EFFICIENCY
MANITOBA

2020/23 EFFICIENCY PLAN SUBMISSION

October 25, 2019

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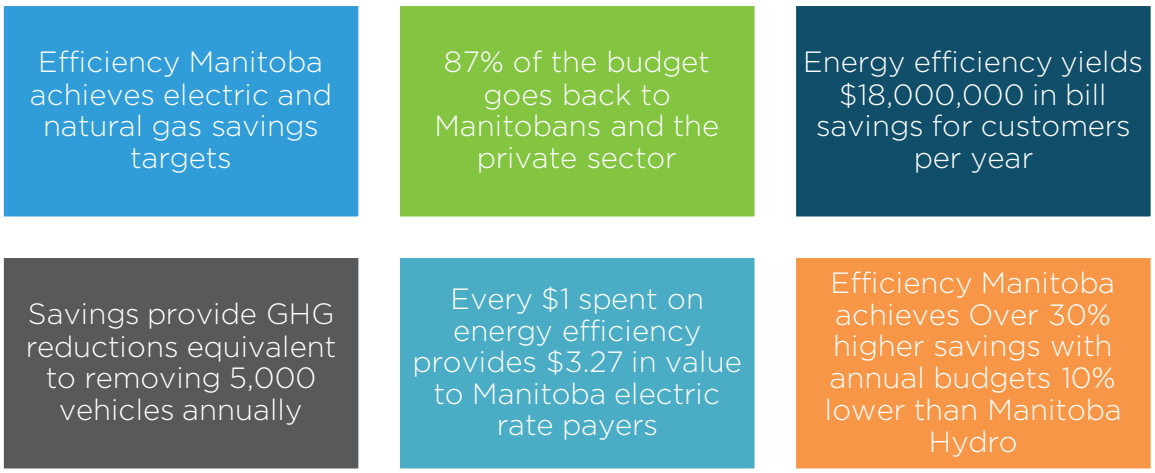
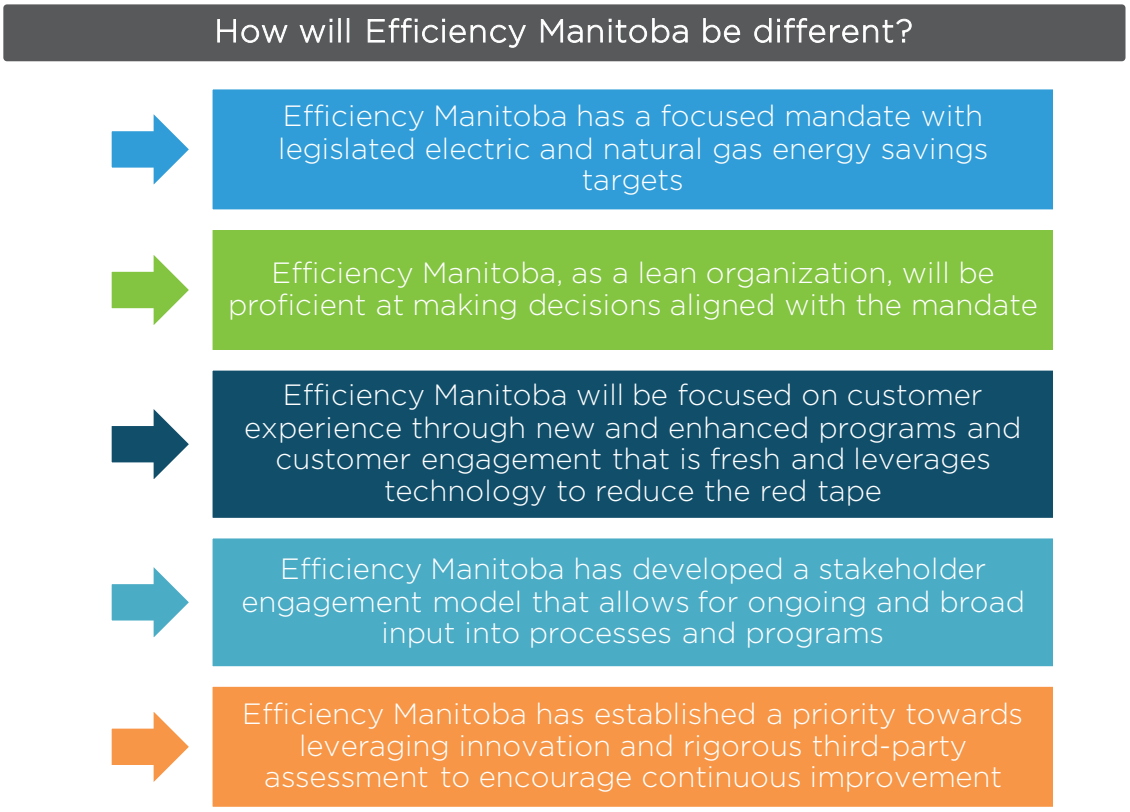
EFFICIENCY MANITOBA

SECTION 1 – OVERVIEW

KEY OUTCOMES OF THE EFFICIENCY MANITOBA 2020/23 EFFICIENCY PLAN



The 2020/23 Efficiency Plan (the "Plan") is the first submission by Efficiency Manitoba to the Public Utilities Board (the "PUB") for review. The Plan serves as the foundation for achieving the corporation's goals as we establish Efficiency Manitoba as a new Crown corporation. While acknowledging the value of previous DSM programming in Manitoba, this Plan is different: it harnesses new measures; innovative new ideas; and new go-to-market strategies recommended both by Manitoba customers, industry, and expert advisors. We are excited to present the next steps towards a new and innovative approach to DSM in Manitoba.



A public review process for the Plan conducted by PUB is an additional unique distinction of Efficiency Manitoba. This submission will facilitate the PUB's review of the Plan as required in the Efficiency Manitoba Act (the "Act") and accompanying Efficiency Manitoba Regulation (the "Regulation"). At the conclusion of the public hearing process, the PUB will make recommendations to the Minister with respect to this Plan.

This Section provides an overview (details are provided in the corresponding Sections of the submission) of the Plan and a summary of the key highlights as follows:

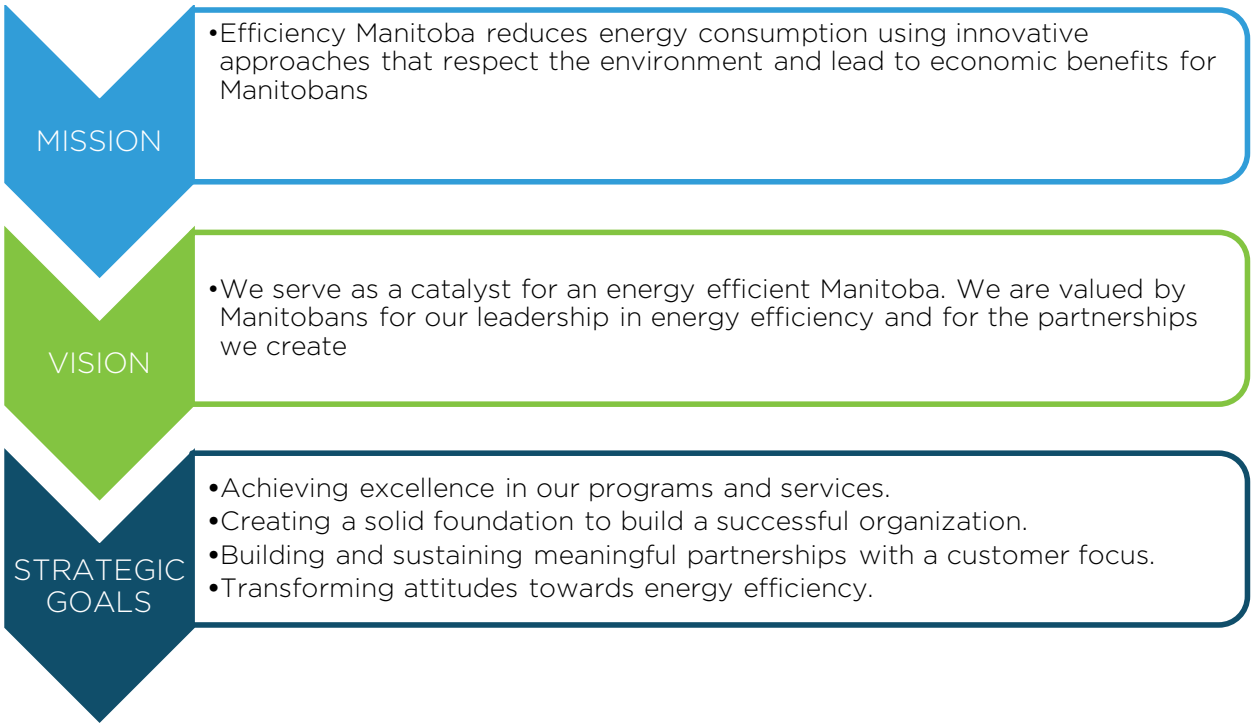
- the Plan is consistent with and achieves the requirements of Efficiency Manitoba's mandate and the regulatory framework;

- the Plan achieves the savings targets through a new approach to customer segment programming and comprehensive engagement;
- Efficiency Manitoba has designed a plan budget that benefits Manitobans and the Manitoba economy;
- The Plan achieves savings targets and is cost-effective with low near-term rate impacts;
- Efficiency Manitoba has designed an inclusive and diverse portfolio that is accessible and provides additional non-energy benefits to Manitobans; and
- Efficiency Manitoba is developing a comprehensive approach to evaluate performance and to continuously improve.

SECTION 2 – THE PLAN ACHIEVES THE REQUIREMENTS OF EFFICIENCY MANITOBA'S MANDATE & THE REGULATORY FRAMEWORK

2.1 EFFICIENCY MANITOBA HAS ESTABLISHED CORPORATE STRATEGIC GOALS THAT GUIDE THE CORPORATION TO FULFILL ITS MANDATE

The Efficiency Manitoba Board of Directors developed a strategic plan which contains the mission, vision, guiding principles, and strategic goals. These served as a compass throughout the development of the Plan. The Vision and Mission statements summarize why Efficiency Manitoba exists and how we are going to realize our mandate.



2.2 THE PLAN IS ALIGNED WITH THE DIRECTIONS OF GOVERNMENT

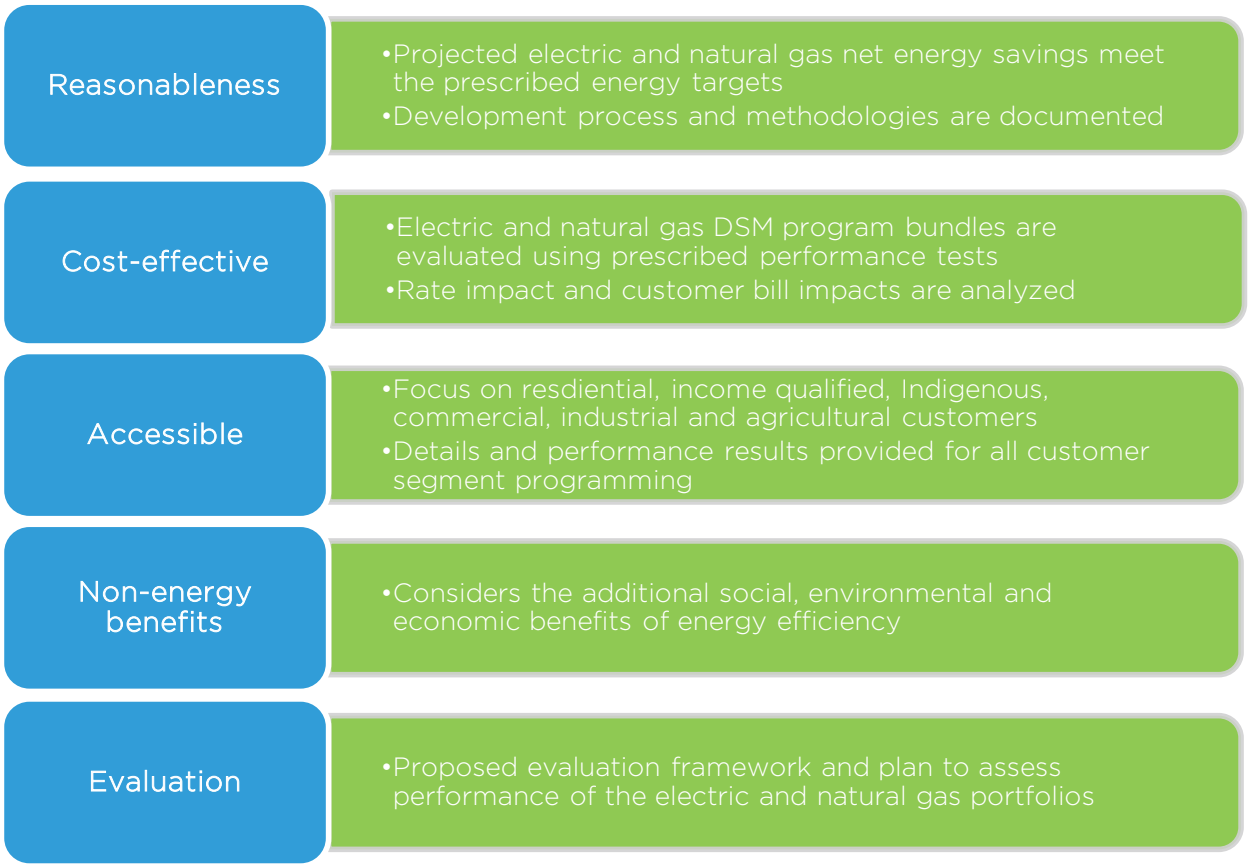
The Plan is consistent with both the mandate letter issued by the Premier to the Minister of Crown Services dated October 18, 2018 and the framework letter issued by

the Minister of Crown Services to the Chair of the Efficiency Manitoba Board of Directors on April 24, 2019. The framework letter builds upon on the mandate letter and articulates four priorities for Efficiency Manitoba:

1) establish the structure of the new corporation ensuring a leaner, more streamlined organization to deliver energy efficiency programs;
2) develop and submit for review and approval an initial three-year plan for demand-side management initiatives to meet mandated savings targets, while optimizing value for money;
3) work with the Public Utilities Board to develop streamlined processes, to reduce overall costs to ratepayers of regulatory hearings; and
4) find ways to obtain the same or better outcomes as formerly obtained under the "Power Smart" program, but at a significantly smaller percentage of the cost and materially lower labour costs.

2.3 THE PLAN CONTAINS THE REQUESTED ELEMENTS OF THE ACT & REGULATION

The Plan contains the necessary elements required for regulatory review specified within the Act, Regulation and directions from government including the elements provided in the following figure. The points of alignment highlighted in the following figure serve as a solid foundation to the Plan which will ensure a continued, long-term strategy to support energy efficiency in Manitoba.



SECTION 3 – THE PLAN ACHIEVES THE SAVINGS TARGETS THROUGH A NEW APPROACH TO CUSTOMER SEGMENT PROGRAMMING & COMPREHENSIVE ENGAGEMENT

3.1 ACHIEVING THE MANDATED ENERGY SAVINGS

Efficiency Manitoba is proposing to reach an annual average energy savings of 1.51 percent of electric load and 0.78 percent of the 2017/18 natural gas baseline over the 2020/23 period. The achievement of these energy savings will begin the trajectory to satisfy the prescribed 15-year cumulative savings targets. The following tables summarize the energy savings and planned budget associated with the Plan. Annual greenhouse gas (GHG) emission reductions resulting from natural gas energy savings are also provided.

2020/23 EFFICIENCY PLAN – ELECTRIC PORTFOLIO SAVINGS

	2020/21	2021/22	2022/23	Average
Annual electric savings (GWh)	373	403	403	393
Savings as a percent of electric load	1.43%	1.55%	1.56%	1.51%
Annual capacity savings (MW)	85	93	93	90

Note. Electric energy and capacity savings determined at generation.

2020/23 EFFICIENCY PLAN– NATURAL GAS PORTFOLIO SAVINGS

	2020/21	2021/22	2022/23	Average
Annual natural gas savings (million m^3)	11.7	12.8	13.2	12.6
Savings as a percent of natural gas volume	0.72%	0.79%	0.82%	0.78%
GHG savings (tonnes CO_2e)	22,200	24,200	25,200	23,900

Note: After accounting for electric programming interactive effects.

3.2 THE FOCUS OF THE PLAN IS CUSTOMER SEGMENTED PROGRAMMING

It is imperative that all Manitoba customer segments have representation within Efficiency Manitoba's Plan. These segments have been defined within the Plan to include residential customers; income-qualified residential customers; Indigenous customers; and commercial, industrial, and agricultural customers. These customer segments have been selected to be inclusive of all Manitobans and to capture their unique customer behaviour characteristics and energy consumption patterns. Efficiency Manitoba plans to customize marketing, engagement, and delivery efforts based on unique and diverse customer segment needs.

Within the Plan, a DSM program or initiative refers to a single specific energy-efficient technology or measure that will be offered to Efficiency Manitoba customers. A "program bundle" is a grouping of individual DSM initiatives while the term "portfolio" refers to either the entire electric or natural gas programming including all customer segment program bundles for each of the respective energy sources.

CUSTOMER SEGMENT	PROGRAM BUNDLES			
RESIDENTIAL	Direct install Offers	Product Rebate Offers	Home Renovation Offers	New Homes & Major Renovation Offers
	Home Energy Efficiency Kits & Education	Emerging Technology Offers		
RESIDENTIAL INCOME QUALIFIED	Income Qualified Offers			
INDIGENOUS	Insulation & Direct install Offers	Metis Income Qualified Offers	Small Business Offers	Community Geothermal Offer
COMMERCIAL, INDUSTRIAL & AGRICULTURAL	Small Business Offers	In-Suite Efficiency	Renovation Offers	HVAC & Controls Offers
	New Construction & High-Performance Buildings	Custom Offers	Load Displacement Offer	Emerging Technology Offers

3.3 THE PLAN HAS SIGNIFICANTLY BENEFITED FROM A COMPREHENSIVE ENGAGEMENT PROCESS

To ensure the Plan reflected the interest of Manitobans, Efficiency Manitoba engaged with key stakeholders throughout the development process. Efficiency Manitoba developed a Stakeholder Engagement Model shown in the figure below. The engagement strategy included formation of the Energy Efficiency Advisory Group ("EEAG"), the development of a stakeholder engagement survey, as well as engagement through program delivery activities with contractors, installers, service providers, retailers, and customers.

Members of the EEAG that contributed throughout the Plan development process include the following:

- Association of Manitoba Municipalities (AMM)
- Consumers' Association of Manitoba (CAC-MB)
- Expert Advisory Council on the Climate and Green Plan (EACCGP)
- Green Action Centre (GAC)
- Manitoba Industrial Power Users' Group (MIPUG)
- International Institute of Sustainable Development (IISD)
- Keystone Agricultural Producers (KAP)
- Manitoba Keewatinowi Okimakanak Inc. (MKO)
- Manitoba Metis Federation (MMF)
- Southern Chiefs Organization (SCO)

Key outcomes from this engagement influenced the Plan by focusing efforts on ensuring: continuity of programs for customers; developing strategies and tools to streamline the application process; adopting new programs within the Plan; and adopting additional customer customization for program design, delivery, implementation and program supporting activities to successfully reach the targeted program participants within each customer segment.

