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Mechanical Systems Lead

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**SAY HELLO TO EFFICIENCY
MANITOBA**

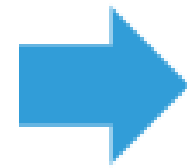
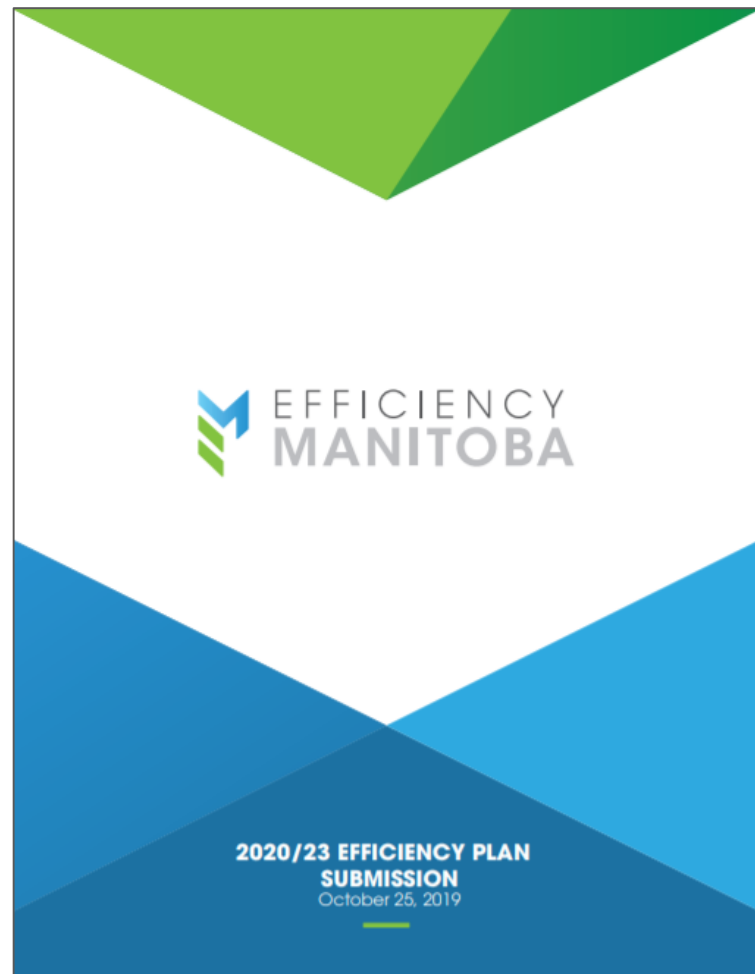
ASHRAE, Manitoba Chapter

PRESENTATION OUTLINE

1. Introduction to Efficiency Manitoba
2. New construction and high performance building projects
3. Benefits of the Energy Modeling Assistance Program
4. Other programs for retrofit projects
 - high performance HVAC equipment
 - pump and fan variable flow projects
 - demand control ventilation using CO2 sensors
 - Enhanced Building Operations
 - Business Lighting Program
 - Building Envelope Program
 - Custom Energy Solutions



EFFICIENCY MANITOBA, A NEW DIRECTION



New, focused mandate with legislated electric and natural gas energy savings targets



Lean organization which will be proficient at making decisions aligned with the mandate



Focus on customer experience through new and enhanced programs and customer engagement that is fresh and leverages technology to reduce the red tape



New stakeholder engagement model that allows for ongoing and broad input



Focus on leveraging innovation and rigorous third-party assessment to encourage continuous improvement



EFFICIENCY MANITOBA'S MANDATE



1.5%

Reduce Manitoba's electricity consumption by 1.5% annually



0.75%

Reduce Manitoba's natural gas consumption by 0.75% annually

- ✓ Achieve aggressive savings targets
- ✓ Deliver cost-effective efficiency programs and services
- ✓ Create programs for as many Manitobans as possible to participate

NEW CONSTRUCTION HIGH PERFORMANCE BUILDINGS

NEW CONSTRUCTION PROGRAMS

Incentives are available to encourage energy efficient buildings for both commercial and residential new construction.



