



**To:** Public Works and Transportation Committee      **Date:** February 23, 2017  
**From:** John Irving, P.Eng. MPA      **File:** 10-6125-07-02/2015-Vol 01  
 Director, Engineering  
**Re:** Climate Action – Building Energy Benchmarking Policy Advocacy

**Staff Recommendation**

That, as described in the staff report titled “Climate Action – Building Energy Benchmarking Policy” from the Director, Engineering, dated February 23, 2017:

1. A resolution be forwarded to the Lower Mainland Local Government Association and the Union of BC Municipalities calling for the province to establish requirements for energy benchmarking of large buildings;
2. A letter be sent to the Chair of Metro Vancouver’s Climate Action Committee calling on Metro Vancouver to lead the development of a regional benchmarking program;
3. The Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to execute funding and partnership agreements with the Real Estate Foundation of BC and BC Hydro to develop benchmarking policy analysis and automated utility data exchange capabilities, and that amendments to the 5 Year Financial Plan (2017-2021) Bylaw be brought forward for up to \$155,000 in expenditures, subject to successful grant applications up to \$140,000 to be covered by grant funding and a \$15,000 City contribution from the Carbon Tax Provision.
4. Staff be directed to report back to Council options to establish building energy benchmarking policy for larger buildings in Richmond as a pilot measure.

*[Signature]*  
 John Irving, P.Eng. MPA  
 Director, Engineering  
 (604-276-4140)

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Finance Department Policy Planning	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<i>[Signature]</i>
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> <i>[Signature]</i>	<b>APPROVED BY CAO</b> <i>[Signature]</i>
<b>PWT - 24</b>		

## Staff Report

### Origin

In 2014, Council adopted the Community Energy and Emissions Plan (CEEP), which includes Strategy #3 “Improve the Performance of the Existing Building Stock.” The 2015 CEEP Update identified mandatory energy benchmarking as a key initiative to support this strategy.

This report supports Council’s 2014-2018 Term Goal #4 Leadership in Sustainability:

*Continue advancement of the City’s sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond’s position as a leader in sustainable programs, practices and innovations.*

- 4.1. *Continued implementation of the sustainability framework.*
- 4.2. *Innovative projects and initiatives to advance sustainability.*

### Background

In 2010, Council adopted targets in Richmond’s Official Community Plan (OCP) to reduce community greenhouse gas (GHG) emissions 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. The OCP also includes a target to reduce energy use 10% by 2020 below 2007 levels. Buildings account for about 45% of Richmond’s GHG emissions and 65% of energy consumption. The 2014 Community Energy and Emissions Plan (CEEP) identifies that in order to meet Richmond’s GHG reduction goals, new developments will need to achieve zero carbon emissions by 2025 and that deep emissions from Richmond’s existing building stock must also occur.

The City has an array of initiatives to reduce GHG emissions and energy consumption from buildings. These include:

- **District energy systems.** The city-owned Lulu Island Energy Company operates the Oval Village District Energy Utility and the multiple award winning Alexandra District Energy Utility. Other district energy opportunities in the City Centre are being evaluated. New mixed use and residential developments located in areas of the City Centre where district energy systems may be established are expected to be developed with mechanical system that can connect into these systems.
- **Energy performance secured during development approvals** – The 2009 City Centre Area Plan includes a policy that new developments over 2000m<sup>2</sup> undergoing rezoning achieve a minimum of LEED™ Silver performance. In 2014, Council adopted a policy in the Official Community Plan that new townhome developments undergoing rezoning achieve Energuide 82, and in 2015 adherence to the Energy Star for Homes rating system was added as an additional compliance option. Options for updating policies for new construction are being presented for Council consideration as part of reports to Planning Committee regarding the Energy Step Code.

