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Item No. 12.1.2
Environment & Sustainability Standing Committee
November 4, 2021

TO: Chair and Members of Environment & Sustainability Standing Committee

SUBMITTED BY: *Original Signed*

Kelly Denty, Executive Director, Planning and Development

Original Signed

Jacques Dubé, Chief Administrative Officer

DATE: August 5, 2021

SUBJECT: **Administrative Order 2021-002-OP – Respecting Net-Zero Construction of New Municipal Facilities Within the Halifax Regional Municipality**

ORIGIN

On April 4, 2019, the following motion of the Environment and Sustainability Standing Committee was put and passed:

“That the Environment and Sustainability Standing Committee request a staff report to determine opportunities to reduce carbon emissions in new and existing buildings – this is to include HRM corporate buildings as well as the built environment.”

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, SNS 2008, c 39:

59 (3) In addition to matters specified in this Act or another Act of the Legislature, the Council may adopt policies on any matter that the Council considers conducive to the effective management of the Municipality.

61 (3) The property vested in the Municipality, absolutely or in trust, is under the exclusive management and control of the Council, unless an Act of the Legislature provides otherwise.

RECOMMENDATION

It is recommended that the Environment and Sustainability Standing Committee recommend that Halifax Regional Council adopt Administrative Order 2021-002-OP, *Respecting Net-Zero Construction of New Municipal Facilities within the Halifax Regional Municipality*, as set out in Attachment A.

BACKGROUND

HalifACT: Acting on Climate Together is the Municipality's long-term climate action plan to reduce emissions and help communities adapt to a changing climate. The Plan¹ aligns with the Climate Emergency that was declared by Halifax Regional Council on January 29, 2019, which emphasized that climate change is a serious and urgent threat to our community. The Plan was unanimously approved by Halifax Regional Council in June of 2020 and outlines a suite of actions that are necessary to meet its aggressive carbon reductions. As part of Council's approval, staff was directed to carry out the actions contained in HalifACT including:

- Explore opportunities to require **net-zero standards** for new buildings within the municipality, and
- Include HalifACT actions within the multi-year budgeting and business planning process to achieve a target of **net-zero municipal operations** by the year 2030.

The Municipality's population is expected to increase 30% by 2050², which will drive the demand for new residential and non-residential buildings. While new buildings will be more efficient than the current building stock, HalifACT requires that all new residential and non-residential buildings be built to a net-zero standard no later than 2030.

Corporately, our operations make up about 1% of community-wide emissions. While this is low, the Municipality has the responsibility to lead and demonstrate practices that will encourage broader emission reductions and help spur economic development. Corporate emissions consist of buildings, fleet vehicles & streetlights. Based on the latest emissions inventory in 2020, 67% of corporate emissions come from our existing building stock. While existing buildings is a key area of focus, it is imperative that new buildings be built to net-zero to prevent the need for future, costly retrofits.

Generally, net-zero buildings incorporate existing tools and technologies to significantly reduce building energy demand and carbon intensity before adding onsite renewables or purchasing off-site renewable/carbon credits. In most cases, building to net-zero is financially feasible due to the lower operating and maintenance costs, protection against volatile energy costs and less costly future retrofits.

Environmental Goals and Climate Change Reduction Act

On October 27th, 2021, the *Environmental Goals and Climate Change Reduction Act*³ was introduced. This Act will replace the previously introduced *Sustainable Development Goals Act*, and will legislate provincial emission reduction targets of 53% below 2005 levels by 2030, and net zero emissions by 2050. The Act has passed first reading. While the 2050 target of the Act is identical to HalifACT, the Municipal low carbon pathway calls for a steeper decline in the short term. In July 2021, the Municipality submitted recommendations to the Province to inform the development of the provincial Climate Change Plan. These recommendations would enable the Municipality to progress on several climate actions, benefitting both parties. As approximately half of Nova Scotia's emissions originate in the Municipality, it is critical that we are close partners through the development and implementation of initiatives required to meet the goals of the Act.

¹ HalifACT – Acting on Climate Together, Halifax Regional Council Package <https://www.halifax.ca/sites/default/files/documents/city-hall/regional-council/200623rc916.pdf>

² Baseline and BAU Report, HalifACT https://www.halifax.ca/sites/default/files/documents/about-the-city/energy-environment/Baseline%20and%20BAU%20Report_1.pdf

³ Bill NO. 57, Nova Scotia Legislature, https://nslegislature.ca/legc/bills/64th_1st/1st_read/b057.htm

DISCUSSION

All municipalities in Nova Scotia currently observe the 2017 National Energy Code of Canada for Buildings (NECB). Nationally, there is a movement towards the development of a tiered federal energy code, like that of the BC Step Code⁴. The BC Step Code outlines a series of more aggressive energy targets, with clear timelines on when these stronger targets will be mandatory. Like the BC Step Code, the most aggressive tier of the new federal code is expected to strive for net-zero construction. In January 2020, the Municipality participated in a workshop hosted by the Nova Scotia Department of Energy and Mines and Efficiency Canada to discuss and gather feedback on this new code. Due to the COVID-19 pandemic, the release date of this code has been delayed until December 2021. As outlined in the *Environmental Goals and Climate Change Reduction Act*, the Province intends to adopt the 2020 NECB within 18 months of it being published by the Federal Government. Historically, the Province of Nova Scotia has been progressive in adopting new versions of the NECB and based on discussions to date, a specific tier of code will be adopted in 2022 after a market-ready assessment is completed.