New Construction / High Performance



New Buildings Program



New Homes Program

NEW BUILDINGS PROGRAM

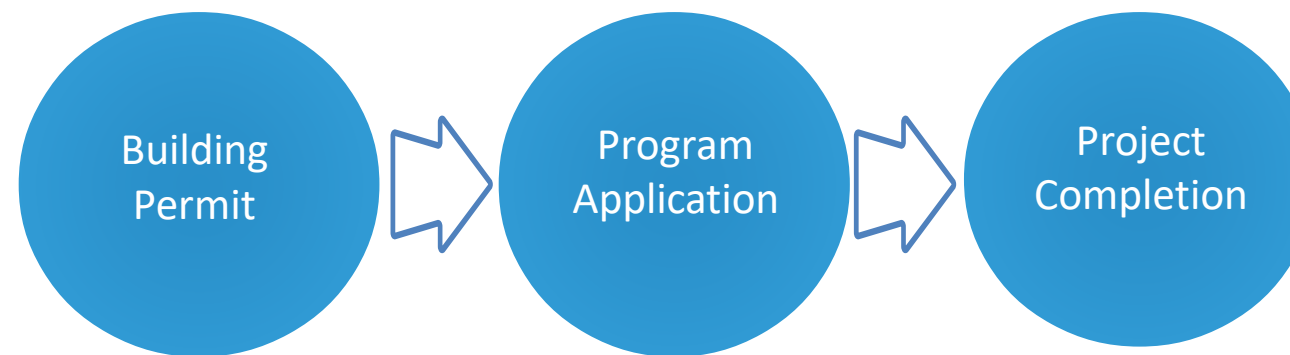


- New construction, energy efficient buildings in the commercial (including MURBs) or institutional sector
- Designed for the performance path option of the Manitoba Energy Code for Buildings

NEW BUILDINGS PROGRAM

Project eligibility

- The program application must be received and approved:
 - within a six month period after the building permit is issued
 - before the project is complete



- The building owner must be the registered current owner of the construction site property and a Manitoba Hydro customer
- New Construction Part 3 Buildings
- The project must comply with all applicable federal, provincial, municipal – laws, by-laws, regulations and code requirements, including MECB 2013

NEW BUILDINGS PROGRAM

Program deliverables

- Owner signed - Owner's Project Requirements (OPR)
- Owner signed - Basis of Design (BOD)
- Performance & Reference Building Energy Models
- Building Systems Manual (with building commissioning documents)
- Demonstration of Owner Training
- Building Permit (copy)
- The Building Occupancy Permit (copy)



NEW BUILDINGS PROGRAM

ENERGY MODELLING ASSISTANCE INCENTIVE

UP TO **\$10,000**

- ✓ Incentives for energy modelling during project design
 - ✓ Submit before project tender and before building permit issue
- ✓ Compare your design against building code requirements
- ✓ Optimize for energy efficiency with software modelling
- ✓ Have your energy model report reviewed before construction

See [Energy Modelling Assistance info sheet](#) for details.

PERFORMANCE PATH

UP TO **\$2/SQ.FT**

- ✓ Incentives for new commercial construction projects
 - ✓ Includes Part 3 buildings and additions
- ✓ Use integrated design best practices
- ✓ Incorporate building commissioning deliverables
- ✓ Modelled to be at least 5% more efficient than the energy code
- ✓ Receive an energy efficiency certification for your building from Efficiency Manitoba

See [Program Guide](#) for complete list of requirements

	Building energy target (% better than MECB)	Incentive factor (\$/sq. ft.)
	5%	\$0.50
	6%	\$0.60
	7%	\$0.70
	8%	\$0.80
	9%	\$0.90
Energy efficiency certification levels	10%	\$1.00
	11%	\$1.10
	12%	\$1.20
	13%	\$1.30
	14%	\$1.40
	15%	\$1.50
	16%	\$1.60
	17%	\$1.70
	18%	\$1.80
	19%	\$1.90
		20%

