



To: General Purposes Committee **Date:** March 18, 2024
From: Peter Russell **File:** 10-6125-07-02/2023-
Vol 01
 Director, Sustainability & District Energy
Re: **Proposed Energy and Emissions Reporting Requirements for Large Existing Buildings in Richmond**

Staff Recommendations

That, as described in the report titled “Proposed Energy and Emissions Reporting Requirement for Large Existing Buildings in Richmond” from the Director, Sustainability and District Energy, dated March 18, 2024:

1. Staff proceed with engaging building owners and managers of large industrial, light industrial warehouse, commercial retail and office uses on proposed annual energy and emissions reporting requirements as described in Proposed Stakeholder Engagement Program; and
2. Report back on results of stakeholder consultation, including next steps on a proposed annual reporting requirement for buildings 100,000 ft² and larger in floor area.

Peter Russell
Director, Sustainability & District Energy
(604-516-9873)

Att. 3

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law	<input checked="" type="checkbox"/>	
Building Approvals	<input checked="" type="checkbox"/>	
Economic Development	<input checked="" type="checkbox"/>	
Policy Planning	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS:	APPROVED BY CAO

Staff Report

Origin

The City is a long-time supporter of benchmarking for large existing buildings; starting in 2014, Council endorsed the Richmond Building Benchmarking Challenge (Attachment 1). The program invited building owners and operators to voluntarily benchmark their buildings, and share data with the City. In March 2016, Council recognized participating building operators who, on average, achieved 12% reduction in site energy use and 16% in GHG emissions. Monitoring energy use and GHG emissions is a foundational energy management best practice that helps building owners manage their energy use and GHG emissions to achieve operating cost savings. Sharing this data with the City aids the development of new programs and policies.

In 2017, a Council-approved recommendation directed staff to report on options to establish a building energy and emissions benchmarking policy for large buildings in Richmond as a pilot measure. That report also included a legal opinion regarding the authority of local governments in BC to set mandatory energy and emission benchmarking and reporting requirements in their bylaws and administrative procedures.

In 2020, Council endorsed the City's participation in the Building Benchmark BC (BBBC), a voluntary benchmark and disclosure program. The City has been reporting annual energy use and GHG emissions for our larger civic buildings through this platform.

This report seeks Council endorsement to engage building owners and managers of large industrial, light industrial warehouse, commercial retail and office uses in Richmond 100,000 ft² or larger in floor area on proposed annual energy and GHG emissions reporting requirements. Feedback from consultation will inform the proposed program, address data sharing and privacy considerations, confirm timing, and technical and programmatic support for building owners/managers to successfully report this data. Program administration costs including opportunities for cost recovery will be assessed, as needed.

This report supports Council's Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

5.1 Continue to demonstrate leadership in proactive climate action and environmental sustainability.

This report supports the implementation of Richmond's Community Energy and Emissions Plan (CEEP) 2050, and OCP emission reduction policies through:

Strategic Direction 1: Retrofit Existing Buildings

Action Categories: Advance building energy and emissions performance reporting and disclosure

Analysis

Rationale for a Proposed Annual Reporting Requirement

The City already has policies and regulation in place for reducing operational GHG emissions from new buildings achieved through the adoption of the BC Energy Step Code, the Zero Carbon Step Code into the Building Regulation Bylaw as well through the implementation of district energy infrastructure. For existing buildings in BC, a similar Code-based regulatory framework on energy efficiency and GHG emission limits does not currently exist. Building off the success of the City's 2014 reporting pilot and the BBBC initiative, CEEP 2050 notes that the implementation of an annual energy and emissions reporting requirement for existing large buildings would begin to address this regulatory gap.

Energy and GHG emission reporting is an essential tool for evaluating and improving the operating performance of existing buildings in Richmond. Building benchmarking goes further and involves measurement and analysis of annual energy consumption for an individual building, as well as across a portfolio of buildings. It also enables comparison of annual energy and emissions data between similar types of buildings, thereby establishing a baseline of current performance, and encouraging property owners to make improvements to energy efficiency and reduce operating emissions from their buildings over time.

An annual reporting requirement would provide the City with read-only access to summarized energy and emissions data from large buildings. The City would treat this information as confidential and it would not be disclosed publicly. This data would provide an understanding of the current energy profile in these buildings, and help inform new strategies and targeted programs to reduce operating GHG emissions.

Regional Policy and Regulatory Context

Some local governments in the region have implemented, or are considering implementing, annual energy and emission reporting requirements for existing larger buildings. A summary of Vancouver's current bylaw requirements, as well as adopted policy by Metro Vancouver Regional District is provided in Attachment 2. With Council approval, staff would align Richmond's future bylaw reporting requirements with regional partners.

