



COMMERCIAL DEEP ENERGY RETROFIT PROGRAM

PROGRAM GUIDE

DESIGN WITH ENERGY EFFICIENCY IN MIND.





- Introduction**2
 - Benefits of Deep Energy Retrofit projects2
- Does my project qualify?**2
- Overview**3
 - Phase 1 Energy Modelling3
 - Phase 2 Performance 4
 - Commercial Deep Energy Retrofit project details5
 - Energy Modelling..... 6
 - Systems Manual7
- Additional program considerations** 9
- How to participate** 11
- Appendix A: Airtightness testing requirements**12



INTRODUCTION

Some existing buildings requiring more comprehensive upgrades and enhancements may be suited for deep energy retrofits. For these projects, an entire building’s energy use is analyzed using energy modelling, and energy efficiency enhancements are designed specifically for that building to reduce its overall energy use by 20% or more upon completing a whole-building renovation.

The building enhancements completed during a deep energy retrofit are wide-ranging, and the projects tend to be capital intensive; however, the energy efficiency upgrades are exhaustive and are expected to provide long-term results for building owners. Through the Commercial Deep Energy Retrofit Program, we offer technical guidance and financial incentives for energy modelling, and energy efficient design for existing buildings.

Benefits of Deep Energy Retrofit Projects:

- Identify opportunities for energy and greenhouse gas emission reductions
- Reduced building maintenance demands
- Save energy and money
- Correct persistent building problems
- Indoor environment improvements for air quality, thermal comfort
- Reduce your operating costs
- Increase your property value and occupancy rates

Through the Commercial Deep Energy Retrofit Program, incentives are available for major renovation projects in which site energy use will be reduced by 20% or more from the pre-renovation baseline energy use. Buildings with aged building elements and equipment in need of being refreshed, repaired, or upgraded (e.g. windows, heating/cooling equipment, lighting, etc.), are ideal candidates for this program.

DOES MY PROJECT QUALIFY?

Your project may be eligible for rebates if it meets the following requirements:

- Commercial, multi-unit residential, agricultural, or industrial Manitoba buildings typically with high to moderate energy consumption (often dated) with the potential to reduce energy usage by 20% or more and the means to undertake a large renovation project.
- Prepared to undertake a major renovation to significantly reduce annual building energy consumption in all conditioned or semi-conditioned year-round occupied spaces with a headroom height of 7.5 ft. or greater. Semi-conditioned spaces are any enclosed spaces within a conditioned building that are heated by a system whose output is greater than or equal to 0.9 W/sq. ft. of the semi-heated floor area. Crawl spaces, attics, and other unconditioned areas are not included in the program’s incentive calculation.
- The renovation project has not started on-site work prior to Efficiency Manitoba approving your application.
- The building’s primary heat source is either natural gas or electricity.
- Buildings converting from electric to natural gas heating systems are not eligible for this program.
- Projects enrolled in the Commercial Deep Energy Retrofit Program are not eligible for additional prescriptive incentives from other Efficiency Manitoba programs for planned upgrades, unless the measure is deemed outside of the scope for this program.
- Savings must be achieved in at least two core categories identified in the following table, with no individual measure within a core category exceeding 75% of the total estimated project savings:

Core categories	Eligible energy conservation measures
Architectural	<ul style="list-style-type: none"> • Building envelope thermal insulation upgrades: windows, skylights, doors, walls, roofs, outdoor duct and pipe insulation • Floor in contact with ground: thermal insulation upgrades • Building envelope air sealing upgrades* • Thermal bridging remediation
Electrical	<ul style="list-style-type: none"> • Interior lighting fixture upgrades and control upgrades • Building outdoor electrical: Intelligent Parking Lot Controllers (IPLC), smart receptacles • Building vertical transportation: energy-optimized elevators and building escalators, etc. • General interior electrical equipment upgrades: high efficiency electric motors, ENERGY STAR® appliances, etc.
Mechanical	<ul style="list-style-type: none"> • HVAC control systems upgrades • Heating and/or cooling equipment upgrades • Variable speed fans and/or pumps • Ventilation equipment upgrades • Domestic hot water system upgrades • Low-flow lavatory faucets and/or showerheads

*Results must be substantiated by pre- and post-renovation airtightness tests. Please refer to "Appendix A" for further details.

