

## SCHEDULE F - TRIPLE BOTTOM LINE REPORT TEMPLATE

**The Triple Bottom Line refers to the environmental, economic and social aspects of sustainable initiatives.**

The purpose of the Triple Bottom Line Report is to share the story of your experience undertaking your project with others seeking to address similar issues in their own communities.

The Project Officer will ensure a Word template of Schedule F is available for completion, and will help with any questions. FCM will post your report on the [Green Municipal Fund™ \(GMF\) website](#).

### Instructions:

- Use **plain language** that can be understood by people who are not specialists on the subject.
- **Five to 10 pages**, but may be longer or shorter, depending on the complexity of the project.
- The report, including all attachments and appendices, must be submitted in **PDF format** with searchable text functionality.
- Reports must be clearly identified as **final** (not draft).
- **Reports must be dated.**

### VERY IMPORTANT:

**Timing:** You need to email a report, to your GMF project officer (contact info is in Schedule C), on the dates indicated in Schedule C or whenever FCM asks for such a report.

**Copyright:** Before you submit a report to FCM, make sure you hold the copyright for the report. If you're hiring a consultant to prepare the report, please make sure to get the copyright (see FCM's copyright tips document), or else FCM will not be able to disburse the Grant Amount.

**Accessibility for people with disabilities:** Please do not change the format, font, layout, etc. of this report. In accordance with FCM's Accessibility Guidelines, this template is designed in order to be accessible.

**Confidentiality:** If your report contains any Confidential Information that you would prefer not be made available to the public (e.g. through a case study or other materials produced by FCM that relate to your Project), please submit two versions of the report:

1. **Complete report including Confidential Information:** Please clearly label this report with the word "**Confidential**" or similar wording and FCM will treat it as confidential.
2. **Abridged report excluding Confidential Information:** This report may be posted on the FCM website and otherwise made available to interested third parties, to help FCM meet its knowledge sharing objectives.

<b>GMF number:</b>	17326 Welcher
<b>Lead Applicant:</b>	Metro Vancouver Housing, Leigh Rollins
<b>Phone, fax, e-mail, and address of lead contact:</b>	604-451-6055, <a href="mailto:leigh.rollins@metrovancouver.org">leigh.rollins@metrovancouver.org</a> 4730 Kingsway Burnaby, BC V5H 0C6
<b>Date of the Report:</b>	July 7, 2021

## 1. Summary of the Initiative

### a. What was the objective in preparing the funded initiative?

The objective of the NetZero Energy / NetZero Energy Ready (NZE / NZER) Feasibility Study was to explore in detail, practical and constructible methods of reducing building operational energy demand, while incorporating on-site renewable energy generation capacity in the Welcher Avenue multifamily residential affordable rental development as well as future Metro Vancouver Housing developments.

### b. Referring to the original plan for this funded initiative, please identify any changes in the approach or methodology upon implementation. For example, significant scope changes such as alterations to timeline, cost or personnel.

The personnel and project cost remained consistent with the original plan. The project timeline and scope extended marginally to include the building's projected operational greenhouse gas emission reductions in the study.

### c. Describe community engagement activities (e.g. consultations, workshops, meetings) performed for this funded initiative.

Community engagement activities were done by both Metro Vancouver and the consultant engaged to conduct the study. The project goals were shared with local municipalities, the British Columbia Institute of Technology (BCIT) and the Zero Emissions Building Exchange (ZEBx). Metro Vancouver intends to present the study findings publically through ZEBx in the fall of 2021.

The information gathering, brainstorming and concept review elements of the project were conducted via workshops with representatives from:

- The Province of British Columbia (BC Housing)
- The Zero Emissions Building Exchange (ZEBx)
- The British Columbia Institute of Technology (BCIT)
- Pembina Institute
- Climate and Air Quality group at Metro Vancouver

The municipality, Port Coquitlam, was also kept informed of the project through regular communications.