Setting limits on annual GHG emissions for existing buildings is currently beyond the jurisdiction of the City. Local governments in BC cannot directly set energy and/or emissions performance requirements for existing buildings, as it is legislatively out of the scope, other than City of Vancouver, which has its own Charter. Metro Vancouver's efforts to bring forward regional GHG emission limits for existing buildings under its authority to regulate pollution in the regional air shed is ongoing.

Energy and Emissions Context for Larger Buildings in Richmond

Richmond has 33,617 existing buildings¹, which are responsible for 40% of total community GHG emissions on an annual basis. Of these buildings, 609 have floor areas 50,000 ft² and larger, representing just under 2% of the total number of buildings in Richmond (Attachment 3

¹ 2017 figures, as reported in CEEP 2050
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includes breakdown by building type). While small in number, this subset of very large buildings is responsible for 31.4% of annual GHG emissions from existing buildings (see Table 1).

Table 1: Richmond Building Count, Energy and Emissions Breakdown by Floor Area

Floor Area	Building Count	GHG Emissions (tCO ₂ e / year)	Energy Use (GJ / year)	Proportion of all Building Emissions	Proportion of Total City Emissions
Area greater than 150,000 ft ²	74	39,816	1,354,368	9.5%	4.1%
100,000 ft ² up to 150,000 ft ²	143	36,075	1,143,638	8.6%	3.4%
50,000 ft ² up to 100,000 ft ²	392	55,080	1,700,310	13.2%	5.1%
25,000 ft ² up to 50,000 ft ²	611	[-- Data currently not available]
TOTAL	1,220	130,971	4,198,317	31.4%	12.6%

Date Source: Combined estimates from City studies of energy consumption and GHG emission intensities of larger buildings, by archetype and size range (2016, 2019), and 2023 building data from BC Assessment.

Building Count: Includes all building types in Richmond, excluding regulated large industrial emitters, as well as buildings on land administered by YVR Airport and Vancouver Port Authority.

Buildings located in areas administered by Vancouver Port Authority, YVR Airport, as well as a federally-regulated large emitter, are outside the scope of the proposed engagement program. However, staff will reach out to these partners during the engagement program to explore voluntary participation in the initiative.

Shaping a Future Building Energy and Emissions Bylaw Reporting Requirement

Staff propose to engage with building owners and property managers of the largest buildings, in terms of floor area. These buildings represent the initial cohort of buildings that staff expect to have the highest level of readiness and capacity to report their annual energy and emissions. This cohort consists of industrial, light industrial, retail buildings and office uses with a gross floor area of at least 100,000 ft². This group of buildings, 115 in total, represents 10.5% of annual GHG emissions from buildings in Richmond, and is the focus of proposed consultation in 2024, as described below in Table 2. This first cohort represents a significantly smaller number of buildings to be engaged, relative to proposed future phases, with experience gained in the first phase benefiting later stages.

To inform the proposed approach for Richmond, staff reviewed energy reporting and benchmarking bylaws and implementation approaches used by other North American jurisdictions. Based on this research, a phased approach over several years is proposed, with the initial phase covering the very largest buildings in Richmond, and then stepping down, by floor area range, to the next cohort of large buildings. With approval to proceed, staff will report back to Council in fall 2024 on results of stakeholder engagement. Based upon stakeholder feedback, staff will present recommendations on proposed next steps, which could include reporting requirements for the largest buildings to begin reporting annual energy use and GHG emissions in 2025.

For future phases, buildings covered by this reporting requirement would expand every 12 months to cover a subsequent group of buildings within a specific floor area range, subject to Council endorsement. This stepped approach would continue until 2028, when buildings 25,000 ft² or larger in gross floor area would fall under the reporting requirement, as shown below.

- **2025:** Industrial, light industrial, retail and office buildings 100,000 ft² and larger
- **2026:** All other building types 100,000 ft² and larger
- **2027:** All buildings types 50,000 ft² and larger
- **2028:** All buildings types 25,000 ft² and larger

Table 2 shows phasing timelines to 2028, where a year prior to an energy and emissions reporting requirement coming into force for a group of buildings (defined by floor area), the City would engage with building managers and property owners on the City’s proposed requirements. This engagement would be phased to occur for each group of large buildings covered by the City’s reporting requirements, from 2024 through 2027.