OVERVIEW

The Commercial Deep Energy Retrofit Program considers an entire building's energy use. Rather than looking at a single component of a building renovation such as lighting, whole building energy modelling is used to simulate all building features and systems to identify and evaluate opportunities for energy efficiency and optimal building design. When undertaking a deep energy retrofit, it's important to seek opportunities where better performance can be achieved and not just look at the building as a list of problems to solve.

There is a synergistic relationship between the building components and systems that is sensitive to a wide range of events unique to each building, of which seasonal weather change is typically most significant. Energy modelling can help identify and evaluate opportunities for energy efficiency by simulating how all building components and systems, inclusive of all planned energy saving measures, interact. Energy models can simulate a variety of building details, such as roof and wall construction, lighting power densities, domestic hot water usage, heating and ventilation systems, occupancy schedules, and more. The energy modeller can adjust variables to represent actual anticipated building conditions and schedules, optimizing the building's design for targeted energy efficiency objectives. Adjustable variables include: indoor environmental conditions; building infiltration levels; heat loss related to changes in thermal transmittance levels in walls, roof, windows and doors; construction materials; and occupant levels.

The following checklist provides an overview of the submission requirements for the Commercial Deep Energy Retrofit Program. The building owner or project design team should designate an individual to be responsible for collecting and submitting all completed program deliverables.

Phase 1 Energy Modelling

- Owner's Project Requirements (OPR)
- Basis of Design (BOD)
- Baseline Building Energy Model
- Design Building Energy Model
- Design Building Energy Model Report, including Workbook

Phase 2 Performance

- Final Building Energy Model
- Final Building Energy Model Report, including final updated Workbook
- Comprehensive Final Systems Manual



Phase 1 Energy Modelling

Qualifying projects may receive up to \$12,000 in building energy modelling costs, which will be provided in two separate phases. In Phase 1, the project team has an opportunity to use energy modeling to review and optimize energy efficiency enhancements for the building.

Projects that successfully complete Phase 1 of the program are eligible to receive up to \$6,000 for project design analysis.

The following deliverables must be submitted for Phase 1:

- A copy of the **Baseline Building Energy Model** representing the current existing building systems, envelope, etc., calibrated to a five-year annual weather normalized average energy use for the most recent calendar years, for Efficiency Manitoba's review and agreement. In some cases, a different baseline may be used if deemed representative of previous building use; for example, if the primary use of the building is changing or if it's been vacant for a period of time. Verification of existing building elements must be provided.
- A copy of the **Design Building Energy Model**, incorporating the project's planned energy efficiency measures, for review and agreement. The document must demonstrate the anticipated post-renovation energy consumption.
- A **Design Building Energy Model Report**, demonstrating the projected site energy use reduction from the pre-renovation baseline energy use. The **Workbook**, summarizing model inputs of Phase 1, will be included with the model report.
- On-site energy generation technologies such as solar photovoltaic and wind generated power technologies would not be eligible for inclusion. Exterior Lighting is also ineligible for energy savings benefits for this program, however additional financial incentives are available through Efficiency Manitoba's Business Lighting Program. Visit efficiencyMB.ca/business/business-lighting for details.
- An **Owner's Project Requirements (OPR)** document, complete with owner acceptance, outlining the functional requirements and project expectations. This document will be used to guide the project and should be shared with Efficiency Manitoba, the design team, renovation team, and any other relevant groups.
- A **Basis of Design (BOD)** document, complete with owner acceptance, outlining the design solutions to the specific requirements detailed in the OPR.
- A detailed copy of the **invoice** for applicable energy modelling services.

The results of the Phase 1 energy modelling exercise will be used to determine if the project qualifies to proceed to Phase 2. In the event that a comfortable minimum 20% energy reduction threshold cannot be demonstrated and the project does not qualify for Phase 2 of the program, any other applicable technology programs would be available as an alternative, (e.g. Business Lighting Program). Efficiency Manitoba approval is required before proceeding to Phase 2.

