

<b>POLICY TITLE</b>	Internal Corporate Carbon Pricing
<b>CATEGORY</b>	Administrative
<b>POLICY NUMBER</b>	ADMIN-019
<b>POLICY OWNER</b>	Finance, Risk and Supply Chain Management
<b>ACCESS</b>	Public

## PURPOSE

The purpose of Vancouver’s Internal Corporate Carbon Pricing Policy is to inform City decision-making by helping staff to quantify actual and/or notional costs associated with policy, business and operational decisions that may give rise to, or that may reduce, *Applicable Sources of Carbon Pollution*. The current scope of this Policy is described below. Other applications of the Policy, for example, beyond City assets, operations, projects, initiatives, policies or by-laws, will be periodically reviewed and may be added to the scope subject to further legal and other analysis as well as City Manager and Council approval as appropriate.

## CURRENT SCOPE

This policy is applicable to options analyses that use *Life Cycle Cost Analysis* to inform decision-making in respect of the following City assets and operations:

- Procuring vehicles and other mobile equipment for corporate use, procuring fuels for such vehicles and other mobile equipment, and the use of telematics to improve the utilization of such vehicles and other mobile equipment.
- Acquiring existing buildings, developing new City buildings, procuring upgrades to the energy efficiency of existing City buildings, procuring upgrades to energy-using equipment at City buildings, procuring upgrades to equipment that produce emissions at City buildings, and procuring energy sources for City buildings.
- Managing methane emissions from the Vancouver Landfill.

## DEFINITIONS

“**Applicable Sources of Carbon Pollution**” is carbon pollution associated with City assets or operations (expressed in *Carbon Dioxide Equivalent*). Carbon pollution can be created through energy use, industrial processes, wastes, and those avoided through ecological carbon storage/sequestration.

“**Carbon Dioxide Equivalent (CO<sub>2</sub>e)**” is the common metric used to quantify and compare different types of carbon pollution, and is expressed in tonnes over a 100-year timeframe.

“**Carbon Price**” is the dollar value (including any provincial and federal carbon taxes) the City assigns to one tonne of CO<sub>2</sub>e.

“**Life Cycle Cost Analysis**” is the process to establish the net present value of all costs and revenues associated with alternative outcomes depending on a decision made in respect of a City asset or operation over its expected life.

**POLICY STATEMENTS**

When undertaking an options analysis for a City asset or operation in the Current Scope, the *Carbon Price* will be used to calculate the value (expressed as a cost) of *Applicable Sources of Carbon Pollution* associated with each option. This value will be included in the *Life Cycle Cost Analysis* for each option alongside other relevant or actual costs (e.g. capital, operating and energy costs). Potential revenue streams (e.g. federal or provincial grants, low carbon fuel standard credits, etc.) should also be part of the *Life Cycle Cost Analysis* and such opportunities should be prioritized in developing business cases.

**Carbon Price**

In *Life Cycle Cost Analysis*, the City will use the *Carbon Price* (inclusive of any applicable provincial and federal carbon taxes) as outlined in Table 1.

Year	Carbon Price
2018	\$150 per tonne of CO <sub>2</sub> e
2019	\$150 per tonne of CO <sub>2</sub> e
2020	\$155 per tonne of CO <sub>2</sub> e
2021	\$160 per tonne of CO <sub>2</sub> e
2022 and beyond	Previous year’s price multiplied by 1.06

Table 1: City of Vancouver Carbon Price schedule

The above will be in effect as long as the sum of provincial and federal carbon taxes, current and future, do not exceed the *Carbon Price* for any given year; otherwise, the *Carbon Price* will need to be adjusted to reflect the provincial and federal carbon taxes of the day.

On an annual basis, the Sustainability Group will calculate and make available the incremental cost per unit of purchased energy (e.g., litres of gasoline, GJ of natural gas), as well as the cost per unit of other *Applicable Sources of Carbon Pollution*.

**Application**

For City assets and operations in the Current Scope, the *Carbon Price* will be used to calculate the value of *Applicable Sources of Carbon Pollution* associated with the following categories of emissions:

- Scope 1 emissions are those that are directly released from an activity (e.g. the tailpipe emissions from a gasoline or diesel vehicle).
- Scope 2 emissions are those that are directly released from the production of electricity and/or heat supplied for an activity (e.g. the emissions from generating the electricity needed to power an electric vehicle).
- Scope 3 are indirect emissions for an activity other than those covered by scope 2 (e.g. the carbon released through the manufacture of the concrete and steel used in a building).