SECTION 4 – EFFICIENCY MANITOBA HAS DESIGNED A PLAN BUDGET THAT MAXIMIZES BENEFITS FOR MANITOBANS & THE MANITOBA ECONOMY

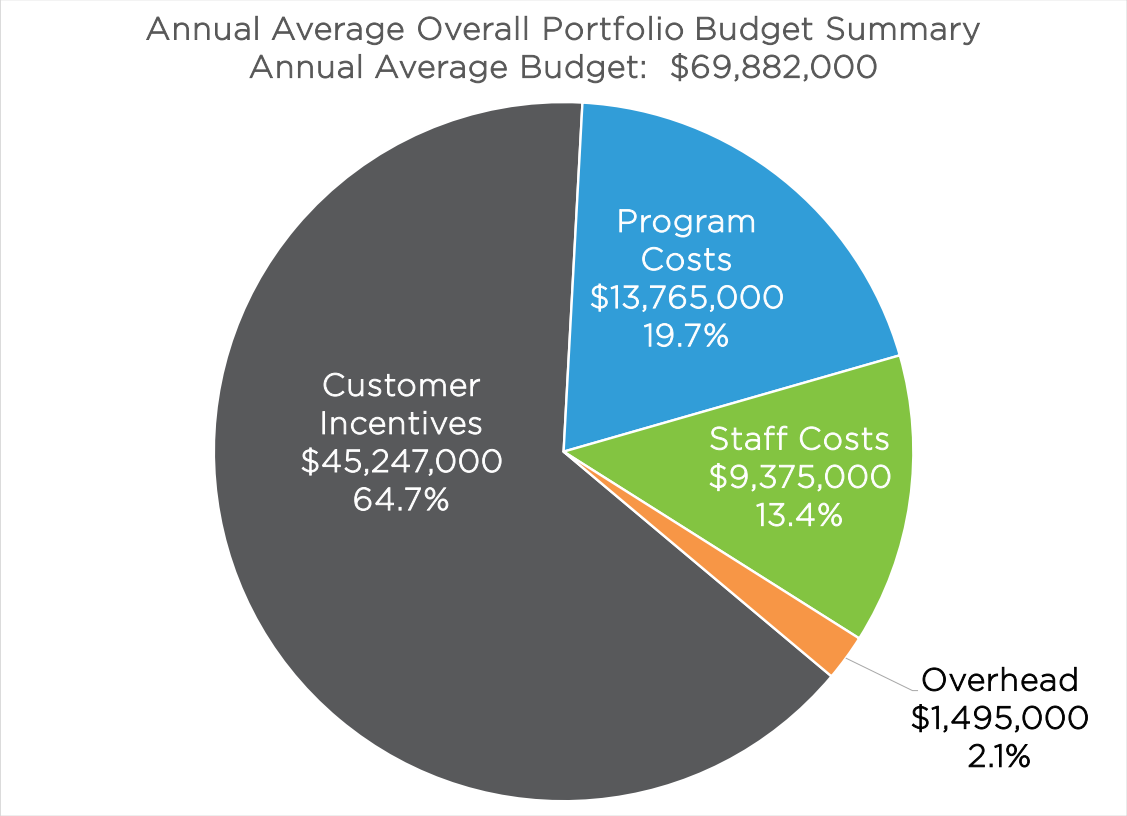
2020/23 EFFICIENCY PLAN SUMMARY - BUDGET

	2020/21	2021/22	2022/23	Average
Electric portfolio	$44,546,000	$51,151,000	$50,984,000	$48,893,000
Natural gas portfolio	$18,643,000	$21,275,000	$23,047,000	$20,988,000
Total Budget	$63,189,000	$72,426,000	$74,031,000	$69,881,000

Note. Currency is expressed in nominal dollars.

4.1 THE PLAN WILL DISTRIBUTE 87% OF THE BUDGET TO MANITOBANS & THE PRIVATE SECTOR

Efficiency Manitoba has budgeted an average of $49 million annually for the electric portfolio and an average of $21 million annually for the natural gas portfolio. These costs are balanced by the benefits provided back to Manitobans, the private sector and Manitoba Hydro. The following figure shows the overall (both electric and natural gas) portfolio budget divided by customer incentives, private sector program costs, Efficiency Manitoba staff and corporate overhead components. The Efficiency Manitoba staff budget includes both program and corporate overhead labour components.



Note. Program costs include private sector program delivery, program administration, program advertising and enabling strategies budget items.

87 percent of Efficiency Manitoba's combined budget is returned to Manitobans through program incentives, private sector energy efficiency delivery partners and outsourced corporate support functions. The incentive budget represents 65 percent of the combined portfolio budget. In addition, 20 percent of the overall budget is allocated to private sector program costs while an additional and 2 percent of the overall budget is allocated to securing private industry support services for corporate support components.

4.2 THE PLAN ALLOCATES 13% OF THE BUDGET FOR EFFICIENCY MANITOBA LABOUR

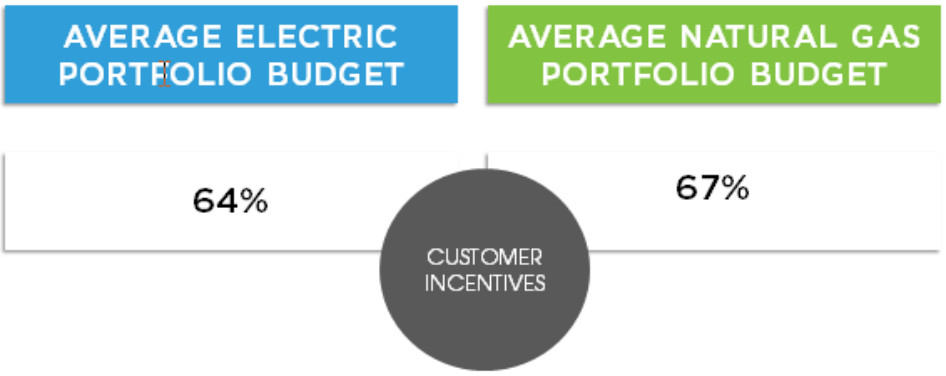
Efficiency Manitoba labour represents 13.4 percent of the combined portfolio budget. This portion of the overall budget includes program costs such program design/modelling, program management, administration, technical and customer support. Also included within the staff budget is the Efficiency Manitoba labour component associated with corporate functions.

4.3 BENCHMARKING DEMONSTRATES THAT EFFICIENCY MANITOBA'S COST STRUCTURE IS REASONABLE

Benchmarking analysis provided an overall comparison of the percentage of budget devoted to customer incentive costs. The comparable jurisdiction results are summarized as follows:

- Massachusetts: 69 to 76 percent of budget allocated for incentives
- Oregon: 46.8 to 54.1 percent of budget allocated for incentives
- Nova Scotia: 60.1 percent of budget allocated for incentives

This compares to the Efficiency Manitoba Plan as follows:



This benchmarking exercise demonstrates overall reasonableness of the incentive budgets as compared to the overall electric and natural gas portfolio investment. It further indicates that Efficiency Manitoba is spending a comparable or lower component of the overall budget on the remaining budget areas.

SECTION 5 – THE PLAN ACHIEVES SAVINGS TARGETS & IS COST-EFFECTIVE WITH LOW RATE IMPACTS

ELECTRIC PORTFOLIO COST-EFFECTIVENESS METRICS

	PACT ratio	PACT NPV	PACT Levelized Cost
Program only metrics	3.88	$369 million	1.89¢/kWh
Overall portfolio metrics	3.27	$345 million	2.24¢/kWh

Note. Program only metrics do not include impact of enabling strategies or corporate overhead. Overall portfolio metrics include those impacts.

NATURAL GAS PORTFOLIO COST-EFFECTIVENESS METRICS

	PACT ratio	PACT NPV	PACT Levelized Cost
Program only metrics	1.42	$22 million	13.03¢/m^3
Program only overall portfolio metrics	0.99	($0.8 million)	18.69¢/m^3

Note. Program only metrics do not include impact of interactive effects, enabling strategies or corporate overhead. Overall portfolio metrics include those impacts.

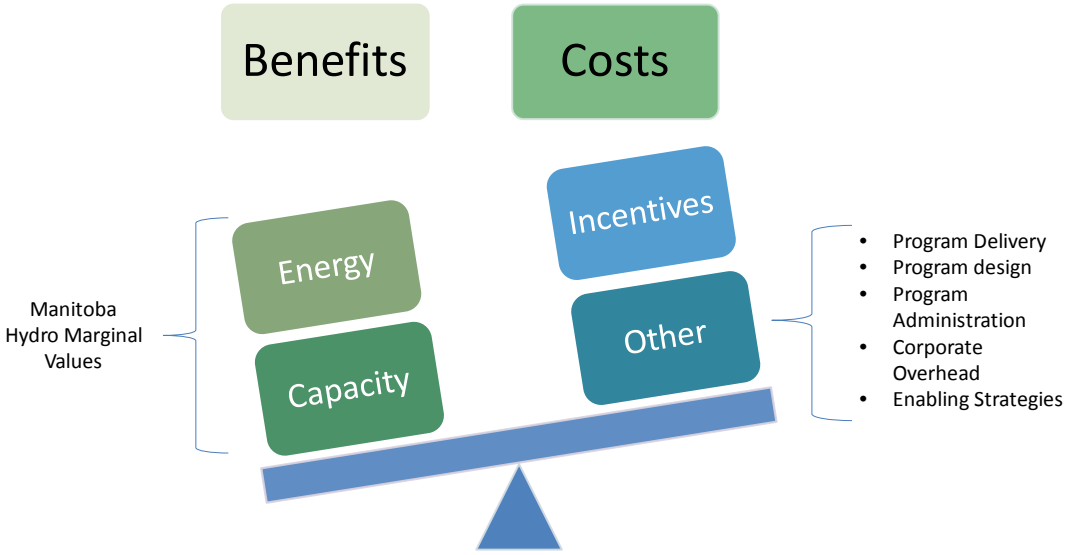
5.1 EFFICIENCY MANITOBA USES THE PROGRAM ADMINISTRATOR COST TEST TO MEASURE THE COST-EFFECTIVENESS OF THE PLAN PRESCRIBED IN REGULATION

The Program Administrator Cost Test (PACT) has been used to evaluate the investments required to deliver the portfolio of energy efficiency programs and the resulting respective electric or natural gas benefits to Manitoba Hydro resulting from those savings.

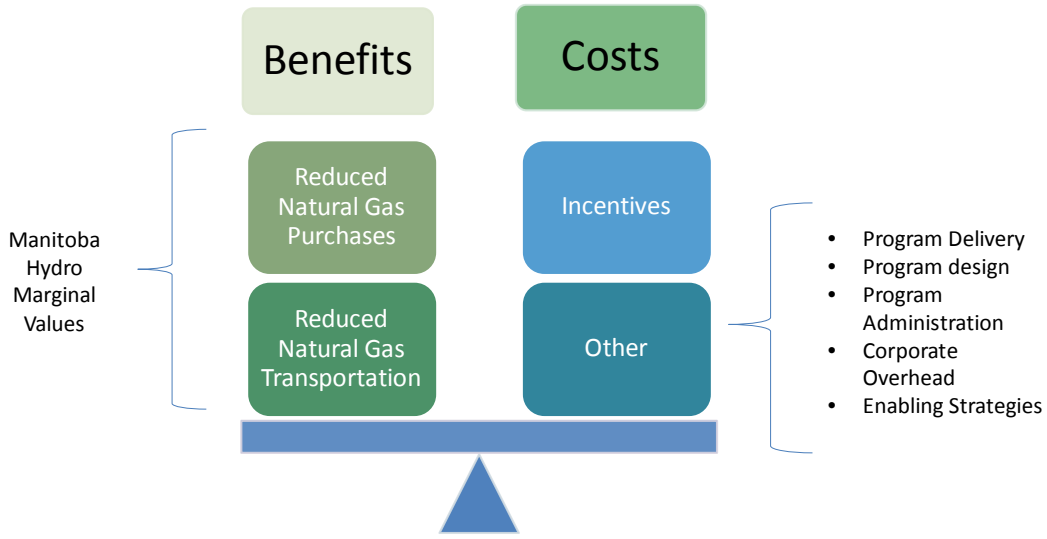
The Plan demonstrates that energy efficiency is a low-cost energy resource that can be leveraged to satisfy a portion of Manitoba's future electric and natural gas energy needs. The Plan supports the deferral of future capital investments and reduces the need to import and combust fossil fuels from outside Manitoba.

DSM cost-effectiveness tests provide a standardized methodology for comparing energy efficiency program benefits with their associated costs. Efficiency Manitoba has used the PACT to satisfy the cost-effectiveness criteria contained in the Regulation. Efficiency Manitoba has conducted the PACT test at both the program bundle level and the overall portfolio level for both the electric and natural gas investments. The following figures illustrates the benefit and cost components considered for the electric and natural gas portfolio PACT test, respectively.

ELECTRIC PROGRAM ADMINISTRATOR COST TEST ILLUSTRATION



NATURAL GAS PROGRAM ADMINISTRATOR COST TEST ILLUSTRATION



In order to assess the long-term cost-effectiveness of the Plan, Efficiency Manitoba has included only the costs and benefits from activities directly associated with the three-years of the Plan (for both the electric and natural gas portfolios). The PACT analysis considers the net present value of benefits, costs, and energy.

PROGRAM ADMINISTRATOR COST TEST (PACT) FORMATS

FORMAT	FORMULA	INDICATOR
RATIO	NPV Benefits / NPV Costs	1.0 or higher = net positive benefits
NET PRESENT VALUE (NPV)	NPV Benefits - NPV Costs	Positive value = net positive benefits
LEVELIZED COST	NPV Costs / NPV Energy	Cost per unit saved

5.2 THE PACT RATIO IS 3.27 FOR THE ELECTRIC EFFICIENCY PORTFOLIO & 0.99 FOR THE NATURAL GAS EFFICIENCY PORTFOLIO

The results of the PACT indicate that Efficiency Manitoba's overall electric DSM portfolio is expected to result in customers having lower costs for meeting their electricity needs through this portfolio, on an aggregate basis, with a ratio of 3.27, a

positive NPV of $345 million and a levelized cost of 2.24 cents/kWh. The results of the PACT indicate that Efficiency Manitoba's overall natural gas DSM portfolio is expected to result in customers realizing similar benefits to costs of meeting their natural gas needs through this portfolio, on an aggregate basis, with a ratio of 0.99, a slightly negative NPV of $0.8 million and a levelized cost of 18.7 cents/m^3. When the natural gas programming only impacts are considered (by removing the electricity programming interactive effects as well as savings and costs of enabling strategies and corporate overhead costs), the natural gas PACT indicates a ratio of 1.42, a positive NPV of $22 million and a levelized cost of 13.0 cents/m^3.

5.3 EFFICIENCY MANITOBA USES THE LIFECYCLE REVENUE IMPACT METRIC AS A SIMPLIFIED INDICATOR OF THE RATE IMPACTS OF THE PLAN

The review of electric and natural gas rates is conducted at electric and natural gas general rate application proceedings before the PUB. This is a complex exercise that involves judgement with respect to balancing the financial health of the utilities with the impacts on customers, detailed testing of cost and revenue forecasts, and allocation of costs between customer classes. A detailed analysis of the revenue requirement and cost allocation impacts of the electric and natural gas portfolios is beyond the scope of the PUB review of the Plan.

Efficiency Manitoba completed a simplified rate and bill impact analysis to provide a directional indicator of the impacts that are associated with the Plan. Efficiency Manitoba has used a lifecycle revenue impact (LRI) measure to indicate an equivalent one-time change in rates (for both electric and natural gas) that is required to establish a balance between the marginal benefits and the revenue

reductions/program investments of the Plan, on a net present value basis. LRI was selected as it applies the standard DSM rate impact measure test components and is consistent with the PACT.

5.4 THE LRI ANALYSIS INDICATES MINIMAL ONE-TIME EQUIVALENT ELECTRIC & NATURAL GAS RATE IMPACTS IN THE ORDER OF 0.3% & 1.2%, RESPECTIVELY

The results of the LRI indicate that the directional one-time equivalent rate increase related to the electric DSM portfolio is 0.019¢/kWh with a range of rate increases of 0.19 percent to 0.32 percent assuming various average electric rates for comparison.

	One-Time Equivalent Rate Increase
LRI (¢/kWh)	0.019 ¢/ kWh
LRI Percent Increase (using 6¢/kWh)	0.32%
LRI Percent Increase (using 8¢/kWh)	0.24%
LRI Percent Increase (using 10¢/kWh)	0.19%

The results of the LRI indicate that the directional one-time equivalent rate increase related to the natural gas DSM portfolio is 0.23¢/m^3 with a range of rate increases of 1.00 percent to 1.22 percent assuming various average natural gas rates for comparison.

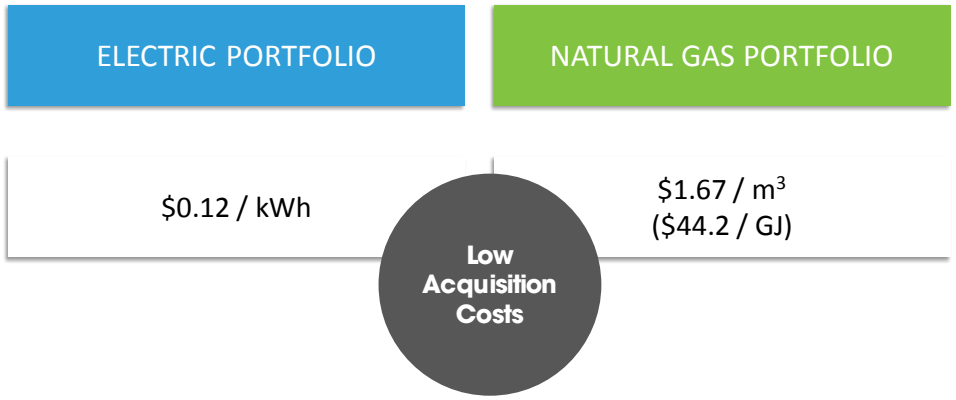
	One-Time Equivalent Rate Increase
Lifecycle Revenue Impact (¢/m^3)	0.23 ¢/ m^3
LRI Percent Increase (using 19¢/m^3)	1.22%
LRI Percent Increase (using 21¢/m^3)	1.10%
LRI Percent Increase (using 23¢/m^3)	1.00%

5.5 ANNUAL BILL SAVINGS FOR PARTICIPATING CUSTOMERS ARE PROJECTED AT $15 MILLION FOR ELECTRIC CUSTOMERS & $3 MILLION FOR NATURAL GAS CUSTOMERS

Customers that choose to participate in the electric and natural gas programming offered by Efficiency Manitoba will realize annual bill reductions based on their energy savings. For the natural gas portfolio, participating customers will also experience bill decreases associated with reductions in the federal carbon charge.

