

# National Energy Benchmarking Framework: Report on Preliminary Working Group Findings



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## BACKGROUND

The Canada Green Building Council (CaGBC) has had a longstanding interest and involvement in energy benchmarking, which started in 2007, when it piloted energy benchmarking in key building sectors across Canada, including: K-12 schools, commercial office and retail. These pilots led to the creation of GREEN UP: Canada's Building Performance Program, the first of its kind in Canada, which put energy benchmarking on the map for building owners and practitioners.

As a national organization that strives to "Make Every Building Greener", improving building energy performance and overall sustainability in the existing buildings sector is a key interest. The CaGBC formed a working group of leading experts to contribute to a common framework for Canadian jurisdictions, considering introduction of building energy benchmarking and disclosure policies. This report presents the preliminary working group findings that outline a proposed set of components to be included in a National Energy Benchmarking Framework.

The next step in this process involves the CaGBC engaging stakeholders to build upon the themes that emerged from the summarized discussions in a forthcoming white paper. The white paper will elaborate on the purpose and utility of a policy framework, principles and policy options for recommendation, and will address questions and gaps that were identified by working group participants and consulted stakeholders.


### **Purpose**

The purpose of the National Energy Benchmarking framework is for CaGBC to provide support to local governments (cities and provinces) that are developing energy benchmarking strategies and regulations. The development of a standardized approach to energy benchmarking initiatives will simplify the process of policy development and implementation for governments, and most importantly, provide reliable data that will support the pursuit of strategic investments in achieving building improvements, and energy and greenhouse gas (GHG) emissions targets. Additionally, as expressed through the principle of 'consistency', a common approach to energy benchmarking on the national scale will support industry (building owners and managers) by making participation in benchmarking programs more straightforward and streamlined.

### **Process**

This report is the product of a series of working group meetings hosted by the CaGBC in partnership with Integral Group, in September and October 2015, to discuss the development of a national energy benchmarking framework. The working group included the following stakeholders:

- British Columbia Ministry of Energy and Mines
- BC Hydro
- Real Property Association of Canada (REALpac)
- City of Vancouver
- City of Toronto
- Toronto Atmospheric Fund
- Building Owners and Managers Association (BOMA) Canada and Toronto
- International Council for Shopping Centres
- Condominium Home Owners Association (CHOA)
- Institute for Market Transformation
- Natural Resources Canada – Office of Energy Efficiency



Note: The Ontario Ministry of Energy is involved in ongoing public consultations to develop an energy and water reporting and benchmarking initiative for large buildings. In addition, in October 2015, the Ontario government introduced proposed amendments to the Green Energy Act, 2009, that would if passed, enable implementation of a reporting and benchmarking initiative. The Ministry notes that the reporting and benchmarking components identified in this framework are largely consistent with the components being considered by Ontario. The Ministry is supportive of future collaborations and consultations related to the framework initiative pending further direction on Ontario's initiative.

### **Concept of a National Framework and Objectives of Working Group**

The concept for a national framework is based on the notion that: as energy reporting and benchmarking requirements begin to emerge across the country, policy makers need not 'reinvent the wheel' or develop their programs in a vacuum, when there is a wealth of information and experience to draw from. A national framework will be based on shared values and principles, and set parameters for a consistent approach to energy benchmarking on a national scale. The primary focus of the working group was:

1. To arrive at a shared understanding regarding the importance of a national approach to energy benchmarking that will be useful and effective for all Canadian provinces and cities.
2. To agree on a set of principles intended to facilitate consistency, quality and participation nationally, on energy benchmarking, reporting and disclosure policies.
3. To craft a series of recommendations for government based on these agreed-upon principles, and existing stakeholder and industry research and efforts.

## **INTRODUCTION**

Residential, commercial and institutional buildings consume over 30 per cent of total energy in Canada. In Canada's major cities, buildings are the primary source of greenhouse gas (GHG) emissions with over 50 per cent attributed to heating, cooling and lighting. Energy benchmarking, reporting and transparency are recognized as a fundamental strategy supporting GHG emissions reductions from existing buildings.

### **Why is Benchmarking Important?**

Benchmarking provides building owners with information about their building's performance over time, compared to its own past performance and to similar buildings. Buildings can be designed and operated more efficiently; however, we lack information about which buildings are performing badly and why. With benchmarking data, owners can make informed decisions about how to manage and operate their buildings, and where it would be beneficial from a cost and energy savings standpoint to strategically invest and implement improvements to the buildings.

Benchmarking is a foundational policy by which local governments are able to obtain a clear picture of how buildings are using energy, and where there are opportunities for improvement. From a government perspective, many jurisdictions across Canada are committed to reducing energy consumption and eliminating GHGs that result from building operations. A lack of data and data transparency are consistent challenges that can inhibit the success of conservation policies and programs.