If scopes 1, 2 or 3 emissions are unavailable or unreliable across all options, staff will have the discretion to exclude one or more scopes from the options analysis.

### Periodic Review

In consultation with Engineering, Real Estate and Facilities Management and other applicable departments, the Sustainability Group and the Long-term Financial Strategy team will review the *Carbon Price* schedule every five years with the first scheduled review occurring in 2022. Any recommended changes require approval by the City Manager and the Director of Finance, and Council as appropriate. Details of the reviews will be recorded in a [companion document](#), maintained by the Sustainability Group.

### Decision-making Guidance

In cases where the lower carbon option has a lower cost when the carbon price is applied to the life cycle cost analysis, but not when it is excluded, staff should generally select the lower carbon option. However, the decision is subject to funding availability and other decision-making criteria. For example, a low carbon option would not be selected if it did not meet staff functional requirements, or if there were budgetary constraints that prevented selecting that option.

### SUPPLEMENTAL INFORMATION

Further information on the development of the City’s Corporate Carbon Pricing Policy is available in Appendix A.

### APPROVAL HISTORY

Version 1 approved by:	Finance, Risk and Business Planning	12/7/2018
	City Manager	12/17/2018
Version 2 approved by:	Finance, Risk and Supply Chain Management General Manager	06/09/2023

**Next review date**                      **6/9/2026**

## Appendix A - Supplemental Information (2018)

This section provides information that supported the Carbon Pricing Policy when it was introduced as a new concept. The context has changed since the Policy was first adopted, and other municipalities and jurisdictions are implementing internal carbon price policies. In addition, governments such as Metro Vancouver are considering significantly higher carbon prices.

### *Context*

City Council approved development of an internal corporate carbon pricing policy through the Renewable City Strategy (RCS) in 2015 and the subsequent Renewable City Action Plan (RCAP) in November 2017. The RCAP directs staff to “Develop and implement a corporate carbon pricing policy building on the leadership shown by Metro Vancouver through the development of a similar policy in July 2017.”<sup>1</sup>

Although the social, environmental, and economic benefits of reducing carbon pollution are well established, they are often under-represented in decision-making processes. Setting a corporate carbon price is one approach that organizations can use to better account for those benefits. Integrating a carbon price into decision-making processes provides a consistent shift towards lower carbon outcomes such as renewable energy and energy efficiency.

The City’s internal corporate carbon pricing policy is a “price on paper” used in financial analyses to compare actual and/or notional costs for different options. A corporate carbon price is not the same as a carbon tax, which is a carbon price set by a government and applied across a jurisdiction. In those cases, the carbon tax is paid by residents, businesses, and other organizations based on the carbon pollution they emit, thereby providing an incentive for them to reduce their carbon pollution. In this case, the carbon price is used to inform decision-making in respect of City assets or operations to help the City reach its climate change targets, but there is no payment or transfer of funds related to the internal carbon price.

In developing the Policy, staff have tried to develop a tool that will be: a) straightforward to understand and integrate into decision making processes, and b) a positive example to contribute to municipal, provincial and national carbon pricing discussions.

### *Policy Precedents*

In July 2017, Metro Vancouver implemented a Carbon Price Policy using a net price of \$150/tonne CO<sub>2</sub>e. The ‘net’ refers to the relationship with BC’s carbon tax, where in Metro’s case they keep the \$150/tonne constant as the provincial taxes increases (e.g. with the BC Carbon Tax at \$35/tonne, Metro Vancouver adds \$115/tonne to their corporate decisions).

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<sup>1</sup> The Metro Vancouver corporate carbon pricing policy is available at:  
[http://www.metrovancouver.org/boards/GVRD/RD\\_2017-Jun-23\\_AGE-Revised.pdf](http://www.metrovancouver.org/boards/GVRD/RD_2017-Jun-23_AGE-Revised.pdf)

The price is used to quantify the value of carbon pollution associated with natural gas, liquid petroleum products, propane, and electricity purchased to power Metro Vancouver's operations. It also applies to fugitive emissions released from wastewater treatment and municipal solid waste management, and avoided emissions from energy recovery and protection of park land. In accordance with the policy, the carbon price informs decisions while planning projects that result in carbon pollution. To do this, Metro Vancouver incorporates the carbon price into the life cycle cost analysis when making decisions. Such projects may involve large infrastructure, fleet planning, retrofitting, park and land protection, or district heating.

