but burning wet, dirty or unseasoned wood result in more smoke and higher PM_{2.5} emissions. For woodstoves, **using an old uncertified woodstove** will also result in much higher PM_{2.5} emissions than a newer stove that is certified by US EPA or CSA standards.

Although the emission inventory provides an important overview of the sources of PM_{2.5} in Comox Valley, it does not provide the whole picture when it comes to the potential impact on air quality and people's health. It is also important to understand that the contribution from each of the sources can vary by day, week, season, and by location. For instance, data analysis shows that **PM_{2.5} concentrations are generally higher in fall and winter months in the Comox Valley**, with rising levels in mid-afternoon and peaking in the evenings (a signature of wood stove smoke).

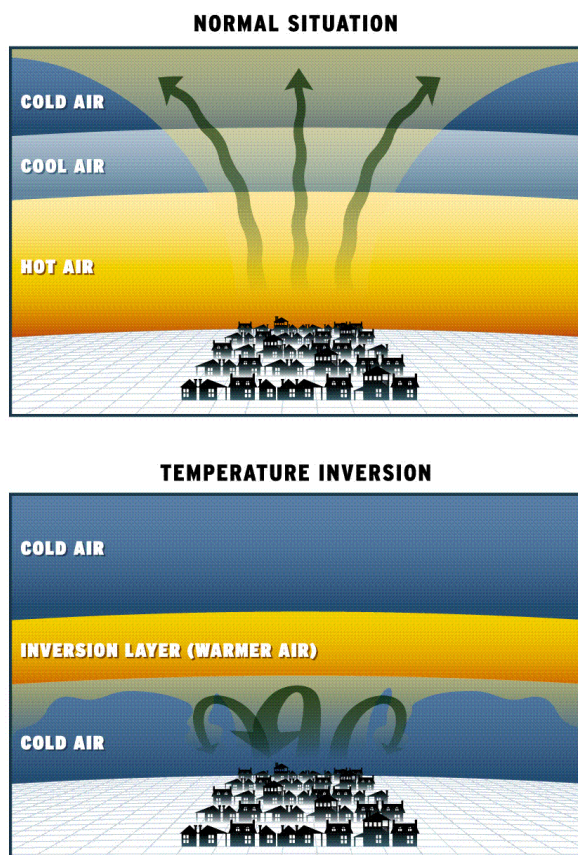
In addition to the influence of seasonal weather, proximity of people to emission sources can lead to increases in exposure and impacts. For example, large forestry burn piles are strongly regulated and are typically well removed from population centres, whereas backyard burning may occur in residential areas potentially have a greater impact. Wood stove emissions occur right where people live, work and play.

The valley location makes the area susceptible to frequent temperature inversions, especially during colder months, and this means that air gets trapped for a longer period of time during these episodes.⁸ If air is trapped in an inversion at the same time as there is an increase in emissions from sources –e.g. wood stoves or open burning during the colder months – then the emissions may build up to unacceptable levels (see Figure 2 for an illustration of this effect).

Other air pollutants

Other pollutants are important to monitor and manage, as they are also linked to adverse health outcomes. Table 1 lists other key air pollutants, their typical sources and their impacts. Because the emissions inventory conducted for the Comox Valley was limited to particulate matter, the source of other pollutants is general to all of British Columbia and not specific to the Comox Valley. Because Comox Valley does not have heavy industrial activity, the majority of the pollutant sources in Comox Valley are likely from mobile sources (cars, trucks and off-road equipment) and area sources (open burning, residential burning, solvents and others).

Figure 2. Illustration of woodsmoke accumulated within a valley (source: Environment Canada)



⁸ Patterns of Air Quality and Meteorology in Courtenay B.C. 2011-2016, BC Ministry of Environment, 2017