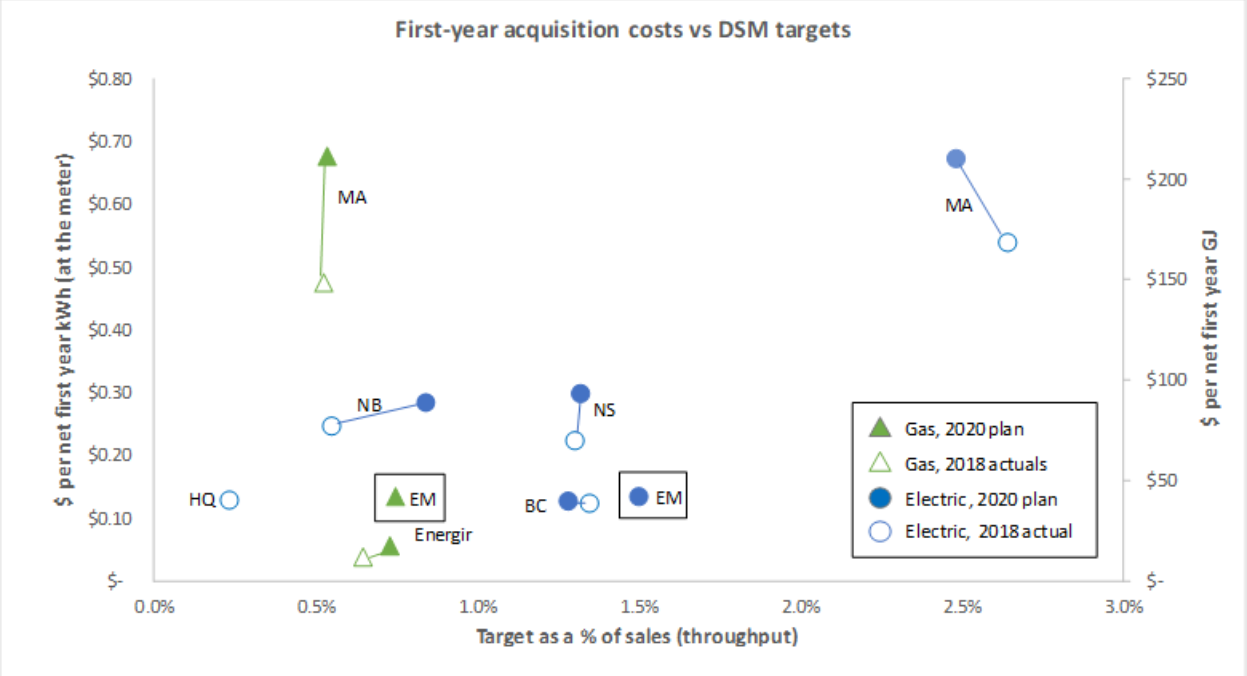
The annual average bill savings for participating electric customers total $14.9 million and the annual average bill savings for participating natural gas customers (including projected savings related to federal carbon charge reductions) total $3.0 million. Recognizing that the energy and customer bill savings persist while the energy-efficient measure is in place, a 30-year NPV of the electric customer bill savings was determined to be $434 million while the equivalent natural gas energy and carbon charge customer bill savings was determined to be $96 million.

5.6 BENCHMARKING DEMONSTRATES THAT EFFICIENCY MANITOBA'S FIRST-YEAR ACQUISITION COSTS ARE REASONABLE WHEN COMPARED TO OTHER SIMILAR JURISDICTIONS



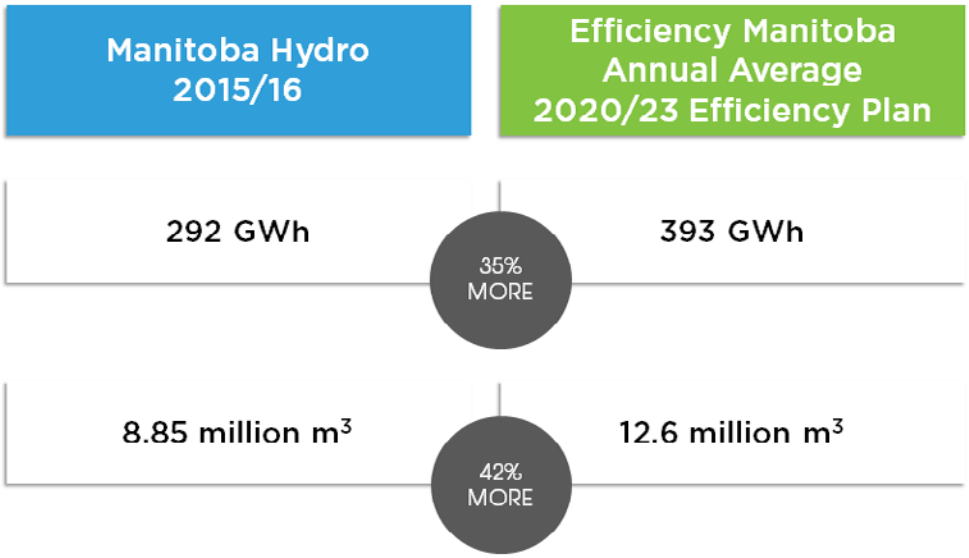
194 While it is not possible to readily compare the Efficiency Manitoba PACT results to
195 other jurisdictions in a uniform fashion due to the variation in which the test results
196 are available and the manner in which they are applied, external benchmarking of the
197 first-year acquisition cost (the cost of procuring DSM first-year savings) confirms the
198 reasonableness and cost-effectiveness of the Efficiency Manitoba electric and natural
199 gas portfolios compared to other jurisdictions.

ELECTRICITY AND NATURAL GAS PROGRAM SAVINGS VS ACQUISITION COSTS COMPARISON[1]



[1] Provided by Dunsky Energy Consulting included in *Attachment 4 – Consultant Memos*

5.7 THE PLAN ACHIEVES ADDITIONAL ELECTRIC ENERGY SAVINGS OF 35% & NATURAL GAS ENERGY SAVINGS OF 42% WHEN COMPARED TO PRIOR EFFICIENCY PLANS



A direct and equitable comparison of the Plan savings and investment to prior Manitoba Hydro DSM plans is not possible as there are many differences with respect to scope, investment items included, and targeted energy savings. However, Efficiency Manitoba has endeavored to provide an analysis to reconcile the differences between its Plan and prior Manitoba Hydro DSM plans in order to provide the best available information to the PUB, with the overall portfolio budget comparison as follows:

Manitoba Hydro 2015/16		Efficiency Manitoba Annual Average 2020/23 Efficiency Plan	
$49,329,000	INCENTIVE COSTS	$45,247,000	8% ↓
$9,927,000	PROGRAM COSTS	$13,765,000	39% ↑
$14,949,000	STAFF COSTS	$9,375,000	37% ↓
$2,190,000	OVERHEAD COSTS	$1,495,000	32% ↓
$76,396,000	**TOTAL COSTS**	**$69,881,000**	9% ↓

SECTION 6 – EFFICIENCY MANITOBA HAS AN INCLUSIVE & DIVERSE PORTFOLIO THAT PROVIDES ADDITIONAL NON-ENERGY BENEFITS TO MANITOBANS

6.1 THE DESIGN OF THE PLAN PROVIDES FOR AN INCLUSIVE & DIVERSE PORTFOLIO OF EFFICIENCY PROGRAMS THAT CONSIDERS ALL CUSTOMER SEGMENTS

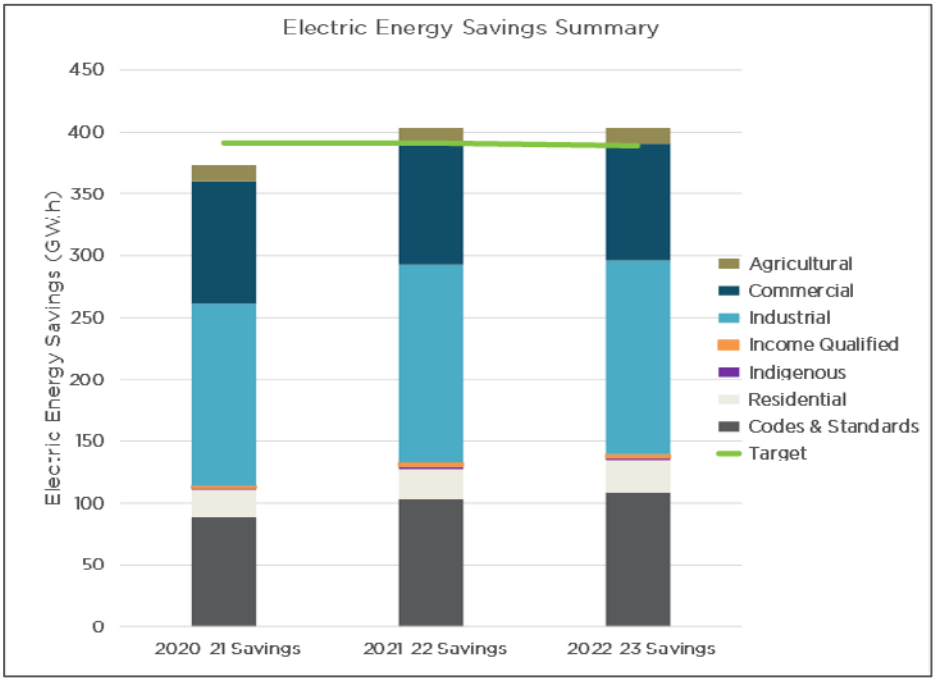
The Plan verifies that Efficiency Manitoba can achieve the mandated electric and natural gas savings targets along with any resulting reductions in greenhouse gas emissions (GHG) and other non-energy benefits in a manner that reaches all Manitobans.

Efficiency Manitoba has identified residential; residential income qualifying; Indigenous; and commercial, industrial, and agricultural customer segments which represent Manitoba's unique customer characteristics and energy consumption patterns. By having identified these customer segments, Efficiency Manitoba is able to customize and deliver offers and programs that facilitate participation of all Manitobans in energy efficiency.

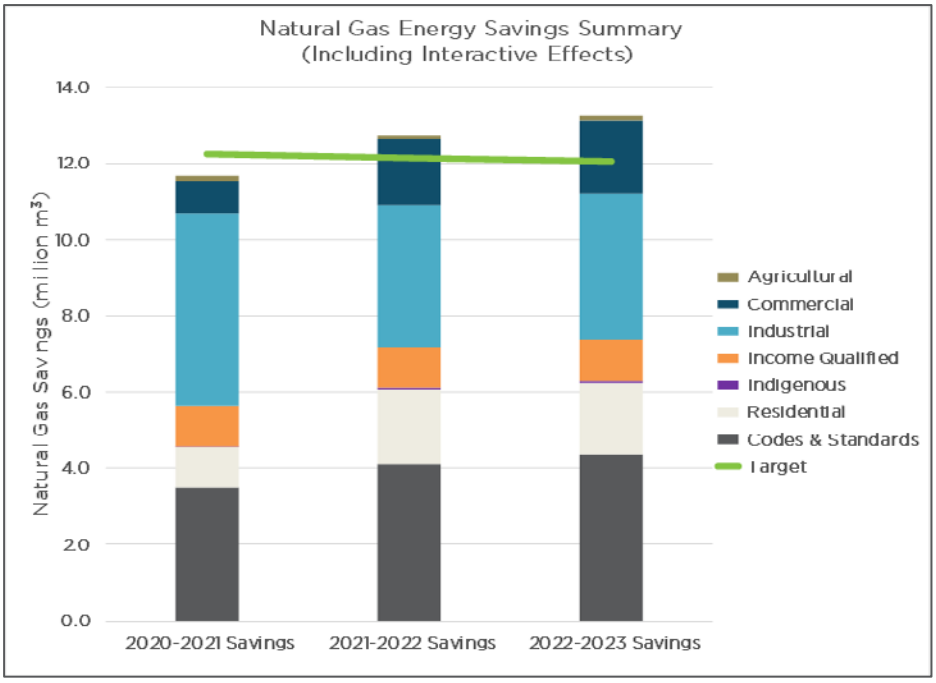
The following charts summarize that:

- the Plan achieves an average energy savings of 1.51 percent of electric load while offering energy efficiency programming to all customer segments; and
- the Plan achieves an average natural gas savings of 0.78 percent of the 2017/18 baseline used while offering energy efficiency programming to all customer segments.

ELECTRIC PORTFOLIO SAVINGS & TARGET SUMMARY



NATURAL GAS PORTFOLIO SAVINGS & TARGET SUMMARY



6.2 PROGRAMMING FOR HARD-TO-REACH CUSTOMER SEGMENTS REPRESENT 6% OF THE ELECTRIC EFFICIENCY BUDGET & 32% OF THE NATURAL GAS EFFICIENCY BUDGET

Efficiency Manitoba is anticipating achieving the hard-to-reach target of five percent of the overall budget identified in the Regulation. The Plan forecasts six percent of the electric efficiency budget and 32 percent of the natural gas efficiency budget towards hard-to-reach customers in the income qualified and Indigenous customer segments. The following table provides the percent of overall savings and budget associated with the electric and natural gas portfolios by customer segment.

ELECTRIC & NATURAL GAS PORTFOLIO SUMMARY – COMPOSITION OF ANNUAL ENERGY SAVINGS & BUDGET BY CUSTOMER SEGMENT

	Customer Segment					
	Industrial	Agricultural	Commercial	Residential	Income Qualified	Indigenous
Annual Average	Electric Portfolio					
Energy Savings (%)	39%	3%	35%	22%	1%	0.5%
Budget (%)	20%	4%	36%	19%	3%	3%
Annual Average	Natural Gas Portfolio					
Energy Savings (%)	29%	1%	25%	37%	7%	0.3%
Budget (%)	9%	1%	27%	21%	30%	2%

Note. Programming budget values do not include cost components associated with Enabling Strategies and Corporate Overhead.

6.3 THE PLAN PROVIDES SIGNIFICANT SOCIAL, ECONOMIC & ENVIRONMENTAL BENEFITS TO MANITOBANS

The energy efficiency programming, technologies, and incentives packaged within the Plan all provide additional benefits to Manitobans beyond direct electric and natural gas energy and cost savings. These "non-energy" supplemental benefits do not appear in the cost-effectiveness tests, bill or rate impacts. These additional unique benefits add to the overall social, economic, and environmental value of Efficiency Manitoba and include, but certainly are not limited to:

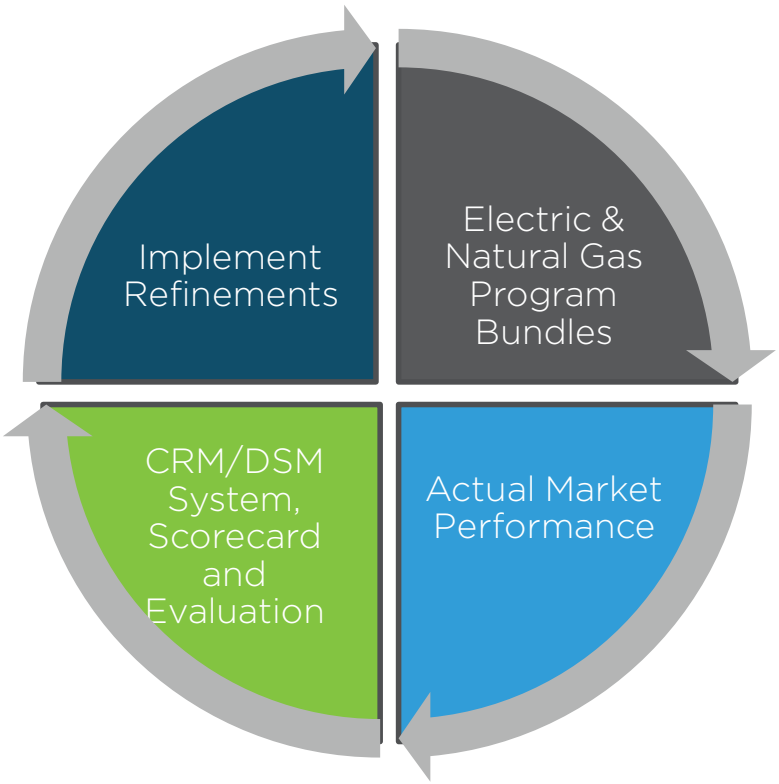
- the social benefits of energy efficiency may be realized within the home, business, or community, with participating customers enjoying improved occupant comfort, improved indoor air quality, improved lighting quality, increased property value, and reduced maintenance costs;
- from an economic perspective, benefits include increased energy efficiency employment as well as direct and indirect benefits through external delivery and installation of energy efficient technologies and external support services provided to Efficiency Manitoba;
- GHGs associated with energy are an important consideration when evaluating the impacts of the Plan. The annual incremental GHG emission reductions associated with the natural gas portfolio are equivalent to removing over 5,000 cars per year from within Manitoba; and
- the Plan is also expected to reduce water consumption and promote waste reduction. For example, 95 percent of refrigerators and freezers picked up through the appliance recycling offer within the residential product rebate bundle can be recycled.

SECTION 7 – EFFICIENCY MANITOBA IS DEVELOPING A COMPREHENSIVE APPROACH TO MONITOR & EVALUATE PERFORMANCE & CONTINUOUSLY IMPROVE

7.1 EFFICIENCY MANITOBA IS PURSUING THE DEVELOPMENT OF A CRM/DSM SYSTEM TO CONTINUOUSLY MONITOR & REPORT ON SAVINGS & INVESTMENTS AT THE MEASURE & PROGRAM BUNDLE LEVEL

The Plan proposes to evaluate performance, implement improvements identified and continuously act on lessons learned. Key to the success of Efficiency Manitoba is the procurement and implementation of a comprehensive and integrated customer relationship management ("CRM") and DSM system (the "CRM/DSM system"). This is overarching strategy will streamline and enhance operations at Efficiency Manitoba from both customer-facing and internal operational perspectives.

The CRM/DSM system will be an invaluable tool for providing Efficiency Manitoba with centralized capability to continuously monitor and report on savings and investments at the measure and program bundle level. The following figure illustrates the role of the CRM/DSM system within the context of complimentary strategies and continuous improvement.



7.2 EFFICIENCY MANITOBA HAS DEVELOPED A SCORECARD TO BENCHMARK DSM PORTFOLIO & CORPORATE PERFORMANCE AGAINST OTHER ENERGY EFFICIENCY PROGRAM ADMINISTRATORS

Efficiency Manitoba will monitor electric and natural gas portfolio performance, as well as overall corporate performance on an ongoing basis. Efficiency Manitoba has developed a DSM Scorecard to be used to benchmark both portfolio performance and corporate performance against other energy efficiency program administrators. This Scorecard will gauge year-over-year internal performance and variances.

7.3 EFFICIENCY MANITOBA HAS DEVELOPED A COMPREHENSIVE EVALUATION, MEASUREMENT & VERIFICATION FRAMEWORK & PLAN

Efficiency Manitoba recognizes the importance and value of undertaking independent evaluations of DSM initiatives. Evaluation is a feedback mechanism to assess program performance for internal review, adjustment and continuous improvement. The two primary purposes of conducting DSM program evaluations are to reliably assess and document program effects and to improve program designs and processes to be more cost-effective at achieving the energy savings.

Efficiency Manitoba's Evaluation, Measurement and Verification Framework provides evaluation guidelines, definitions and practices. This framework is designed to be a longer-term document that persists beyond the three-year Plan. Key components of the framework include the establishment of guiding principles, clarity on the various types of evaluations and prioritization criteria to be used when developing the customer segment evaluation plan.

The evaluation plan prepared for Efficiency Manitoba's three program years outlines the programs to be evaluated, the types of evaluations to be conducted, and when and why those evaluations should be carried out. Efficiency Manitoba has earmarked an average of 1.7 percent of the annual portfolio budget to complete independent savings and cost-effectiveness verifications of every program annually and full impact evaluations on every program at least once during the three-year Plan period.

7.4 EFFICIENCY MANITOBA IS PREPARED FOR EMERGING OPPORTUNITIES

Based on the results acquired through evaluation, DSM scorecard key performance indicators or ongoing program monitoring from the CRM/DSM system, Efficiency Manitoba can adjust as needed to maintain program bundle or portfolio trajectories.

Efficiency Manitoba has identified an innovation / research and development budget to support the achievement of longer-term energy savings. This will enable the evaluation of new technologies, approaches or customer services through pilot programs and projects.

Efficiency Manitoba has identified a three-year contingency fund for the explicit purpose of pursuing unanticipated DSM opportunities. A process was developed to allow the communication; assessment of the benefits and costs; and potential approval of any associated activities.

