

**December 5<sup>th</sup>, 2019 Committee of the Whole  
Cruise-ships emissions and waste and the CoV Climate Leadership Plan**

**SLIDE 1)** Thank you for giving leave for us to speak to the Council motion concerning emissions and waste from cruise-ships.

I'm Marg Gardiner. President of the James Bay Neighborhood Association and lead on the emissions file since 2006, when JBNA approached VIHA to study emissions from the dark plumes which were over our community. Also speaking today is Bob Vander Steen, who joined the JBNA quality of life committee in 2011, and as a seasoned industry engineer, soon became a key member of the air quality group working with the UVic scientists studying air quality.

**SLIDE 2)** We will touch upon various aspects of cruise-industry emissions and waste which are the subject of the motion requesting staff to look at the authority of the city regarding control of the use of Victoria as a Port-of-Call.

Our review was done in light of the ambitious and bold *Climate Leadership Plan* which was presented to you by staff on November 14.

**SLIDE 3)** The dramatic and unbridled growth of the industry has left the City in a catch-up position with respect to environmental and quality of life impacts.

Both the number of visits and the size of the ships have increased. 5 years and next year will see a 8% passenger increase; this year saw a 21% increase; with increases of 50% over the last 5 years and 160% over the last fifteen.

**SLIDE 4)** In 2006 ships arrived on Thursday to Saturday evenings only.

Expansion of the industry has meant that ships now arrive on any day of the week. With the weekend berth slots being saturated weekday visits are now increasing.

**SLIDE 5)** The average passenger time in port has stabilized at around 6.7 hours.

In 2020 ships will visit Victoria for 139 days leaving the community with few cruise ship free days during late spring and summer

**SLIDE 6)** This is not a surprise as the industry has been forthright about expansion. In 2012, GVHA commissioned industry reports. This and the following slide are from the Bermello, Ajamil & Partners study.

**SLIDE 7)** The Alaska growth since 2012 follows the high growth line – the purple one. The 3 year dip was a reflection of the 2008 recession. The intention was and remains unbridled growth.

**SLIDE 8)** Recently, Mayor Helps spoke of “*clouds of black smoke billowing over the legislature*”.

As an energy source, almost all ships burn bunker fuel, using scrubbers to eliminate SO<sub>2</sub>. After removal of Sulphur compounds, emissions are Green House Gases, particulate matter, and small amounts of volatile organic compounds. In addition to “black clouds”, residents have commented on **orange and brown plumes**. We are seeing the nitrous oxide (N<sub>2</sub>O) and particulate matter in water vapour.

**SLIDE 9)** Information from the 2006-2009 CALPUFF air quality analysis is useful today. The schematic on the left is the 24-hr SO<sub>2</sub> dispersion schematic, based on sampling in the field. The graph to the right provided conclusive evidence of the impact of cruise-ships in the region. The green curve peak, shows SO<sub>2</sub> at the CRD Topaz monitoring site during the 2006 cruise season. Ships created more SO<sub>2</sub> than all the vehicles in the Topaz area - in 2006 there were 185 ship visits – smaller ships with mainly Thursday to Saturday visits.

Yet, the CALPUFF Study team had **modelled acceptable** levels of SO<sub>2</sub>. The MAML schematic at the bottom of the slide shows the severity of the SO<sub>2</sub> during the 89-day actual measurement period when a mobile laboratory was quietly placed beside MacDonald Park in James Bay. On the daily maximum level, SO<sub>2</sub> was higher in James Bay than in Trail BC.

How? Why did the study model suggest 1/3 of the measured level?

The answer – the model was based on industry asserted 1.6% sulphur in the fuel. Bunker fuel has 4-4.5% S.

The subsequent VIHA health assessment stated possible premature deaths. To its shame – the City said nothing – silence.

**SLIDE 10)** The SO<sub>2</sub> problem has been resolved. In 2011 after the Ministry of Environment placed a SO<sub>2</sub> monitor station in James Bay, SO<sub>2</sub> emissions were halved. As ECA, the North America Emissions Control Area agreement, came into effect, SO<sub>2</sub> levels lowered further – and are no longer a problem.

There was an anomaly in 2014 when the highest level recorded occurred on May 9. At an open GVHA meeting a week later, Greg Wirtz, then President of CLIA, recognized the high SO<sub>2</sub> event, stating that the Ogden berths were uniquely adjacent to residences and that CLIA had advised against 4 ships in a day.

**SLIDE 11)** Residents are aware of the plume and are taking to social media to tell their stories. Of course, with social media, we don't always know if a person is a resident of the City, a nearby municipality, or a visitor.

**SLIDE 12)** The CALPUFF modelling in 2008 did more than examine SO<sub>2</sub>. It also assessed the dispersion of particulate matter, both larger 10 micron and fine particulates, 2.5 microns and less.