Staff are currently assessing the need to include buildings connected to Lulu Island Energy Company to this requirement. These buildings are already connected to a low-carbon system, or will be, and therefore achieve the same objectives as the proposed program to reduce GHGs emissions. The City already has access to energy data for these buildings for space heating and domestic hot water. Any further reporting of this data would provide a full understanding of the building emissions and energy usage, including lighting, pumps, and supplementary heating and cooling systems connected to BC Hydro and Fortis BC energy meters.

Finally, it is important to ensure that all building owners report their data in a standardized format. The recommended software for reporting is Energy Star Portfolio Manager (ESPM). ESPM is a free reporting and benchmarking software widely used in North America to collect, store and report annual building energy and emissions data. Data reported by each building owner will not be shared externally by the City.

Table 2: Timeline of Proposed Energy and Emission Reporting Requirements in Richmond

	<i>Year</i>				
	2024	2025	2026	2027	2028
Proposed Stakeholder Engagement	Now Report to Committee #1: Industrial, Light Industrial, Retail & Office buildings 100,000+ ft ² *				
Report Back and New Bylaw *	Fall Report to Committee #2: New Bylaw requiring reporting for Industrial, Light Industrial, Retail & Office buildings 100,000+ ft ² *	First year of annual reporting for Industrial, Light Industrial, Retail & Office buildings 100,000+ ft ² *			
Future Stakeholder Engagement *		All Buildings 100,000+ ft ² +	All Buildings 50,000+ ft ² +	All Buildings 25,000+ ft ² +	
Future Bylaw Amendments *			All Buildings 100,000+ ft ² +	All Buildings 50,000+ ft ² +	All Buildings 25,000+ ft ² +

Initial Phase, the scope of this report

* Subject to Council approval

+ All residential and non-residential uses

Proposed Stakeholder Engagement Program

With Council endorsement, staff will proceed to develop and conduct an engagement process for building owners and managers of very large non-residential buildings in Richmond, beginning in Q2 2024. Key questions to answer during the stakeholder engagement include:

- ***Are you aware of the benefits of energy and GHG emissions reporting and benchmarking?*** Staff will show how annual benchmarking and reporting can be leveraged to reduce energy costs and GHG emissions, thereby improving the overall building efficiency.
- ***What is your level of readiness to begin reporting to the City?*** Staff will ensure that stakeholders affected by a potential reporting requirement have sufficient capacity and knowledge to use the tools available to record and report energy use and emissions.
- ***Do you have additional feedback on the proposed reporting requirement?*** Staff will Gather feedback from stakeholders on timing, data privacy concerns, and proposed approach.
- ***What supports do you currently have or need?*** Staff will seek to understand if technical support is needed to assist applicants during the first reporting cycle, and what this looks like on an ongoing basis.
- ***Are you aware of available federal and provincial energy incentives?*** Staff will share information to gauge level of awareness of current energy efficiency and decarbonisation incentives, and how the City could assist.
- ***What is the best way to keep in touch?*** Staff will also determine the optimum format for ongoing engagement of existing building owners and property managers by the City.²

Input gathered during the stakeholder engagement phase will inform the development of a proposed energy and GHG reporting bylaw requirement, and a potential nominal annual fee for technical support. Engagement is forecast to conclude in Q4 2024, after which a summary Council report will be prepared on outcomes of the consultation, and will include recommendations for Council consideration regarding implementation of an energy and an emissions reporting requirement for this first group of existing buildings via bylaw.

Legality and Privacy Considerations

In 2017, external legal counsel was commissioned to provide an opinion to the City reviewing whether the City could mandate building owners to provide information regarding a building's annual energy consumption and emissions.

The findings of the report underscore the authority of local governments to mandate building owners to share energy consumption and GHG emissions data from their buildings. The legal opinion also highlights the need for transparency in justifying data collection and the importance of safeguarding confidentiality of that information once reported.

² For Richmond's new building design and construction community, the optimum engagement format to support implementation of the BC Energy Step Code has been through Richmond's successful *Builder Breakfast* series for local builders, as well as periodic online webinars and in-person meetings with large building developers.

Financial Impact

None for the stakeholder engagement phase. Staff will report on financial implications of moving forward following stakeholder engagement when the proposed bylaw is presented for Council consideration in a future report. It may include consultant and administrative costs, fees, as applicable, and resources for ongoing support.

Conclusion

The report outlines the importance of mandatory reporting as an effective tool for reducing energy use and GHG emissions for larger buildings in Richmond, and for meeting the City's targets. To ensure a smooth adoption of proposed reporting requirements a phased approach that incorporates lessons learned is proposed to commence in 2024 for industrial, light industrial warehouse, commercial office and retail uses. The floor area thresholds and criteria for reporting align with similar proposals set forth by Metro Vancouver and the City of Vancouver, establishing a regionally consistent approach.

