Stantec

Memo

To:	Rochelle Owen Director of Sustainability Dalhousie University 1226 Lemarchant Street Halifax, NS B3H 3P7	From:	Stantec Consulting Ltd. 845 Prospect Street Fredericton, NB E3C 2T7
File:	121416946	Date:	April 15, 2021

Reference: Greenhouse Gas and Climate Change Advisory Services

INTRODUCTION

Stantec Consulting Ltd. (Stantec) is pleased to provide this memo regarding our review of Dalhousie University's (Dal) most recent GHG inventory (2019-2020 fiscal year). The scope of work included a desktop review and guidance on the development of the GHG inventory report and calculations, to help strengthen the GHG inventory and prepare Dal for disclosure of GHG emissions as well as recommendations to align Dal's GHG management practices with the current best practices of other like organizations.

PROCEDURES

The following areas of the calculations and GHG inventory report were checked by Stantec against The Climate Registry's (TCR) General Reporting Protocol (GRP) and General Verification Protocol (GVP), as well as ISO 14064 guidance and best practices in GHG organizational inventories:

- Methodologies, and the identification of any divergence from the GHG emission calculation methodology outlined in the guidance documented listed above
- Referenced values (e.g., emission factors and conversion factors)
- Assumptions inherent to the calculations
- Documentation of assumptions or explanations
- Potential for calculation errors

FINDINGS

Overall, the GHG inventory report documents the assumptions that were used and provides explanation of the calculations performed. No calculation errors were detected and the methodologies used for the calculations are appropriate, with exception of the following:

- The emission factors used in Dal's calculations were 2019 TCR emission factors. According to the TCR GRP (Version 3.0), "*organizations reporting emissions data from previous years must use the most recent emission factors available when the inventory is being reported, except when quantifying emissions associated with electricity use.*" Dal could consider updating the emission factors used for the calculations to the most up-to-date emission factors available on the TCR website (2020 emission factors were published in April 2020).
- Dal used the TCR light fuel oil "residential" category emission factors for quantifying furnace oil GHG emissions. The "forestry/commercial/public admin/institutional" emission factors would be more appropriate.

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- In the paragraph under Table 2.3, Dal writes, "*the total wood consumption at the AC resulted in 17,456 tonnes of BioCO₂*". This statement is incorrect. There were 17,082 tonnes of biogenic CO_2. The other 375 t CO_2e are CH_4 and N_2O emissions; these are not referred to as "bioCO_2" emissions because the CH_4 and N_2O portion of combusted wood are not biogenic.
- The global warming potential (GWP) for refrigerant R508B does not match TCR's 2019 default emission factors. The calculation/assumptions used by Dal for this GWP are not listed in the calculation spreadsheets or the GHG inventory report.
- Dal's calculations related to cogeneration/combined heat and power were reviewed by Stantec and found to be acceptable.

Other points for consideration:

- The GHG inventory report states that the methodology used for calculating GHG emissions from refrigerants is the simplified mass balance approach from the GRP, however Dal's calculations do not include the same calculation inputs (e.g., quantity of refrigerant recycled). The activity data used in the calculations, assumptions and omissions could be more clearly stated in the GHG inventory report (e.g., which calculation inputs were omitted due to lack of data or because they do not exist on site).
- Stantec was not provided with all raw data, invoices or other evidence/data sources in support of the activity data used in the calculations (e.g., fuel volumes consumed). Samples of these could be reviewed internally or by a third party prior to disclosing emissions to confirm data was appropriately incorporated.
- The GHG inventory report does not clearly explain how the mobile/fleet data is allocated between the Halifax and Agricultural Campus (AC) locations.
- Mobile fuel use is estimated from fuel purchases (dollars spent), mileage and a number of assumptions. Tracking actual fuel consumed by the university's vehicles would be a more accurate way to collect data for calculating emissions related to mobile fuel consumption, rather than basing the calculation on dollars spent and using average fuel prices to back-calculate fuel consumption.
- It would be helpful, for others reviewing the GHG inventory report, to have a summary spreadsheet showing all of the calculations and categories instead of several spreadsheets for each category.
- The GRP does not provide guidance on calculating the Scope 3 emissions included in Dal's GHG inventory report (commuting, paper consumption and water use). The calculation inputs and assumptions listed in the GHG inventory report were reviewed and found to be reasonable.
- Dal should consider reviewing the GHG inventory report, to make sure abbreviations are spelled out upon first mention (e.g., global warming potential (GWP)).

Dal's GHG inventory report supports the 2019 University Climate Change Operations Plan (the Plan) by allowing year-over-year GHG emissions comparisons to track the university's progress towards meetings targets established in the Plan. The Plan's targets include reducing GHG emissions below the university's 2008-2009 baseline year by 30% by 2025; 55% by 2030; 80% by 2040 and 100% by the year 2050 (carbon neutral). Dal's target to be carbon neutral by 2050 is in alignment with other large Canadian universities, including the University of British Columbia (UBC 2020), the University of Calgary (UoC 2019), and the University of Waterloo (UoW). The GHG inventory report includes a list of projects that were undertaken in 2019 and 2020 to reduce GHG emissions and mitigate climate change, and also lists projects that are being planned, implemented and monitored in future to further lower/mitigate GHG emissions. As a best practice, it is recommended that Dal consider listing tentative completion dates and estimated expected GHG reduction outcomes for these projects in the "Next Steps" section of the GHG inventory report.

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While Dal's Plan clearly presents the university's climate change and sustainability information, it lacks some details that are often included in these types of plans. The plan does not clearly outline some of the initiatives that have been undertaken by Dal to align with the global sustainability standard, STARS (Sustainability, Tracking, Assessment & Rating System). For example, aligning sustainability goals with the United Nations Sustainable Development Goals (UNSDG), and linkages and targets associated with equity, including LBGTQ+ and Indigenous Knowledge). Dal could consider including these initiatives, and any other sustainability efforts/programs, in the Plan for transparency.

CLOSURE

This memo has been prepared for the sole benefit of Dalhousie University. This memo may not be relied upon by any other person or entity without the express written consent of Stantec Consulting Ltd. (Stantec) and Dalhousie University. Any use of this report by a third party, or any reliance on decisions made based upon this report, are the responsibility of the third party. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This memo was prepared by Catherine MacFarlane, M.A.Sc. and Dan Hegg,B.Comm., M.Sc., LEED Green Associate, CEM, ENV-SP Verifier, quality reviewed by Vicki Corning, P. Eng., and independently reviewed by Nicole Flanagan, M.A.Sc., P.Eng. We appreciate the opportunity to assist the University with your GHG inventory. If you have any questions regarding the contents of this memo, or require any additional information, please do not hesitate to contact the undersigned.

Regards,

Stantec Consulting Ltd.

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