Phase 2 Performance

The Phase 2 Performance offers a financial incentive ranging between \$2.50/sq. ft. to \$6.00/sq. ft. of the building's eligible floor space, as determined by the project's Final Building Energy Model and reviewed by Efficiency Manitoba. The eligible floor space area is measured from the interior face of the exterior walls or from the centerline of walls separating buildings.

Building energy reduction percentages will be prorated between each table benchmark and rounded down to the nearest whole number to determine the incentive factor used for the incentive calculation (e.g., a 27.8% energy reduction is rounded down to 27%, which yields a prorated incentive factor of \$2.95/sq. ft. based on the table below).

Projects that successfully complete Phase 2 Performance are eligible to receive up to an additional \$6,000 towards energy modelling costs.

Reduced Annual Building Energy Consumption	Performance Incentive Factor (\$/sq. ft.)
20%	\$2.25
25%	\$2.75
30%	\$3.25
35%	\$3.75
40%	\$4.50
45%	\$5.25
50%	\$6.00

In certain instances where the Final Building Energy Model demonstrates a post-renovation energy consumption below the minimum 20% energy reduction threshold, once the Final Building Energy Model has been reviewed and approved by Efficiency Manitoba, the Performance incentive factor will be adjusted based on the final energy reduction. The incentive factor will be adjusted by \$0.10/sq. ft. for each 1% reduction down to 18%, and by \$0.20/sq. ft. for each 1% reduction below 18%. For example, if a major building renovation project achieves only 18% energy reduction based on as-built conditions, the project would receive a Performance incentive factor of \$2.05/sq. ft. (i.e., 2 x \$0.10/sq. ft.); a further reduction to 17% would yield a resulting incentive of \$1.85/sq. ft. (i.e., a further \$0.20/sq. ft. adjustment).

The calibrated Baseline Building Energy Model representing pre-renovation energy consumption will be measured against the Final Building Energy Model that demonstrates post-renovation energy consumption. The difference between the two models will be used to determine the performance incentive value. In cases where the building use is changing significantly, or the building has been vacant for a period of time, predetermined and agreed upon reasonable adjustments to the Baseline Building Energy Model could be considered.

Phase 2 deliverables:

- Provide Efficiency Manitoba with a copy of a **Final Building Energy Model** representing as-built conditions of the building and demonstrating post-renovation energy consumption. Efficiency Manitoba will review and approve this document.
- Submit the **Final Building Energy Model Report** summarizing the final building energy performance results compared to the Baseline Building Energy Model. Only energy saving measures will be considered in the Final Building Energy Model. The final version of the **Workbook**, updated to summarize the model inputs of Phase 2, will be included with the model report. On-site energy generation technologies such as solar photovoltaic and wind generated power technologies are not eligible for consideration under this program.
- Provide any relevant and requested information and/or documentation related to the deep energy retrofit project organized digitally in a finalized **Systems Manual**. Include all project design documentation, operator training records, occupancy permit(s), project functional testing, and start-up and commissioning reports.

Owner's Project Requirements (OPR)

As part of the program, the building owner will develop and submit the OPR. This is a document that details the functional requirements and expectations of the project, including project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. The OPR is a collection of vital information regarding the renovation project.

The OPR can be considered a working document, as it's created early on and updated throughout design, renovation, and occupancy. Energy efficiency-related design objectives of the project will be established and documented here for the entire design team. The completed OPR will be provided to all design team members upon completion.

Basis of Design (BOD)

The Basis of Design (BOD) outlines the design solutions to the specific requirements detailed in the OPR. The document is created and maintained by the design team in consultation with a program representative as it records how the building's final design achieves the objectives listed in the OPR. Throughout the project, it is typically the role of the building commissioning authority (where applicable) to review the BOD against the OPR, to verify that the owner's specific requirements are being satisfied, identify any inconsistencies with the design team, and resolve any issues by changing the design (design team agrees to the change) or by changing the OPR (owner agrees to the change).

