

FINANCIAL MANAGEMENT COMMITTEE

TO: *MAYOR AND COUNCILLORS*

**SUBJECT: NATURAL RESOURCES CANADA RENEWABLE ENERGY
INNOVATION PROGRAM - OPPORTUNITY TO PARTICIPATE IN A
JOINT APPLICATION**

RECOMMENDATION:

THAT staff be directed to participate in the referenced joint funding opportunity to Natural Resources Canada, as outlined in Option 2 (see Section 3.1) of the report titled “Natural Resources Canada Renewable Energy Innovation Program – Opportunity to Participate in a Joint Application” dated October 15, 2024, of the Open meeting of the Financial Management Committee.

REPORT

The Financial Management Committee, at its meeting held on October 15, 2024, received and adopted the attached report providing Council with options in relation to a joint funding application opportunity to Natural Resources Canada.

On behalf of the Financial Management
Committee,

Councillor P. Calendino
Chair

Councillor A. Gu
Vice Chair

TO: FINANCIAL MANAGEMENT COMMITTEE
FROM: GENERAL MANAGER CORPORATE SERVICES
SUBJECT: **NATURAL RESOURCES CANADA RENEWABLE ENERGY INNOVATION PROGRAM – OPPORTUNITY TO PARTICIPATE IN A JOINT APPLICATION**
PURPOSE: To provide Council with options in relation to a joint funding application opportunity to Natural Resources Canada.

RECOMMENDATION

THAT staff be directed to participate in the referenced joint funding opportunity to Natural Resources Canada as outlined in Option 2 (see Section 3.1) of this report.

EXECUTIVE SUMMARY

An opportunity has emerged for the City of Burnaby, managed via the Civic Innovation Lab, to participate in a joint application with Simon Fraser University (Dr. Vahid Hosseini, School of Sustainable Energy Engineering) through the Natural Resource Canada Renewable Energy Innovation Program ‘Renewable Energy Demonstration Projects’ funding stream. The application deadline is November 12, 2024. Options for potential participation are outlined below in Section 3.1 of this report.

1.0 POLICY SECTION

Potential City of Burnaby participation in the referenced Natural Resources Canada funding opportunity is consistent with:

- City of Burnaby Environmental Strategy (2016);
- Burnaby Declaration of a Climate Emergency (2019);
- Burnaby Climate Action Framework (2020);
- City Energy Strategy (2020); and the
- Burnaby Community Energy and Emissions Strategy.

2.0 BACKGROUND

The Civic Innovation Lab (the “Lab”) was founded in 2022 by the City of Burnaby in partnership with Simon Fraser University (SFU), with a mandate to research and develop innovative solutions to civic issues and challenges, in addition to providing educational advancement through collaborative learning and research opportunities. Since its founding the Lab has expanded to support over 20 projects spanning 8

municipal and 14 SFU departments. An update report on the Lab’s activities over the past year is anticipated to be presented to Council in November 2024.

The City, via the Lab, has been approached by SFU professor Dr. Vahid Hosseini¹ of the School of Sustainable Energy Engineering, to participate in a joint funding application with SFU to the Natural Resources Canada (NRCAN) Energy Innovation Program, ‘Renewable Energy Demonstration Projects’ funding stream.

The application deadline is November 12, 2024. Successful applicants are expected to be notified by Q3-4 2025, with approved projects commencing in Q1-Q2 2026. Options for the scope of the proposed joint application are outlined below in Section 3.0 for Council’s consideration.

3.0 GENERAL INFORMATION

The NRCAN ‘Renewable Energy Demonstration Projects’ funding stream is led by the Office of Energy Research and Development which focuses on funding accelerated efforts in energy innovation and cleantech programming. The current call for applications provides possible funding of up to \$4 million for projects up to a five-year duration.

Should staff be directed to move forward with participation in a joint application, the City’s involvement would be managed via the Lab.

3.1 ‘SustainaSphere’ Project Scope

‘SustainaSphere’ (the Project) is intended to provide proof of concept for emergent technologies related to the green energy transition and reducing grid-dependence, while also showcasing more established technologies in a public setting. Through conversations with Dr. Hosseini, staff have identified three options for consideration as outlined below. In all cases, the projects are intended to be publicly accessible for both self-directed (e.g. via explanatory signage) and curated (e.g. researcher-led workshops) learning opportunities. Targeted learning opportunities for SFU students, both undergraduate and graduate, would also be offered.

The Project activities outlined in Options 1 and 2 below are land-based and, pending Council direction and outcome of the application, are proposed to be situated on currently under-utilized, non-treed City-owned land. Should this application be successful staff will work cross-departmentally to identify suitable locations and will bring forward options for Council approval. Access to the parcel(s) in question would be provided on a time-limited basis. Specific access details would be negotiated via a licence agreement or other appropriate legal mechanism.