Table 1. Summary of other air pollutant sources and impacts

Pollutant	Sources ⁹	Air quality impacts ¹⁰
Nitrogen oxides (NO _x)	Primarily mobile sources (trucks, cars, off-road equipment and marine vessels), remaining from industrial point sources	<ul style="list-style-type: none"> • Affects respiratory systems • Damages vegetation • Major contributor to secondary PM_{2.5} and ozone formation
Volatile organic compounds (VOCs)	Roughly evenly from mobile sources (trucks, cars, off-road equipment), industrial point sources and area sources (fossil fuel evaporation, general solvent use, natural sources like coniferous forests and vegetation) ¹¹	<ul style="list-style-type: none"> • Major contributor to ozone and secondary PM_{2.5} formation • Individual VOCs are known or suspected of direct toxic effects on humans
Ozone (O ₃)	Forms when NO₂ and VOCs combine in sunlight on warm days	<ul style="list-style-type: none"> • Linked to pre-mature mortality • Aggravates existing conditions like asthma • Main component in smog • Injures crops and vegetation, reducing yields and may contribute to forest decline
Sulphur oxides (SO _x)	Primarily industry (upstream oil and gas and pulp and paper), and remaining from mobile sources (mostly marine vessels)	<ul style="list-style-type: none"> • Adverse effects on respiratory systems • Damages vegetation and causes acid rain • Contributor to secondary PM_{2.5} formation
Carbon monoxide	Over half from mobile sources (trucks, cars and off-road equipment), and remaining from industrial point sources (wood industry) and area sources (mostly prescribed open burning and wood stoves)	<ul style="list-style-type: none"> • Affects blood capacity to carry oxygen to organs and tissues

3. Air quality in Comox Valley

Since 2008, experts have been studying air quality in the Comox Valley, including monitoring air quality, and publishing studies about the relationships between pollution sources and health impacts in the area.

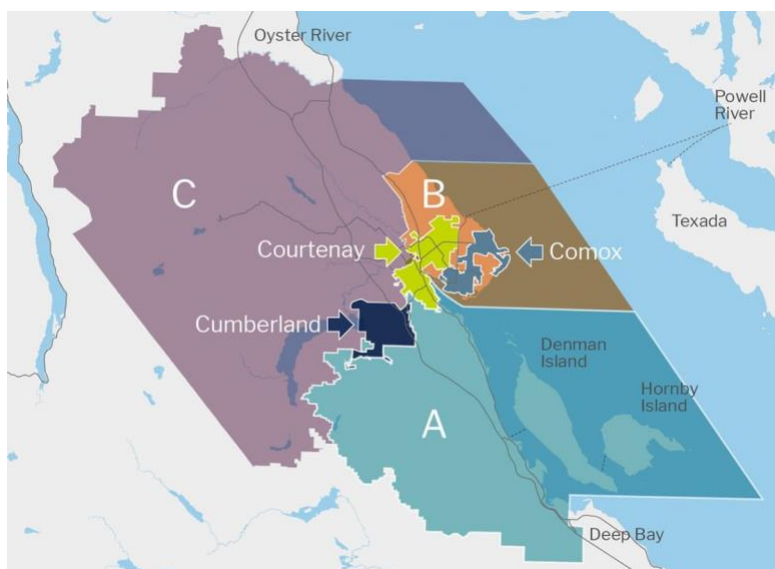
What is an airshed?

The term “airshed” is used to describe an area where the movement of air, and air pollutants, is hindered by local geographic features and weather conditions. Airsheds can vary in size depending on the current conditions, but for this strategy, we will consider the airshed to be inclusive of the Comox Valley. The Comox Valley is vulnerable to the frequent formation of temperature inversions, particularly during the winter months, which can decrease the ability of the atmosphere to disperse pollutants.

⁹ 2000 British Columbia Emissions Inventory of Criteria Air Contaminants: Result Highlights, BC Ministry of Water, Land and Air Protection, 2005

¹⁰ <https://www.canada.ca/en/environment-climate-change/services/air-pollution/pollutants/common-contaminants.html> and <http://airquality-qualitedelair.ccme.ca/en/>

¹¹ Cannabis production, an emerging industry, may also be a source of VOCs in some areas, as noted in the 2020 State of the Air report released by the BC Lung Association. Cannabis production was not identified as a source in the provincial emission inventory completed in 2000.

Figure 3. Map of the Comox Valley Regional District (source: CVRD)

Monitoring

Air pollutants measured in the Comox Valley include particulate matter, nitrogen oxides and ozone. Measurements have been collected through a combination of stationary and mobile monitoring stations:

- **Stationary monitoring:** One permanent monitoring station is located in Courtenay, at the Courtenay Elementary School. Air quality parameters currently measured here include PM_{2.5}, nitrogen dioxide and ozone. This is run by the provincial Ministry of Environment and has been in place since July 2011.
- **Mobile monitoring:** Instruments have been deployed for a short period of time, at temporary locations, in relation to academic studies looking at PM_{2.5}. Mobile monitoring has provided an opportunity to gather samples from various geographical points and pockets in the region.

Both types of monitoring are important – the permanent stationary monitor provides an ongoing long-term data set to monitor conditions in the region broadly; while the mobile monitoring provided insight into conditions that may appear in specific “hot spots” by being close to pollution sources and/or due to weather and geography conditions trapping the pollutants.