- **The EnergySAVE Richmond suite of programs** ([www.energy.richmond.ca](http://www.energy.richmond.ca)) – The City offers a variety of programs to reduce emissions and energy consumption in the community. Many of these programs are delivered with funding support from utilities and other partners. Programs include:
  - The Building Energy Challenge, a friendly competition to benchmark energy use and reduce consumption over the course of a year.
  - The Richmond Carbon Marketplace.
  - The Business Energy and Water Saving Program.

As directed in the CEEP and the 2041 Official Community Plan, the City will continue to develop and implement initiatives to reduce community energy consumption and emissions. Access to buildings' energy consumption data represents a key opportunity to encourage energy and emissions reductions, as well as better evaluate and improve the initiatives noted above.

## **Analysis**

### Energy Benchmarking Overview

Energy benchmarking is the process of regularly tracking buildings' energy use, and comparing energy consumption against historic consumption, other similar buildings, and future targets. Benchmarking is considered a core energy management best practice. Building owners and managers can use energy benchmarking to understand their building's relative performance; assist in identifying opportunities to reduce energy consumption and costs; and evaluate the impact of capital investments and operating decisions.

The most common platform for building energy benchmarking is the free online ENERGY STAR Portfolio Manager (Portfolio Manager) tool developed by the United States Environmental Protection Agency. In 2013, Natural Resources Canada began hosting the Canadian adaptation of Portfolio Manager. Over 20% of the commercial floor space in Canada is already benchmarked using Portfolio Manager, and over 40% in the USA.

### The City's Experience with Benchmarking

The City uses Portfolio Manager to measure performance in its own larger buildings. Benchmarking with Portfolio Manager is also a core component of participating in the Richmond Building Energy Challenge, a friendly competition to reduce energy use and GHG emissions in larger buildings in Richmond that the City established in 2014. In the first year of the Challenge, participants' energy use reduced by 8% and GHG reduced by 13%, highlighting the value of benchmarking and related efforts to improve energy management.

## The Benefits of Benchmarking

Access to building energy benchmarking information allows building owners, governments, and the public to better understand how their buildings use energy. With this knowledge, they can make smarter and more cost-effective improvements. Benchmarking provides:

- **Improved information for the real estate industry** – When building owners and managers benchmark their buildings, they understand how they perform relative to comparable buildings. This allows owners to better prioritize energy management projects in their portfolio. Likewise, energy service providers benefit from the statistics developed from benchmarking data sets. And when prospective tenants or owners have access to benchmarking information, they can make more informed decisions about the performance of a building.
- **Energy and cost savings** – Energy waste costs residents and businesses in Richmond tens of millions of dollars every year. Studies by the US Environmental Protection Agency, Urban Land Institute and MIT suggest that building portfolios benchmarked with Portfolio Manager achieve savings of 7% to 14% within four years. A review of a similar benchmarking system used in Australia found savings in base building<sup>1</sup> energy consumption of 35% after 10 years.
- **Improved government and utility programs** – Transparency and good information are key components of functioning markets. Benchmarking data provides important insight into how buildings perform. Access to this data can allow the City, Metro Vancouver, the province and utilities to offer more customized, targeted incentives and programs to buildings to better assist them in reducing energy costs and emissions. It can also help the City plan for investments in district energy and other initiatives. Lastly, benchmarking data is necessary to evaluate how effective building codes and energy policies (such as the City’s energy performance standards for projects undergoing rezoning) are at realizing lower energy use and carbon emissions.