1. For more information, please visit www.sfu.ca/see/people/faculty/vahid-hosseini.html

Option 1: Focused Application

Develop an application based upon passive house design and modular construction (of approximately 1,500 square feet) showcasing the capabilities of an integrated microgrid with a smart energy management system that meets local energy demand and distribution requirements sustainably, reliably, and resiliently. Proposed additional components include a heat pump, solar panels, and a rain garden, water collection, and filtration system for low-grade heat storage (thermal battery). Other emergent technologies may also be explored.

An AI-enabled control system will optimize energy distribution based on real-time supply and demand, with the ability to switch between energy sources as needed. The system will be expandable, serving as a potential scalable solution for future projects. The project would enable researchers to investigate and track reduced grid dependence for the structure based upon activation of the noted elements.

A land area of approximately 3,000 square meters would be required for installation of the modular structure and other related elements. Smaller parcels would also be considered.

In this option, the application would include a request for funding to off-set City expenses related to the project including any necessary permits, utilities, garbage collection for the space etc. Approximately \$80,000 of in-kind staff-support is anticipated over the 5-year life cycle of the project for this option. This includes staff time associated with the planning, delivery, and maintenance of the site and is expected to be accomplished during the completion of regular position duties. SFU researchers would install and maintain the present technologies. Construction of the modular structure would be led by SFU with City institutional support (e.g. building permit).

Option 2: Multi-Variable Application (Recommended)

Develop an application including the entirety of Option 1 (above) with the addition of an Autonomous People Mover (APM) demonstration. An APM is a transportation system designed to carry passengers using automated technology. APMs operate autonomously, utilizing advanced sensors, software, and control systems to navigate and function. Commonly deployed in environments such as airports, university campuses, and urban transit networks, APMs are effective for short-distance passenger transport. The proposed demonstration would take place in a controlled manner, at pre-set times, with public notice provided in advance. The APM demonstration would also be deployed with an operator present behind the wheel as required by current legislation.

In British Columbia, autonomous vehicles classified as Society of Automotive Engineers (SAE) Level 3 and above² are currently not permitted on public roads under new legislation enacted in April 2024. As such, the proposed demonstration is anticipated to take place on an existing pedestrian pathway running from the south end of the Kensington Urban Trail pedestrian bridge (south of Sperling Skytrain Station) to the Bill Copeland Sports Centre north parking lot, as outlined in *Figure 1* below. Close collaboration with Provincial regulators would be undertaken as required. Should this demonstration prove successful, opportunities for expansion to operate both regularly and directly from Sperling Skytrain Station could be explored. It is noted that improvements to the existing pedestrian bridge (etc.) would be required for any expansion.

As above, in this option, the application would include a request for funding to off-set City expenses related to both variables of the project. Approximately \$120,000 of in-kind staff-support is anticipated over the 5-year life cycle of the project for the combination of Options 1 and 2, as discussed in this report. Site preparation for an APM demonstration may require additional funding and can be assessed as required. Again, as above, SFU researchers would install and maintain the present technologies.

Figure 1.



Potential route for APM demonstration

2. The [Society of Automotive Engineers \(SAE\)](#) classifies vehicle automation with a 0 to 5-level system. Level 0 has no automation, while Levels 1 and 2 have automated driver-assistance features (e.g. lane change assist or automatic braking). Levels 3 to 5 have highly automated self-driving capabilities, which do not require a person to be driving when automated features are engaged.

Option 3: Decline Opportunity

The opportunity to participate in the joint application opportunity could be considered and declined. Staff would communicate this decision to SFU pending direction. Should this funding stream re-open for applications in the future, the opportunity could be reconsidered at that point.

4.0 COMMUNICATION AND COMMUNITY ENGAGEMENT

Should staff be directed to participate in the joint application opportunity, and should the proposal be successful, staff with work with SFU to ensure a full project description, including clear pathways for learning and participation is publicly available for Burnaby community members.

5.0 FINANCIAL CONSIDERATIONS

As outlined above, in-kind staff time ranging from a value of approximately \$80,000 to \$120,000, depending on the option selected, would be required to ensure successful delivery of the Project. This support is anticipated to be delivered during regular duties. The value of the potential land parcel(s) that the Project would have access to through the 5-year duration of the funding would be brought forward to Council for consideration at the time of notice of successful funding, should this occur.

Respectfully submitted,

Juli Halliwell, General Manager Corporate Services

REPORT CONTRIBUTORS

This report was prepared by Rebekah Mahaffey, Executive Director Civic Innovation Lab and reviewed by James Lota, General Manager Lands and Facilities.