What is the Air Quality Health Index?

The [Air Quality Health Index](#) (AQHI) is a scale developed in Canada to indicate the potential impact of current air quality conditions on health. It is a tool to inform the public about how to alter activity levels based on the current air quality conditions. For this region, the AQHI is monitored and published by the BC Ministry of Environment and is based on hourly air quality readings from the monitoring station in Courtenay.¹²

Air quality standards and objectives

Air quality standards establish limits on air pollutants based on monitored air quality data and are intended to drive action to protect human health and the environment. The aim is to keep air pollutant

¹² AQHI for the Comox Valley found here: http://www.env.gov.bc.ca/epd/bcairquality/data/aqhi.html?id=AQHI-Comox_valley

levels far below all standards, however, when pollutants near or surpass standards then governments act to reduce those pollutant levels.

BC has adopted the Canadian Ambient Air Quality Standards (CAAQS) and provincial Air Quality Objectives (AQO) for PM_{2.5}, ozone, SO₂ and NO₂. They are generally expressed as a concentration averaged over a specific period of time. There are two sets of standards and objectives for PM_{2.5} – one is averaged over 24 hours and one is averaged over one year (see Table 2 for the national and provincial levels.)¹³

Table 2. Federal CAAQS and Provincial AQOs for PM_{2.5}

Averaging period	Federal CAAQS (µg/m ³)	BC AQO (µg/m ³)
24-hour	27	25
Annual	8.8	8

The 24-hour AQO serves as a reference for issuing air quality advisories. An advisory is typically issued whenever the PM_{2.5} running mean exceeds the 24-hour AQO and the exceedance is expected to remain for an extended period of time. The air quality advisory that is issued will state that at-risk populations should reduce or reschedule strenuous activities outdoors, and that the general public should consider reducing or rescheduling strenuous activities outdoors.

Summary of air quality monitoring data in the Comox Valley

Table 3 and Figures 4 to 6 provide a summary of the air quality PM_{2.5} objectives for Comox Valley, based on the air quality data monitored at the Courtenay Elementary School monitoring station. This data demonstrates that PM_{2.5} has exceeded the provincial objective annually between 6 and 26 days in recent years. Other pollutants are well below the provincial objectives and national standards.

Table 3. PM_{2.5} measurements for provincial AQOs at Courtenay Elementary station, 2012-2019¹⁴

	Annual mean - wildfires removed (µg/m ³)	Annual mean - effect of wildfires (µg/m ³)	24-hour 98 th percentile - wildfires removed (µg/m ³)	24-hour 98 th percentile - wildfires effect (µg/m ³)	Max daily values - wildfires removed (µg/m ³)	# days exceeding provincial objective - wildfires removed	# days exceeding provincial objective - effect of wildfires
2012	9.2	0	29.7	0	39.2	12	0
2013	11.4	0	33.4	0	42.8	26	0
2014	9.2	0	30.8	0	42.6	19	0
2015	8.2	0.2	32.3	4.3	50.6	14	3
2016	7.7	0	31.8	0	36.1	17	0
2017	9	1.2	30.9	3.3	36.1	25	9
2018	8	1.4	25.2	1.8	32.2	8	7
2019	7.7	0	24.4	0	30	6	0

Table note: Cells highlighted in yellow show where the measurements exceed the provincial objectives.

¹³ For detailed listing of national standards and provincial objectives, and how they are calculated, see: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/air/reports-pub/prov_aqo_fact_sheet.pdf

¹⁴ Patterns of Air Quality and Meteorology in Courtenay B.C. 2011-2016, BC Ministry of Environment, 2017 and Personal Communication with Tarek Ayache, Ministry of Environment and Climate Change Strategy, August 2020