## Mandatory Benchmarking Policy

22 North American cities, two states, and the province of Ontario now require that buildings above a certain size threshold (often 50,000 square feet) annually report benchmarking information to the regulating jurisdiction. Energy benchmarking requirements are considered a potent market-based policy mechanism to drive reductions in GHG emissions and energy costs, and greater innovation. These policies comprise of the following components:

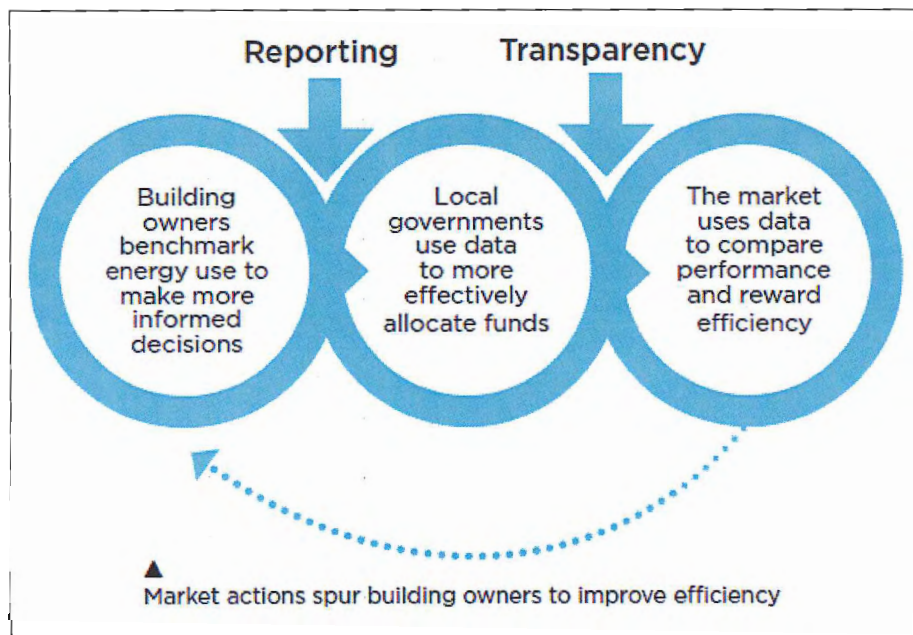
1. **Benchmarking** – Buildings are required to track their performance in the Energy Star Portfolio Manager tool on an annual basis. This requirement ensures that this good energy management practice is adopted by all buildings within the community, and allows owners and property managers to compare their buildings’ performance against average values in the region.

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<sup>1</sup> “Base building energy consumption” refers to energy consumed by non-tenant occupied or common property. This typically is about half the energy used in office buildings.

2. **Reporting** – On an annual basis, buildings are required to report their energy consumption information to the local government and/or province/state. Electronic reporting platforms are established that make this process simple for property owners. Sharing benchmarking data with a local government and/or province allows policymakers to analyze whether programs are achieving their intended results; more effectively provide incentives and assistance with making energy improvements; and gain a better understanding of a region’s building stock for infrastructure planning. Individual buildings’ information is not shared publicly at this stage.
  
3. **Transparency (optional)** – Some jurisdictions go further, making data sets with individual buildings’ annual energy consumption publicly accessible. Providing this information helps the real estate sector make more informed decisions, and is a way to drive greater attention to energy performance amongst the real estate sector. Typically, energy data transparency only occurs after a few years of energy reporting, giving industry an opportunity to respond through energy management projects and ensuring data quality.

These components are summarized in Figure 1 below.



**Figure 1:** How building energy benchmarking policies encourage building efficiency.  
 Source: Pacific Coast Collaborative & Institute for Market Transformation.



### Benchmarking Policy Activity in BC

The 2014 Union of BC Municipalities Convention endorsed Resolution B94 “Benchmarking Tools for Building Energy Use”, which requested that the provincial government empower local governments to enact benchmarking requirements. In its response in February 2015, the province noted that “while legislative amendments are not under consideration at this time, the Province is exploring approaches and policy options in relation to enabling potential benchmarking activities, in particular for commercial and large multi-unit residential buildings in BC.”

In September 2015, the City requested that the Province develop mandatory benchmarking policy in its written submission to the BC Ministry of Environment as part of the Climate Leadership Plan development process.