BENEFITS OF THE ENERGY MODELING ASSISTANCE PROGRAM

ENERGY MODELING

Reasons to consider energy modeling:

- energy code and/or building code compliance
- LEED certification points
- P3-type projects with utility costs built into business plans
- strategic tweaks in building design for overall energy performance improvements



ENERGY MODELING

Modelling for commercial or institutional buildings enrolled in the New Building Program are intended to deliver:

- whole building annual energy performance analysis using software tools in traditional and integrated design processes
- simulation of various building element options, arrangements and alignments for optimal building energy performance
- confirmation of other important building design parameters impacting day lighting, indoor air quality, and thermal comfort

The Energy Modelling Assistance incentive enables:

- opportunities to identify any early project indicators that could benefit from Efficiency Manitoba technical support

Efficiency Manitoba promotes the use of building energy modelling in the New Buildings Program to encourage exceeding building energy performance levels beyond minimum requirements of the Manitoba Energy Code for Buildings (MECB) 2014

Some additional project deliverables impacted by the modelling process include:

- owner participation in the design process (i.e. OPR & BOD practices)
- building commissioning
- measurement verification planning
- project systems manual

BUILDING ENERGY MODELLING SOFTWARE REQUIREMENTS

NECB 2011/ MECB 2014 clause 8.4.2 Compliance Calculations, inclusive of:

- energy-model calculations performed for an 8760 hour, one year period
- tested to be in compliance with the ANSI/ASHRAE 140, Standard Evaluation of Building Energy Analysis Computer Programs
- good representative climatic data at the building site averaged from a minimum of 10 years measured collected data

ENERGY MODELING

Commonly used building energy modelling software:

- eQUEST® 3.65 (derived from DOE2.2)
- CAN-QUEST (Canadian Adaptation from eQUEST® 3.62 derived from DOE2.2)
- IES Virtual Environment
- Trane Trace 6.1 and higher
- Carrier E20-II HAP

Other acceptable building energy modelling software:

- Trane Trace 3D Plus
- Energy Plus
- Design Builder
- Open Studio
- Simergy
- Bentley
 - Hevacomp
 - AECOsim Energy Simulator V8i
- ESP-r
- TRNSYS

NEW HOMES PROGRAM: Energy Modelling

NEW HOMES PROGRAM

The New Homes Program provides rebates for the design and construction of Certified Energy Efficient new homes.



NEW HOMES PROGRAM

Home builder benefits

- EnerGuide labels and energy use reports for the builder customers
- Free third-party air tightness testing and reporting at no charge to applicant
- Energy Efficient Certification by Efficiency Manitoba
- Automatic eligibility for mortgage insurance premium refund programs

Additional program benefits

- Builder or Homeowner can apply
- Additional homeowner rebates available through mortgage insurance providers

Program requirement

- The program application must be received and approved during the design stage of the project and before the start of construction

NEW HOMES PROGRAM

PRESCRIPTIVE PATH

\$1,200 REBATE

- ✓ Do it yourself or hire a builder
- ✓ Incorporate [ten energy saving upgrades](#) in your project
- ✓ Receive official certification for your project from Efficiency Manitoba
- ✓ Your new home will be about 20% more energy efficient than comparable new homes

PERFORMANCE PATH

\$1,500 - \$12,000 REBATE

- ✓ Design assistance and detailed energy modelling provided
- ✓ Select any upgrades, materials, or equipment you want to include in your project
- ✓ Receive an official EnerGuide label and home energy report from Natural Resources Canada
- ✓ Enjoy bigger rebates (up to \$12,000!)

PROGRAMS FOR RETROFIT PROJECTS

UPSTREAM HVAC PROGRAM

Equipment Distributor Program:

- The Upstream HVAC Program offers rebates directly to high performance equipment suppliers for qualifying energy-efficient equipment.