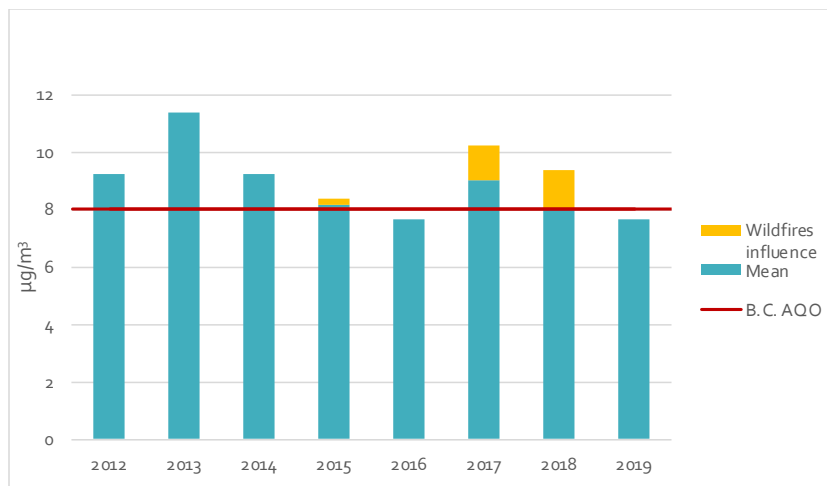


Figure 4. Courtenay Elementary - PM_{2.5} annual provincial AQO

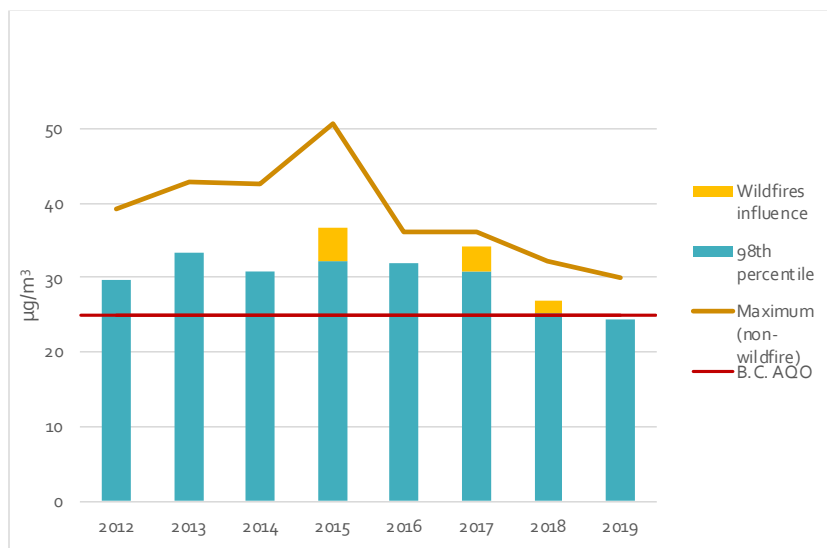


Figure 5. Courtenay Elementary - PM_{2.5} 24-hour provincial AQO

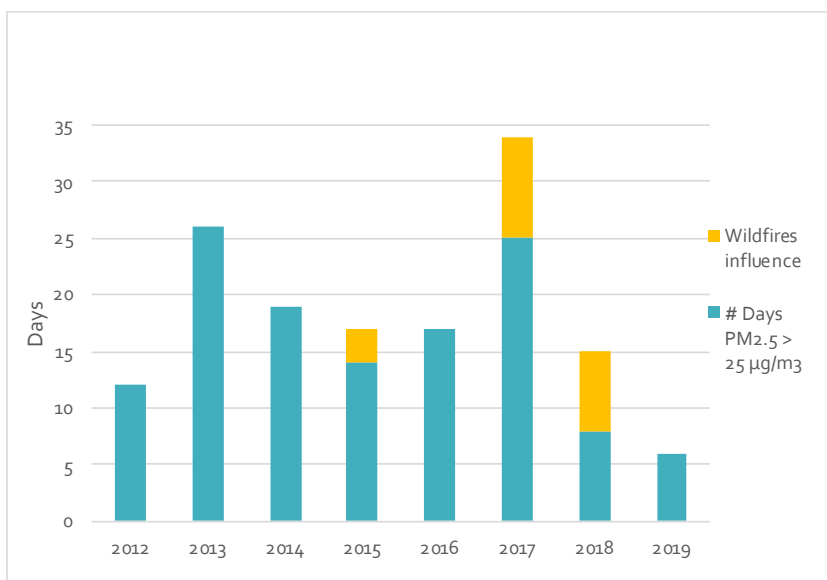


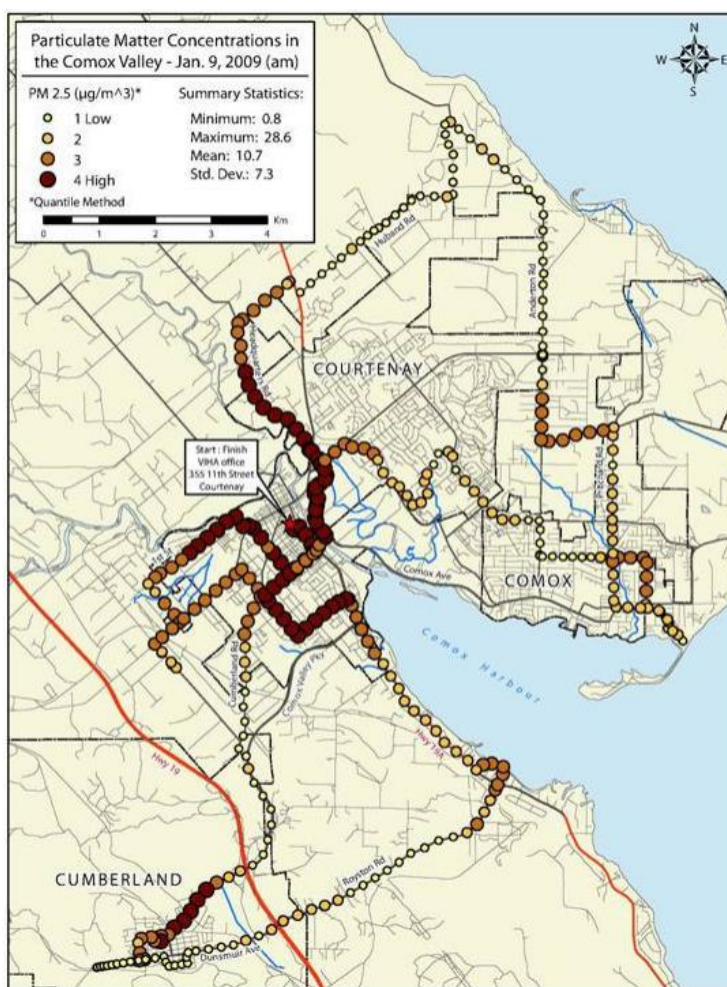
Figure 6. Courtenay Elementary – number of daily exceedances of the provincial AQO for PM_{2.5}

Key findings from studies in the Comox Valley

In addition to the air quality monitoring, AQHI and the emissions inventory discussed above, several studies have been conducted in the Comox Valley to better understand PM_{2.5} pollution and its impacts. These include:

- The earliest study of air quality in the Comox Valley occurred in **2008-2009**, facilitated by a group of stakeholders (residents, local government, Ministry of Environment and University of Victoria) measured elevated levels of PM_{2.5} across large parts of the Comox Valley. The research found hotspots of PM_{2.5} in Cumberland, western portions of Comox, and the commercial/residential areas of Courtenay (see Figure). These hotspots suggested residential wood heating emissions, and could have been affected by local traffic emissions as well. Due to limitations of mobile monitoring, the study recommended further research including long-term monitoring at a fixed site.
- In **2017**, researchers aimed to understand more about the cardiovascular health impacts of PM_{2.5} from burning biomass in three regions in Canada – one being the Comox Valley. The study found that short-term changes in ambient PM_{2.5} were associated with an increased risk of myocardial infarction (heart attack) among elderly subjects. The strongest association was found during colder periods (when residential wood stoves are used the most).¹⁵