SECTION 2
THE PLAN ACHIEVES THE REQUIREMENTS OF EFFICIENCY MANITOBA'S MANDATE & REGULATORY FRAMEWORK

2020/23 EFFICIENCY PLAN

CORPORATE STRATEGIC GOALS

GOVERNMENT DIRECTION

ALIGNMENT WITH THE EFFICIENCY MANITOBA ACT, REGULATION & REGULATORY REVIEW REQUIREMENTS

EFFICIENCY MANITOBA

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FIGURES

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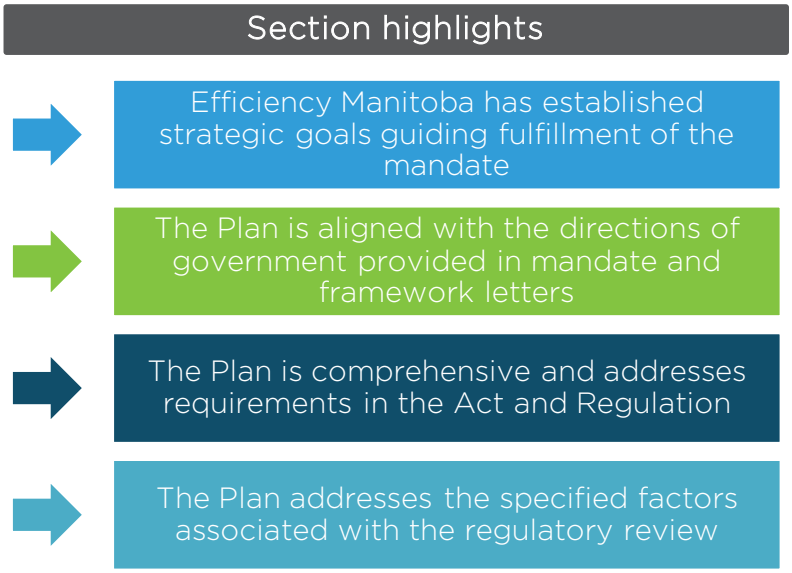
SECTION 2 – THE PLAN ACHIEVES THE REQUIREMENTS OF EFFICIENCY MANITOBA'S MANDATE & REGULATORY FRAMEWORK

Together, The Efficiency Manitoba Act (the "Act") and corresponding Efficiency Manitoba Regulation (the "Regulation") establishes Efficiency Manitoba as a new Crown corporation focused on achieving legislated energy savings targets of at least 1.5 percent of electrical energy load and 0.75 percent natural gas load. This section provides a summary of:

- the overall strategic goals of Efficiency Manitoba which were informed by the mandate, Government direction, Act and Regulation, and which guided the development of the 2020/23 Efficiency Plan (the "Plan");
- the alignment of the Plan with the mandate and direction issued by the Government of Manitoba to Efficiency Manitoba; and
- the requirements within the Act and accompanying Regulation reflected within the Plan and how the requirements for regulatory review are addressed.



2.1 EFFICIENCY MANITOBA HAS ESTABLISHED STRATEGIC GOALS THAT GUIDE THE CORPORATION TO FULFILL ITS MANDATE

2.1.1 EFFICIENCY MANITOBA'S STRATEGIC PLAN

The Efficiency Manitoba Board of Directors developed a strategic plan which contains the corporation's mission, vision, guiding principles, and strategic goals. These served as a compass throughout the development of the Plan. The vision and mission statements summarize why Efficiency Manitoba exists and how its mandate will be realized.

VISION

We serve as a catalyst for an energy efficient Manitoba. We are valued by Manitobans for our leadership in energy efficiency and for the partnerships we create.

MISSION

Efficiency Manitoba reduces energy consumption using innovative approaches that respect the environment and lead to economic benefits for Manitobans.

STRATEGIC GOALS

Efficiency Manitoba has identified four strategic goals, which will move the organization forward in achieving the vision and living the mission. Each strategic goal is further described, detailing the organization's focus over the next three years.

TABLE 2.1 EFFICIENCY MANITOBA'S STRATEGIC GOALS

STRATEGIC GOAL	DESCRIPTION
ACHIEVING EXCELLENCE IN OUR PROGRAMS & SERVICES	Developing programs and services that are beneficial to all customer sectors in Manitoba: residential, commercial, industrial, rural and remote, Indigenous, agriculture, municipal, and government. Leveraging research and innovation to implement programs and services to the right market at the right time. Providing outstanding customer service and technical support.
CREATING A SOLID FOUNDATION TO BUILD A SUCCESSFUL ORGANIZATION	Creating a workplace that empowers employees and fosters creativity, trust, and excellence. Satisfying the Efficiency Manitoba Act and Crown Corporations Governance and Accountability Act mandates. Identifying and establishing the organizational structure, processes, finances, technology, systems and infrastructure.
BUILDING & SUSTAINING MEANINGFUL PARTNERSHIPS WITH A CUSTOMER FOCUS	Establishing the Energy Efficiency Advisory Group with representation from Indigenous Communities and a diverse mix of social, economic, and environmental organizations. Promoting and encouraging the involvement of the private sector and other non-governmental entities. Serve as a resource to all levels of government on energy efficiency related matters. Providing cost efficient energy resources to Manitoba Hydro for resource planning purposes.
TRANSFORMING ATTITUDES TOWARDS ENERGY EFFICIENCY	Undertaking educational initiatives to develop a broader understanding of the benefits of energy efficiency. Establishing the Efficiency Manitoba brand. Developing recognition as a trusted energy efficiency expert.

GUIDING PRINCIPLES

Guiding Principles were developed to describe the behaviours and culture that will be supported across the organization. These are summarized in Figure 2.1.

FIGURE 2.1 EFFICIENCY MANITOBA'S GUIDING PRINCIPLES

Employees	•We believe our employees are key to our success; therefore, we will foster a work culture of positive engagement, creativity and diversity.
Equity and access	•We believe in equity and access; therefore, we will provide programs and services that benefit all Manitobans.
Investing in Manitoba	•We believe in investing in Manitoba; therefore, we will prioritize collaborating with and providing opportunities to local experts creating a stronger economic benefit for our province.
Keeping things simple	•We believe in keeping things simple; therefore, we take a straightforward approach to communication and keep business processes easy to understand and implement.
Sustainable practices	•We believe in sustainable practices; therefore, we will source suppliers and service providers that follow environmentally sound practices.
Transparency	•We believe in transparency; therefore, we are open and accountable.

2.1.2 MANITOBA'S CLIMATE & GREEN PLAN

Efficiency Manitoba will be a valuable resource for achieving greenhouse gas (GHG) emission reductions and will play a strong role delivering on commitments outlined in the province's *Made-in-Manitoba Climate and Green Plan*. The Expert Advisory

Council to the Climate and Green Plan released a June 2019 report[1] that provided recommendations and advice on establishing Manitoba's first carbon savings account setting out a Made-in-Manitoba GHG reduction goal with a series of measures that will result in carbon emissions reductions. Efficiency Manitoba programs across different customer sectors will offer incentives for energy efficient technologies to reduce natural gas consumption, resulting in reduced GHG emissions. In addition to incentives and rebates, Efficiency Manitoba will be a resource for education and expertise for Manitobans looking to reduce their natural gas energy consumption and associated environmental footprint.

2.2 THE PLAN IS ALIGNED WITH THE DIRECTIONS OF GOVERNMENT

2.2.1 MANDATE & FRAMEWORK LETTERS

Efficiency Manitoba's Plan addresses both the mandate letter issued by the Premier to the Minister of Crown Services dated October 18, 2018 and the framework letter issued by the Minister of Crown Services to the Chair of the Efficiency Manitoba Board of Directors April 24, 2019[2]. The framework letter builds upon on the mandate letter and articulates four priorities for Efficiency Manitoba:

1) *Establish the structure of the new corporation ensuring a leaner, more streamlined organization to deliver energy efficiency programs.*

Detailed organizational planning is on-going in advance of the April 1, 2020 commencement date outlined in the Regulation. Efficiency Manitoba staffing levels,

[1] https://www.gov.mb.ca/asset_library/en/eac/eac_carbon_savings_report2019.pdf

[2] https://www.gov.mb.ca/government/proactivedisclosure/ministerials.html

inclusive of all activities represented within the Plan, is budgeted to be up to 75 full-time equivalent staff which is a reduction of approximately 30 percent from the average of 110 full-time equivalent positions at Manitoba Hydro when delivering demand-side management with a full staff complement.

Efficiency Manitoba is also procuring a customer relationship management/demand side management (CRM/DSM) system that will streamline historically manual processes. This will result in less paperwork, less administration, more automated reporting, and faster data availability. *Section 7.1* provides details regarding the CRM/DSM system.

2) *Develop and submit for review and approval your initial three-year plan for demand-side management initiatives to meet your mandated savings targets, while optimizing value for money.*

Submission of this Plan for the Public Utilities Board's (the "PUB") review represents a major milestone. Efficiency Manitoba is working diligently towards its April 1, 2020 commencement date as an independent organization. Amid start-up activities and establishing the foundations of this organization, Efficiency Manitoba has developed and submitted this Plan, while working collaboratively with stakeholders.

The performance metrics and benchmarking contained within the Plan demonstrate the portfolio of electric and natural gas programs are cost effective and return value to Manitobans through incentives, customer bill savings, and a variety of non-energy benefits. *Section 3* provides further information on the achievement of the mandated energy savings. *Sections 4 and 5* provide the details of the budget, cost-effectiveness and rate implications associated with achieving these savings.

3) *Work with the Public Utilities Board to develop streamlined Review processes.*

Efficiency Manitoba and the PUB staff have been in communication since drafting of the supporting Regulation. Both parties have recognized the significance of the PUB review process and time available prior to Efficiency Manitoba's commencement date of April 1, 2020. Efficiency Manitoba worked with the PUB prior to the filing date to proactively develop a public notice, preliminary issues list, and a draft hearing schedule for consideration of the PUB and stakeholders. Efficiency Manitoba looks forward to continued engagement with the PUB, stakeholders, and customers as the Plan is reviewed, approved, and subsequently implemented.

4) *Find ways to obtain the same or better outcomes as formerly obtained under the "Power Smart" program, but at a significantly smaller percentage of the cost and materially less labour costs.*

Efficiency Manitoba is planning to meet the savings targets mandated in the Act, which is an increase in energy savings over the previous "Power Smart" program. An equitable comparison is difficult as there are many differences with respect to scope and budget items included. The Plan provides a representative side-by-side analysis of the electric and natural gas total planned energy savings and the corresponding budgets for each year of Efficiency Manitoba's 2020/23 Efficiency Plan with the 2015/16 Manitoba Hydro DSM Plan. The total average budget to accomplish the targeted energy savings in the Plan is $70 million, compared with the Manitoba Hydro 2015/16 DSM plan budget of $76 million. With respect to energy savings, the Plan achieves additional electric energy savings of 35 percent and natural gas energy

savings of 42 percent when compared to Manitoba Hydro's 2015/16 DSM plan. As indicated above, Efficiency Manitoba staffing levels will be reduced by approximately 30 percent from the average of 110 full-time equivalent positions delivering demand-side management at Manitoba Hydro.

Section 4 provides the approach, details, and analysis surrounding the incentive, programming, and corporate overhead costs associated with achieving the outcomes outlined in the Plan. For additional summary and details associated with the performance analysis and benchmarking refer to *Section 5.*

2.2.2 ANNUAL REPORTING

Both the Act and the Crown Corporations Governance and Accountability Act (the "CCGAA") have reporting requirements for Efficiency Manitoba's financial, savings performance, and other activities. These mechanisms provide a transparent framework through which Efficiency Manitoba will communicate ongoing plans and performance related to achievement of the mandated outcomes.

Efficiency Manitoba will publicly report via annual and quarterly reporting prepared in accordance with the CCGAA and Section 32(1) within the Efficiency Manitoba Act.

As prescribed through the CCGAA, annual reporting will include the audited financial statements of the corporation and a comparison of actual results to planned achievements set out in Efficiency Manitoba's Annual Business Plan. If there is a variance between actual results and specific outcomes for the fiscal year, explanations will be provided. In accordance with the CCGAA, Annual Business Plans include the following:

1) The corporation's goals for the fiscal year covered by the plan.

2) The specific outcomes to be achieved by the corporation during the applicable fiscal year including, in the case of a corporation that is subject to a mandate letter that applies to more than one fiscal year, the outcomes from the letter that are to be achieved within the fiscal year covered by the plan.

3) A capital expenditure program for the prescribed period, which includes each proposed capital expenditure that exceeds the prescribed threshold during the period.

4) The performance measures that are to be used to determine if the specific outcomes have been achieved.

5) Any other information that is prescribed or that the responsible minister considers appropriate.

Performance measures included in Efficiency Manitoba's Annual Business Plan and subsequently reported on through annual reporting will reflect both strategic plan goals and measures, along with DSM-specific measures allowing comparison of Efficiency Manitoba's performance to that of similar entities in other jurisdictions. The DSM-specific performance monitoring and evaluation activities are discussed in greater detail in *Section 7*.

The Act also directs further inclusions in the annual report such as:

- the comparison of the actual net savings attained with those set out in the Plan, including variance reporting on significant discrepancies;

- description of any contingency fund used to address emerging measures and analysis of the savings and cost-effectiveness of those measures; and
- descriptions of any operational adjustments made during the fiscal year.

2.3 THE PLAN CONTAINS ELEMENTS REQUIRED THROUGH THE ACT & REGULATION

Efficiency Manitoba is aligned and consistent with both the Act and supporting Regulation. Where Efficiency Manitoba was required to operationalize the language or intent of the Act or Regulation, a summary of these applications is provided in this Section.

2.3.1 THE EFFICIENCY MANITOBA ACT

The Act was proclaimed in January 2018 and established Efficiency Manitoba as a corporation with its mandate to:

- *implement and support demand-side management initiatives to meet savings targets and achieve any resulting reductions in greenhouse gas emissions in Manitoba;*
- *reduce consumption of electrical energy and natural gas beyond the savings targets if reductions can be achieved in a cost-effective manner;*
- *mitigate the impact of rate increases on Manitoba ratepayers through the delay of Manitoba Hydro's need for major capital investments in new generation and transmission projects; and*

- *promote and encourage the involvement of the private sector and other non-governmental entities in the delivery of its demand-side management initiatives.*

In addition to electrical energy and natural gas demand side management, the Act identifies that Efficiency Manitoba may also carry out demand side management initiatives with respect to electric demand, potable water, and fossil fuels in the transportation sector in Manitoba should those prescribed duties be identified within Regulation.

The Act outlines both the scope of the efficiency plans as well as the report and recommendations which will be provided by the PUB to Government. To assist with review of the Plan, Table 2.2 is provided below to cross-reference the specific sections of the Act with the contents of the submission.

TABLE 2.2 SUMMARY OF THE EFFICIENCY MANITOBA ACT CROSS-REFERENCED TO CORRESPONDING SECTIONS OF THE SUBMISSION

EFFICIENCY MANITOBA ACT	2020/23 EFFICIENCY PLAN SUBMISSION
Section 7(1) Initial Savings Targets	Section 2.3.1 – The Efficiency Manitoba Act Section 2.3.2 – Practical application of the Act– Appendix A – Section A2.2.2
Section 7(2) Targets are Cumulative	Section 2.3.1 – The Efficiency Manitoba Act
Section 7(3) Calculating Net Savings	Section 2.3.2 – Practical application of the Act Appendix A – Section A2.2.2
Section 8 Savings Targets after first 15 years	Not applicable for 2020/23 Efficiency Plan
Section 9(a) Description of demand-side management initiatives	Section 3.2 – Customer Focused Programming Appendix A - Section A4 through A9
Section 9(b) Description of Educational Initiatives	Appendix A - Section A4.6 Appendix A - Section A9.2.5
Section 9(c) Description of Additional Initiatives	Not applicable for 2020/23 Efficiency Plan
Section 9(d) Cumulative net savings shortfall	Not applicable for 2020/23 Efficiency Plan
Section 9(e) Resulting greenhouse gas reductions from 9(a) to 9(d)	Section 6.3.3 – Environmental Benefits Attachment 3 –Technical Tables
Section 9(f)(i) Net Savings and cost-effectiveness of each initiative	Appendix A - Section A3 through A8

EFFICIENCY MANITOBA ACT	2020/23 EFFICIENCY PLAN SUBMISSION
Section 9(f)(ii) Overall Net Savings and cost-effectiveness	Section 3.1.1 - Achieving the mandated energy savings Section 5.1 – Efficiency Manitoba uses the Program Administrator Cost Test (PACT) to Measure the Cost-Effectiveness of the Plan as prescribed in Regulation Section 6.1.2 – Customer Segment Considerations
Section 9(g)(i) Participant Benefits	Section 5.5.1 – Electric customer bill impacts Section 5.5.2 – Natural gas customer bill impacts Section 6.3.1 – Social benefits Appendix A - Section A4 through A8
Section 9(g)(ii) Manitoba Hydro Benefits	Section 5.1.2 – PACT Energy Benefits Section 5.1.3 - Efficiency Plan PACT Metrics Appendix A – Section A2.2.2 Appendix A – Section A3.3
Section 9(g)(iii) Benefits to all Manitobans	Section 6.3 – The Plan provides significant social, economic and environmental benefits to Manitobans Appendix A - Section A4 through A8
Section 9(h) Stakeholder Input	Section 3.3 – Comprehensive engagement Appendix A - Section A2.4 Attachment 2 – Energy Efficiency Advisory Group Reporting
Section 9(i) Impact of initiatives on 15-year Efficiency Manitoba plan	Section 3.1.1 - Achieving the mandated energy savings
Section 9(j) Plan addresses required prescribed factors for PUB	Section 2.4.1 – The Efficiency Manitoba Act
Section 9(k)(i) Interest Rate for loan/financing programs	Appendix A - Section A4.4
Section 9(k)(ii) Eligibility Criteria for loan/financing programs	Appendix A - Section A4.4
Section 9(k)(iii) Expected dollar amount to be loaned/financed through initiatives	Appendix A - Section A4.4
Section 9(l)(i) 3-year projected cost of each initiative and timeline for costs incurred	Section 4.1 - Portfolio Budget Summary Section 4.4 - Portfolio Budget Analysis Appendix A - Section A3.2 Appendix A - Section A4 through A8
Section 9(l)(ii) 3-Year Projected administrative and overhead costs	Section 4.1 - Portfolio Budget Summary Section 4.4 - Portfolio Budget Analysis
Section 9(l)(iii) Contingency Fund required	Section 7.4 – Efficiency Manitoba is prepared for emerging technologies and contingencies
Section 9(l)(iv) Proposed Sources and amount of funding	2.3.1 The Efficiency Manitoba Act2.3.2 Practical application of the Act Appendix A - Section A3.2
Section 9(l)(v) Schedule of required funds over 3 years	Appendix A - Section A3.2.5
Section 9(m) How outcomes are achieved and proposed performance measures	Section 7 – Efficiency Manitoba is Developing a Comprehensive Approach to Monitor, Evaluate Performance and Continuously Improve Attachment 5 – Evaluation Framework and Planning Report

In addition to the cross-referenced sections provided in Table 2.2, the following provides some additional explanation related to energy savings targets, plan requirements, Manitoba Hydro and demand-side management of other resources addressed in the Act:

ENERGY SAVINGS TARGETS

The Act mandates that Efficiency Manitoba is responsible for achieving annual net savings targets that are at least equal to 1.5 percent of electrical energy consumption and 0.75 percent natural gas consumption in the preceding fiscal year, respectively. Over 15 years, the corresponding cumulative total annual percentage savings targets for electrical energy is 22.5 percent and 11.25 percent for natural gas. To illustrate, if 1.5 percent savings of electrical energy consumption is achieved annually for 15 years, the summation of these annual percentage savings is 22.5 percent. Any shortfalls or surpluses in annual net savings will carry forward during the 15-year period. Each 15-year period annual and cumulative electrical energy and natural gas savings targets are to be reviewed and revised by regulation, if necessary.