Energy Modelling

The Commercial Deep Energy Retrofit Program relies on energy modelling to forecast energy savings. Energy modelling is a process that simulates an entire building with respect to its annual energy consumption and performance. The final Commercial Deep Energy Retrofit incentive is derived from the simulation's comparison of the Final Building Energy Model, inclusive of all final construction updates and approved submittals following the renovation with the established baseline calibrated building energy model. Program energy modelling guidelines will be made available by Efficiency Manitoba.

Energy Modelling software requirements:

All building energy modelling must be completed using software compliant with National Energy Code of Canada for Buildings (NECB) 2020 article 8.4.2.2, inclusive of ANSI/ASHRAE 140 Standard Evaluation of Building Energy Analysis Computer Program.

Energy Model Report submittal requirements:

The Energy Model Report must include, but not be limited to, the following information:

- I. Project description/building overview
 - II. Energy modelling scope
 - III. Inputs and assumptions:
 - Climate data
 - Basis of inputs (Baseline and Design/Final cases)
 - Key assumptions
 - System workarounds
 - IV. Results and discussions:
 - Energy end-use breakdown (Baseline and Design/Final cases)
 - Energy utilization intensity (EUI) comparison between Baseline and Design/Final cases
 - Thermal energy demand intensity (TEDI) comparison between Baseline and Design/Final cases
 - V. Conclusions and recommendations
- Forecasted annual energy consumption comparisons (split by fuel type and expressed in kilowatt-hours of electricity and cubic meters of natural gas, and totalled)
 - Forecasted annual energy cost comparisons (split by fuel type and expressed in kilowatt-hours of electricity and cubic meters of natural gas, and totalled)
 - Provide any supplemental, relevant reports and result files generated by the energy modelling software program; output documents typically include detailed information on: modelled envelope assemblies, ventilation values (e.g. ASHRAE 62.1 inputs), lighting specifications, process and plug load details, zone heating and cooling loads, and hourly schedules



Systems Manual

A Systems Manual is a comprehensive documentation package that includes all information related to the building systems, assemblies, and commissioning processes. The package provides the owner and building operators with resources to understand, operate, and maintain the building's systems. The Systems Manual may be one of the most important documents created, as it ensures the building and its systems will be operated and optimized as per the intended design.

Systems Manual submittal requirements:

A complete Systems Manual must be delivered to the building's owner and operations personnel (when applicable). Digital copies of the final Systems Manual are preferred for program submissions.

The Systems Manual must include, but not be limited to, the following information:

I. Executive summary

A narrative overview of the building's design, construction, and operational requirements which provides the building owners/operational staff/users with a basic understanding of the intended operation, performance, and maintenance of the building.

II. Facility design and construction

1. OPR: The final version of the OPR, including all updates made throughout the design and construction processes.
2. BOD: The final version of the BOD, including all updates made throughout the design and construction processes to accurately reflect the final design of the building.
3. Construction/project record documentation: Provide the building's final design documents (as-built or record drawings) and equipment specifications.

III. Facility, systems, and assemblies information

1. Final approved shop drawing submittals: Provide final copies of approved shop drawing submittals including the commissioned sequences of operations for the buildings equipment and systems (including limitations to operation).
2. Manufacturers' operations and maintenance (O&M) documentation: Provide the verified installation and O&M manuals (as provided by the manufacturers) for the building's systems and equipment.
3. Existing building documentation (as applicable): Provide existing building documentation (e.g. O&M).
4. All Heating, Ventilation, and Air Conditioning (HVAC) system test and balance reports for ventilation and hydronic systems that were part of the energy-saving measures included in the project.

IV. Facility operations

Develop and provide a Facility Guide. The guide is a basic building systems description and operating plan with general procedures and confirmed facility operating conditions, set points, schedules, and operating procedures which facility operators can use to optimize operations.

1. Operating plan: A basic guide to aid in the proper operation of the building through describing fundamental building functions and management.
2. Facility and equipment operating schedules: Details the basic time-of-day operating schedule for the building and other functions of the facility.
3. Set-points, ranges, and limitations: Final installed and commissioned values used with the operational control sequences for the installed HVAC and other equipment in the building.