Once the new federal code is released, staff will compare it to the technical analysis of HalifACT. As the interim target of the *Environmental Goals and Climate Change Reduction Act* differs from that of HalifACT, there is a chance that the tier mandated for the province may not enable us to meet our targets. Should this be the case, staff will return to Council with a request to recommend that the Province prescribe additional standards applicable to the construction of buildings within HRM through subsection 4(2) of the *Building Code Act*. This endorsement would align with the principles of the BC Step Code. In BC, the provincial government has granted all municipalities the authority to mandate any tier of the code, providing they meet the minimum tier set by the province. Similar authority for Nova Scotian municipalities and towns would empower local governments that have the capacity and resources to champion the code and drive market transformation.

Toronto's Incentive-based Program

If a request to the Province is unsuccessful, Council may wish to consider an incentive-based program like that of the Toronto Green Standard (TGS)⁵. The TGS is a municipal version of the BC Step Code that outlines the most effective path to meeting Toronto's greenhouse gas emission reduction targets through four energy performance tiers. The first tier is mandatory for all private and public developments and states that the building must be **designed** to meet the specific energy performance target at the planning approval stage. As the Province of Ontario currently observes the 2017 NECB, the City of Toronto cannot mandate that the building be constructed as designed, so the additional tiers are voluntary. The voluntary tiers consist of core and optional measures which include higher efficiencies and resiliency measures. To encourage developers to meet these voluntary tiers, financial incentives are offered in the form of waived permitting fees or a refund on development charges. The TGS also has clear timelines for when higher tiers become mandatory as a means of providing the industry with a clear and transparent pathway to meeting the City's climate targets. The TGS was developed after the City of Toronto conducted research on global best practices in energy efficiency requirements to inform their Zero Emissions Buildings Framework⁶. The research indicated that moving away from a "percent better than" approach, which is common in most jurisdictions, and instead, selecting absolute energy performance targets achieved deeper energy and carbon emission reductions. Through a study that included energy and costing models, a series of energy performance targets for Toronto's top five building archetypes were identified. They are:

1. **Total Energy Use Intensity (TEUI)**: The total amount of energy consumed in a building per floor area per year (measured kWh/m²/year)

⁴ BC Step Code <https://energystepcode.ca/>

⁵ The City of Toronto "Toronto Green Standard" <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/>

⁶ The City of Toronto "Zero Emissions Buildings Framework" <https://www.toronto.ca/wp-content/uploads/2017/11/9875-Zero-Emissions-Buildings-Framework-Report.pdf>

2. **Thermal Energy Demand Intensity (TEDI):** The annual heat loss through a building envelope and ventilation system after accounting for all passive heat gains (measured in kWh/m²/year)
3. **GHG Intensity (GHGI):** Total emissions associated with the building's energy consumption per floor area per year (measured kg/m²/year)

Aside from energy performance targets, the TGS also prescribes air quality, water quality, ecology preservation, solid waste considerations, and resiliency requirements. While not the direct focus of this report, these additional standards will need to be explored to strengthen individual and community resiliency to ongoing climate hazards.

The City of Toronto has the authority to require all private and public buildings be **designed** to meet a specific energy performance target at the planning approval stage. The ability for Halifax to replicate this is hindered by Section 7(1) of the *Building Code Act*. In lieu of amendments to the Act, incentives could be used to encourage building beyond the current NECB.

Municipal Incentive Tools

One tool available to the Municipality for encouraging developers to build beyond the 2017 NECB is the use of incentive or bonus zoning. The *HRM Charter* authorizes the use of incentive or bonus zoning throughout the Municipality. Currently, the incentive or bonus zoning program only applies within the areas covered by the Downtown Halifax Secondary Municipal Planning Strategy and the Regional Centre Secondary Municipal Planning Strategy. Creation of a program for the suburban and rural areas of HRM has been initiated by Regional Council and is expected to be brought forward for Council's consideration in early 2022.