Other local government examples include New Westminster, Saanich and Dawson Creek, which have corporate carbon pricing policies in place for internal operations. Through the development of Vancouver's Policy, staff from other local governments have expressed interest in the approach, including West Vancouver, the City of North Vancouver, Victoria, Surrey and Toronto, along with the BC and federal treasury boards. Further afield, the City of Stockholm uses corporate carbon pricing to account for embodied emissions in its construction projects.

Beyond local governments, many corporations have successfully implemented internal carbon pricing. According to the Carbon Disclosure Project, over 1,389 companies are putting a price on carbon or are in the process of doing so. Several local companies such as Nature's Path, MEC and Arc'teryx are exploring corporate carbon pricing for their operations.

Corporate carbon prices range from Microsoft's price of \$4.40 to Novartis' price of \$100 (in USD/tonne CO<sub>2e</sub>). These taxes are typically applied to direct and indirect emissions (scope 1 and 2) but not consumption-based emissions (scope 3) from the company's operations, projects, or supply chain; only a few companies, such as Microsoft and La Banque Postale, currently take scope 3 emissions into account. Most businesses use carbon pricing to reach their climate targets and reduce financial risk. Some are also using carbon pricing as a tool to drive corporate culture change and raise consumer awareness.

Most of the companies use their internal carbon price to inform decision-making processes. Corporations typically use this framework when deciding which assets or projects to invest in. Much like Metro Vancouver, companies run a life cycle analysis that incorporates the carbon price. A group of decision-makers would then analyze the scenarios and select the most economically and environmentally sensible option.

Some companies earmark revenue from their carbon prices in addition to using them to influence decisions. The earmarked funds often go towards further reducing carbon pollution. For example, Disney purchases carbon offsets, such as forest-carbon projects, with their carbon tax fund.

Incorporating an internal carbon price has yielded positive change for the participating corporations. Most companies have reported a reduction in carbon pollution because of the carbon fee and are on track to reaching their reduction targets. In 2016, Unilever reached their 2020 targets ahead of schedule by reducing emissions by 43% from 2008 levels. Microsoft has reported that using a carbon price as a tool for decision-making has embedded a culture of sustainability leadership amongst their

employees. Similarly, carbon pricing policies at Yale, Disney, and Royal DSM have prompted positive behaviour change and creative thinking.

### *Illustrative example*

The following example shows how a corporate carbon price could influence the decision between fossil natural gas and renewable natural gas. The example is based on a corporate carbon price of \$150/tonne, which is the price used by Metro Vancouver.

Without a corporate carbon price, the City can purchase fossil natural gas from FortisBC for \$3 per gigajoule (GJ), while renewable natural gas costs \$9 per GJ. If a decision between these two options was made based on least financial cost (i.e. not accounting for the social, environmental and economic impacts of climate change), fossil natural gas would be a clear winner.

To account for those costs, the life cycle carbon intensity of each fuel is multiplied by the carbon cost and added to the based financial cost. These calculations are shown in the following table. As shown, the carbon cost of fossil natural gas adds \$10 per GJ, while the carbon cost of renewable natural gas adds \$1 per GJ. The result is that the decision would switch to renewable natural gas if a \$150/tonne carbon price were included in the analysis.

	Fossil Natural Gas	Renewable Natural Gas
Fortis Price	\$3 per GJ	\$9 per GJ
Carbon Intensity	64 kg per GJ	9 kg per GJ
Carbon Cost (at \$150/tonne)	\$10 per GJ	\$1 per GJ
<b>Total Cost</b>	<b>\$13 per GJ</b>	<b>\$10 per GJ</b>

It should be noted that the carbon price should not replace other tools that could help close a gap in a business case. In the fossil versus renewable natural gas example, staff would explore other options (e.g. provincial low carbon fuel standard credits) to help improve the business case for the renewable option. The carbon price would be applied after that work to narrow any remaining gap.