- In **2018**, a University of British Columbia graduate student, Matthew Wagstaff, completed a thesis which measured the variation of PM_{2.5} from residential wood smoke using fixed and mobile monitoring during the winter of 2017. The monitoring instruments were able to distinguish wood smoke from other sources of PM_{2.5}. The results clearly showed times and areas where residential wood stoves were the primary source of PM_{2.5}, and they also showed hotspot areas with consistently higher concentrations of PM_{2.5} and wood smoke.¹⁶

Figure 7. PM_{2.5} concentrations in the Comox Valley on January 9, 2009



¹⁵ *Biomass Burning as a Source of Ambient Fine Particulate Air Pollution and Acute Myocardial Infarction*, Weichenthal, et al, Epidemiology Volume 28, Number 3, May 2017

¹⁶ *Monitoring Residential Woodsmoke in British Columbia Communities*, Matthew Wagstaff, Thesis submitted for Master of Science at the University of British Columbia, 2018

Studies from outside of the Comox Valley

In addition to the work conducted to understand air quality in the Comox Valley, experts around the world are conducting studies that link air pollution to health impacts and climate change. The World Health Organization and BC Lung websites are excellent resources to find current information.¹⁷ Some recent studies highlight additional factors that may be relevant to consider when preparing an airshed protection strategy for Comox Valley, including:

- In the USA, researchers are investigating the impacts of long-term exposure to PM_{2.5} and increased risk of COVID-19 deaths. The study found that a small increase in long-term exposure to PM_{2.5} leads to a large increase in COVID-19 death rate.¹⁸
- A recent literature review aimed at understanding the health impacts of wildfire smoke exposure found that wildfire smoke exposure is associated with respiratory morbidity, and that more study is needed to clarify the link with mortality and cardiovascular outcomes.¹⁹
- In Ontario, a recent modelling study revealed that shifting to electric vehicles and cleaner, newer trucks could save hundreds of lives every year due to cleaner air quality, while also cutting almost 70% of the Greater Toronto and Hamilton Area greenhouse gas emissions from traffic, leading to billions of dollars in social benefits.²⁰

4. Air quality management in Comox Valley

In British Columbia, air quality is managed through a range of federal and provincial acts and regulations (laws), local bylaws and programs, and the type of management varies by pollution source. When legislation is developed, it happens through a consultation process with public, business and industry, nongovernmental organizations and other interested parties – demonstrating that air quality management can be complex and involve many levels of government and organizations.

Regulations addressing air quality

- **Federal government:** The *Canadian Environmental Protection Act* (CEPA) regulates motor vehicle standards and fuels, off-road and rail engines and marine engines.
- **Provincial government / Canadian Council of Ministers of the Environment (CCME):** BC is a member of CCME which has set Canadian Ambient Air Quality Standards for PM_{2.5}, ozone, nitrogen dioxide and sulphur dioxide.
- **Provincial government:** BC controls pollution from point and area sources and can require the preparation of air quality management plans through various regulations, including the following of particular relevance to the Comox Valley:
 - *Environmental Management Act (EMA)*: regulates industrial and municipal waste discharge, pollution, and hazardous waste. The EMA is the larger legislation within which the following regulations fall under.
 - *Open Burning Smoke Control Regulation*: regulates land clearing, forestry operations and agriculture, giving the conditions when and where open burning is allowed.

¹⁷ <https://www.who.int/health-topics/air-pollution> and <https://bc.lung.ca/protect-your-lungs/air-quality-lung-health/bc-state-air-report>

¹⁸ <https://www.medrxiv.org/content/10.1101/2020.04.05.20054502v2>

¹⁹ <http://dx.doi.org/10.1289/ehp.1409277>

²⁰ <https://clearingtheair.ca/wp-content/uploads/2020/06/Clearing-The-Air-OPHA-EDC-Final.pdf>

- *Solid Fuel Burning Domestic Appliance Regulation*: requires wood stoves sold in BC to meet certified emission standards, and regulates that only untreated seasoned wood or wood products can be burned.
- *Climate Change Legislation*: numerous regulations aiming to significantly reduce greenhouse gas emissions; in many cases these will have positive impacts on air quality.
- *Wildfire Act and Regulation*: specifies rules and regulations around fire use, fire prevention and wildfire control.
- **Local governments (regional and municipal)**: Local bylaws can be adopted to control emissions for open burning in residential yards, wood stoves and vehicle idling. Local governments can also address air pollution through land use and transportation planning, regional growth strategies, sustainability plans, and local education and incentive programs.

Local government actions addressing air quality

Table 4 highlights local government actions taken to address air quality in the Comox Valley, including regulating open burning and installation of new wood stoves, as well as providing programs that reduce the sources of emissions. Open burning is banned within municipal boundaries, however in certain unincorporated areas open burning is regulated and requires a permit. For example, CVRD bylaw #258 imposes restrictions on open burning and covers select areas outside of the Village of Cumberland. In the CVRD there are many fire service areas - 8 rural, 4 improvement district and 3 municipal – all of these have different bylaws and regulations. This multitude of fire service areas creates challenges for regulating open burning on a regional level.

The **Wood Smoke Reduction Program** is offered through funding from the provincial Wood Stove Exchange Program. In 2020, rebates are being offered for removing a 5+ year old wood-burning appliance and replacing it with a high efficiency gas, pellet or propane stove / insert, or an electric heat pump. Enhanced rebates for electric heat pumps are provided by Island Health for specific areas with higher concentrations of wood smoke.