In December 2016, BC signed the Pan-Canadian Climate Plan, which calls for building energy benchmarking and disclosure as early as 2019. Moreover, the province, through its participation in the Pacific Coast Collaborative (an agreement between the province of BC, and the states of California, Oregon, Washington and Alaska to coordinate on matters of economic and environmental policy) agreed to the Pacific Coast Climate Leadership Plan, committing to “collaborate with West Coast cities, to further expand large building energy benchmarking and disclosure throughout the region and leverage data to drive reductions in energy use.” This Plan set a target of 75% of eligible large building square footage on the Pacific Coast reporting energy data through provincial and/or local government requirements.

The City of Vancouver is actively pursuing establishing a benchmarking requirement, which is a centrepiece of Vancouver’s Building Retrofit Strategy. However, Vancouver staff report that the Vancouver Charter likely needs to be revised to establish benchmarking policy. Vancouver is pursuing this Charter change with the province. It is important to note that other BC local governments may not need revisions to their enabling legislation to establish benchmarking requirements. Indeed, BC Ministry of Energy and Mines staff have noted their belief that local governments may enact benchmarking requirements, given that the Community Charter specifies “a council may, by bylaw, regulate, prohibit and impose requirements in relation to... buildings” (Section 8(3)(1)).

### Perspectives on Establishing Mandatory Benchmarking Requirements

The Canada Green Building Council released a common framework for establishing benchmarking, reporting and transparency policies in Canada. This guide complements similar guidance documents published by the US Department of Energy, the Institute for Market Transformation and other similar institutions.

Research that informed the guide suggests that the Building Owners and Managers Association of BC (BOMA BC), the Real Property Association of Canada (REALpac), and the International Council of Shopping Centres (ICSC) and other property ownership stakeholders recognize the value of benchmarking, and have even supported their membership in their own benchmarking efforts. These organizations are not opposed to governments requiring reporting of energy data to local governments or provinces; however, they do have concerns about the public disclosure of energy data, especially in the early years of requirements’ implementation.

### The Need for “Automated Data Exchange”

“Automated data exchange” is the automatic uploading of utility consumption information into the ENERGY STAR Portfolio Manager benchmarking tool. After a building owner chooses to use automated data exchange, their Portfolio Manager account will be automatically regularly populated with utility data into the future. This simplifies the benchmarking process and reduces errors.

FortisBC is developing these capabilities through a provincial grant. BC Hydro has developed this capability for commercial buildings in 2016. In 2017, BC Hydro aims to provide “aggregated electronic data exchange services,” which will sum all residential electricity consumption in a building into one number and automatically report it into Portfolio Manager. This functionality ensures individual households’ anonymity and privacy, as well as avoiding needing to request energy data from each electric utility bill payer in a building. For these reasons, automated aggregated data exchange is important to implementing benchmarking reporting requirements encompassing the multifamily and mixed-use sector, which comprise the majority of the floor space potentially impacted by benchmarking requirements. However, further resources would be required in order for BC Hydro to establish aggregated electronic data exchange capabilities for residential buildings. BC Hydro has committed \$80,000 to this effort, with the City of Vancouver contributing an additional \$30,000; additional funds are required. As recommended below, there is an opportunity for the City to support this initiative through Real Estate Foundation of BC grant funds.

### Recommendations

In order to take leadership on benchmarking policy in BC, it is recommended that:

1. **A resolution be forwarded to the Lower Mainland Local Government Association and the Union of BC Municipalities calling for the province to establish requirements for energy benchmarking of large buildings.** The proposed resolution is included in Attachment 2. A provincial requirement would be most impactful in terms of the total building floor space covered. It would also likely be simpler to administer than multiple local government requirements, which would necessitate shared data management and compliance infrastructure.
2. **A letter be sent to the Chair of Metro Vancouver’s Climate Action Committee calling on Metro Vancouver to lead the development of a regional benchmarking program.** In the event that the province does not establish benchmarking policy in a timely manner, regional governments may be an appropriate entity to manage benchmarking programs and/or establish benchmarking requirements. Were Metro Vancouver to implement such programs, a sizeable proportion of the applicable buildings in the province would be encompassed.