4. Sequences of operations: Final installed and commissioned sequences of operation for the installed HVAC and other operating equipment in the building.
5. Emergency procedures (optional): Details on specific emergency procedures recommended for the building and location(s) of applicable controls.
6. Maintenance schedules (optional): Details of the equipment preventative maintenance schedules.

V. Commissioning process report

- Final commissioning report: Provide the final commissioning report with evaluation and records for each commissioned building system.
- Functional testing and start-up reports: Provide detailed testing sheets on the following energy-related systems (at minimum):
 - o Heating, ventilating, air conditioning, refrigeration systems, and associated controls
 - o Lighting and day-lighting controls
 - o Domestic hot water systems

Include pre-functional checklists; manufacturers', testing agencies', and contractors' reports; and include all observations and recommendations for future reference.

VI. Operator training records

The owner, operator, and other relevant personnel must receive appropriate training on the renovated building's operation. Training should follow the creation of the Systems Manual and inform the owner and operators how the building was designed to operate. It's beneficial to keep records of the training sessions and training materials for both current and future staff.

- Provide sign-off sheets and records of attendance along with descriptions of the training activities pertaining to the content referenced in the building's Systems Manual.

Signage and Recognition

Once retrofit work begins on a building, Efficiency Manitoba will offer to provide on-site signage to highlight the building's commitment to energy-efficient design.

The building will officially be certified energy efficient if it meets the minimum energy performance requirements, demonstrating an improvement of at least 20% over the pre-renovation baseline, following Efficiency Manitoba's review and approval of the Phase 2 Performance deliverables.

Construction site sign



Certificate of energy efficiency





ADDITIONAL PROGRAM CONSIDERATIONS

Staged Renovation Projects

In some cases, commercial renovation projects may need to be completed in stages due to funding limitations, logistical challenges, or other constraints. The program accommodates staged renovation projects while ensuring overall energy savings goals are met. The following guidelines outline how staged renovations are supported within the program.

Energy Modelling incentive

For staged renovation projects, the Design Building Energy Model and Report must include all planned upgrades across all stages. The model submitted for Phase 1 should reflect the full scope of the project.

- **Phase 1 Energy Modelling**
Once the Phase 1 deliverables are reviewed and approved, we will issue the energy modelling incentive of up to \$6,000.
- **Phase 2 Performance**
The remaining energy modelling incentive (up to \$6,000) will be made available once subsequent renovation stages are completed. The incentive will be released incrementally, based on the number of planned stages. For example, if there are four planned stages, up to \$1,500 will be released upon completion of each stage. This ensures that the project continues to progress until all energy-saving measures have been implemented.

Performance incentive

After each significant upgrade (e.g. architectural, mechanical, or electrical) is completed in Phase 2 Performance, the Final Building Energy Model must be updated to reflect as-built conditions and exclude unimplemented measures. This ensures a more accurate verification of incremental energy savings associated with each measure, which will be validated by comparing the updated Final Building Energy Model to the Baseline Building Energy Model. Additionally, we will require an updated Final Building Energy Model Report, including the final updated Workbook, and an updated Final Systems Manual after the completion of each stage.

- **Phase 2 Performance**
Performance incentives will be issued after each stage, determined by the incremental energy savings achieved and subject to Efficiency Manitoba's review and approval of the Phase 2 Performance deliverables. Incentive rates will align with the program's performance incentive scale: \$2.25 to \$6.00 per square foot for energy savings between 20% and 50%.

Below-threshold adjustments

If energy savings during a stage fall below the 20% threshold, the incremental incentive for that stage will be reduced by \$0.10/sq. ft. for each 1% reduction below the 20% target. This adjustment provides flexibility for phased projects while promoting the achievement of energy efficiency goals.



Phase 2 Performance: incentive example

Two-stage renovation project building size: 10,000 sq. ft.