To address the need for data about building energy (and water) use, local governments across North America are introducing energy benchmarking, reporting and disclosure policies. These policies require owners of large buildings to report to the government on their building's energy (and water) consumption on an annual basis. This data collected is cleaned and analyzed by the local government and then shared publically through a web portal and/or an Annual Report.

Although energy benchmarking discussions are underway across the country, an overarching strategy that advocates for effective and efficient program design principles underpinning regulations is absent. Such a strategy would reduce challenges of implementing benchmarking policies from the perspective of policy makers, and would reduce the complexity of reporting for property owners that own and operate buildings across multiple jurisdictions. Additionally, a national strategy can help support the large range of capacities Canadian cities have to develop and deliver complex environmental policies.

### **Why a National Initiative?**

A national initiative will drive uptake of energy benchmarking and reporting requirements in communities across the country. The initiative encourages consistency of reporting systems. Some key benefits are as follows:

- **Coordinated efforts for carbon reduction:** Many jurisdictions across the country have adopted energy conservation and GHG targets. The built environment generates a significant proportion of GHG emissions in an urban environment, and reducing energy use in existing buildings remains one of the key challenges to meeting reduction targets. With the imperative of meeting targets, the time is right for a coordinated effort that engages communities across the country. With several jurisdictions exploring benchmarking programs, a national initiative would allow key players to drive these initiatives forward in tandem and avoid reinventing the wheel.
- **Greater uptake from industry:** For owners with portfolios of buildings in many cities, unified national requirements will simplify the process of benchmarking and provide a consistent approach to managing energy use across their portfolios. The national initiative provides a platform for dialogue between industry and policy makers, with the objective of meeting the needs of diverse stakeholders.
- **Enhanced capacity for policy development:** Developing an energy benchmarking policy requires a series of key decisions in regards to policy design, scope, and implementation approach. Canadian cities range significantly in size and capacity to develop and deliver complex environmental policies. This national initiative aims to provide that much-needed capacity to participating communities, in order to remove barriers in the introduction of these policies.

### **Key Terms**

**Benchmarking:** The comparison of a building to its peers using a common methodology.

**Reporting:** Sharing building benchmarking and attribute data with local, provincial or federal governments, or a utility.

**Disclosure:** Making all or some of the benchmarking and building attribute data public in some form.

**Labelling:** The public display of benchmarking or building attribute data on-site, or linked to the location via a website or geographic information system (GIS).

**Data Verification:** The process wherein a qualified professional or authority reviews and signs off on building attribute and benchmarking data to ensure quality and accuracy.

## PRINCIPLES OF A NATIONAL BENCHMARKING FRAMEWORK

The four principles below, agreed upon by the working group, were established to guide the development of the National Framework. Each of the policy and program recommendations to be included in the Framework will support one or more of the guiding principles.

### ***Consistency***

The purpose of energy benchmarking is to track and compare a building's performance over time and compare it to other similar buildings. As such, an important component of benchmarking is the use of consistent tools. ENERGY STAR Portfolio Manager is the tool of choice for jurisdictions in the United States that mandate benchmarking, and is already in wide use in Canada with over 11,000 buildings currently using the tool. By extension, consistency of reporting requirements in different cities and provinces will ensure an apples-to-apples comparison between building performance not only within a given community, but across the country.

### ***Effectiveness***

One of the key objectives of benchmarking initiatives is to empower local governments to achieve energy savings in buildings. Obtaining previously inaccessible information in a standardized form will support local governments and utilities in significant refinement of energy conservation policy and program design and delivery. Effectiveness is also achieved by developing streamlined approaches to benchmarking and reporting that facilitate compliance with the regulation, and empower building owners to act on energy results. Finally, accuracy of data is an intrinsic component to ensure the effectiveness of a benchmarking initiative.