3. **The City partner with other organizations to develop benchmarking communication tools and data exchange infrastructure through a funding agreements with the BC Real Estate Foundation and BC Hydro.** In order for benchmarking policy to be implemented, analysis and communications infrastructure must be developed. Notably, it will be necessary for utilities to establish electronic data exchange capabilities. Additionally, data visualizations and customized reports to building owners can provide powerful means of communicating opportunities to reduce energy use and emissions. Lastly, legal analysis of local governments’ authority to implement benchmarking requirements can inform local and provincial policy. The City can lead in the development of these efforts.

There is an opportunity for the City of Richmond to leverage grants of up to \$105,000 from the Real Estate Foundation of BC and \$35,000 from the BC Hydro Community Energy and Emissions Plan Implementation Offer, to support efforts to implement BC Hydro automated data exchange, benchmarking information communications and visualization tools, and legal analysis of local governments’ ability to implement benchmarking requirements. It is recommended that staff be authorized to execute funding and partnership agreements with the Real Estate Foundation of BC and BC Hydro, to implement this work.

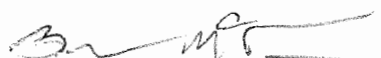
4. **Explore options for the City to establish benchmarking policy.** Finally, staff will explore options to establish building energy benchmarking policy for larger buildings in Richmond as a pilot measure. Staff will report back with analysis of options within a year, following engagement with other levels of government.

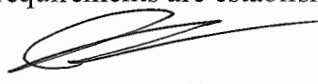
**Financial Impact**

Should the City be successful in its applications to the Real Estate Foundation of BC and BC Hydro for benchmarking capacity development work, an amendment will be brought forward to the 5 Year Financial Plan for up to \$155,000 in staff and specialized expertise. The City will enter into funding and partnership agreements with these organizations. Up to \$140,000 will be sourced through grant funds. A maximum of \$15,000 of City funds will be spent on salaries for project management sourced from the City’s Carbon Tax Provision fund, which is dedicated to community energy and emissions projects.

**Conclusion**

Continuing to encourage energy upgrades in local buildings is essential to reaching Richmond’s energy goals and reducing emissions. Energy benchmarking helps buildings better manage energy, and thereby reduce energy costs and pollution. The City can take a variety of leadership actions to help ensure that benchmarking requirements are established in BC.