## 2. Triple Bottom Line Findings and Recommendations

### a. What were the findings related to the options explored in the Study?

- Environmental, Financial, Social
- Impact on affordability
- Recommendations

Not originally contemplated at the outset of the project, the consultant team also included a thorough analysis on both embodied and operational greenhouse gas (GHG) emissions for the project in addition to the originally planned energy study. Not only did the modelled results of the NZE/NZER measures show the possibility of a 50% reduction in operational energy use from minimum building code requirements, it also showed a possible 87% reduction in operational GHG emissions. The positive environmental implications of these energy use and GHG emission reductions are clear and will go a long way in demonstrating the potential for future multi-family residential projects throughout Canada if implemented.

Once the energy reduction measures were identified, considerable study was completed on each measure to determine the capital cost, lifecycle cost and project value in terms of energy saved per dollar invested. This allowed the team to focus on, and recommend energy conservation measures that provide the greatest possible benefit to the project at the least cost. Additionally, several energy conservation or GHG emission reduction measures were revealed to have only minor impacts on capital cost. By communicating this information to the larger design and construction community, measurable environmental and social benefits can be realized at a large scale at little to no cost.

Through community engagement and community members' participation in the study workshops, considerable project interest was generated outside of the workshop groups in the local design, construction and academic communities leading to a positive social benefit. Our hope is that the extra attention on this project will provide pride and motivation for the local community, the municipality, our tenants and the Canadian housing industry as a whole.

Affordability for tenants is always a top priority for Metro Vancouver Housing. Through the use of air source heat pump heating, cooling and domestic hot water, energy costs are minimized. Energy modelling completed as part of this feasibility study has shown an approximately 50% reduction in operational energy use. The original project planned for natural gas as a fuel source for both space heating and domestic hot water. In pursuit of both GHG emission reductions and energy efficiency, the team changed all systems to electric. In British Columbia, electricity rates as compared to natural gas is approximately 3 to 4 times the energy cost. With the reduction in overall energy use, the team was still able to show an energy cost savings for the tenants with a fully electric building. The key performance metrics are summarized in the table below.

Performance Measure	Minimum Requirement / Base Project	NZE / NZER Building
Energy Usage Intensity (kWh/m <sup>2</sup> /year)	120	60.3
Greenhouse Gas Intensity (kgCO <sub>2</sub> eq/m <sup>2</sup> /year)	5.5	0.7
Energy Cost	\$6.61/m <sup>2</sup> /year	\$5.51/m <sup>2</sup> /year

#### 4. Community Context

Provide a profile of the community that is the object of this funded initiative (e.g. general demographics)	<i>The Welcher Avenue affordable housing redevelopment project located in Port Coquitlam, British Columbia. Port Coquitlam is considered a smaller municipality within the Metro Vancouver region with approximately 58,000 residents, and population growth generally remaining stable at around 1% per year. It is home to an ethnically diverse population with a large percentage of families – 50% of households have children at home.</i>
Indicate the size and structure of the lead applicant organization and the Board of Directors	<i>Metro Vancouver Housing Corporation (MVHC) is a not-for-profit entity that is wholly owned by Metro Vancouver Regional District which is a federation of 23 member jurisdictions: 21 municipalities, one Electoral Area and one Treat First Nation. MVHC is governed by a 40-member board of directors representing all 23</i>

*member jurisdictions. MVHC currently provides 3,400 homes at 49 sites across the region that house over 9,400 people*

## 5. Project Team

a. Briefly indicate who was involved in developing this funded initiative, and their affiliations (including consultants). If the lead applicant is a municipal housing provider, please include both municipal staff and officials who managed the preparation of the funded initiative.

Leigh Rollins, P.Eng – Senior Engineer, Metro Vancouver Housing – Project manager for the Welcher redevelopment project.

Jotty Gill, ASCT – Construction Manager, Metro Vancouver Housing

Michel Labrie, Architect AIBC – Principal, Local Practice Architecture + Design – Lead Feasibility Study Consultant

Maru Kim, B.Arch Sci – Architectural Technician, Local Practice Architecture + Design – Feasibility Study Consultant

Mike Wilkinson, M.Eng, EIT, CPHD – Associate, RDH – Building Envelope Consultant

Richard Corra, P.Eng – President, Rocky Point Engineering Ltd – Mechanical Consultant

Mathieu Bechard, P.Eng – Associate, Rocky Point Engineering Ltd – Mechanical Consultant

Hira Boparai, B.A.Sc – Principal, O'M Engineering – Electrical Consultant

Eric Catania, M.Eng, P.Eng – Associate, RDH – Lead Energy Modeller

Andrew Hambleton, P.Eng – Associate, Fast & Epp Structural Engineers – Structural Consultant

b. Was there a Project Champion who was instrumental to the completion of the funded initiative? If so, please include their name, title and contact information, and describe their role in the funded initiative.