EQUIPMENT DISTRIBUTOR PROGRAM

Equipment categories

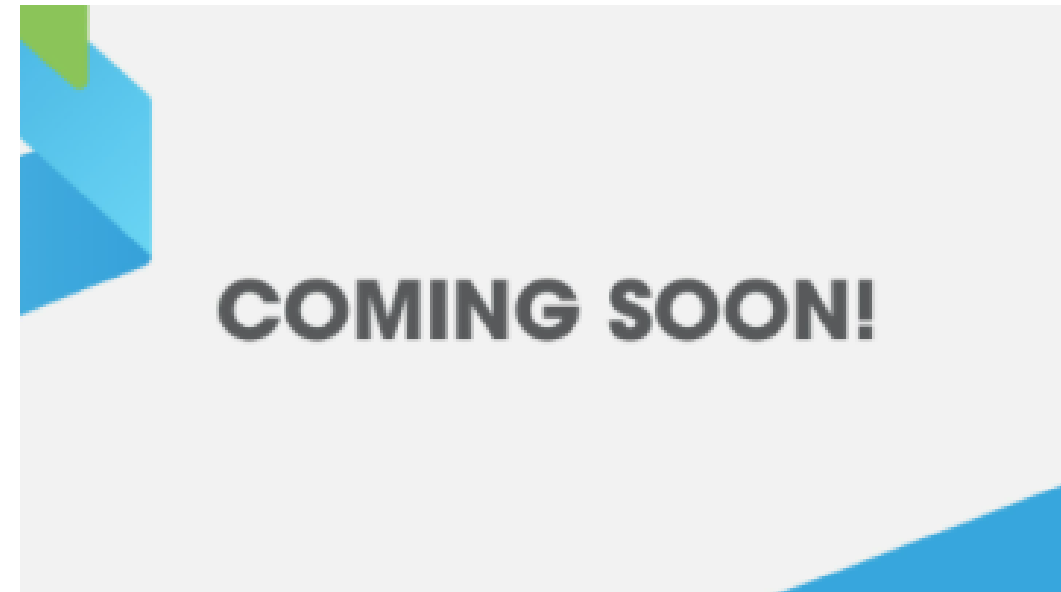
- HRV's and ERV's
- Air-Cooled High Efficiency Chillers
- Condensing Natural Gas:
 - i) boilers
 - ii) water heaters
 - iii) unit heaters
 - iv) infrared (IR) heaters

Eligibility requirements

- sold for installation at a commercial, industrial, or agricultural facility
- permanent installation
- retrofit projects only
- base load sizing only (not intended to be applied for redundant capacity applications)

Equipment distributors interested in participating can request a participation agreement from Efficiency Manitoba by email: Upstream@efficiencymb.ca

CO2 SENSORS



Promotes the application of demand control ventilation using CO2 sensors

This program is currently on-hold due to the current Covid-19 Pandemic

All customers have been advised of ASHRAE COVID-19 response resources from ASHRAE and others

To find out when this program becomes available, sign up for supplier newsletter at efficiencymb.ca/newsletter

CO2 SENSORS

How to apply

- Online application
- Application process will involve the identification of a qualified installer

CO2 Sensor eligibility criteria

- Applied in a control sequence that modulates the volume of fresh outdoor air using demand control ventilation strategy described in ASHRAE Standard 62.1
- Use in existing commercial, industrial, or agricultural facilities
- Ventilation systems that operate a minimum of 1,000 hours between September 1 and May 31
- Infrared sensor technology
- Permanently attached
- Includes a physical or Building Automation System (virtual) adjustable control set-point

VARIABLE FLOW PUMP & FAN SYSTEMS

COMING SOON!