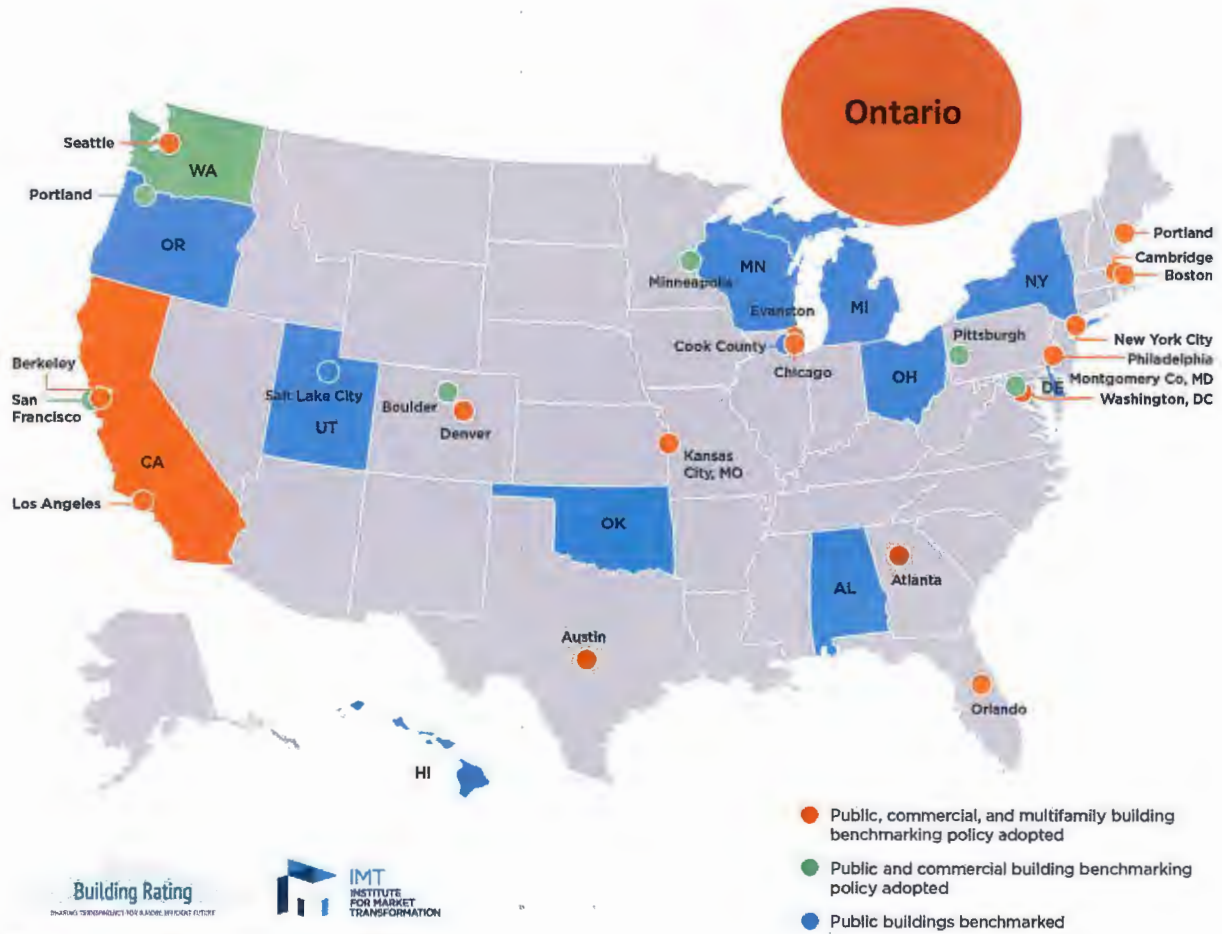
  
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- Att. 1: Jurisdictions adopting benchmarking and disclosure policy.
- Att. 2: Draft Resolution – Lower Mainland Local Government Association and the Union of BC Municipalities



**Attachment 1: Jurisdictions adopting benchmarking and disclosure policy.**



**Building Rating**  
ENHANCING PERFORMANCE AND ACCOUNTABILITY FOR THE FUTURE

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**Attachment 2: Draft Resolution Lower Mainland Local Government Association and the  
Union of BC Municipalities**

PROVINCIAL ACTION ON BUILDING ENERGY BENCHMARKING City of Richmond

WHEREAS as described in the Canada Green Building Council's "Energy Benchmarking, Reporting & Disclosure in Canada: A Guide to a Common Framework" mandatory energy benchmarking and reporting is a low cost, market-based means to enable buildings to reduce energy costs and GHG emissions;

AND WHEREAS the province of BC is a signatory to both the Pan-Canadian Framework on Climate Change and Clean Growth and the Pacific Coast Climate Leadership Plan, both of which commit the province to implement benchmarking requirements for larger buildings;

AND WHEREAS a provincially administered benchmarking requirement similar to that adopted by the province of Ontario would be most impactful and administratively simple;

AND WHEREAS climate change threatens BC communities, and action in the built environment is necessary to mitigate climate change and realize economic opportunity;

THEREFORE BE IT RESOLVED that the province be requested to develop a requirement that buildings above a size threshold benchmark their energy performance and report this information to the province annually, and that the resulting data be available to local governments to inform their climate policy and programs.