

AJAX GREEN STANDARD ENERGY MODELLING REPORT

Terms of Reference

Description

The Ajax Green Standard (AGS) is a tiered municipal green standard that establishes sustainability-related performance measures and design guidelines for new development and redevelopment in the Town of Ajax. The AGS promotes higher building standards and development practices to help prepare, mitigate and adapt to climate change while protecting and enhancing natural features. The AGS is a requirement for any applicable development applications submitted on or after May 1, 2022.

The Energy Modelling Report is a Site Plan Control and/or Draft Plan of Subdivision application submission requirement to show how AGS Energy Performance and Emissions objectives will be met through exterior building design elements. All applicable applications must show compliance with at least Tier 1 requirements of the AGS. The focus should be on exterior design solutions but an applicant may choose how to address the minimum performance requirements which may include interior, exterior, or servicing strategies, or a combination therein. Where an applicant chooses to pursue strategies beyond exterior design or elements not yet reflected in the drawings, the model may make necessary assumptions and, the plans and drawings will support contingent references to the extent necessary to meet the interior measures proposed.

The Energy Modelling Report will identify energy conservation measures proposed and any applicable assumptions made in modelling the energy performance of the building(s). The Planning Rationale and/or Design Briefs shall also be consistent with the Energy Modelling Report.

Preparation:

Energy Modelling Reports shall be completed and signed by the energy modeler and licensed Architect, C.E.T., B.E.M.P., or Professional Engineer.

The simulation program shall meet the requirements as set out in ASHRAE 90.1-2013, G2.2. Energy Models should be completed using the following software:

- eQUEST version 3.64 or higher
- Energy Plus
- IES Virtual Environment

The model will follow simulation guidelines from Sections 3 through 7 of the [**Toronto Green Standard Version 3 Energy Efficiency Report Submission & Modelling Guidelines**](#) as applicable. With the exception of section 3.2, Town of Ajax projects shall use an Ajax weather file.

Where a site plan application includes an existing building that is expected to remain, the model should consider scope and delineation of included and excluded components. The Energy Modelling Report will clearly identify the boundary of the energy model. An energy model is not required to include existing

buildings or building floor area that are not changing as part of the project. Site Plan Control applications with multiple buildings served by independent heating systems shall submit individual Energy Modelling Reports for each building.

At the Site Plan Control and/or Draft Plan of Subdivision application stage, it is understood that many of the building design details, equipment and other required inputs are not fully complete. The applicant is to supply enough information and supporting documents to describe the energy conservation measures to be applied to the project, including measures related to the following:

- Building articulation
- Orientation
- Building envelope
- Glazed area
- Solar control, such as external shading devices
- System choice and major mechanical and electrical energy decisions

Where a building system or part of a building system has not been specified, it shall be assumed and modelled as equal to the prescriptive requirements of SB-10 2017 of the Ontario Building Code. Reasonable assumptions around mechanical and electrical systems are allowed and should be documented in the Energy Modelling Report or Mechanical and Electrical design briefs if provided as supplementary information.

When Required:

An Energy Modelling Report will be included with the AGS Checklist submission as part of the Initial Complete Submission package for applications for Site Plan Control and/or Draft Plans of Subdivision.

Like the AGS Checklist, an Energy Modelling Report is applicable to the following:

- **Low-Density Residential** developments less than four (4) storeys and with a minimum of five (5) dwelling units
- **Mid- to High-Density Residential** developments four (4) storeys and higher
- **Non-Residential** developments of all industrial, commercial, and institutional buildings

Exemptions to the requirement of an Energy Modelling Report may be determined by staff where it is demonstrated that the energy component of a project is not relevant to the review of the application in the context of applicable policy. Buildings which don't have energy requirements under the Ontario Building Code do not have to demonstrate energy performance under the AGS.

Contents for Energy Modelling Reports:

1. Summary

This section will provide a high-level summary of the assumptions, modelling tool and results. It will clearly identify how the project complies with the energy model requirements of the AGS

2. Proposed Building Energy Simulation Overview

This section will provide details of the modelling simulation approach and building assumptions such as occupancy type areas, operation hours, and weather data.

3. Simulation Details for Proposed and Reference Buildings

This section will provide a table outlining the proposed and reference building details for the following parameters:

- Building Envelope
 - ▶ Wall floor and roof assemblies- general type, assumed R value, thickness
 - ▶ Doors
 - ▶ Window to wall ratio
 - ▶ Fenestration type(s)
 - ▶ Air Infiltration assumptions
- Interior Loads
 - ▶ Lighting and power density assumptions
- Mechanical Systems
 - ▶ Mechanical system assumptions

4. Energy Model Compliance Results

This section will provide the model results such as energy use, emissions, peak demands.

Evaluation Criteria:

Submission will be evaluated for compatibility with the AGS based on the Tier 1 requirements identified in the AGS Guidebook. Meeting Tier 2 requirements and higher is highly encouraged.

Low-Density Residential developments must demonstrate that the building(s) achieve or exceed ENERGY STAR for New Homes, version 17, R-2000 requirements, or equivalent.

Mid- to High-Density Residential and Non-Residential developments must demonstrate that the building(s) achieve at least 15% energy efficiency improvement over OBC, SB-10, Division 3 (2017).

Submission:

The Energy Modelling Report will be submitted along with the AGS Checklist and associated documentation.

Resources:

- [Toronto Green Standard \(v3\) Energy Efficiency Report Submission & Modelling Guidelines](#)
- [ENERGY STAR for New Homes](#)
- [R-2000 Standard](#)
- [CBHA Net Zero Home](#)
- [Passive House Canada](#)