A program that promotes variable flow pumping or fan applications using:

- variable frequency drives
- Permanent magnet motor



VARIABLE FLOW PUMP & FAN SYSTEMS

How to apply

- Online application
- Application process will involve the identification of a qualified installer

Variable flow pump and fan system eligibility criteria

- All pump or fan applications must be used in variable flow (variable torque) applications or constant flow applications.
- 1,600 hours minimum use per year
- Motor sizes up to 100 HP
- Defined facility power quality requirements
- All products shall be electrically certified for use in Manitoba
- Installed in compliance with all current Canadian Electrical Code requirements

VARIABLE FLOW PUMP & FAN SYSTEMS

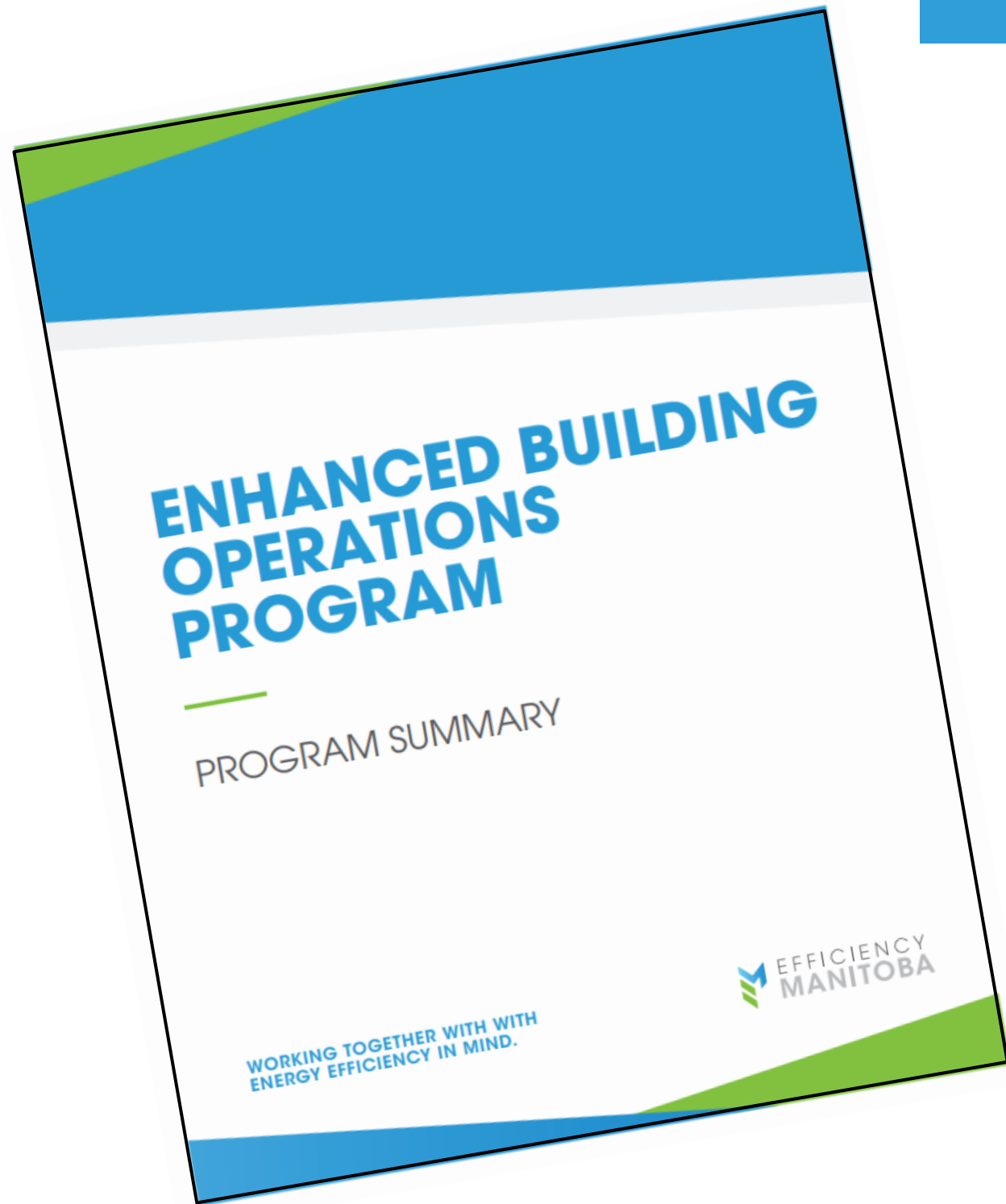
PMM requirements

- Supplied with overload, single-phase and voltage imbalance protection
- Suitable for variable speed operation
- 3-phase electrical device