PLAN REQUIREMENTS

With respect to the Plan, the Act directs Efficiency Manitoba to include details related to:

- the achievement of electric and natural gas energy savings targets;
- the demand side management ("DSM") initiatives proposed; and
- the analysis used to evaluate the benefits and cost-effectiveness of the DSM initiatives within the proposed Plan.

The Act also stipulates provision of details within the Plan related to:

- stakeholder engagement;
- energy efficiency financing programming to be offered;
- budget details; and
- evaluation or assessment of the activities proposed within the Plan.

As provided in Table 2.2, Efficiency Manitoba has addressed the requirements within the Act. Additional requirements outlined within the accompanying Regulation have been included separately in *Section 2.3.3*.

MANITOBA HYDRO

Section 18 of the Act provides for the support of Efficiency Manitoba activities through Manitoba Hydro funding. In recognition of the benefits received, Manitoba Hydro is to provide funding to Efficiency Manitoba necessary to implement an approved efficiency plan and to carry out its responsibilities under this Act. The entire electric portfolio is completely funded by Manitoba Hydro. Similarly, the entire natural gas portfolio outlined within the Plan is funded by Centra Gas as a wholly owned subsidiary of Manitoba Hydro.

The Act authorizes the coordination of Plan activities between Efficiency Manitoba and Manitoba Hydro as it relates to areas such as energy efficiency loan or financing programs; review of the Plan; and the exchange of customer energy use information required by Efficiency Manitoba in order to carry out the initiatives outlined within the Plan.

DEMAND-SIDE MANAGEMENT OF OTHER RESOURCES

Section 40(1) of the Act allows, should a regulation be made, for demand-side management of potable water and fossil fuels consumed within the transportation

sector in Manitoba. It is recognized that in the absence of being prescribed through the enabling Regulation and in the absence of dedicated funding, Efficiency Manitoba cannot pursue an electric vehicle program or a dedicated water conservation program. Water conservation exists as a non-energy benefit through several programs within the Plan where more efficient technologies to reduce the consumption of heated water may be implemented due to incentives or education.

2.3.2 PRACTICAL APPLICATION OF THE ACT

In order to develop the Plan, Efficiency Manitoba operationalized the Act. The following provides a summary of this practical application:

ELECTRIC ENERGY AND NATURAL GAS SAVINGS TARGETS WITHIN THE PLAN

Efficiency Manitoba has developed the Plan to achieve the annual savings targets. Although any single year within the plan may be below or above the annual electric energy or natural gas savings target respectively, as detailed in Section 7(2) of the Act, the three-year average of the respective savings outlined in the Plan achieves the mandated savings targets and maintains the prescribed path towards the cumulative savings targets.

DEFINITION OF "CONSUMPTION"

The Act prescribes a meaning of consumption to determine the magnitude of the electric or natural gas energy associated with the mandated savings targets.

The publicly available Manitoba Hydro 2018 Electric Load Forecast was utilized to provide the estimated future electric energy usage which identifies annual electric consumption (in GWh) at the point of generation. As this load forecast accounts for future codes and standards, Efficiency Manitoba adds back codes and standards

savings from prior years to establish a base electric consumption from which the impacts of the Plan can be assessed.

In order to provide a representative derivation of the natural gas target, Efficiency Manitoba utilized the 2017/18 gross actual natural gas volume consumption provided within the Manitoba Hydro 2017/18 annual report which was publicly available at the time of Plan preparation[3]. This allows the communication of the natural gas energy savings targets in a manner which does not release commercially sensitive information. Using this 2017/18 gross actual natural gas volume consumption, natural gas consumption used as an input to industrial production and natural gas used to generate electric power were removed from this value as per the description for "consumption" provided in Section 2 of the Act.

The technical details of this methodology are outlined in *Appendix A - Section A2*.

DEFINITION AND DETERMINATION OF "NET SAVINGS"

In the determination of net savings, Efficiency Manitoba has included both the consideration of interactive effects, along with programs or initiatives that are weather dependent.

Interactive effects occur when individual DSM initiatives combine to increase or decrease savings with other DSM initiatives. Efficiency Manitoba considered possible savings implications due to the interactive effects of DSM initiatives within and/or

[3] Manitoba Hydro 2017/18 Annual Report, Page 107. https://www.hydro.mb.ca/corporate/financial/

between the electric or natural gas portfolios.[4] An example of this is installation of higher efficiency lighting resulting in an increase in the natural gas required for space heating. The technical details of the application of net savings are outlined in *Appendix A - Section A2.* For DSM initiatives that are weather dependent, projected energy savings are based on average weather conditions to achieve "weather normalization."

CUMULATIVE SAVINGS SHORTFALL

Addressing cumulative net savings shortfalls is not applicable within the Plan as this is Efficiency Manitoba's first Plan.

EDUCATIONAL INITIATIVES & INNOVATION

With respect to educational initiatives and innovation, the Plan has categorized an overview of these activities under enabling strategies. Within this broader category, the Plan also includes specific initiatives such as general branding and consumer awareness; community engagement; efforts related to codes and standards; and evaluation. These initiatives are separate and distinct from other programming or offers that directly lead to in-year electric energy or natural gas savings. Instead, these initiatives represent activities that support overall market transformation, education, or future energy standards or regulations. Apart from codes and standards, there are no directly attributed energy savings due to these enabling strategies. Although full budgeting details are provided, the lack of a specific energy savings stream negates the ability to provide a separate cost effectiveness analysis of

[4] Li, M.; Haeri, H.; Reynolds, A. (2018). The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-70472. http://www.nrel.gov/docs/fy18osti/70472.pdf

these enabling strategies. To satisfy the intent of the Act, in addition to the detailed cost breakdown provided, all budget dollars associated with enabling strategies are included within the overall electric or natural gas portfolio cost effectiveness analysis and testing. Enabling strategies are described in detail within *Appendix A - Section A9.*

FUNDING

All activities within the Plan will be funded directly by Manitoba Hydro and Centra Gas, a wholly owned subsidiary of Manitoba Hydro. If additional sources of funding become available to support either electric or natural gas portfolio activities outlined within the Plan, it is understood that these amounts are to be used to reduce the electric or natural gas funding provided by Manitoba Hydro or Centra Gas, respectively. If additional sources of funding become available for Efficiency Manitoba activities not outlined within the Plan, it is understood that these amounts will not reduce the amount of funding provided by Manitoba Hydro or Centra Gas for the Plan.

2.3.3 EFFICIENCY MANITOBA REGULATION

The Regulation, registered in 2019, prescribes specific requirements to be addressed within the Plan and serves to further clarify and expand on the Act. The Regulation also prescribes the scope of PUB review of the Plan.

The Regulation details several DSM activities that may be counted towards determination of net energy savings and provides specific direction with respect to the determination of cost-effectiveness and performing an independent assessment.

289 Other areas of focus within the Regulation include the Affordable Energy Fund and
290 the Furnace Replacement Program and associated account.

291 Table 2.3 provides a summary table cross-referencing specific sections of the
292 Regulation with the contents of the submission.

TABLE 2.3 SUMMARY OF THE EFFICIENCY MANITOBA REGULATION CROSS-REFERENCED TO CORRESPONDING SECTIONS OF THE SUBMISSION

EFFICIENCY MANITOBA REGULATION	2020/23 EFFICIENCY PLAN SUBMISSION
Section 4 Measures not considered DSM	Section 2.3.4 – Practical Application of the Regulation
Section 6 Fossil fuels other than natural gas	Section 2.3.4 – Practical Application of the Regulation
Section 7 Other powers (codes, standards and regulations)	Appendix A - Section A9.4
Section 8 When savings may be counted	Section 2.3.4 – Practical Application of the Regulation
Section 9 Savings based on fiscal year	Appendix A - Section A2.2.2
Section 10 Weather-adjusted net savings	Section 2.3.4 – Practical Application of the Regulation Appendix A - Section A2.2.2
Section 13 – Independent Assessment	Section 7.3 - Efficiency Manitoba has developed a comprehensive evaluation, measurement and verification framework and plan Attachment 5 – Evaluation Framework and Planning Report
Section 14 Use of Affordable Energy Fund	Section 2.3.3 - Efficiency Manitoba Regulation Appendix A - Section A5
Section 15(1) Furnace Replacement Program (FRP)	Section 2.3.3 - Efficiency Manitoba Regulation Section 5.4.2 Natural gas rate impacts Appendix A – Section A5

DETERMINATION OF SAVINGS

293 The Regulation outlines which of the net savings in the consumption of electrical
294 energy or natural gas are included as part of the respective savings targets
295 established by the Act. Section 8 within the Regulation requires that the savings be
296 reasonably attributable:

297 - to a DSM initiative undertaken by Efficiency Manitoba or on its behalf;

- incremental savings resulting from a DSM initiative undertaken by Manitoba Hydro if the initiative is included in an approved plan or if Efficiency Manitoba provides operational support to continue with an initiative;
- a code, standard, or regulation to which a material contribution has been made by Efficiency Manitoba or Manitoba Hydro; or
- to an electric or natural gas rate to which Efficiency Manitoba has made a material contribution.

Electrical energy savings resulting from electric demand savings initiatives are outside the scope of the Plan as prescribed in Section 5 of the Regulation. Natural gas savings resulting from fossil fuel saving initiatives are outside the scope of the Plan as prescribed in Section 6 of the Regulation.

AFFORDABLE ENERGY FUND

The Affordable Energy Fund was established through the Winter Heating Cost Control Act, S.M. 2006, c.5. The purpose of the fund was to encourage energy efficiency and conservation for electricity and natural gas. The scope of the Affordable Energy Fund expanded with The Energy Savings Act, S.M. 2012, c. 26. As prescribed in Section 14 of the Regulation, Efficiency Manitoba must use the Affordable Energy Fund to undertake initiatives to encourage and realize efficiency improvements and conservation in the use of home heating fuels other than electrical energy or natural gas, and not for any other purpose.

FURNACE REPLACEMENT PROGRAM

The Furnace Replacement Program was established in accordance with Board Order 99/07 of the PUB to Centra Gas to assist with furnace replacement for income

qualified customers and qualified fixed income seniors. Through a recent assessment, it was determined that the balance currently in the fund is sufficient to cover remaining furnace replacements and/or conversions and that additional funding from customers through rates was projected to no longer be required. The amount accumulated in the Furnace Replacement Program account as of Efficiency Manitoba's commencement date is to be used to offset the cost of the natural gas DSM initiatives set out in an approved efficiency plan. Section 15(3) of the Regulation does not limit the PUB's jurisdiction to determine how the residual amount is to be allocated between Centra Gas's customer classes. The Furnace Replacement Program utilizing these residual funds is continued within the Plan and is included within the natural gas portfolio budget.

2.3.4 PRACTICAL APPLICATION OF THE REGULATION

Similar to the Act, Efficiency Manitoba was required to operationalize several sections within the Regulation. The following provides a summary of this practical application of the Regulation within the Plan:

FUEL SWITCHING

With respect to fuel switching, the following are aligned with both the Act and accompanying Regulation and are therefore included in the Plan:

- conversion of a heating source from natural gas to electric as this would lead to a decrease in GHG emissions;
- conversion of a heating source from natural gas or electric to a biomass source as there would be either a decrease in GHG emissions (natural gas) or a negligible change in GHG emissions (electric); and

- conversion of an electric supply from grid electricity to another renewable energy source of distributed generation such as solar, bioenergy, or waste products as there would be a negligible change in GHG emissions.

With respect to fuel switching, the following are not aligned with both the Act and accompanying Regulation and therefore, not included in the Plan:

- conversion of a fuel oil heating system to natural gas or propane as this would result in a conversion from one fossil fuel to another;
- conversion of an electric heating system to natural gas as there would be a resulting increase in GHG emissions; and
- conversion of an electric supply from grid electricity to a distributed fossil-fuel based energy generation, such as a natural gas fired combined heat and power system, as there would be a resulting increase in GHG emissions.

DEMAND FOR ELECTRICAL POWER

Should Manitoba Hydro request Efficiency Manitoba undertake specific DSM initiatives related to the reduction of electric demand during any of the three Plan years, as prescribed, these initiatives will not be included within the Plan or future efficiency plans. An example of this would include an electric load-shifting program where customers were to be provided an incentive to reduce their electric demand during specific hours of the day. Such a program may or may not reduce overall energy consumption of this customer and may only shift consumption from daytime to nighttime hours. However, should an electric demand saving initiative also result in electrical energy savings, the resultant net savings will be included as per Section 8(2) of the Regulation.

FOSSIL FUEL SAVINGS

Except as covered through the Affordable Energy Fund, the Plan or future efficiency plans will not include DSM initiatives for fossil fuels other than natural gas. Should Efficiency Manitoba obtain an additional funding source during any of the three Plan years and implement non-natural gas fossil fuel DSM initiatives, Efficiency Manitoba will count the resulting net fossil fuel savings towards the achievement of the natural gas savings target as per Section 8(3) of the Regulation.

CLARIFICATION OF INCOME QUALIFIED, LOW INCOME OR HARD-TO-REACH CUSTOMERS

The term "income qualified" customers is defined within the Plan as customers who meet the Low Income Cut-Offs[5] ("LICO"), as estimated by Statistics Canada, for urban centres with more than 500,000 residents. An additional 25 percent is added to the LICO qualifier (the "LICO 125 threshold") to increase the number of Manitoba customers who are eligible for the income qualified offers.

The term "hard-to-reach" customers includes both income qualified customers and Indigenous customers as both segments face unique barriers to implementing energy efficiency opportunities. *Appendix A – Section A5 and A6* provides detailed customer segment descriptions and programming information for these customer segments.

COST-EFFECTIVENESS TESTS

The cost-effectiveness tests are the standard[6] Program Administrator Cost Tests ("PACT"), which capture the prescribed levelized cost comparisons. There are three

[5] https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110024101

[6] https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/CPUC_STANDARD_PRACTICE_MANUAL.pdf

formats of the PACT including PACT ratio, net present value, and levelized cost which are all used within the Plan. *Section 5* discusses the PACT and includes the cost-effectiveness test results for the electric and natural gas portfolios.

AFFORDABLE ENERGY FUND

DSM initiatives identified under Income Qualified, Indigenous, or Home Renovation Programs that result in either:

- the conversion of a home heating system from propane or fuel-oil to electric; or
- the installation of measures which reduce the consumption of home heating propane or fuel-oil;

will be allocated to the Affordable Energy Fund.

FURNACE REPLACEMENT PROGRAM ACCOUNT

The natural gas portfolio budget provided within the Plan may be offset by the funds available through the Furnace Replacement Program account as per Section 15(2)(b) of the Regulation. For the purposes of the Plan, only those budgeted costs directly related to the Furnace Replacement Program would be offset by these funds available.

2.4 THE PLAN ADDRESSES THE SPECIFIED FACTORS ASSOCIATED WITH THE REGULATORY REVIEW

Section 17 of the Act discusses the PUB's role as it relates to the review, report and recommendations associated with the Plan. As identified within this section, the Act and the Regulation provide specific reference to the PUB's review of the Plan.

2.4.1 THE EFFICIENCY MANITOBA ACT

In order to facilitate the review of the Plan, Table 2.4 is provided to cross-reference the specific sections of the Act with the contents of the Plan related specifically to regulatory review. The subsequent sections provide further summary of the Regulation specifically pertaining to the review of the Plan.

TABLE 2.4 SUMMARY OF THE EFFICIENCY MANITOBA ACT REGULATORY REVIEW REQUIREMENTS CROSS-REFERENCED TO CORRESPONDING SECTIONS OF THE SUBMISSION

EFFICIENCY MANITOBA ACT	2020/23 EFFICIENCY PLAN SUBMISSION
Section 11(4)(a) PUB considerations – net savings	Appendix A - Section A2.2
Section 11(4)(b) PUB considerations – benefits and cost-effectiveness of the initiatives	Section 5 – The Plan Achieves Savings Targets and is Cost-Effective on a Long-term Basis with low Near-Term Rate Impacts Section 6.3 - The Plan provides significant social, economic and environmental benefits to Manitobans Appendix A - Section A3.3 Appendix A - Section A4 through A8
Section 11(4)(c) PUB considerations – accessibility of initiatives	Section 3.2 - Customer focused programming Section 6.1 -The design of the Plan provides for an inclusive and diverse efficiency portfolio that considers all customer segments Appendix A - Section A3.3 Appendix A - Section A4 through A8
Section 11(4)(d) PUB considerations – additional factors prescribed	Section 2.4.2 – Efficiency Manitoba Regulation

2.4.2 EFFICIENCY MANITOBA REGULATION

Table 2.5 is provided as a reference between the specific sections of the Regulation and the contents of the Plan related to regulatory review. Section 11(a) through (l) of the Regulation identifies these specific considerations of review covering topics such as:

- screening methodologies used;

- customer representation;
- cost-effectiveness;
- budget;
- rate and customer bill impacts; and
- new and emerging technologies.