Stage one:

- Initial energy savings achieved above pre-renovation baseline: 17%
- Incentive calculation: \$2.25/sq. ft. (incentive at 20% energy reduction) – \$0.30/sq. ft. (adjustment for 3% below 20%) = \$1.95/sq. ft.
- Total Stage One incentive:
10,000 sq. ft. × \$1.95 = \$19,500

Stage two:

- Cumulative energy savings (including Stage One) achieved above pre-renovation baseline: 30%
- Incentive calculation: \$3.75/sq. ft. (incentive at 30% energy reduction) – \$1.95/sq. ft. (previously paid for Stage One) = \$1.80/sq. ft.
- Total Stage Two incentive:
10,000 sq. ft. × \$1.80 = \$18,000

Total performance incentives:

\$19,500 (Stage One) + \$18,000 (Stage Two) = \$37,500

To confirm eligibility for this approach, please reach out to Efficiency Manitoba to discuss the project details and agreed-upon stages.

We also welcome renovation projects that focus on specific sections of the building for major renovations, rather than the entire structure, provided there are plans to renovate the building in its entirety over time. If your project fits this description, please contact us to discuss how each stage of your project can align with our program requirements.

Bonus Incentive for Multi-Unit Residential Buildings (MURBs) Installing Ground Source Heat Pump (GSHP) Systems

For a limited time, the Commercial Deep Energy Retrofit Program is offering a 25% bonus on the eligible Performance incentive for multi-unit residential buildings (MURBs) enrolled by March 31, 2026, that incorporate a ground source heat pump (GSHP) system into their existing systems, subject to approval.

To qualify:

- The building must be primarily residential in use
- The GSHP system must serve all dwelling unit spaces

Example:

A 100,000 sq. ft., MURB achieving a 35% energy reduction compared to its pre-renovation baseline would receive:

- Performance incentive: 100,000 sq. ft. × \$3.75 = \$375,000
- GSHP bonus: \$375,000 × 25% = \$93,750
- Total incentive: \$468,750
(Excludes up to \$12,000 available for energy modelling)

Incentive Eligibility: Retrofit and New Construction Projects

Projects participating in both the Commercial Deep Energy Retrofit Program and the New Buildings Program may only qualify for energy modelling incentives under one program. If your project includes both retrofit and new construction work, please reach out to Efficiency Manitoba to review your project details.



HOW TO PARTICIPATE

1. Submit your application.

We may contact you to schedule a meeting to further discuss the project details. Once accepted, the building owner and all contacts listed will be sent an email outlining the next steps.

2. Utilize Energy Modelling to evaluate options for energy efficiency upgrades.

Building owners and project teams are encouraged to consult our efficiency team to provide guidance on energy modelling and energy efficient designs.

3. Complete and submit your Phase 1 deliverables.

Submit your OPR, BOD, Baseline Building Energy Model, Design Building Energy Model, Workbook, and Design Building Energy Model Report for Efficiency Manitoba review, and invoice for the relevant energy modelling services.

4. Once all deliverables are received and approved we pay your Phase 1 incentive and provide project feedback.

5. When all program Phase 1 requirements have been achieved, we'll provide approval to advance to Phase 2 of the program.

6. Complete the renovation.

Throughout the entire deep energy process, our energy efficiency team will remain available to provide technical assistance and guidance on energy modelling and energy efficient design.

7. Complete and submit your Phase 2 deliverables.

Submit your Final Building Energy Model representing as-built conditions of the building, Final Building Energy Model Report, updated Workbook, and Final Systems Manual, for Efficiency Manitoba review. Your final incentive will be determined by measuring the final as-built energy model energy consumption against the pre-renovation baseline, once all deliverables have been reviewed and approved by Efficiency Manitoba.

8. We pay your Phase 2 incentive.

After successfully completing the program, we'll notify the building owner and project team that the project has met the Commercial Deep Energy Retrofit Program requirements. We'll also deliver the confirmed incentive amount to the building owner.



APPENDIX A:

AIRTIGHTNESS TESTING REQUIREMENTS

Overview

Projects enrolled in the Commercial Deep Energy Retrofit Program may use whole-building airtightness testing to demonstrate energy savings resulting from building envelope assemblies upgrades (e.g. new windows, air sealing, etc.). Both pre- and post-retrofit airtightness tests must be completed in order for improved building airtightness to be eligible for program incentives.

The following sections outline acceptable test standards for the Commercial Deep Energy Retrofit Program, including required test report elements and additional methodology adjustments pertaining to each accepted standard.