VFD requirements

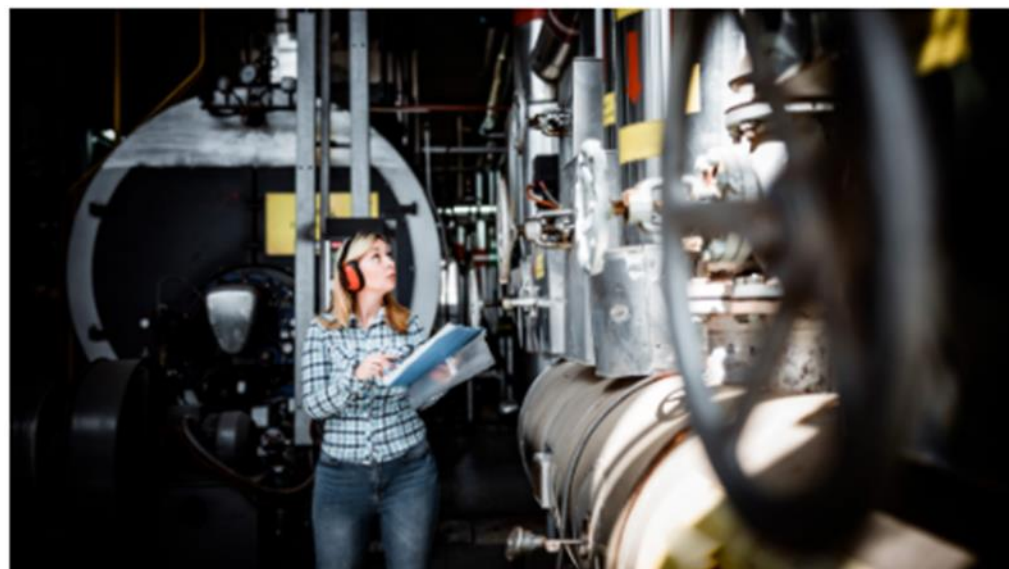
- Supplied with overload, single-phase and voltage imbalance protection
- An inverter duty motor rated for use with VFD's is required
- DC Bus chokes, line reactors and harmonic filtration
- Load reactors, dv/dt or sine wave filters required when installation distance exceeds 7.6 m (25')
- 3-phase electrical device

ENHANCED BUILDING OPERATIONS PROGRAM



A program that brings together building owners, commissioning agents, and the Efficiency Manitoba project team to identify savings opportunities and optimize daily building operations. The Enhanced Building Operations Program considers the existing building's mechanical and electrical systems.

ENHANCED BUILDING OPERATIONS PROGRAM



Enhanced Building Operations

CALCULATE YOUR INCENTIVE

Building Address *

ACME Building

(example city)

City

MB

Province

(example PC)

Postal Code

Calculation based on:

Imperial Area

Floor area occupied and heated:

feet² 45000

Range: 35000-500000 feet²

Projects under 35,000 feet² may still qualify. Please contact us for details at EnergyTeam@efficiencymb.ca.