TABLE 2.5 SUMMARY OF THE EFFICIENCY MANITOBA REGULATION REGULATORY REVIEW REQUIREMENTS CROSS-REFERENCED TO CORRESPONDING SECTIONS OF THE SUBMISSION

EFFICIENCY MANITOBA REGULATION	2020/23 EFFICIENCY PLAN SUBMISSION
Section 11(a) Methodologies	Appendix A - Section A2
Section 11(b) All customer groups	Section 3.2 - Customer focused programming Section 6.1 -The design of the Plan provides for an inclusive and diverse efficiency portfolio that considers all customer segments Appendix A - Section A3 through A8
Section 11(c) Low Income/Hard to Reach customers	Section 2.3.4 – Practical application of the Regulation Section 6.2 - Programming for hard-to-reach customer segments represents 6% of the electric efficiency budget and 32% of the natural gas efficiency budget Appendix A - Section A3 Appendix A - Section A5 Appendix A - Section A6
Section 11(d) Portfolio cost-effectiveness	Section 5.1 - Efficiency Manitoba uses the program administrator cost test to measure the cost-effectiveness of the plan as prescribed in regulation
Section 11(e) Excess initiatives & cost-effectiveness	Not applicable for 2020/23 Efficiency Plan
Section 11(f) Reasonability of administration budget	Section 4.4 - Portfolio Budget Analysis Section 4.5 - Benchmarking demonstrates that Efficiency Manitoba's cost structure is reasonable
Section 11(g) Impact on rates and customer bills	Section 5.3 - Efficiency Manitoba uses the lifecycle revenue impact metric as a simplified indicator of the rate impacts of the Plan
Section 11(h) Reasonability of meeting annual and 15-year savings targets	Section 3.3.1 - Energy Savings, Investment & Cost-Effectiveness
Section 11(i) Use of private-sector enterprises	Section 4.2 - The Plan will provide 86% of the budget to Manitobans and the private sector Section 6.3.2 - Economic Benefits Appendix A - Section A4 through A8

EFFICIENCY MANITOBA REGULATION	2020/23 EFFICIENCY PLAN SUBMISSION
Section 11(j) New & emerging technologies	Section 4.4.2 - Programming budget Appendix A - Section A8 Appendix A - Section A9.3
Section 11(k) Internal performance assessment	Not applicable for 2020/23 Efficiency Plan
Section 11(l) Compliance with Minister	Section 2.2.1 - Mandate and framework letter Section 4 – Efficiency Manitoba has designed a Plan budget that maximizes benefits for Manitobans Section 5 – The Plan Achieves Savings Targets and is Cost-Effective on a Long-term Basis with low Near-Term Rate Impacts
Section 12(1) and (2) Determining cost-effectiveness	Section 5.1 - Efficiency Manitoba uses the program administrator cost test to measure the cost-effectiveness of the plan as prescribed in regulation Appendix A - Section A2.3 Appendix A - Section A3.3 Appendix A - Section A4 through A8
Section 12(3) Cost effectiveness of excess Initiatives	Not applicable for 2020/23 Efficiency Plan

SECTION 3
THE PLAN ACHIEVES THE SAVINGS TARGETS THROUGH A NEW APPROACH TO CUSTOMER SEGMENT PROGRAMMING & COMPREHENSIVE ENGAGEMENT

2020/23 EFFICIENCY PLAN

ACHIEVING THE ENERGY SAVINGS TARGETS
CUSTOMER FOCUSED PROGRAMMING
COMPREHENSIVE ENGAGEMENT

EFFICIENCY MANITOBA

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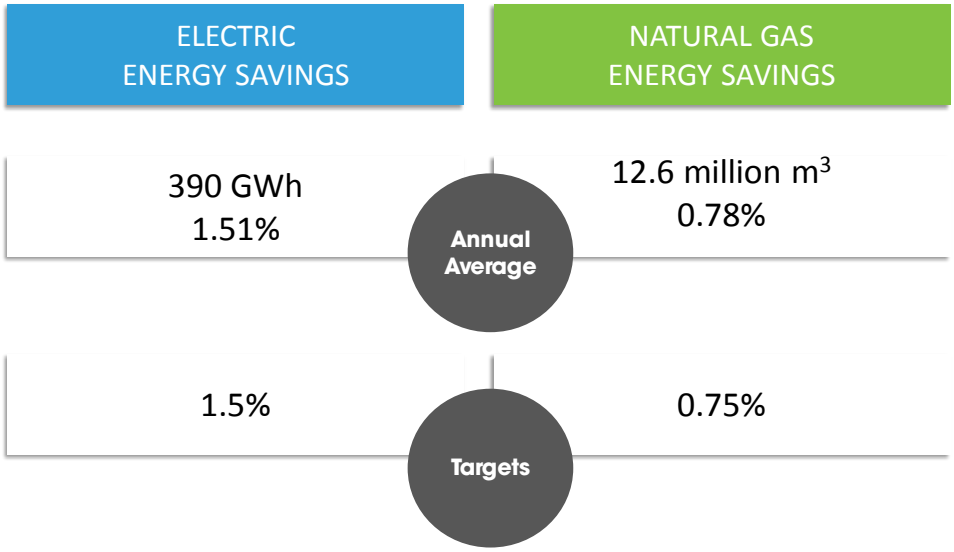
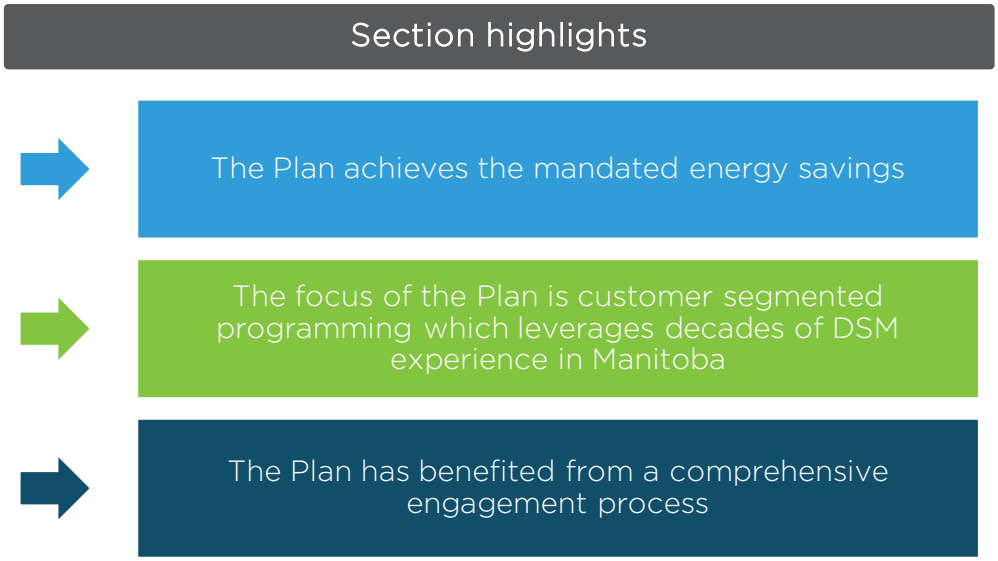


The 2020/23 Efficiency Plan (the "Plan") serves as the foundation for Efficiency Manitoba's near-term goals as they relate to cost-effectively achieving mandated energy savings targets, while benefitting all Manitobans from an economic, social, and environmental perspective. The Plan outlines programs, offers, and initiatives that will be available during a three-year period beginning April 1, 2020.

This section of the Plan provides a summary of customer programming and engagement, and provides overall savings, budget, and cost-effectiveness results.



3.1 ACHIEVING THE MANDATED ENERGY SAVINGS

This section provides an overall summary of the energy savings for the electric and natural gas portfolios. Efficiency Manitoba demonstrates that the electric and natural gas savings targets have been achieved through the portfolio of demand-side management (DSM) initiatives detailed throughout the Plan.

Table 3.1 shows the annual electric energy savings in gigawatt-hours (GWh) and as a percentage of the electric load. Overall, first year electric energy savings are below the savings target in the Act. However, this shortfall is overcome within years two and three of the Plan such that the average annual electric energy savings over the course of the three Plan years is 1.51 percent, accomplishing the mandated electric savings target. By achieving the mandated electric energy savings over the three years considered in the Plan, Efficiency Manitoba has demonstrated commitment to achieving the cumulative 15-year electric energy savings outlined in the Act. The savings trajectory proposed eliminates the cost-effectiveness risk of having to increase spending in future years to counter any early shortfalls. Also shown in Table

3.1 are the annual electric capacity savings resulting from the electric portfolio. *Appendix A – Section A2* provides the methodology with respect to determination of the electric energy savings targets.

TABLE 3.1 2020/23 EFFICIENCY PLAN SUMMARY – ELECTRIC PORTFOLIO SAVINGS

	2020/21	2021/22	2022/23	Average
Annual electric savings (GWh)	373	403	403	393
Savings as a percent of electric load	1.43%	1.55%	1.56%	1.51%
Annual capacity savings (MW)	85	93	93	90

Note. Electric energy and capacity savings determined at generation.

Table 3.2 shows the annual natural gas energy savings in millions of cubic meters (million m^3) and as a percentage of natural gas volume consumption. Overall, the first-year natural gas energy savings are below the savings target in the Act. This first-year shortfall is overcome within subsequent years of the Plan. The average annual natural gas energy savings over the course of the three Plan years is 0.78 percent based on the 2017/18 actual Manitoba Hydro natural gas consumption, accomplishing the mandated natural gas savings target. As with the electric portfolio, Efficiency Manitoba has taken responsibility for setting an initial trajectory that will ultimately achieve the cumulative 15-year natural gas energy savings outlined in the Act. This proposed path provides near-term clarity of all costs required to maintain this initial path while not deferring responsibility and risk to future years to counter any early shortfalls. Also shown in Table 3.2 are the annual greenhouse gas (GHG) emission reductions resulting from the natural gas portfolio. These were determined using the Manitoba Hydro natural gas GHG emission factor[1] of 0.0019 tonnes CO_2e/m^3 for the

[1] https://www.hydro.mb.ca/environment/pdf/ghg-emission-factors.pdf

industrial, commercial, and residential combustion of natural gas. *Appendix A – Section A2* provides the methodology employed with respect to determination of the natural gas energy savings targets and the treatment of interactive effects from the electric portfolio.

TABLE 3.2 2020/23 EFFICIENCY PLAN – NATURAL GAS PORTFOLIO SAVINGS

	2020/21	2021/22	2022/23	Average
Annual natural gas savings (million m^3)	11.7	12.8	13.2	12.6
Savings as a percent of natural gas volume	0.72%	0.79%	0.82%	0.78%
GHG savings (tonnes CO_2e)	22,200	24,200	25,200	23,900

Note. Annual natural gas savings account for electric programming interactive effects.

3.2 CUSTOMER FOCUSED PROGRAMMING

To achieve the mandated energy savings targets, Efficiency Manitoba was able to leverage decades of respected DSM experience in Manitoba while setting the foundation for new focused customer segment approaches, processes, and programming.

3.2.1 CUSTOMER SEGMENT APPROACH

Efficiency Manitoba has targeted residential, residential income qualified, Indigenous, and commercial, industrial and agricultural customer segments. Separating income qualified and Indigenous customers as overall distinct segments emphasizes the strategic importance and unique characteristics of these customers. Efficiency Manitoba has also added the agricultural segment as many programs to assist this segment leverage the programs offered to commercial and industrial customers. These groupings help customers within these segments better recognize potential common opportunities. Efficiency Manitoba identifies the customer segments as follows:

- **Residential:** This segment represents homeowners and tenants living in single family homes (single-detached), multifamily (multi-attached) homes, and apartments.
- **Income qualified:** Residential lower income customers can often be hard-to-reach due to a variety of demographic, cultural, social, and economic factors. They often have a higher and disproportionate energy burden, where a larger proportion of their income is allocated towards their energy bills compared to other households. This segment includes customers that have limited access to information, language barriers, or who do not have the social or economic means to make energy-efficient upgrades to their homes.
- **Indigenous:** This segment includes Canada's Indigenous peoples, recognized as First Nations, Metis, and Inuit[2]. Acknowledging that Manitoba's Indigenous population is largely First Nation and Metis, Efficiency Manitoba has identified the need to reach a larger Indigenous market. This segment may have similarities to other residential or hard-to-reach customers, but, in the case of First Nations specifically, an additional layer of complexity can exist due to geography, homeownership structure, and availability of resources.
- **Commercial, industrial, and agricultural:** These three customer segments have been grouped together in the Plan in order to improve transparency, efficiency, and market reach.

[2] https://www.rcaanc-cirnac.gc.ca/eng/1100100013785/1529102490303

- Commercial: This segment represents a wide range of commercial buildings including small businesses, municipal buildings, universities, schools, hospitals, multi-unit residential buildings, office buildings, retail spaces, warehouses, recreational centres, restaurants, hotels, and other similar buildings.
- Industrial: This segment represents businesses that produce goods within Manitoba and range from small manufacturing facilities that serve local customers to large multi-national industrial processing facilities that compete globally. This market includes industrial customers in the mining, food and beverage producers, pulp/paper, chemicals, oil, primary metals, and other manufacturing sectors.
- Agricultural: This segment represents primary agricultural producers located throughout Manitoba. Included within this segment are livestock farming operations such as hog and poultry as well as crop farming operations such as, grains and potatoes.

Within the Plan, a DSM program or initiative refers to a single specific energy-efficient technology or measure that will be offered to Efficiency Manitoba customers. A "program bundle" is a grouping of individual DSM initiatives while the term "portfolio" refers to either the entire electric or natural gas programming which including all customer segment program bundles for each of the respective energy sources.

3.2.2 PLAN DEVELOPMENT PROCESS

Efficiency Manitoba was able to leverage research that had already been contracted by Manitoba Hydro in 2017[3] by reviewing and incorporating recommendations contained within the resulting Manitoba Hydro DSM Optimization report related to the various strategies that could be used to achieve greater electric and natural gas energy savings. The report recognized that an existing robust portfolio of programs would be important to set Efficiency Manitoba up for success in meeting the savings targets outlined by the Act, but identified both near- and mid-term strategies that could be considered based on the programs being offered by Manitoba Hydro in the 2016/17 fiscal period.

When looking to achieve the mandated savings targets, Efficiency Manitoba started with an analysis of existing individual technologies and program bundles. Portfolio design decisions were based on measure or technology savings, program cost, cost effectiveness, the impact of codes & standards, and any interactive effects. This process yielded the selection of individual technologies, adjustments to planned incentive levels, or revised targeted participation levels. *Appendix A – Section A2.3.4* provides additional details of the approach taken with respect to the development of the electric and natural gas energy efficiency program savings and costs.

Paramount to achieving the longer-term cumulative energy savings identified in the Act, Efficiency Manitoba included budget for enabling strategies to ensure long-term success at Efficiency Manitoba for the benefit of Manitobans. The enabling strategies include customer support activities such as assisting to identify energy savings

[3] *Optimizing Power Smart: Options to Achieve Manitoba's New Energy Savings Targets,* 2017, Dunsky Energy Consulting.

opportunities for industrial customers; innovation/research and development funds; and work related to the development of national or provincial energy codes, standards and regulations. A summary of these activities is provided in Section 3.2.9 while the investment in these activities is presented in *Section 4*.

3.2.3 PROGRAMMING

The Plan includes continuation and augmentation of existing energy efficiency programs and initiatives. This enables a smooth customer transition to Efficiency Manitoba programming and serves as a foundation while ensuring continuity with program delivery installers, contractors, and service providers who have built their businesses around supporting energy efficiency services in Manitoba. In order to achieve the savings targets, enhancements to existing DSM programs in Manitoba as well as new programs, offers, and initiatives are included in the Plan. Overall, the portfolio is robust and comprehensive and offers a multitude of energy efficiency technologies and measures to Manitobans. The Plan demonstrates both the breadth and diversity of programming available to customer segments that will be available throughout the three years starting April 1, 2020.

Both electric and natural gas programming in the Plan have been organized into program bundles which was one of the opportunities in the category of "enhanced marketing efforts" identified in the Manitoba Hydro DSM optimization report. Instead of offering separate and independent energy conservation programs and initiatives, Efficiency Manitoba has organized programs and initiatives by shared features and grouped these together under comparable delivery models. These bundles will help streamline internal processes by reducing the number of unique customer

applications that will require creation, managing, and tracking. Program participation from the customer perspective was a priority in the streamlining processes. By creating program bundles, Efficiency Manitoba aims to reduce the amount of paperwork and documentation required for participation which will create an easy, efficient, and more enjoyable customer experience. A summary of the customer bundles is provided in the portfolio summary found in the following *Sections 3.2.4 through 3.2.8.*

3.2.4 RESIDENTIAL PROGRAM SUMMARY

Table 3.3 provides a summary of the programs, initiatives, and offers in the residential sector. These offers are designed to increase awareness of energy-efficient technologies and practices and provide customers with rebates, incentives, and information to encourage them to make their homes more energy efficient. Details with respect to the savings, investment, program specific cost effectiveness, projected participation, technologies, marketing approach, implementation, and non-energy benefits are found in *Appendix A – Section A4*.

TABLE 3.3 2020/23 EFFICIENCY PLAN SUMMARY – RESIDENTIAL PROGRAM BUNDLES

PROGRAM BUNDLE	SUMMARY
DIRECT INSTALL OFFERS	A full-service offer for homeowners through a basic check-up of their home. Customers can choose to take the next step towards a more energy efficient home through a direct install option and rebates/incentives on eligible products.
PRODUCT REBATE OFFERS	Includes instant and online retail rebates on a variety of energy-saving products. Also includes the Appliance Recycling Program, which allows customers to recycle their old, working, and inefficient refrigerators, freezers, dehumidifiers, or window air conditioners in an environmentally responsible manner.
HOME RENOVATION OFFERS	Offers rebates on a variety of energy-saving measures and technologies such as insulation, windows, heat recovery ventilator (HRV) controls, and geothermal systems. Access to financing options through the Home Energy Efficiency Loan is also included.

PROGRAM BUNDLE	SUMMARY
NEW HOMES & MAJOR RENOVATION OFFERS	The New Homes Program offers design assistance in the form of energy modelling and one-on-one consultation with a certified energy advisor, coupled with financial incentives. The Major Renovation Program provides incentives to residential customers for major renovation projects that improve the energy efficiency of their home.
HOME ENERGY EFFICIENCY KITS & EDUCATION	Encourages customers to reduce their energy consumption by providing homeowners with basic home energy efficiency kits and educational resources. This initiative educates students by providing kits and resources at community events and in schools.

3.2.5 RESIDENTIAL INCOME QUALIFIED OFFERS

Efficiency Manitoba's Income Qualified Offers include the following products and services for customers who fall below qualifying income thresholds:

- a Home Energy Check-Up;
- installation of free basic energy saving and water saving devices;
- air sealing measures;
- insulation upgrades;
- a natural gas furnace or boiler upgrade (Furnace Replacement Program);
- a front load clothes washer (when qualifying home occupancy criteria are satisfied);
- a smart thermostat; and
- guidance and support to facilitate installation of qualifying measures and implementation of energy efficiency upgrades.

Residential Income Qualified Offer details with respect to savings, investment, cost effectiveness, projected participation, technologies, marketing approach, implementation, and non-energy benefits are found in *Appendix A – Section A5*.

3.2.6 INDIGENOUS PROGRAMS

Efficiency Manitoba will work with First Nation and Métis partners to approach energy efficiency and conservation in a manner which is fair, collaborative, and contributes to the energy efficiency goals to the benefit of all parties. Table 3.4 provides a summary of the programs, initiatives, and offers in the Indigenous customer sector which are designed to alleviate the barriers to participation. Details with respect to the savings, investment, cost effectiveness, projected participation, technologies, marketing approach, implementation, and non-energy benefits are found in *Appendix A – Section A6*.

TABLE 3.4 2020/23 EFFICIENCY PLAN SUMMARY – INDIGENOUS PROGRAM BUNDLES

PROGRAM BUNDLES	SUMMARY
INSULATION & DIRECT INSTALL OFFERS	Involves partnering with the 63 First Nations to identify on-reserve housing with high energy use and collaborating to reduce energy consumption. Two different participation paths are offered: insulation, and the direct install of small energy-saving items. Includes establishment of a dedicated First Nation energy advisor.
METIS INCOME QUALIFIED OFFERS	Includes all the residential income qualified offers but aims to partner with the Manitoba Metis Federation to administer, deliver and identify a network of Metis contractors to facilitate the upgrades.
SMALL BUSINESS OFFERS	Offered to First Nation on-reserve buildings and Métis businesses. Eligible small businesses receive free and easy-to-install devices, (such as faucet aerators and basic lighting measures), a lighting assessment, and an incentive on qualifying lighting retrofits identified in the assessment.
COMMUNITY GEOTHERMAL OFFER	A program to upgrade First Nations homes from electric furnaces to geothermal heat pumps. Includes training community members on how to install and maintain geothermal heat pump systems. The objective of this program is to attain energy savings while contributing to and supporting economic development in Indigenous communities through work with Indigenous Social Enterprises.

3.2.7 COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS

Offers in the commercial, industrial, and agricultural sectors are designed to increase awareness of energy-efficient technologies and practices, and to provide customers with information and incentives to encourage facilities and operations to become more energy efficient. Table 3.5 provides a summary of the programs, initiatives, and

offers in this customer sector. Details of savings, investment, cost effectiveness, projected participation, technologies, marketing approach, implementation, and non-energy benefits are found in *Appendix A – Section A7*.