Table 4. Local government actions in Comox Valley to address air quality

Action	Comox Valley Regional District	City of Courtenay	Town of Comox	Village of Cumberland
Bylaws regulating and/or prohibiting open burning	X*	X	X	X
Bylaw banning installation of wood stoves in new construction		X	X	X
Wood Smoke Reduction Program**	X	X	X	X
Comox Valley Waste Management Centre composting program	X (drop-off only)	X (drop-off only)	X (collection)	X (collection)
Notes:				
* This CVRD bylaw (258) has open burning restrictions that are limited in geographic scope				
** Funding for this program is provided by BC Ministry of Environment, BC Lung Association and Island Health and Island Health				

Actions with potential co-benefits for air quality in the Comox Valley

In addition to the efforts outlined above that directly relate to air emissions in the Comox Valley, several strategies and projects are being implemented by the Comox Valley Regional District that may have co-benefits to air quality, including:

- CVRD, Active Transportation Plan and Gap Analysis on multi-modal transportation in the region (work still to begin): improved access to other modes of transportation can have co-benefits for air quality
- CVRD, Residential Retrofit Acceleration Strategy (in progress): recommended priority retrofit actions in this strategy could impact air quality
- CVRD, Poverty Reduction Strategy (project has been funded and is in the scoping phase): strategy could consider the affordability of alternative home heating options to wood stoves

5. Next Steps

The Regional Airshed Roundtable will work together to develop and implement a Regional Airshed Protection Strategy (airshed strategy). The airshed strategy will be compiled through a collaborative approach, working with organizations and individuals who have been invited to sit on the Airshed Roundtable and Steering Committee (Appendix A). Using baseline information gathered in this state of the air memo and elsewhere, the airshed strategy will be a collection of research, analysis and discussions that lead to the identification of recommended actions that can support the reduction of air pollution within the Comox Valley. Many different organizations will ultimately need to implement actions identified, and so the Airshed Roundtable and Steering Committee will be tasked with advocating for and assisting with implementation of the strategy once developed.

Examples from other airshed strategies in BC

Several types of actions can emerge from an airshed strategy, and a few examples pulled from similar strategies developed by other regions include (note these are not comprehensive lists from any of these plans, just a subset of the full actions each is undertaking):

- Cowichan Valley:
 - Raise public awareness of health impacts of wood smoke
 - Develop consistent bylaws for open burning and for wood stoves across the region
 - Explore options for curbside pickup of yard and garden material
 - Promote use of alternative heating systems
- Alberni Valley:
 - Annual woodstove exchange program offers incentives to remove old stoves
 - Education about air quality action areas, focusing on reducing emissions from outdoor burning, wood heating and vehicles (see Appendix B for an infographic summary)
- Prince George:
 - Support the development of new research projects in the airshed that enhance understanding of particulate matter and odour emissions sources
 - Provide a forum for inter-agency communication and collaboration to address air quality
 - Communicate air quality needs and potential solutions to key agencies and individuals in the community, who may or may not be members of the Roundtable
- Central Okanagan:
 - Integrate air quality requirements and targets into transportation and land use plans
 - Minimize pollutant emissions from yard maintenance activities and recreation activities
 - Make local air quality information accessible to decision makers

- Make air information available to all citizens and businesses

Next steps for Comox Valley

The Regional Airshed Roundtable began with a meeting of the Steering Committee on June 18, 2020. This group is being supported by an Air Quality Coordinator (Pinna Sustainability) hired by the Comox Valley Regional District, and staff at CVRD. The following next steps will be taken to launch the work of the Regional Airshed Roundtable:

Year 1:

- **September 2020:** Regional Airshed Roundtable will meet for the first time, including members of the Steering Committee and those invited to the Roundtable.
- **Fall 2020:** State of the Air Memo to be published with a FAQ for public forthcoming in early 2021.
- **Fall 2020-Spring 2021:** Meetings of the Roundtable and Steering Committee to begin the development of the airshed strategy. Communications provided to the residents of the Comox Valley on the current events and actions of the Roundtable. The primary means of communication will be through the project webpage at www.comoxvalleyrd.ca/airshedroundtable.

Year 2:

- Conduct public engagement to inform the strategy development.
- Roundtable and Steering Committee complete the airshed strategy.
- Continue to develop and share communication material with the public.
- Identify and apply for funding to support key initiatives.

Year 3:

- Coordinate and advocate for implementation of the strategy actions.
- Continue to share communication material with the public.
- Continue to seek funding to support key initiatives.

Concurrently, during winter 2020 the CVRD's 2020 Wood Smoke Reduction Program will continue to communicate and engage with the public about reducing emissions from wood smoke, with a focus on wood stoves and open burning.

Appendix A: Airshed Roundtable and Steering committee membership

Airshed Roundtable

The purpose of the Regional Airshed Roundtable is to:

- Help establish shared priorities through issue identification;
- Offer potential solutions to issues identified;
- Help inform public policy on clean air in the region;
- Provide advice and support to the Steering Committee;
- Share information with the organizations / groups that they represent.