It's important to share the information and requirements outlined with your project team — particularly your project's airtightness testing consultant and energy modelling consultant — as early as possible in the project design stage.

Acceptable Test Standards


The following standards are acceptable for Commercial Deep Energy Retrofit Program submissions, with corresponding adjustments and requirements outlined in the next two sections:

- CGSB 149.10-2019 or newer
 - 2019: CAN/CGSB-149.10-2019
 - 2024: CAN/CGSB-149.10-2019
- ASTM 3158-18 or newer
 - 2018: ASTM E3158-18
 - 2024: ASTM E3158-24

Additional Program Requirements for CGSB 149.10 Methodology

When the CGSB 149.10 methodology is selected, the following additional requirements apply for claiming airtightness-based energy savings in the Commercial Deep Energy Retrofit Program:

1. Test results must be averaged based on both depressurization and pressurization tests on the test enclosure. Where only one of the two tests is completed, justification must be provided.
2. The tester must use the “Closed-up” Building Envelope Assessment Type sealing schedule as described in Table 3 – Building Envelope Preparation.
3. The tester must use the multi-point test procedure as described in CGSB 149.10 with the following additions and modifications (bolded and italicized):
 - Additions to Section 6.2.3 – Starting offset pressure and temperature
 - Starting and final offset pressure measurements shall have test fans sealed for a minimum of 30 seconds before pressure measurements are recorded. Starting and final offset pressure measurements shall be measured over a minimum of 120 seconds. The offset pressure measurements shall be divided into 12 equal length intervals.
 - Each induced envelope pressure and its corresponding flow measurement shall occur within 20 seconds of each other. Each induced envelope pressure shall be averaged over a minimum of two times the length of the equal length intervals from the offset pressure measurements.

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- o Modifications to Section 6.2.4 – Procedure for multi-point test
 - 6.2.4.1 – Adjust the airflow to produce a pressure difference of between **75 Pa** to **80 Pa** across the building envelope.
 - 6.2.4.3 – Repeat 6.2.4.2 taking a minimum of **9** additional readings. The lowest pressure difference shall not be less than 10 Pa. The highest pressure difference shall not be greater than **100 Pa**, nor shall it be less than **70 Pa**. ***There shall be at least a 25 Pa differential between the lowest and highest induced envelope pressures.***
 - 3. Submitted reports must include the following (when conducting depressurization and pressurization tests, include the individual and averaged results separately):
 - o Flow coefficient (C_f) (L/s•Pa_n)
 - o Pressure/flow exponent (n)
 - o Correlation coefficient (r or r²)
 - o ACH50
 - o NLR75
 - o Description of the test envelope (boundary of a building or a portion of a building configured to a single zone condition to be tested, as defined by the tester) with details on included/excluded zones (e.g. unheated crawlspace, attic space, etc.)

Additional Program Requirements for ASTM E3158 Methodology

When the ASTM E3158 methodology is selected, the following additional requirements apply for claiming airtightness-based energy savings in the Commercial Deep Energy Retrofit Program:

- o Test results must be averaged based on both depressurization and pressurization tests on the test enclosure. Where only one of the two tests is completed, justification must be provided.
- o The tester must use the “Building Envelope” sealing schedule as described in Table 1 – Building Preparation for Test Boundary.
- o The tester must use the multi-point regression test procedure as described in ASTM E3158.
- o Submitted reports must include the following (when conducting depressurization and pressurization tests, include the individual and averaged results separately):
 - Flow coefficient (C) (L/s•Pa_n)
 - Pressure/flow exponent (n)
 - Correlation coefficient (r or r²)
 - ACH50
 - NLR75
 - Description of the test envelope with details on included/excluded zones (e.g. unheated crawlspace, attic space, etc.)

Airtightness Testing Support

Depending on the size and complexity of the project, additional funding support may be available to help offset the cost of pre- and post-construction whole-building airtightness tests. Email us at airtightness@efficiencyMB.ca for further information.

APPLY ONLINE AT EFFICIENCYMB.CA

204-944-8181

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DeepRetrofits@efficiencyMB.ca

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