Michel Labrie, Architect AIBC – Principal, Local Practice Architecture + Design  
Local Practice Architecture + Design  
#302 – 980 George Street  
Vancouver, BC V6A 0H9  
O. 604.343.4525

Michel was the lead consultant for the feasibility study. He is an industry expert in sustainable design and was instrumental in organizing the study and bringing industry partners into the study for collaborative workshops. He was responsible for adding another level of study into greenhouse gas emissions that really benefited the project and provided a deeper understanding for all parties involved.

## 6. Outcomes and Next Steps

a. What is the next step in the implementation of this funded initiative?

With the feasibility study completed. Metro Vancouver Housing intends to apply to the Green Municipal Fund – Capital Projects program to implement the NZE / NZER measures into the project for construction.

## 7. Lessons Learned and Knowledge Sharing

In answering the questions in this section, please consider all aspects of the preparation of the funded initiative — from the initial planning through each of the essential tasks until the funded initiative was completed.

- a. What lessons did you learn during this funded initiative? In your answer, consider any barriers or challenges encountered and what you might have done differently.

As an organization, we gained a deep understanding of residential building energy use, greenhouse gas emissions, and associated design measures to reduce these. I learned practical limits to NZE / NZER based on construction type and unit density – essentially the difficulty in fully offsetting energy use through on-site renewable energy generation.

We had the benefit of having a strong consulting team with a good knowledge of the latest sustainability technologies in residential construction; however, the rapid pace of the market is such that new technologies are coming online regularly and may not have been considered as options for this project.

- b. What worked well? What would you recommend to others undertaking similar projects?

The workshop structure of the project worked well for information gathering and collaboration with industry partners. We would recommend this approach on future projects/studies.

- c. How do you plan to share the knowledge gained from this funded initiative? (e.g. website, conference, trainings).

We plan to partner with the consulting team and produce a presentation that can be delivered at several seminars and conferences as well as within Metro Vancouver such that municipal members can gain an understanding of the possibilities for high-performance affordable housing construction. Suggested presentation outlets will include the Zero Emissions Building Exchange (Zebx), British Columbia Non-Profit Housing Association (BCNPHA), British Columbia Institute of Technology (BCIT) and the Urban Development Institute (UDI).

## 8. Publicity and Outreach

- a. Did the funded initiative receive any recognition, media coverage, or notable public support? If so, please describe.

The funded initiative has not been communicated to the public at this time. Our intentions are to communicate this at a later date, and possibly if capital funding through FCM is approved.

- b. If available, please provide the web address with more information about the initiative (with references to the relevant section).

N/A

c. We encourage you to provide up to 10 images relevant to the funded initiative, if available.

a. Where possible, include photos that feature people in action, illustrate the progress of the project, or feature “before” and “after” perspectives.<sup>1</sup>

b. For each photo, please include:

- o A caption describing what is featured in the photo
- o A photo credit that indicates who owns the copyright to the photo and the photographer (e.g. © 2010, City of Ottawa/Madison Brown)
- o Written releases from any persons appearing in the images (Please request a photo consent form from your project officer).

## 9. **Contacts**

a. Please provide the name and coordinates (title, full address, phone, fax and email) of someone who can be contacted for more information about the funded initiative.

Leigh Rollins, Senior Project Engineer, Metro Vancouver Housing  
4370 Kingsway  
Burnaby, BC V5H 0C6  
o. 604-451-4055  
c. 778-968-5437

b. In the event the contact is no longer available, please provide general contact information for the lead applicant, such as the administrative office of the municipal department that coordinated the Project or some other general contact for the Recipient/lead applicant.

Metro Vancouver Housing Corporation  
4370 Kingsway  
Burnaby, BC V5H 0C6  
604-432-6200

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