### *Rationale for Vancouver’s Carbon Price*

In developing Vancouver’s carbon pricing policy, staff explored three possible approaches to set the carbon price: 1) aligning with Metro Vancouver’s \$150/tonne, 2) aligning with the social cost of carbon through research, and 3) aligning with the implicit carbon costs deemed necessary to achieve provincial and national climate change targets through economic modelling studies.

Options 2 and 3 produced a range of \$200 to \$300 per tonne from a variety of studies. While options 2 and 3 may be more directly linked to the costs of mitigating climate change, there was also concern about starting with a price significantly higher than current provincial policy and Metro Vancouver’s policy when a significant amount of education and change management is needed to understand and implement this policy corporate wide.

Based on internal and external consultation, a hybrid option was selected. The Policy starts at \$150 per tonne to be in full alignment with Metro Vancouver. The price will then escalate at the same rate as BC's carbon tax until 2021, after which it will escalate at 6% per year (\$10 per tonne in 2022). This approach allows the Policy to align with Metro Vancouver initially and then gradually increase over time to reach levels in 2030 that align with those needed to achieve BC and Canada's climate targets.

### ***Financial & Business Justification***

The City has a long track record of investing in carbon pollution reduction through solutions such as electric vehicles, energy efficient buildings, heat pumps, and renewable fuels. Some of those investments have generated actual savings for the City on a life cycle basis (e.g. energy efficiency upgrades on City buildings and light duty electric vehicles), some have been cost neutral (e.g. the recently approved switch to renewable diesel for the City's fleet and heavy duty electric vehicles), and some have carried a cost premium (e.g. heat pumps and renewable natural gas).

Staff undertook a forecasting exercise for corporate emissions based on the most recent actual levels (2017) and the projects that have already committed to:

- switch to renewable diesel and renewable natural gas in the fleet;
- addition of heavy duty zero emissions vehicles to the fleet;
- more renewable natural gas in buildings; and
- further fuel switching to heat pumps.

The net effect of these committed projects is that forecast carbon pollution from corporate fleet and buildings is expected to be slightly below the levels targeted for 2019 through 2022 (based on a straight line between 2019 and 2030 targets). As a result, further action should not be required to meet the targets over that timeline and the Policy should not result in incremental costs above and beyond what is already in the current budget.

At this time, staff do not have an estimate of the cost of continuing to stay on track for the City's corporate climate targets after 2022. A variety of factors will affect the cost of reductions:

- Changes in the price of various energy sources - These have a high degree of uncertainty and could increase or decrease average costs.
- Changes in the cost of procuring and installing various renewable energy and energy efficiency technologies - As these technologies continue to advance and the City gains familiarity with those technologies, they will likely reduce costs on average.
- Changes in the stringency of provincial and federal climate policy - If climate policy continues to be more stringent, as is anticipated through the pan-Canadian framework on climate change and clean growth and the emerging BC Clean Growth Strategy, it will result in lower average costs for the City.
- Changes in the complexity of achieving emissions reductions as the City works through easier options - If future actions to reduce emissions prove to be more

complex and challenging than earlier actions, it will likely result in higher average costs.

### ***Carbon Pollution Justification***

The first phase of the Policy is expected to enable the City to stay on track for its corporate climate targets. Combining the carbon pollution from the City's buildings and fleet, the current corporate targets are 32 per cent below 2007 levels by 2020, and 59 per cent below 2007 levels by 2030.

If the Policy proves to be successful, its impact has the potential to be amplified in two ways:

1. Other governments and businesses may follow suit to implement similar policies, which will help reduce carbon pollution. For example, City staff have been updating colleagues at other governments on the Policy's development and are aware of interest from West Vancouver, the City of North Vancouver, Victoria, Surrey, Toronto, and Seattle along with the BC and federal treasury boards.
2. The City may choose to expand the scope of decisions covered by the Policy over time, which will create opportunities for the Policy to influence more sources of carbon pollution.

### ***Legal Review***

The City's Legal Services department has advised that the City has the legal authority to implement an internal Corporate Carbon Pricing Policy in respect of the assets or operations of the City in the Current Scope that the City already has the legal authority to conduct.

### ***Subsequent Scope***

The initial scope of corporate decisions to fall within the Policy is relatively limited. Staff will continue to explore potential expansion of the scope of the Policy, including any further legal analysis and other work needed on external stakeholder consultation and data certainty.