Incentives

Phase 1: \$5,679.00

Phase 2: \$7,572.00

Phase 3: \$5,679.00

Total Incentive: \$18,930.00

Eligibility criteria

- Large commercial & institutional buildings in Manitoba
- Facilities with Building Automations Systems (BAS)
- Buildings with sufficient capital, fully operational and recently upgraded equipment

How to apply

- Start by completing the opportunities questionnaire
- Building owner, or eligible representative, completes and submits the application to Efficiency Manitoba when accepted into the program
- A professional building consultant is selected by the building owner

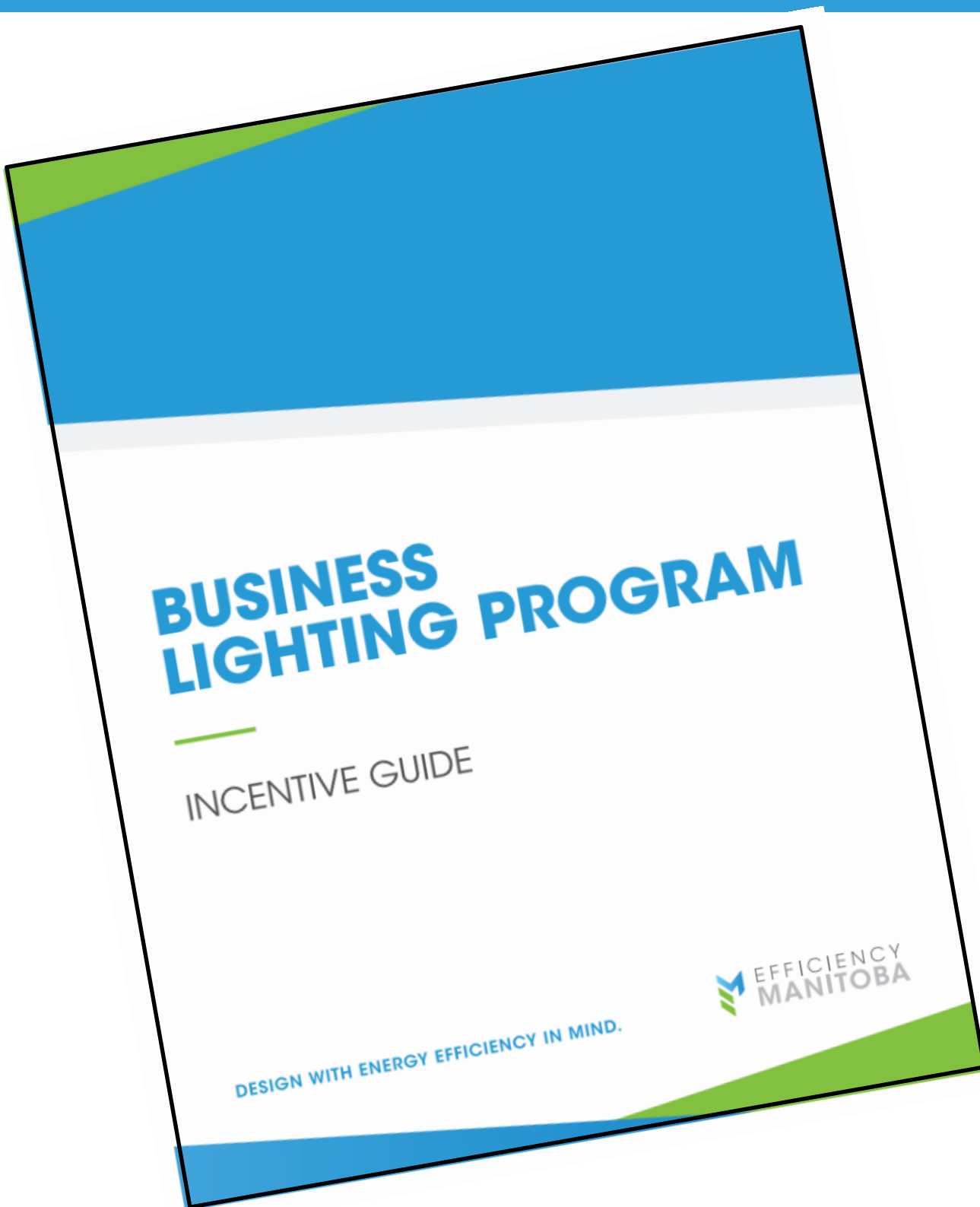
ENHANCED BUILDING OPERATIONS PROGRAM

Program deliverables

The professional building consultant leads the project and completes:

- Opportunities Report
- Measures Report
- Implementation and Validation Report
- The customer is provided with an On-Going Efficiency reporting tool or methodology to monitor the energy saving benefits of all implemented Energy Conservation Measures
- Additional supplementary documents included in the reports:
 - Systems Manual
 - Current Facilities Requirements (CFR)
 - Issues and Resolution Log
 - Promote a culture of energy use awareness and energy efficiency with facility owners and operators

BUSINESS LIGHTING PROGRAM



The Business Lighting Program is a retrofit program offered to reduce building lighting energy use and maintenance costs in commercial, agricultural, and industrial buildings

BUSINESS LIGHTING PROGRAM

Two important considerations before applying

- Efficiency Manitoba written pre-approval required for all applications prior to the purchase or installation of any lighting materials for program incentives
- Electrical permits are required for all lighting projects, except for LED screw-in lamp incentives

Benefits from energy efficient lighting upgrades

- Up to 100% of the lighting material costs (including taxes) provided by incentives
- May be adjusted based on energy savings produced by the project
- Incentives are calculated based on a one-for-one replacement or less
- Based on a minimum of 2,000 annual hours of lighting operation

BUILDING ENVELOPE PROGRAM

Program features

- Improve building energy efficiency performance through continuous insulation with surface upgrades
- Offset a significant portion of project incremental costs
- Receive financial long-term investment support
- Free technical support

Program benefits

- Enhanced building durability
- Reduced:
 - building heating and cooling costs
 - condensation and drafts
 - environmental footprint
- Improved:
 - building aesthetic
 - building value
 - occupant comfort
 - indoor air quality

BUILDING ENVELOPE PROGRAM

Financial incentives are available to upgrade existing roofing, walls, windows and curtain walls.

Insulation upgrades

Roof insulation

- Flat Roof – up to \$2.00/sf
- Attic/Cavity – up to \$0.95/ sf

Wall insulation

- Surface insulation – up to \$1.25/sf
- Cavity insulation – up to \$0.75/sf

High performance window upgrades

- Punched windows – up to \$11.00/sf

Glazed door upgrades

- Swinging door – up to \$11.00/sf
- Sliding door - up to \$16.00/sf

Curtain wall and storefront system upgrades

- Vision and spandrel sections
- Up to \$18.00/sf
- Energy modelling support (optional) - up to \$3,000 per project.

CUSTOM ENERGY SOLUTIONS

A program that offers customized incentives for energy savings in industrial, commercial or agricultural facilities.



CUSTOM ENERGY SOLUTIONS

When no other Efficiency Manitoba programs apply...

Program features

- Provides technical support and performance-based incentives for the purchase and installation of high-efficiency equipment
- Considers end uses, equipment, distribution systems and controls - focus is on optimization
- Improve efficiency and enhance productivity and competitiveness for industrial, commercial and agricultural customers

CUSTOM ENERGY SOLUTIONS

Electric

- Compressed air equipment and systems
- Heat recovery equipment/systems
- Pumps, fans, and blowers
- Industrial refrigeration equipment and systems
- VFD's (greater than 100 HP) for fans and pumps

Natural Gas

- Heat recovery equipment and systems
- Boilers (steam/hot water)
- Condensing and direct contact gas water heaters prove building energy efficiency performance through continuous insulation with surface upgrades
- Offset a significant portion of project incremental costs
- Receive financial long-term investment support
- Free technical support



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<https://efficiencymb.ca/newsletter/>

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EMAIL

Send an email to our team if you have questions about energy efficiency or our programs.
EnergyTeam@efficiencyMB.ca



CALL

Monday to Friday, 9 to 5
excluding stat holidays.

Phone: [204-944-8181](tel:204-944-8181)
Toll free: [1-844-944-8181](tel:1-844-944-8181)



QUESTIONS

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