The current program offers developers within the Regional Centre the opportunity to increase building volume beyond a pre-determined maximum in exchange for public benefit. Under Centre Plan Package A, Section 236, "public benefit" is defined as one of, or a combination of, the following:

- 1) Affordable housing (money-in lieu);
- 2) Conservation of a registered heritage building (conservation on site or money-in-lieu not on site);
- 3) Improvement of municipal parks (money-in-lieu);
- 4) Affordable community or cultural indoor space (money-in-lieu); or
- 5) Public art (public art on site or money in lieu).

As the Regional Centre is expected to see substantial growth, adding energy performance targets as a public benefits category could be helpful in reducing emissions while also increasing the marketability of the development through reduced utility costs, improved comfort, and increased resiliency. Prior to the development of the Centre Plan, the Downtown Halifax Land Use By-Law included *the provision of exemplary sustainable building practices* as a public benefit category. However, in practice, this was not effective as it was not specific enough to enact change nor was it easily enforceable. For these, and other reasons, it was not proposed to be carried forward in the Regional Centre Land Use By-Law.

On August 17, 2021, Halifax Regional Council provided direction to create a new policy in section 8.2, Climate Change, of the proposed Secondary Municipal Planning Strategy, to support the potential use of the density bonusing tool for renewable energy technologies through future plan updates. As the Municipality does not have the ability to enforce a specific standard beyond that of the mandated NECB, the proposed policy indicated that this density bonusing category would not be considered until the NECB is strengthened or the Province grants HRM authority to prescribe more stringent standards as mentioned above. If sustainable building design was re-introduced as a public benefit category, it would need to be accompanied with defined, impactful, and measurable metrics that align with HalifACT. This re-integration would need to be balanced with the other public benefit categories already approved by Council, particularly affordable housing, which is mandated under Section 245A(4) of the *HRM Charter*.

Any municipal incentive program could also be designed to incorporate existing incentives like Efficiency Nova Scotia's (ENS) New Construction Program.⁷ This program offers a \$10,000 grant towards the cost of an energy model and a \$0.10 rebate for every kilowatt-hour (kWh) of energy consumption reduction for that building over the current NECB.

Municipal Buildings

Prior to Halifax Regional Council establishing a target of net-zero municipal operations by the year 2030, the Municipality has historically aimed to meet LEED certification when constructing its corporate buildings. To improve on this, with assistance from the Environment & Climate Change division, more specific and stringent energy performance standards are currently being included in new tenders. Some of these projects include the Mackintosh Depot Replacement, which will be built to exceed the 2015 NECB by a minimum of 15% and the new Fire Station #62, which includes a 50kW solar electric system, air to water heat pumps for in-floor heating with air to air heat pump back-up and variable frequency drives for all pumps and fans. The Municipality has also been piloting net-zero construction design in two more recent projects; the Needham Park Washrooms and the new Fire Headquarters.

Administrative Order 2021-002-OP

To ensure all future new corporate buildings meet the aforementioned net-zero construction target and to show community leadership, it is recommended that Halifax Regional Council adopt *Administrative Order 2021-002-OP – Respecting Net-Zero Construction of New Municipal Facilities within the Halifax Regional Municipality* as outlined in Attachment A. The Administrative Order (AO) will apply to all new municipal facilities, requiring that they be designed and constructed to a net-zero standard. Net-zero means that 100% of a building's energy need is generated on-site or off-site through a renewable source. Should a net-zero standard be deemed infeasible due to site limitations, operational needs or the capital cost of achieving a net-zero standard is not offset by the operational and maintenance savings, the facility will be built to a net-zero ready standard. Net-zero ready means reducing building energy consumption by 50% as compared to the 2017 National Energy Code for Buildings and maximizing on-site renewable generation, with the intention to purchase off-site renewables or carbon offsets as they become available to achieve net-zero.

Included within the *Environmental Goals and Climate Change Reduction Act* is a commitment to require any new build or major retrofit in government buildings, including schools and hospitals, that enters the planning stage after 2022, to be net-zero energy performance and climate resilient. As the Act has only passed first reading, the definition of "government building" is unknown. Should the definition include Municipal buildings, staff will return to Council to recommend the AO be amended or repealed as needed.

While net-zero construction is new to the Municipality, it has been proven to be financially feasible using existing tools and technologies. A 2019 study by the Canadian Green Building Council (CaGBC) estimated that constructing a net-zero building in Halifax today would come with an average cost premium of 9% when compared to the 2011 NECB. As we currently observe the 2017 NECB, this premium would be less and could be further reduced after factoring in available ENS incentives. The study estimated that these new buildings would result in annual operating savings of 36% and emission reduction of 87%.⁸ Detailed costing will be presented to Halifax Regional Council as part the Capital Budgeting process.