### ***Transparency***

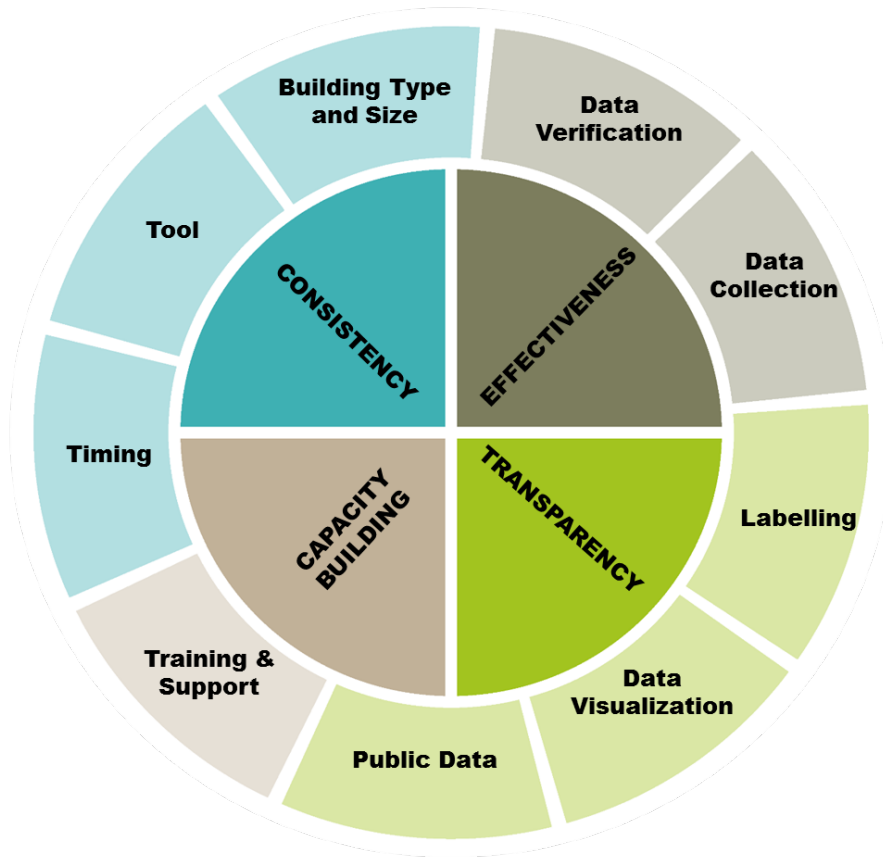
Sharing building data and performance metrics publically supports transparency and the movement toward open data. A key benefit of unlocking and releasing data broadly is that it increases the market's capacity to understand how energy is used in buildings and the associated impacts. For consumers and the real estate market, energy data is valuable information to support decision making in investment and management. Energy use data and energy efficiency contribute positively to building valuation, however the lack of such data is a gap in advancing market mechanisms to advance building performance and valuation.

### ***Capacity Building***

Conducting stakeholder outreach, education and training activities related to benchmarking is essential to successful implementation. By raising awareness among building owners about the benefits of benchmarking, and the objectives of a reporting initiative, these activities can build stakeholder support for policies and proactively support compliance, data quality and effectiveness. Raising awareness and literacy around energy use in buildings also can stimulate the marketplace for energy retrofits, develop capacity for energy management professionals, and ultimately drive actual energy savings in buildings.

# NATIONAL BENCHMARKING FRAMEWORK POLICY OPTIONS

For governments that elect to introduce annual energy reporting and benchmarking requirements for large buildings, the following is a set of recommended policy components.



## ***Building Size and Type***

### **Size and type of buildings**

For medium and large cities to access a significant proportion of total energy use data in their community (e.g. 50 per cent of total floor area), energy reporting requirements should typically be applied to residential and commercial buildings that have a gross floor area of 50,000 square feet or more.

### **Determining size thresholds: Align with policy objectives**

Communities should establish what their objectives are in order to determine the appropriate threshold for buildings targeted. One way to approach this is to determine the proportion of square footage of floor area that should be covered by the policy. For example, a larger city with a policy including buildings  $\geq 50,000$  square feet might impact over 50 per cent of total built area, while a smaller city with relatively fewer large buildings may elect to extend the benchmarking requirement to buildings 20,000 or 30,000 square feet or larger in order to impact the majority of the building stock.

### **Phasing of implementation**

Reporting requirements for different buildings sizes and market sectors can be implemented in phases. This approach is recommended where there is a need, on the side of the administering body, to

accommodate development of administrative processes, and where various sectors may need additional time to establish reporting processes and access data.

**Table 1: Approach to phased implementation**

	Government Buildings	Commercial/Industrial Buildings	Multi-Unit Residential Buildings
<b>Year 0*</b>	10,000 – 50,000 square feet and larger		
<b>Year 1</b>		≥250,000 square feet	
<b>Year 2</b>		≥100,000 square feet	≥100,000 square feet
<b>Year 3</b>		≥50,000 square feet	≥50,000 square feet

*\*Prior to launch of program*

**Tool**

*Annual reporting of monthly whole building/property level energy, water consumption and GHGs should be done using ENERGY STAR Portfolio Manager.*

While certain sectors may use other tools to track and manage energy use in their portfolios, the consistent use of a common national platform is integral to the success of a benchmarking and reporting requirement. Natural Resources Canada has licensed Portfolio Manager and adapted it for use in Canada. The tool is free, simple to access, and provides the necessary data fields and reporting to support decision making among building owners and managers, governments and utilities.

**Timing**

*The reporting deadline should occur approximately five months after the end of the calendar year.*

Because utility data is often not available in real-time, the five month window allows for utilities to aggregate and release data, and for utilities and/or building owners to access and input relevant data into the tool.