Airshed Roundtable Participant Organizations:

- Breathe Clean Air Comox Valley
- Chamber of Commerce
- Comox Valley Community Health Network
- Comox Valley Farmers' Institute
- Comox Valley Fireplace and Patio
- Comox Valley Nurses for Health & the Environment
- Comox Valley Regional District
- Cumberland Community Forest Society
- Elemental Energy Advisors
- Focused Energy Assessments
- Hancock Natural Resource Group
- Hearth, Patio, & Barbeque Association of Canada
- Norse Heating
- Mid Island Farmers' Institute
- Vancouver Island Health Authority (Environmental Health)
- Vancouver Island Health Authority
- 6 members of the general public
- Town of Comox*
- Peakflow Energy Solutions*
- Fire Chiefs Association*
- Mosaic Forest Management*
- CVRD's Integrated Regional Transportation Select Committee*

* Passive members: receive summary notes from Roundtable meetings and have the opportunity to provide feedback

Steering Committee

The purpose of the Steering Committee is to:

- Advance work, including setting priorities and providing direction;
- Identify gaps in knowledge, and support research and engagement to reduce those gaps;
- Support strategic planning including lending expertise;
- Act as champions for air quality management in the Comox Valley.

Steering Committee Participant Organizations:

- Comox Valley Regional District
- City of Courtenay
- Village of Cumberland
- BC Wildfire Service, Forest Lands Natural Resource Operations and Rural Development
- Air Quality Section, BC Ministry of Environment and Climate Change Strategy
- Air Quality Section, BC Ministry of Environment and Climate Change Strategy
- Vancouver Island Health Authority
- Applied Environmental Research Lab, Chemistry, Vancouver Island University
- Town of Comox
- K'ómoks First Nation

Appendix B: Example – Port Alberni Air Quality Action Areas Infographic

KEY ACTION AREAS

Alberni Valley Air Quality

HELP REDUCE AIR POLLUTION

OUTDOOR BURNING

Backyard burning and land clearing debris burning is **NOT** permitted within the City of Port Alberni.

Construction material and other non-household garbage must be taken to the landfill for proper disposal.

Instead of burning leaves and other yard debris, you are encouraged to compost and reuse as mulch or topsoil.

Sticks, branches, leaves and grass clippings are also free to drop off at the Alberni Valley Landfill.

Waste Disposal Alternatives

Recycle: newspaper, used oil, plastic bottles, magazines, cans, cardboard
Compost: yard waste, vegetable scraps
Reuse: clothes, donate to charity
Buy Smart: avoid unnecessary packaging

Campfires for cooking, ceremonial purposes, or social enjoyment are permitted throughout the year between dawn and 10:00pm.

Campfires must use only clean dry wood.

WOOD HEATING APPLIANCES

All woodstoves in Port Alberni **MUST** meet the the Canadian Standards Association (CSA) or Environmental Protection Agency (EPA) certification by May 31, 2017.

Older woodstoves use up to 1/3 more wood and generate up to 70% more pollution.

Stoves operated properly can increase heat output by up to 15%. Burn only clean, dry wood.

Please refrain from using woodstoves during air quality advisories.

Visible smoke is unburned fuel. Burn hot, burn clean.

Did You Know

- During winter months, clear sunny days and any time after the sun goes down are the worst times to burn as the atmosphere's ability to disperse the smoke is very poor.
- Research estimates 70% of smoke from chimneys can actually reenter your home and your neighbour's home.
- Tiny particles in wood smoke can negatively affect both you and your neighbours health. Wood smoke can also increase the risk of heart and asthma attacks, particularly with older adults, children and people with lung or heart disease.

VEHICLE EMISSIONS

Idling of vehicles is restricted in Port Alberni and **NOT** permitted around schools.

Idling discharges harmful pollutants that affect us all. By idling your car, you are particularly placing young children, the elderly and people with respiratory problems at a greater health risk. In addition, idling more than 10 seconds costs more than turning off your engine and can also reduce engine life up to 20%.

A ski rack or luggage box can increase fuel consumption by 22%.

Older vehicles consume more fuel and cause more air pollution.

Tuned vehicles with properly inflated tires use less fuel.

You can help reduce vehicle emissions by walking, cycling or taking the bus in place of driving.

In Canada, each of us makes an average of 2,000 car trips of 3 km or less each year. You can save money, improve your health and reduce air emissions by making the switch.

To report nuisance/air quality concerns call the Port Alberni Firehall: **250-724-1351**
To report potholes or poachers call the BC Conservation Officer Service: **1-877-952-7277**
For more information please visit: www.acrd.bc.ca/air-quality-council-web-directory