Early implementation of an energy and emissions reporting requirement for larger buildings aligns with Richmond's leadership in building benchmarking. Finally, building-scale energy and emissions data facilitates informed planning and decision-making by the City on future policies and programs targeting large existing buildings in Richmond, and supports the City's decarbonisation objectives for this sector as outlined in the Community Energy & Emissions Plan 2050.



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- Att. 1: Richmond Building Energy Challenge Results Summary
- Att. 2: Regional Policy and Regulatory Context: City of Vancouver and Metro Vancouver
- Att. 3: Total Buildings by Type (50,000 ft² or more in area)

Richmond Building Energy Challenge Results Summary



Building Energy Challenge

This program is now closed

Program Overview

In April 2014, Council endorsed the development and implementation of a "Building Energy Challenge", a friendly competition to reduce energy use in commercial, institutional and multifamily properties. The Challenge is part of the broader EnergySave Richmond suite of programs, which support the implementation of the 2014 Community Energy and Emissions Plan and are intended to help pursue greenhouse gas (GHG) reduction targets in the Official Community Plan.

Over the course of 2015, the City of Richmond hosted the first year of its Building Energy Challenge (BEC). As part of the program, participants are asked to track their energy performance and commit to pursuing strategies to reduce costs and benefit the environment. The Challenge provided the participants with:

- Energy coaching, whereby an energy management expert helps participants track and benchmark their energy use, and identify energy management opportunities.
- Subsidized training opportunities for buildings' operations staff.
- Access to and education about BC Hydro and Fortis BC energy rebate programs.
- Instruction and encouragement to benchmark buildings' energy performance.
- Networking and peer learning opportunities.

Participants and Partnership

Forty organizations representing 124 buildings registered in the Challenge. They included a variety of types of participants, including offices, warehouses, hotels, casinos, educational institutions, multifamily property managers, and other organizations.

Results:

- 5,596,804 square feet of property were benchmarked in Portfolio Manager.
- 75 buildings across 12 organizations were represented.
- 10 out these 12 organizations were deemed to be benchmarked because of their participation in the Building Energy Challenge.
- Site energy use decreased 12% over the last baseline year.
- GHG emissions decreased 16%.
- Electricity consumption reduced by 7%.

Regional Policy and Regulatory Context: City of Vancouver and Metro Vancouver

City of Vancouver

- **Annual Greenhouse Gas and Energy Limits By-Law No. 13472**

In July 2022, City of Vancouver introduced its Annual Greenhouse Gas Emissions and Energy Limits By-Law, outlining GHG emissions and heat energy thresholds for existing buildings within its jurisdiction. This bylaw also mandates energy and carbon emission reporting for existing large commercial and residential buildings. For residential uses, these requirements only apply to buildings that are four or more floors in height.

The bylaw requires commercial buildings in Vancouver 100,000 ft² or larger in floor area to annually report energy and emissions data to the City in 2024. The bylaw also sets 2025 as a reporting date for commercial buildings 50,000 ft² and higher in floor area, as well as residential buildings with floor area 100,000 ft² and higher. In 2026, residential buildings above 50,000 ft² would also be required to report this data.

There are costs associated with the implementation of Vancouver's bylaw. Vancouver is developing a reporting and data management system, providing technical support through a hotline, and creating a dedicated website with resources available to the community. Reporting properties are required to cover bylaw administration costs of \$500 per year.

Metro Vancouver Regional District

- **Clean Air Plan 2021**

The regional air quality and GHG management plan aims to reduce air contaminant emissions and their impacts, including greenhouse gases, over the next decade. The plan sets a commitment to a carbon neutral region by 2050, noting that achievement of plan objectives will improve regional air quality, and protect human health and environment.

- **Air Quality Management Bylaw No. 1082, 2008**

Metro Vancouver protects public health and the environment through a tiered approach to managing the discharge of local air contaminants that applies the use of site-specific permits, sectoral emission regulations, and provisions within Bylaw 1082.

- **Boilers and Process Heaters Emission Regulation Bylaw No. 1087, 2008**

This bylaw covers health-harming air contaminants from boilers used to provide space heating or domestic hot water in commercial, institutional, residential or industrial buildings. It also covers emissions from process heating used in industrial applications.

Metro Vancouver staff have developed a proposed annual energy and emissions reporting requirement for larger buildings in the region, aligned with City of Vancouver's requirements. If approved, Metro Vancouver would use its authority as regulator of regional air contaminants to establish GHG emissions limits by building type, leading to building upgrades.

Total Buildings by Type (50,000 ft2 or more in area)

ATTACHMENT 3