TABLE 3.5 2020/23 EFFICIENCY PLAN SUMMARY – COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAM BUNDLES

PROGRAM BUNDLES	SUMMARY
SMALL BUSINESS OFFERS	Includes incentives to promote the use of energy-efficient commercial kitchen appliances and energy-efficient commercial refrigeration equipment. Promotes energy efficiency in businesses less than 10,000 square feet in size such as restaurants, convenience stores, small offices, salons, and garages. It offers energy-efficient products including water- and energy-saving devices, lighting, and smart thermostats.
IN-SUITE EFFICIENCY	Provides a full-service direct installation of energy-efficient devices for multi-unit residential buildings including apartments, townhouses, and condominiums.
RENOVATION OFFERS	Includes lighting technologies and controls as well as building envelope technologies. Provides financial incentives and technical assistance for customers within this segment to influence the adoption of energy-efficient technologies and practices by reducing the incremental cost of renovations.
HVAC & CONTROLS OFFERS	Provides incentives to influence the adoption of higher efficiency heating, cooling, and ventilation (HVAC) equipment in various commercial, industrial, and agricultural retrofit applications.
NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDINGS OFFERS	The various programs, incentives, and initiatives provided within this category take a whole-building approach that encourages energy efficiency in commercial, large multi-unit residential and industrial facilities. Provides technical support for each participant from the initial application stage through to project completion. Offers within this bundle include the New Buildings Program, Enhanced Building Operations Program, Manitoba Race to Reduce, energy scoping audits, and deep energy retrofits.
CUSTOM OFFERS	Provides technical support and financial incentives for feasibility studies and energy management initiatives and supports the purchase and installation of numerous higher efficiency technologies and systems. Programs cover both typical technologies within these customer segments while accommodating the flexibility to encompass unique customer-specific technologies or projects.
LOAD DISPLACEMENT OFFERS	Supports the development of customer-sited electric generation using readily available low-cost industrial by-product streams or biomass resources as fuel.

3.2.8 EMERGING TECHNOLOGY PROGRAMS

Emerging technology programs offer incentives across multiple market sectors. The offerings in this category currently include both the Solar Energy Program and Customer Sited Bioenergy Program. Beginning in 2022/23, Efficiency Manitoba will

provide incentives to customers who install an approved grid-connected solar photovoltaic (PV) system to an existing building or premise. For the Customer Sited Bioenergy Program, financial and technical support will be provided for installed wood pellet and wood chip heating systems to Manitoba Hydro grid-connected customers. Details on savings, investment, cost effectiveness, projected participation, technologies, marketing approach, implementation, and non-energy benefits are found in *Appendix A – Section A8*.

3.2.9 ENABLING STRATEGIES

Enabling strategies enhance programs and services offered by Efficiency Manitoba and support the strategic direction of the Plan. Included within these strategies are non-program specific engagement initiatives, research and development activities, portfolio evaluation activities, and actions to support the development of energy codes, standards, and regulations. Non-program specific engagement initiatives include:

- activities related to increasing corporate brand equity and awareness;
- the development of a customer relationship management/demand side management (CRM/DSM) system;
- building and fostering relationships with trade allies, contractors, and associations representing emerging markets for specific energy-saving opportunities that are not market-ready;
- active participation with the Energy Efficiency Advisory Group (EEAG); and
- community directed efforts such as developing energy plans and educational initiatives.

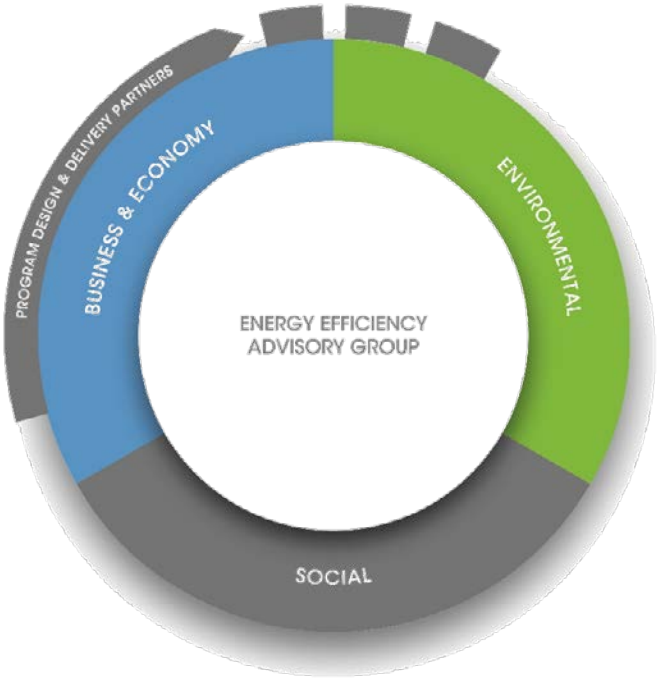
A specific research and demonstration budget has been included to support innovation, which was another specific opportunity identified in the Manitoba Hydro DSM Optimization report. This will allow Efficiency Manitoba to pursue near-term pilot projects and partnerships that will provide early market or technical support in order to reduce common barriers to emerging technologies that will be required to meet energy savings targets in future years. Efficiency Manitoba's approach to affect change in codes & standards involves being an active participant on a number of national energy efficiency building codes and energy performance standards committees. The details and descriptions with respect to the enabling strategies included in the Plan are found in *Appendix A – Section A9*.

The customer segment approach supported the design and analysis of the portfolio diversity discussed in *Section 6* and enabled the customer segment-specific analysis found in *Appendix A – Section A3*. *Appendix A – Section A2* provides further details of the approach taken with respect to these customer segments.

3.3 COMPREHENSIVE ENGAGEMENT

To ensure the Plan reflects the best interest of Manitobans, Efficiency Manitoba developed a Stakeholder Engagement Model, shown in Figure 3.1, which includes several formal and informal methods of engaging with key stakeholders that will extend beyond the Plan development process and become an avenue for continuously improving on the delivery of programs identified in the Plan as well as for identifying new opportunities and partnerships in the future.

FIGURE 3.1 EFFICIENCY MANITOBA'S STAKEHOLDER ENGAGEMENT MODEL



The Stakeholder Engagement Model will structure and guide Efficiency Manitoba's engagement activities and decisions towards the corporate strategic goal of "building and sustaining meaningful partnerships with a customer focus." The outermost ring represents program design and delivery partners, which includes suppliers, contractors, installers, and service providers – essentially, the businesses that are directly responsible for delivering energy efficient products and services into homes, commercial operations, and industrial businesses. It will be critical to engage these partners for program design decisions including incentive structures and implementation strategies. For example, in determining the appropriate program design to increase the market penetration of drain water heat recovery systems in residential homes, Efficiency Manitoba will work closely with contractors in order to understand common customer barriers and leverage the existing practices. The

middle ring represents the engagement and partnerships that will be formed with customer and industry associations and social enterprises to assist in outreach for Efficiency Manitoba offerings, as well as to get direct feedback on types of services to offer or to identify potential additional funding sources. Examples of these partners include but are not limited to the following (additional examples are provided in *Appendix A – Section A2.1.4*):

- Business and economy: Winnipeg Chamber of Commerce, Manitoba Chambers of Commerce, Building Operators and Managers Association (BOMA), and the Economic Developers Association of Manitoba.
- Environmental: Canada Green Building Council (Manitoba Chapter), Centre for Indigenous and Environmental Resources (CIER), Sustainable Building Manitoba, Manitoba Sustainable Energy Association (ManSEA), and Manitoba Environmental Industries Association (MEIA).
- Social: BUILD Inc, Habitat for Humanity, Manitoba Non-Profit Housing Association, Manitoba Housing and Renewal Corporation, and Aki Energy.

The centre of the circle represents the EEAG which is discussed further in *Section 3.3.1*.

By developing and implementing the Stakeholder Engagement Model and integrating into operations, Efficiency Manitoba will continue to build strong and lasting relationships with organizations, government, community groups, industry, and experts. The immediate engagement strategy that served to inform specifically the Plan development included:

- the formation of the EEAG;

- the development of a stakeholder engagement survey; and
- engagement through program delivery activities with contractors, vendors, retailers, customers, and associations.

The EEAG provided invaluable insight and perspectives on Efficiency Manitoba's strategies to compile and balance actions, while also meeting the mandated savings targets in a cost-effective manner.

The Plan has benefited from these engagement activities. The following provides a summary of the outcomes and impacts reflected within the Plan resulting from direct feedback provided by a variety of stakeholders.

CONTINUITY OF PROGRAMS

A common theme received was the importance of ensuring continuity of DSM services, programming, and technical support. In response, Efficiency Manitoba has leveraged the decades of respected DSM experience in Manitoba through enhancements to existing offers in addition to offering completely new programs. Further, Efficiency Manitoba has planned to continue to include technical support as a key component of program delivery, particularly in the commercial, industrial, and agricultural customer segment.

STREAMLINED APPLICATION PROCESSES

Efficiency Manitoba understands that straightforward online program applications are desired by customers and third-party vendors and contractors delivering Efficiency Manitoba programs. The CRM/DSM system intends to streamline customer and contractor interactions while the program bundling approach will result in fewer customer applications for similar energy-efficient technologies.

NEW PROGRAM REQUESTS

When asked which initiatives or technologies stakeholders would like to see Efficiency Manitoba support, the top three areas included solar PV, windows, and additional areas for insulation. The Emerging Technology Program beginning in 2022/23 will include a residential and commercial solar PV program. Within the Home Renovation Offer, Efficiency Manitoba will be offering rebates for building envelope improvements inclusive of insulation upgrades (attic, wall, foundation), windows, doors, and air sealing with incentives for the latter three being new offerings. Efficiency Manitoba will also introduce a new Residential Major Renovation Offer, which allows for a performance-based incentive for qualifying projects.

CUSTOMER FOCUSED APPROACH

The residential, income qualified, Indigenous, commercial, industrial, and agricultural customer segments are all unique. Engagement with representatives through the EEAG from within these customer segments highlighted the importance of tailoring program design, delivery, implementation, and program supporting activities to successfully reach the targeted program participants and to achieve the resulting energy savings in the most cost-effective manner. Reflected within the Plan are the resulting planned actions such as:

- customized promotional and informational materials developed throughout the three plan years for municipally owned buildings;
- partnering with the Provincial government's Economic Development Office and other economic development agencies within Manitoba to encourage new business or facility expansions within the commercial, industrial, and

agricultural customer segment with the ancillary benefit of capturing larger low acquisition cost energy savings outcomes resulting from this development;

- developing specific educational materials and offering presentations targeting new immigrants to Canada that may be eligible for Income Qualifying Offers;
- developing the new Indigenous Small Business Program to First Nation communities through direct communication to the First Nation and in coordination with other Indigenous organizations such as Southern Chiefs Organization, Manitoba Keewatinowi Okimakanak, Assembly of Manitoba Chiefs and the several First Nation Tribal Councils (to ensure economic development opportunities are created, the third-party service provider responsible for program delivery will work with a local Indigenous electrical contractor whenever possible); and
- developing the Metis targeted offerings including the new Indigenous Small Business Program to reach Metis small business and the new Metis Income Qualified Program. In order to learn what specific barriers may exist for the Metis Nation within Manitoba, and how to appropriately and cost-effectively address them, Efficiency Manitoba has proposed to work with the Manitoba Metis Federation to gain a better appreciation of these challenges.

3.3.1 ENERGY EFFICIENCY ADVISORY GROUP

Central to the overall Stakeholder Engagement Model is the EEAG. The EEAG worked with Efficiency Manitoba in advance of submitting the Plan to provide input and reflect opinions with respect to the composition of DSM actions and strategies. To

ensure a transparent, impartial, and thoughtful process, Efficiency Manitoba retained external services to facilitate the process. The EEAG was formed to:

- ensure the Plan reflected various customer segments, Indigenous, social, environmental, technical and economic perspectives;
- solicit advice and perspectives on the process, programs, analysis, priorities, and approaches; and
- encourage participation of Efficiency Manitoba stakeholders in the planning process.

Going forward, the EEAG will continue to meet regularly to discuss customer segment topics related to specific program delivery, achieved savings, spending, and overall evaluation. On August 20, 2019, the EEAG met to discuss feedback about Efficiency Manitoba and the steps being taken towards development of the Plan. The following provides a brief synopsis of the EEAG members that participated in development of the Plan and some of the key inputs they have provided to Efficiency Manitoba. As synopsis of member feedback and comments is provided below in alphabetical order:

ASSOCIATION OF MANITOBA MUNICIPALITIES (AMM)

- There is ongoing concern over increasing operating costs (utility rates) for municipal buildings such as recreational centers.
- Prior offers such as the Power Smart Programs for Municipal Recreational Facilities (co-developed between Manitoba Hydro and AMM) must continue.
- Efficiency Manitoba should focus on streamlining service delivery and reducing administration burden for participating customers.

- Coordination with other provincial and/or federal agencies is needed when delivering the Plan in order to leverage funding and avoid duplication.
- AMM members want one central place to apply for programs and have indicated support for the CRM/DSM project described in *Appendix A – Section A2*.

CONSUMERS' ASSOCIATION OF CANADA (CAC)

- Written comments were provided regarding content and organization of the Plan and draft portfolio related to topics such as:
    - electric and natural gas savings and cost allocation;
    - regulatory requirements, potential gaps, and the need for transparency;
    - target derivation;
    - budget delineation;
    - savings and cost-effectiveness assumptions and clarity; and
    - benefits to Manitoba Hydro.
- CAC has indicated there has been no general public consultation to help Plan development.
- Alternative DSM portfolios would better position Efficiency Manitoba to contribute towards an integrated resource planning process.
- There will be confusion about the overlap between Manitoba Hydro and Efficiency Manitoba. Customer-facing infographics, charts, and summaries are needed to achieve clarity.

EXPERT ADVISORY COUNCIL ON THE CLIMATE AND GREEN PLAN

- The Manitoba Climate and Green Plan includes Efficiency Manitoba's natural gas savings targets as contributing towards the provincial Carbon Savings Account targets.
- The working relationship, including reporting protocols, with Efficiency Manitoba will continue to be developed over the upcoming months.

GREEN ACTION CENTRE (GAC)

- Efficiency Manitoba is well-positioned to respond to the climate challenge.
- Efficiency Manitoba should lead electric vehicle market transformation in Manitoba. It is costly not to proceed with electric vehicle market transformation, as there are lost opportunities in terms of climate mitigation and the positive business case for Manitoba Hydro and provincial treasury to accelerate electrification.

INTERNATIONAL INSTITUTE OF SUSTAINABLE DEVELOPMENT (IISD)

- Efficiency Manitoba has a role with respect to the Carbon Savings Account outlined in the Manitoba Climate and Green Plan.
- Efficiency Manitoba could look to broaden climate change initiatives by diversifying funding beyond Manitoba Hydro (i.e. targeting other fossil fuels besides natural gas).

KEYSTONE AGRICULTURAL PRODUCERS (KAP)

- Continued dialogue is needed between Efficiency Manitoba and primary agricultural producers to coordinate and collaborate on areas of shared

interest including bioenergy, grain drying operations, heating, insulation, and solar PV.

- Interest in new technologies needs to be balanced with quality control.
- The biological component of the agricultural industry (animals and plants) needs to be considered. For example, the agricultural industry is moving towards larger housing for animals, so there may be new considerations about providing heat for animals on the horizon.

MANITOBA INDUSTRIAL POWER USERS' GROUP (MIPUG)

- MIPUG members are focused on rate impacts.
- Energy efficiency project implementation may be disruptive to the production-based focus of MIPUG members.
- Large industrial efficiency projects may be capital intensive.
- There may be opportunities to identify energy savings that have previously not been captured.
- Efficiency Manitoba must be able to capture per-unit energy savings (a reduction in energy intensity versus an absolute drop in energy consumption).
- Temporal and locational marginal values may present additional opportunities to both MIPUG members and Manitoba in terms of reducing operating costs. However, this could result in different customers having unique programming. How this may be addressed in a fair and equitable manner will need to be determined should refined marginal values become available.

MANITOBA KEEWATINOWI OKIMAKANAK INC. (MKO)

- Efficiency Manitoba should have programming for diesel communities.
- Efficiency Manitoba should play a role in the long-term provincial energy strategy.
- Jurisdiction and historical exclusion are always issues. Efficiency Manitoba needs to invest in meaningful engagement with First Nations and consider the social impact and financial accessibility of any program.
- MKO expressed concern that due to the lower percentage of overall savings, First Nation contribution may be lost in future assessments.
- A significant amount of hydroelectric energy is generated in MKO territory. Because of the sacrifice the land is making, which is directly tied to way of life and now impacted irreversibly, Efficiency Manitoba should consider special rates to on-reserve peoples.

SOUTHERN CHIEFS ORGANIZATION (SCO)

- The facilitation and tone of the EEAG meetings has been excellent.
- We need to facilitate an exchange to help communities understand what is available and to help Efficiency Manitoba understand what communities need.
- There will continue to be questions about consultation and roles coming from First Nations' rights holders.

The terms of reference of the EEAG is available in *Attachment 2 – Energy Efficiency Advisory Group Reporting* as are the meeting reports from each of the six meetings conducted in advance of this Plan.

Efficiency Manitoba looks forward to continuously working with this group to address the longer-term interests or concerns by members. Examples may include coordination between provincial and/or federal agencies, input into the development of a future Manitoba Energy Strategy, and support for additional fossil fuel reduction programs including electric vehicles and fossil fuel use in commercial, industrial, or agricultural customer sectors.

3.3.2 OTHER STAKEHOLDER ENGAGEMENT ACTIVITIES

STAKEHOLDER ENGAGEMENT SURVEY

Efficiency Manitoba surveyed stakeholders of Manitoba Hydro's energy efficiency programs to gain feedback on the programs and services offered as well as to generate ideas for future programming. The information received from the respondents was used to formulate the offerings and enhancements described throughout the Plan. In total, 2,500 contractors, suppliers, vendors, consultants, engineering firms, architectural firms, government departments, and associations were contacted.

STAKEHOLDER ENGAGEMENT SUMMARY

Manitoba Hydro staff at the request of Efficiency Manitoba documented the many facets of public engagement with various stakeholders throughout spring of 2019. Discussions about existing programming offered by Manitoba Hydro took place and were tracked, as well as detailed conversations and research related to possible program enhancements and new opportunities. This summary of stakeholder engagement and ongoing future engagement will help Efficiency Manitoba to

continuously improve its offerings through this and successive three-year plans. Examples of the engagement activities that took place include:

- in-person meetings, phone conversations;
- "lunch and learns";
- association meetings;
- site visits;
- presentations; and
- webinars.

CONTINUED ENGAGEMENT

In accordance with organizational guiding principles and the Stakeholder Engagement Model, Efficiency Manitoba will continue to seek stakeholder engagement that is open and transparent. Efficiency Manitoba executives will continue to meet regularly with the EEAG to discuss customer segment topics related to specific program delivery, achieved savings, spending, and overall evaluation.