Although there are many more ships now and the stacks of the current fleet of ships are higher, new studies are not needed as the existing schematics serve as proxies. Fine particulates are of concern as the use of scrubbers is known to reduce large particulates while increasing fine particulates. Although large particulate matter is more visible, creating soot-like dust, the fine particulates are more of a health concern as they more easily enter the lungs. One of the documents submitted in support of this presentation provides a link to a report of an undercover measure of particulates on 4 Carnival ships.

**SLIDE 13)** The dispersion schematics for NO<sub>x</sub> speaks more directly to Mayor Helps comment about dark plumes billowing over the legislature.

As the Emissions Control Agreement came into effect, the scientists from UVIC cautioned that although the SO<sub>2</sub> would be resolved, nitrous oxides and other compounds would be emitted, and people with chemical sensitivities would continue to experience problems. Except for those whose health is compromised, the emissions would create a quality of life issue more than a direct health problem.

**SLIDE 14)** Alaska, unlike Victoria, monitors ship emissions.

In 2018, 10 ships which visited both Alaska and Victoria received air and water violation notices.

These same 10 ships accounted for over 40% of the total cruise ship visits to Victoria in that year.

**SLIDE 15)** The City of Victoria has documented its GHG reduction targets both long term and on a yearly basis.

From 2020 until 2030 the City has projected a yearly 6% reduction target in GHGs,

**SLIDE 16)** From the GVHA emission report we see that GHG emissions have increased at 7% a year since 2010 and currently account for 3.3 % of the City's annual GHG emissions during the 6-month cruise ship season.

With the City reducing GHG by 6% a year and cruise ship emissions increasing by 7% a year the cruise ship emissions will account for 7% of the City's total by 2025.

**SLIDE 17)** The recent Synergy Emissions Inventory report was well publicized by GVHA, the press and television but not once was it mentioned that NO, repeat NO, cruise ship emission measurements were taken at Ogden Point.

This should have been clearly stated within the report's Executive Summary, not solely contained within a lengthy paragraph on Page 11.

The data within the report is entirely theoretical and assumes low sulphur fuel (cruise ships with scrubbers burn high sulphur fuel), as well as no mechanical failures and that the cruise companies behave in an environmentally ethical manner.

The scrubbers are required, and have proved their capability, to reduce sulphur dioxide emissions to the level that would be achieved if the ships were burning low sulphur fuel.

The same equivalency is not required for particulate matter. The ships burn high sulphur fuel in port but the report has assumed low sulphur fuel when calculating particulate matter emissions.

**SLIDE 18)** The words "shore power" or "cold ironing" have been dangled as a cure-all. Talk and studies followed a few years later with more talk and studies - while other mitigation or control measures have been dismissed. Yet, shore-power may not by itself be the "solution" to emissions from cruise-ships which are burning bunker fuel or other petroleum. In Vancouver, which has shore-power, the use of the facility has been limited – and declining.

**SLIDE 19)** In 2018 only 26% of visits connected while 37% of ships were capable. In 2015 84% of ships capable of using shore-power connected while in 2018 only 70% of the ships capable of using shore-power connected.

There are necessary conditions for shore-power to be **the** emissions solution. Previous proposals involved an arm at the north pier which could be used to service ships on either side of the pier. This suggests that benefits would be achieved with a limit of 2-ships in port at the same time. Also staggering arrivals and departures would facilitate hook-ups.

Although the slide, and previous GVHA studies, suggest that shore power would should be used only for long-stays, technological advancements have shortened the time period. Newer ships could use shore-power with the short 4.5-hour visits.

Regarding the BC Hydro grid, in addition to accessing the grid, a battery bank, in one of the large buildings by the piers could be charged during the off-peak night hours and serve as a reserve for peak hour visits.

Mayor helps has suggested that any shore-power should not be financed by the taxpayer. The multi-billion-dollar industry has already received taxpayer subsidy through government grants.

We understand that the shore power used by the Cable-Ship, the Innovator, was installed and paid for by the cable-ship company.

Suggestions that the industry will reduce the “rate” of carbon emissions are worrisome if the number of ships and expansion means less or no net reduction.

**SLIDE 20)** Many players are involved in air quality. GVHA as landlord is responsible, with its tenants, for pollution created by the tenants.

The City for land use zoning and bylaws and for local activities, included use of our streets. The Government of BC and Federal government for airshed matters while Transport Canada is responsible for the behaviour or compliance of ships while they are in federal Canadian waters.

**SLIDE 21)** The schematic is from the Ogden Point MasterPlan document. The red dashed line represents the property line boundary. The Ogden waterlot is within the City. The blue rectangular waterlot to the north belongs to transport Canada and until recently was used by Mercury Marine.