**Data Collection**

Consumption data should ideally flow to landlords/owners directly from utilities. Provinces should work with utilities to enable whole-building access to consumption data and automated data uploading and where necessary, legislate it.

**Data Verification**

*Reported data should be verified by a qualified professional for the first year of reporting and at regular intervals (e.g. every three to five years) thereafter to ensure accuracy of benchmarking data.*





Eligible verifiers could include: Professional Engineers, Certified Energy Managers and Building Technologists<sup>1</sup>. Verifiers may be in-house employees of the building owner or manager or third parties. Government should periodically audit a sample of building reports.

### ***Public Data***

A public registry of energy and water use for all buildings should be posted on the government's website annually. Public disclosure of reporting for each building group<sup>2</sup> should be made available **one year** after the initial year of reporting. In addition, periodic reports of aggregated Province/City-wide results and trends should be published.

The CaGBC will work with local governments and other stakeholders to determine the optimal selection of data fields to share publically and the most effective medium or format for presenting data. For exceptional situations (e.g. financial distress, privacy/security issues), there will be a process by which buildings can apply for exemption from public disclosure of data.

### ***Public Visualization***

Partnerships with academia, non-profit and private sectors should be explored to make energy information more accessible and impactful in the public realm.

### ***Labelling***

Labels should be offered as an optional product that building owners may choose to leverage to demonstrate their energy achievements. If or when NRCan develops a standardized label that displays ENERGY STAR Portfolio Manager data, industry should be consulted about its development.

### ***Training and Support***

Jurisdictions implementing benchmarking programs should develop, in tandem with industry and other stakeholders, comprehensive plans for reaching out to building owners and operators, managers, tenants, utilities and other stakeholders. At minimum, they should offer technical support, host webinar and in-person industry training sessions, and offer grants for social housing providers to participate in the program.

## **NEXT STEPS**


### **White Paper**

To support a National Energy Benchmarking Framework, the CaGBC will work with stakeholders including the working group members to build upon the themes that emerged from the working group discussions. The results will be provided in a white paper that will elaborate on the purpose and utility of a policy framework, the principles and policy recommendations. The White Paper will represent the CaGBC's perspective and position on a National Energy Benchmarking Framework based on stakeholder


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<sup>1</sup> To support policy development at a national level, CaGBC will work with industry associations and academic institutions to develop a list of criteria for eligible professionals, or a list of eligible professional degrees and certifications.

<sup>2</sup> Exceptions should be made for buildings with energy intensive uses including: data centres, television studios, trading floors, and buildings used primarily for industrial manufacturing purposes.



and expert input received from across Canada. It will address questions that were raised and gaps that were identified by working group participants and other consulted stakeholders.



These include, but are not limited to, the following:

- What is the best approach for public disclosure of data? Which data points are of most interest and of greatest use to key stakeholders, including building owners, energy service companies, policy makers, researchers, tenants, investors and brokers? What format or medium is most useful or meaningful to stakeholders?
- What is the objective of data verification? What are the benefits of this level of quality assurance? What level of quality assurance is needed to create sufficient confidence in the data? How do you define data verification? What qualifications should be considered acceptable for data verifiers?
- How should governments approach engagement and compliance in such a way that encourages maximum participation?
- What is the role of utilities in supporting successful benchmarking policies? How can the CaGBC facilitate engagement between governments and utilities? Is any legislation at the federal or provincial level needed to enable or compel utilities to support benchmarking policies?
- How can provincial governments best support and collaborate with municipal governments? What is the appropriate division of responsibilities for implementation of benchmarking policies between provincial and municipal governments? How can those roles be made most complementary?
- What is the best model for small and medium-sized communities? Are there other policy models, or other combinations of policies and programs that make more sense for small and medium sized communities?
- How can enhanced energy performance be advanced in the residential sector, particularly multi-unit residential buildings? Can it best be addressed through benchmarking, or some other policy/program initiative such a third-party financing of energy systems and/or improvements?

### **Stakeholder Outreach**

This working group process involved stakeholders representing different regions of the country and different sectors, however there was a lack of representation from certain regions and lower participation from certain sectors. The White Paper will include input from groups that were not involved in the initial working group process. CaGBC will make an effort to engage with utilities, as well as provincial and municipal representatives from the Prairies, Quebec and the Maritime provinces, and engage the residential and commercial sector more thoroughly.

### **Working Group Input**

The CaGBC will keep working group members (including potential additional participants from the above mentioned stakeholder groups) apprised of future actions relating to the National Energy Benchmarking Framework, including the structuring and development of a white paper. The intent of the white paper is that it serves as a useful resource to stakeholders across the country, and as such, will be crafted with input from diverse parties.