



ZCB-Design Certification Review Report

Purpose The Zero Carbon Building Program in Canada was initiated by the Canada Green Building Council to meet the needs of the low-carbon economy by making carbon reductions the key indicator of building performance. Taking a carbon centric approach is crucial because the most important factor in the emissions footprint of a building is often not energy performance, but rather the carbon intensity of the local grid and the fossil fuels used. This project was evaluated according to CaGBC's Zero Carbon Building Standard following the ZCB-Design pathway.

Zero Carbon Building Components The report is organized into four categories based on the main components of a Zero Carbon Building as defined by the Zero Carbon Building Standard including: Zero Carbon Balance, Energy Efficiency, Renewable Energy, and Low Carbon Materials.

Explanation of Scoring

| | | |
|-----------------------|----------|---|
| Achieved | 6 | The applicant has provided the mandatory documentation (completed ZCB-Workbook and associated information) that supports achievement of the requirements. |
| Pending | 0 | The applicant has not totally satisfied the mandatory documentation, or the documentation is incomplete and an achievement decision cannot yet be made. |
| Denied | 0 | The project has not demonstrated achievement of these requirements. |
| Not Applicable | 1 | The project is not required to meet these requirements. |

Review status is: ZCB-Design Certified

Project Number **20718**
 Project Name **Service Maintenance and Storage Building**
 Review Date **November 13, 2020**
 Review Status **ZCB-Design Certified**

| Program Requirements | |
|----------------------|------------------------------------|
| Achieved | Zero Carbon Balance |
| Not Applicable | Zero Carbon Transition Plan |
| Achieved | Thermal Energy Demand Intensity |
| Achieved | Energy Use Intensity |
| Achieved | Peak Demand |
| Achieved | Onsite Renewable Energy Generation |
| Achieved | Embodied Carbon |

Zero Carbon Balance

- Achieved** **Zero Carbon Balance**
 The applicant has submitted the ZCB-Workbook, a submission narrative and supporting documentation demonstrating a design phase Zero Carbon Balance.

 Prerequisite achieved.
- Not Applicable** **Zero Carbon Transition Plan**
 The applicant has submitted a zero carbon buildings submission narrative which indicates that the building does not use fossil fuels.

 Prerequisite not applicable.

Energy Efficiency

Note: The purpose of the energy model review performed during the course of this ZCB Design Certification Review is only to evaluate the predicted Thermal Energy Demand Intensity (TEDI) and Onsite Renewable Energy against the ZCB Design program requirements. As such, this review is not a validation of the energy model and the results cannot be interpreted as actual expectations while the building is in operation.

- Achieved** **Thermal Energy Demand Intensity**
 The ZCB workbook indicates that the thermal energy demand intensity (TEDI) of the building is 32 kWh/m2. The building is located in Ottawa, Ontario which is in climate zone 6.

 It was noted that the TEDI calculation used a floor area of 813 m2, while 860 m2 is used elsewhere in the submittal, including in the code matrix of drawing A001. Substituting for consistency, the TEDI using the smaller area is 30.1 kWh/m2. Compliance is not affected.

 Prerequisite achieved.
- Achieved** **Energy Use Intensity**
 The ZCB workbook indicates that the energy use intensity (EUI) of the building is 0.19 GJ/m2/yr.

 Based on the total energy and gross floor area reported per the Summary tab of the ZCB workbook (187.85 GJ and 860 m2, respectively), it appears that the EUI is 0.22 GJ/m2/yr. Prerequisite achievement is not affected.

 Prerequisite achieved.
- Achieved** **Peak Demand**
 The narrative indicates that the peak demand for the building is 18 kW, and it occurs on January 23rd at 08:15.

 Prerequisite achieved.

Renewable Energy

Achieved

Onsite Renewable Energy Generation

The applicant has submitted a completed ZCB Workbook which demonstrates that 47.49% of the modelled energy required is generated on-site.

Prerequisite achieved.

Low-Carbon Materials

Achieved

Embodied Carbon

The applicant has submitted an embodied carbon report. The applicant has also provided a copy of the LCA model. The software used to prepare the report was the Athena Impact Estimator for Buildings and a service life of 60 years was used. The embodied carbon report indicates that all structural and envelope components were included in the analysis as well as the required life cycle phases.

The submitted embodied carbon report indicates carbon footprint of the materials over the life of the building (not including building operations) is 253,000 kg CO₂-e. The submitted Athena model indicates the carbon footprint is 263,000 kg CO₂-e. The value from the Athena model will be considered correct.

Please note for future submissions, it is advisable to submit reports exported from the LCA model rather than the simulation files themselves. Reviewers do not have access to all software platforms.

Prerequisite achieved.