The “Landlord’s Liability document is provided as a support document to this presentation.

When cruise-ships enter the Public Port of Victoria they are in federal waters, **but once they maneuver and enter the Ogden Point waterlots they leave federal waters and enter GVHA property within the City of Victoria boundary.**

**SLIDE 22)** Ogden Point is zoned M-2, light industrial. There is a performance zoning clause which prohibits activities which are noxious or offensive to the immediate neighbourhood – to those who live on the west side of James Bay, near Ogden.

Note also that a waste sorting and distribution centre is not identified as a permitted use.

**SLIDE 23)** GVHA owns, fee simple, Ogden Point lands and waterlots. As landlord, GVHA shares liability, responsibility for the pollution created by its tenants, the hoteling cruise-ships. As a landlord hosting porting activity, it is also GVHA's responsibility to know what pollution is being created by their tenants.

Contract law trumps regulatory law. GVHA has the power to alter behavior of the industry. A new pier nearing completion in Seattle will support the expansion of the industry and the increasing need for a port-of-call, for a stop in Victoria.

The City is responsible for zoning of lands and waterlots within City boundaries. It is also responsible for ensuring compliance with respect to zoning and other bylaws.

**SLIDE 24)** Victoria's Official Community Plan recognizes the need to consider public health and ecological implications including air quality and noise.

**SLIDE 25)** The James Bay Neighbourhood Plan identifies the importance of industries, whether new or established, be compatible with the neighbourhood.

**SLIDE 26)** For many years JBNA has been assessing the ground transportation impacts, created by the cruise-activity, on the community, using data collected by the City.

Residents have identified, year after year, congestion, noise, and safety issues associated with buses and taxis.

Working with city staff, monitoring sites are selected each year. The map shows data collection sites for 2019.

**SLIDE 27)** In May of this year the City set up traffic monitors at 5 James Bay locations.

We were provided with the data and, by correlating this data with ship times, we were able to compare traffic volumes and speeds for both "ship in port" days and "no ship days".

The chart shows the traffic volumes on Dallas Rd for no ship, 1 ship, 2 ship and 3 ship days.

The highest vehicle count on a no ship day is about 150/h and on a 3 ship day about 420/h.

**SLIDE 28)** There have been numerous complaints about speeding taxis primarily from residents on Montreal and Oswego Streets. This is a problem that appears to be recognized by GVHA.

This chart clearly shows the high number of vehicles per hour exceeding 50 km/h, when cruise ships are in port, on Oswego, a residential street.

Of particular concern are the 3 ship Friday & Saturday evenings when up to 40 vehicles an hour exceed the speed limit.

**SLIDE 29)** JBNA has been consistent over the past 12 years in seeking changes which would provide mitigation to reduce traffic surges when 2 or 3 ships arrive or depart in the same hour.

These traffic surges lead to nearly empty buses and taxis scurrying to and from downtown through our community in an attempt to maximize the number of trips to and from Ogden Point.

**SLIDE 30)** The City could bring order and calm the traffic. Pedicabs and horse carriages are limited in range and number of licences; why not buses? Walking should be more actively encouraged.

GVHA has access control to Ogden Point and could, through contracts, alter cruise schedules and better control ground transportation providers.

GPS technology to monitor vehicle speed is available and should be mandatory on taxis accessing Ogden Point

**SLIDE 31)** Jurisdictions elsewhere in the world are making changes.

They are bringing the industry under control in an effort to improve the environment and quality of life for their residents and businesses.

Cities are levying passenger taxes to compensate for the costs borne by the city through use of streets and other public amenities.

**SLIDE 32)** Although we have not checked into which other North American ports have shore-power, on Tuesday we received the tweets from Integrity BC.

They state that California is about to raise the percentage of ships that must use shore power from 70 to 80%

**SLIDE 33)** The leasing of what used to be public land for waste management purposes to serve the multi-billion-dollar cruise industry has been a great

disappointment. Beyond the burden being placed on the James Bay community which has restricted road access in and out of our community, the mere idea of Victoria, of Canada, accepting tons of waste to be sorted and disposed of for other countries is abhorrent.

We have heard talk of barges, but not seen any. If barging is to be done, it should be from Ogden. Taking over a 1000 tones of recycling a month via truck through James Bay streets is not a solution.

It will cost us all, either through direct traffic and other impacts thrust upon James Bay, or through our GHG reduction needs.

Simply put – this is wrong – and insulting to the community.

**SLIDE 34)** The City and CRD are rightly targeting reductions – not only for their activities, but for residents and businesses. To ask us to reduce while accepting waste from floating resorts which may create more waste than our own community is ludicrous.