FINANCIAL IMPLICATIONS

As mentioned in the Discussion section of this report, a net-zero building in Halifax today is estimated to come with an average cost premium of 9% when compared to the 2011 NECB. This premium will ultimately

⁷ Efficiency Nova Scotia "New Construction" <https://www.energycns.ca/wp-content/uploads/2016/09/New-Construction-Flow-Chart-VF.pdf>

⁸ Canadian Green Building Council "Making The Case For Building To Zero Carbon" <https://www.cagbc.org/makingthecase>

depend on the nature and use of the building. While there will be an upfront capital cost premium, the operational and maintenance costs are expected to be substantially reduced when compared to like buildings not built to this standard. According to the CAGBC study, over a 25-year life-cycle analysis, building owners can expect to see a positive financial return of 4-5%. Each new project put forth after approval of this Administrative Order will reflect the HalifACT design direction and will have the associated financial implications integrated in the project business case to support its budget request.

RISK CONSIDERATION

While building to net-zero is financially feasible today using existing tools and technologies, this may not be practical due to site limitations or operational needs. In these cases, the buildings will be constructed to as close to net-zero as possible, with the difference being accommodated in other ways, such as offsite renewables or carbon sequestration.

COMMUNITY ENGAGEMENT

There has been no community engagement completed to inform this report. However, significant community engagement relating to the items discussed above was completed during the development of HalifACT.

ENVIRONMENTAL IMPLICATIONS

There is significant environmental benefit to the recommendation as outlined in the report.

ALTERNATIVES

The Environment and Sustainability Standing Committee defeat the staff motion recommending the adoption of Administrative Order 2021-002-OP. This is not recommended as the Administrative Order helps to ensure progress towards the municipal target of net-zero municipal operations by 2030 and the achievement of the overarching climate goals approved in HalifACT.

ATTACHMENTS

Attachment A – Administrative Order 2021-002-OP – Respecting Net-Zero Construction of New Municipal Facilities Within the Halifax Regional Municipality

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

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**ADMINISTRATIVE ORDER NUMBER 2021-002-OP
RESPECTING NET-ZERO CONSTRUCTION OF NEW MUNICIPAL FACILITIES WITHIN THE
HALIFAX REGIONAL MUNICIPALITY**

WHEREAS the Council has authorized the direction contained in the HalifACT: Acting on Climate Together Plan;

AND WHEREAS the HalifACT Climate Action Plan has committed to developing, adopting, and applying a standard for net-zero new construction, with a target of net-zero construction by 2030;

BE IT RESOLVED AS AN ADMINISTRATIVE ORDER of the Council of the Halifax Regional Municipality under the authority of the *Halifax Regional Municipality Charter*, as follows:

Short Title

1. This Administrative Order may be cited as Administrative Order 2021-002-OP, the *Net-Zero Construction of New Municipal Facilities Administrative Order*.

Interpretation

2. In this Administrative Order,

(a) “Council” means the Council of the Halifax Regional Municipality;

(b) “department” means the department assigned responsibility for corporate building design and construction by the Chief Administrative Officer;

(c) “municipal facility” means a building owned by the Halifax Regional Municipality that is heated or cooled;

(d) “net-zero” means that 100% of a building’s energy need is generated on-site or off-site through a renewable source;

(e) “net-zero ready” means reducing building energy consumption by 50% as compared to the 2017 National Energy Code for Buildings and maximizing on-site renewable generation, with the intention to purchase off-site renewables or carbon offsets as they become available to achieve net-zero; and

(f) “temporary structure” means a building that is not intended, by its construction, to be permanent, and includes mobile offices, emergency shelters and structures required to facilitate the construction of other buildings.

Purpose

3. The purpose of this Administrative Order is to consider the energy consumption of all new municipal facilities.

Application

- 4. This Administrative Order applies to all municipal facilities designed after the passing of this Administrative Order by Council.
- 5. For greater certainty, this Administrative Order does not apply to temporary structures.

Roles and Responsibilities

- 6. Department staff shall consider designing and constructing new municipal facilities to achieve net-zero.
- 7. Department staff may consider designing and constructing a new municipal facility to achieve net-zero ready, providing that department staff are satisfied that net-zero is infeasible due to one or more of the following:
 - (a) site limitations;
 - (b) operational needs; or
 - (c) the capital cost of such measures outweighing the operational and maintenance savings over the facility’s useful life.
- 8. New municipal facilities that are designed to achieve net zero or to be net-zero ready shall include energy monitoring (circuit level for electrical) to verify that the energy target has been met.
- 9. Nothing in the Administrative Order requires Council to design and construct a municipal facility that achieves net-zero or is net zero ready.

Done and passed on this day of , 2021.

Mayor

Municipal Clerk

I, Iain MacLean, Municipal Clerk of the Halifax Regional Municipality, hereby certify that the above noted Administrative Order was passed at a meeting of Halifax Regional Council held on , 2021.

Iain MacLean, Municipal Clerk