It belies the principles purported by Mayor and Council and rightly expressed in the recently introduced Climate Leadership Plan.

As an aside – please note the photo – some ships provide mobility scooters for those who are mobility challenged.

**SLIDE 35)** The cruise-industry gains tremendous value by using Victoria a Port-of-call. Although the head offices of most of the cruise-lines using Victoria as a port-of-call are in Seattle or Miami, the ships are not made in the states and hence subject to fines under the US Passenger Vessels Services Act if they do not stop in a “foreign” port on the Alaska run.

The base-value of Victoria to the industry is  $\frac{3}{4}$  of a billion dollars. Added to this benefit is revenue from Shore excursions and tax-dollar subsidy through infrastructure grants to GVHA for the Dolphins and other facility improvements. And now the convenience of using Victoria – James Bay – as their waste grounds.

As part of this presentation we have provided 2-page document with links to articles and studies which speak to the environmental integrity of the cruise-industry. We ask that you read each of the documents.

**SLIDE 36)** The City is embarking on a challenging, forward-looking initiative. The ***Climate Leadership Plan***. The impacts we have discussed – emissions – transportation – and waste are but the beginning. As the Climate Leadership Plan explains, going forward with “Embodied Emissions” Victoria will need to consider

the GHG while ships are travelling along the Strait of Juan de Fuca, the gray water, and other impacts relating to the environment and wildlife.

**SLIDE 37)** Mayor Helps asked – “**what is the story that we’re telling about our city?**”. The City cannot reasonably ask or expect residents or businesses to commit to the ambitious targets of net-zero carbon while inviting floating resorts into the city - unless that industry meets the same targets. Does the city expect the 6000 residents who receive direct emissions to stay indoors with their windows closed? With south and west windows, it may give a unique Victoria version of the term “greenhouse gas effect”

About 8 years ago, a ship came unto port using LNG. It was clean in that the plume was clear – suggesting no Sox or NOx and little if any particulate matter. The industry is building more LNG ships – but only half the ships being built are LNG.

What we have seen over the past couple of years, as other cities have led the way, is that the industry will adapt – if it must. The industry is not leading, The City of Victoria is not leading. **The City needs to be bold.**

**SLIDE 38)** James Bay residents welcome tourists. We share our community. ***Good tourism interacts with community. Bad tourism impacts on community.***

To gain social license, the cruise industry needs to change – it needs to respect the communities it visits and to become a good corporate citizen in our city.

**SLIDE 39)** My final words are those of Jennifer Wieland who presented the City’s Sustainable Mobility Strategy with Fraser Work on November 14. She said

***“You get to set the rules, you get to tell the folks how you want them to innovate, how you want them to operate in your city and in your region . . . You also have the most valuable assets to control . . . You have the right of way, you have lands, and you have the ability to shape what the city looks like.”***

We would welcome any questions you may have.

Thank you

(switch to last slide)

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<https://www.esg.adec-innovations.com/about-us/faqs/what-is-ghg/>

## **What is GHG?**

Greenhouse gases, or GHGs, are compound gases that trap heat or longwave radiation in the atmosphere. Their presence in the atmosphere makes the Earth's surface warmer. Sunlight or shortwave radiation easily passes through these gases and the atmosphere. This radiation is absorbed by the surface of the earth and released as heat or longwave radiation. The molecular structure of GHGs allows them to absorb the heat released or trap them in the atmosphere and re-emit them back to the earth. This heat trapping phenomenon is known as the greenhouse effect. The accumulation of GHGs since the industrial revolution has accelerated this greenhouse effect, causing global warming and climate change.

The principal GHGs, also known as heat trapping gases, are carbon dioxide, methane, nitrous oxide, and the fluorinated gases. Carbon dioxide composes 64.3% of GHGs. It enters the atmosphere through the burning of fossil fuels, solid waste, trees and wood products, and certain chemical reactions. It is removed from the atmosphere naturally by plants as part of the biological carbon cycle. Methane is released to the atmosphere by the production and transport of coal, natural gas and oil, livestock and agricultural practices, and the decay of organic waste in municipal solid waste landfills. Nitrous oxide (N<sub>2</sub>O) is emitted during agricultural and industrial activities, and during combustion of fossil fuels and solid waste.

GHGs can also be classified into two different types: forcing GHGs and feedback GHGs. Forcing GHGs are the four above-mentioned gases: carbon dioxide, methane, nitrous oxide, and the fluorinated gases. They take many years to leave the atmosphere and don't react to changes in temperature or air pressure, so they are not easily removed. Feedback GHGs are water vapor. They last in the atmosphere for only a few days, and are highly active components of the climate system, meaning they respond rapidly to changes in conditions. They act as feedback to GHGs by circulating the greenhouse effect or by accentuating the warming effect of forcing GHGs.