SECTION 4
EFFICIENCY MANITOBA HAS DESIGNED A PLAN BUDGET THAT MAXIMIZES BENEFITS FOR MANITOBANS & THE MANITOBA ECONOMY

2020/23 EFFICIENCY PLAN

CUSTOMER INCENTIVES

PROGRAMMING COSTS

CORPORATE OVERHEAD

BENCHMARKING

EFFICIENCY MANITOBA

CONTENTS

FIGURES

TABLES

SECTION 4 – EFFICIENCY MANITOBA HAS DESIGNED A PLAN BUDGET THAT MAXIMIZES BENEFITS FOR MANITOBANS & THE MANITOBA ECONOMY

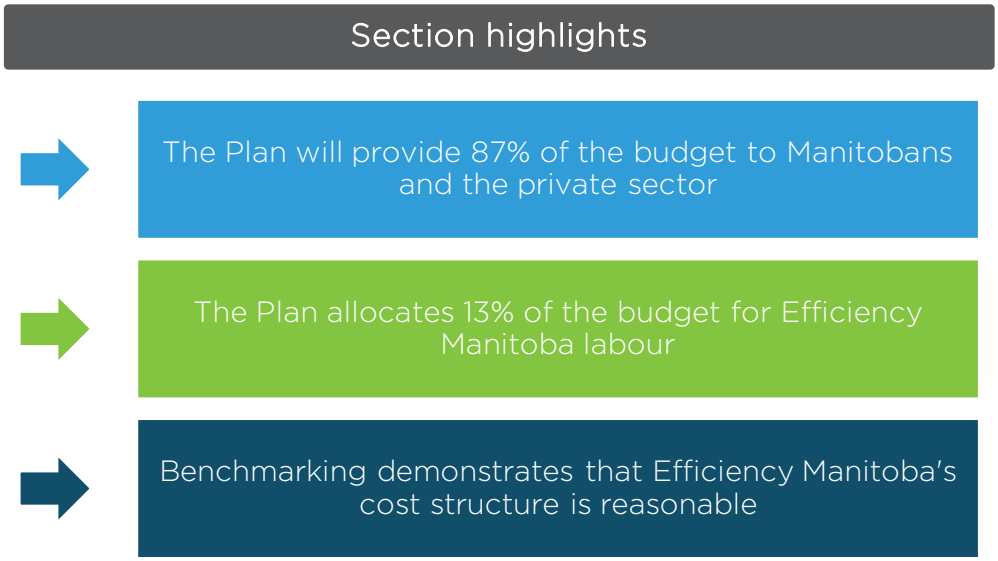
AVERAGE ELECTRIC PORTFOLIO BUDGET		AVERAGE NATURAL GAS PORTFOLIO BUDGET
$31,158,000 (64%)	CUSTOMER INCENTIVES	$14,089,000 (67%)
$9,876,000 (20%)	PROGRAM COSTS	$3,889,000 (19%)
$6,738,000 (14%)	STAFF COSTS	$2,637,000 (13%)
$1,121,000 (2%)	OVERHEAD COSTS	$374,000 (2%)
$48,894,000	**TOTAL ANNUAL COSTS**	**$20,989,000**

The 2020/23 Efficiency Plan (the "Plan") sets out a balanced approach to pursue demand-side management ("DSM") opportunities in Manitoba while considering legislative requirements to meet mandated electric and natural gas savings targets while also reducing greenhouse gas emissions. To maximize the benefits to Manitobans and to maintain consistency with directions from the Minister of Crown Services, Efficiency Manitoba recognizes the requirement for prudent budget planning and developing an organization focused on core objectives.

When establishing the budget, Efficiency Manitoba relied on performance metric data, practicality and program continuity for Manitobans in order to achieve the mandate of delivering the resulting portfolio at lower costs. Indiscriminate changes to the program design and delivery model were rejected in favour of those that enhanced

the strong history of DSM in Manitoba and ensured continuity of programs for customers and stability for service providers and delivery partners that are critical for reaching the market with energy efficiency program and services. With these considerations in mind, Efficiency Manitoba has created a realistic and achievable plan to meet the mandated targets within the first three years of the Plan.

Efficiency Manitoba has budgeted an average of $48.9 million annually for the electric portfolio and $21.0 million annually for the natural gas portfolio over the three plan years. These costs are balanced by the benefits provided back to Manitobans, the private sector and Manitoba Hydro.



4.1 PORTFOLIO BUDGET SUMMARY

TABLE 4.1 2020/23 EFFICIENCY PLAN BUDGET SUMMARY

	2020/21	2021/22	2022/23	Average
Annual electric budget	$44,546,000	$51,151,000	$50,984,000	$48,894,000
Annual natural gas budget	$18,643,000	$21,275,000	$23,047,000	$20,988,000
Total budget	$63,189,000	$72,426,000	$74,031,000	$69,882,000

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding.

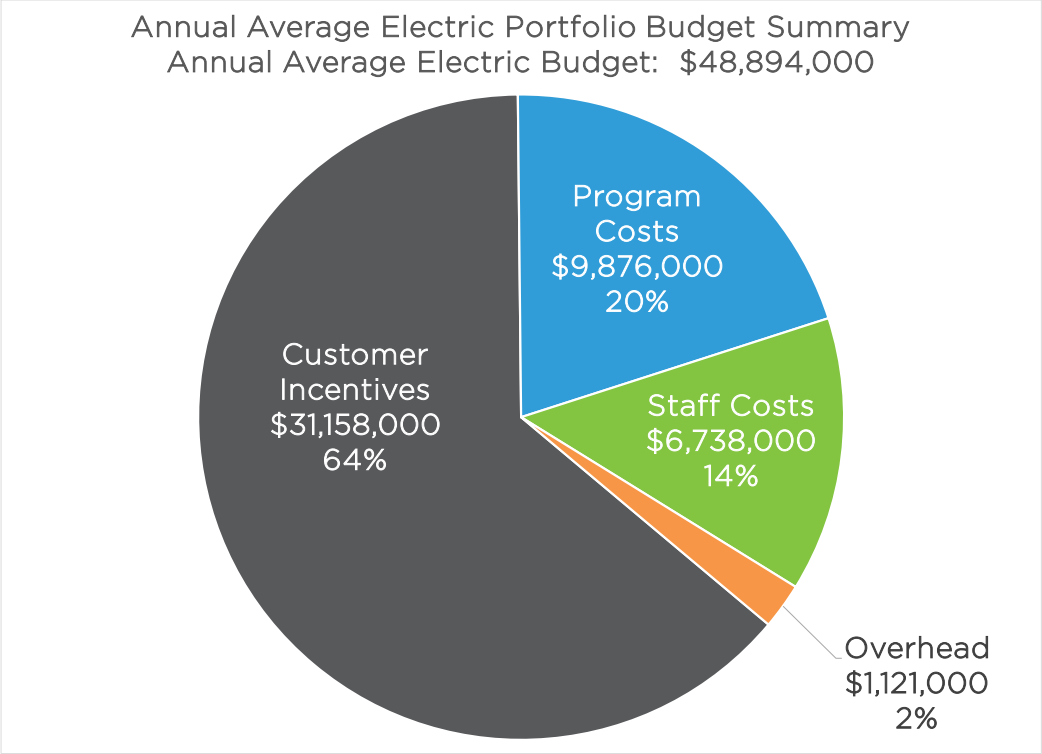
Table 4.1 shows the annual investment required to deliver the electric and natural gas portfolios. These planned investments are inclusive of all customer incentives, program costs for external delivery and implementation, Efficiency Manitoba labour and corporate overhead costs. Over the three years covered by the electric portfolio, Efficiency Manitoba is proposing an annual average $48.9 million be funded through Manitoba Hydro. Over the three years covered by the natural gas portfolio within the Plan, Efficiency Manitoba is proposing an annual average of $21.0 million be funded by Centra Gas.

All program and corporate overhead cost estimates were developed for each of the three plan years by quantifying the various individual cost components discussed within this section. For each technology, expenses for customer incentives, program design/modelling, management, delivery, administration, advertising, and supporting activities were developed considering actual historical program expenditures and estimates of future costs.

Figure 4.1 and Table 4.2 provide summaries of the electric portfolio budget. Figure 4.1 highlights that the annual average $48.9 million electric budget will be comprised of participating customer incentives; program costs for private sector delivery and implementation; Efficiency Manitoba staff (inclusive of all program and overhead

39 staffing budgets) and corporate overhead costs. Table 4.2 provides the annual
40 electric portfolio budget summary by fiscal year.

FIGURE 4.1 ELECTRIC PORTFOLIO BUDGET SUMMARY



Note. Program costs include private sector program delivery, program advertising and enabling strategies budget items.
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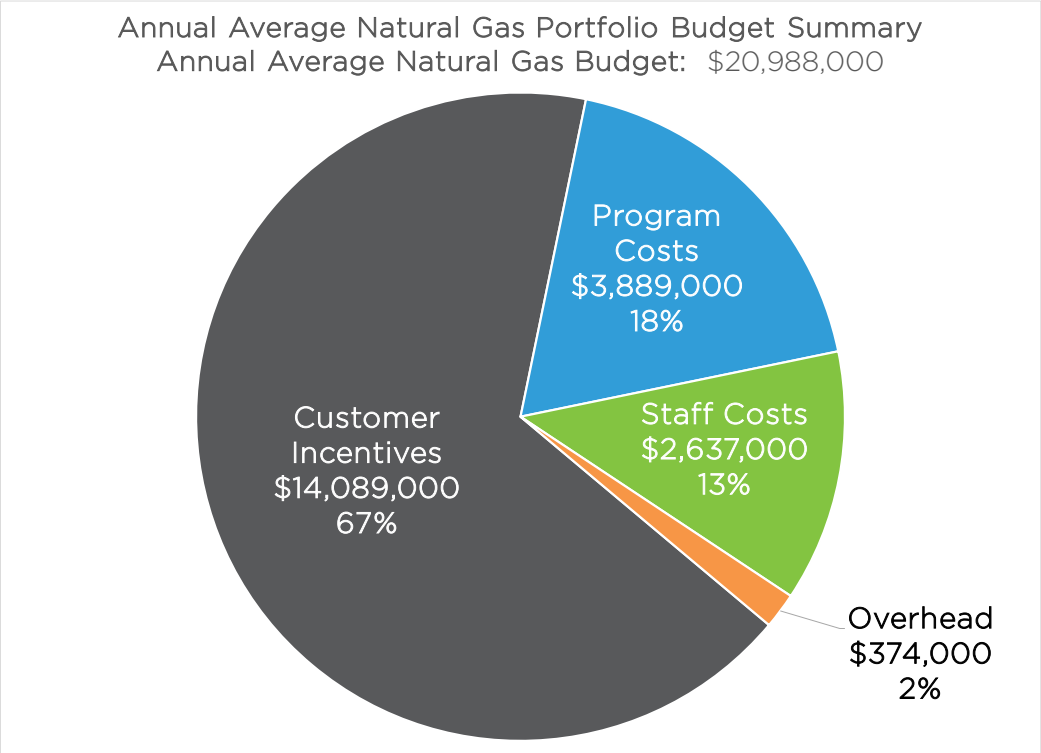
TABLE 4.2 ANNUAL ELECTRIC BUDGET SUMMARY

	2020/21	2021/22	2022/23	Annual average
Customer incentives	$27,589,000	$33,643,000	$32,242,000	$31,158,000
Program costs	$9,607,000	$9,988,000	$10,034,000	$9,876,000
Staff costs	$6,556,000	$6,749,000	$6,909,000	$6,738,000
Corporate overhead	$794,000	$771,000	$1,799,000	$1,121,000
Total	$44,546,000	$51,151,000	$50,984,000	$48,894,000

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding. Program costs include private sector program delivery, program advertising and enabling strategies budget items.

Figure 4.2 and Table 4.3 provide summaries of the natural gas portfolio budget. Figure 4.2 highlights that the annual average natural gas budget will be approximately $21.0 million comprised of: participating customer incentives; program costs (inclusive of all private sector program delivery and implementation budgets); Efficiency Manitoba staff (inclusive of all program and overhead staffing budgets); and corporate overhead costs. Table 4.3 provides the annual natural gas portfolio budget summary by fiscal year.

FIGURE 4.2 NATURAL GAS PORTFOLIO BUDGET SUMMARY



Note. Program costs include private sector program delivery, advertising and enabling strategies budget items.

TABLE 4.3 ANNUAL NATURAL GAS BUDGET SUMMARY

	2020/21	2021/22	2022/23	Annual average
Customer incentives	$11,958,000	$14,348,000	$15,961,000	$14,089,000
Program costs	$3,821,000	$4,022,000	$3,823,000	$3,889,000

Staff costs	$2,599,000	$2,648,000	$2,663,000	$2,637,000
Corporate overhead	$265,000	$257,000	$600,000	$374,000
Total	$18,643,000	$21,275,000	$23,047,000	$20,988,000

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding.
*Program costs include private sector program delivery, advertising and enabling strategies budget items.

The subsequent sections provide the analysis and details with respect to the costs included within each of the categories. The detailed DSM portfolio development approach that was utilized is provided within *Appendix A - Section A2*. *Appendix A3 – Section 3.2.5* presents a proposed annual funding schedule corresponding to these portfolio budgets.

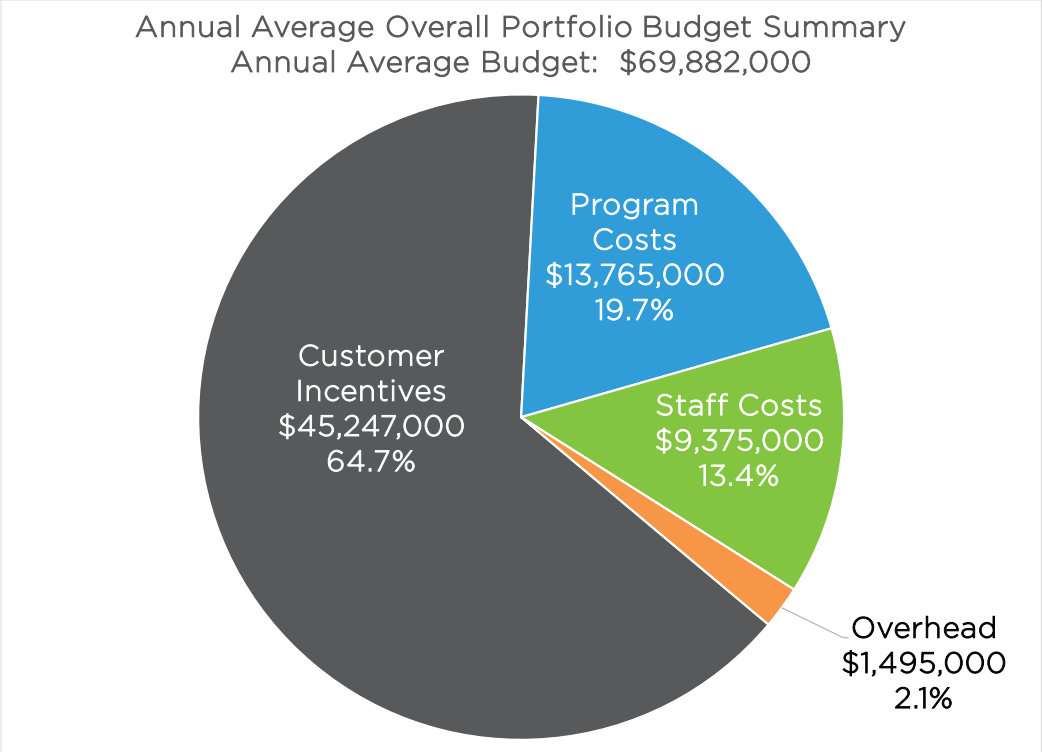
4.2 THE PLAN WILL PROVIDE 87% OF THE BUDGET TO MANITOBANS & THE PRIVATE SECTOR

Figure 4.3 and Table 4.4 provide summaries of the overall combined electric and natural gas portfolio budget. Figure 4.3 highlights that the annual average budget will be approximately $69.9 million comprised of participating customer incentives; program costs (inclusive of all private sector program delivery and implementation budgets); Efficiency Manitoba staff (inclusive of all program and overhead staffing budgets); and corporate overhead costs. Table 4.4 provides the annual overall portfolio budget summary by fiscal year.

As shown in Figure 4.3, the incentive budget represents 64.7 percent of the combined portfolio budget. Also shown is that the sum of the private sector program costs (19.7 percent) and corporate overhead (2.1 percent) budget components that will use private sector services is 21.8 percent of the combined portfolio budget. Therefore, 86.5 percent of the combined budget is allocated to Manitobans through program

incentives and through private sector services. Further details are provided in *Section 4.4*.

FIGURE 4.3 OVERALL PORTFOLIO BUDGET SUMMARY



Note. Program costs include private sector program delivery, advertising and enabling strategies budget items.

TABLE 4.4 ANNUAL OVERALL PORTFOLIO BUDGET SUMMARY

	2020/21	2021/22	2022/23	Annual average
Customer incentives	$39,547,000	$47,991,000	$48,203,000	$45,247,000
Program costs	$13,428,000	$14,010,000	$13,857,000	$13,765,000
Staff costs	$9,155,000	$9,397,000	$9,572,000	$9,375,000
Corporate overhead	$1,059,000	$1,028,000	$2,399,000	$1,495,000
Total	$63,189,000	$72,426,000	$74,031,000	$69,882,000

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding. Program costs include private sector program delivery, program advertising and enabling strategies budget items

4.3 THE PLAN ALLOCATES 13% OF THE BUDGET FOR EFFICIENCY MANITOBA LABOUR

As shown in Figure 4.3, the Efficiency Manitoba labour represents 13.4 percent of the combined portfolio budget. This portion of the overall budget includes program costs such program design/modelling, management, administration, technical and customer support. Also included within the staff budget is the Efficiency Manitoba labour component associated with corporate functions. Further details and analysis are provided in *Section 4.4*.

4.4 PORTFOLIO BUDGET ANALYSIS

Efficiency Manitoba has identified the cost categories used for budget development purposes. This section provides a detailed description of budget elements included within each category and demonstrates that 87 percent of the combined electric and natural gas portfolio budget is anticipated to be allocated to program participants and the private sector.

4.4.1 CUSTOMER INCENTIVE BUDGET

The electric and natural gas portfolio budgets include the value of incentives provided to customers. These may include in-store rebates, no-cost products, cost re-imbursements, or volume incentives (based on a per-unit of energy conserved basis). Typically, the value of these incentives is based on several factors, such as existing market penetration, stage in the product lifecycle, customer costs and economics, historical incentives, comparable offerings in other markets, and cost-effectiveness of the program offer. These incentive budgets are typically developed on a per-sale basis, where the unit sales may be a single product, a single residence/business, or a project. The unit incentives are then considered with overall market participation

projections for each year of the Plan to determine the overall incentive budget for both electric and natural gas offers.

Table 4.5 summarizes the resulting incentive budgets represented in the Plan in both dollars and percentages. As demonstrated in this table, 64.7 percent of the entire Plan budget is returned to the Manitoba economy via direct incentives to Manitobans. This relative contribution varies only slightly annually and by electric versus natural gas portfolio. This re-investment of funds is a powerful driver towards both energy efficiency and further investment in Manitoba homes and commercial operations as well as in the businesses delivering the products and services to the market.

TABLE 4.5 ANNUAL AVERAGE PORTFOLIO INCENTIVE BUDGETS ($ AND %)

	Annual average	
	Budget ($)	Percent of Budget (%)
Electric portfolio	$31,158,000	63.6%
Natural gas portfolio	$14,089,000	66.9%
Total (overall portfolio)	$45,247,000	64.7%

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding.

4.4.2 PORTFOLIO PROGRAMMING BUDGET

Efficiency Manitoba has developed a portfolio of energy efficiency programs for achieving long-term energy savings. Overall portfolio programming costs are inclusive of both private sector and staff budget components. Private sector costs include program delivery, advertising and enabling strategies cost components. Efficiency Manitoba labour costs are included in the staff costs category and include design/modelling, management, delivery, administration, advertising and enabling strategies further described within this section. Also included are Efficiency Manitoba staff budgets within the corporate overhead cost category. Table 4.6 and 4.7

summarize overall electric, natural gas and overall portfolio budgets associated with program costs (Table 4.6) and Efficiency Manitoba staff (Table 4.7). As shown, 13.4 percent represents the portion of the overall portfolio required for Efficiency Manitoba labour, while 19.7 percent of the overall portfolio represents the budget for private sector program costs. The following sections provide additional descriptions of the cost components included in each of the private sector and staff budgets.

TABLE 4.6 ANNUAL PROGRAM BUDGETS ($ AND %) – PRIVATE SECTOR

	Annual average	
Electric portfolio – private sector program costs		
Electric program delivery	$3,643,000	7.5%
Electric enabling strategies	$5,082,000	10.4%
Electric advertising	$1,151,000	2.4%
Electric program costs (sub-total)	$9,876,000	20.3%
Natural gas portfolio – private sector program costs		
Natural gas program delivery	$1,521,000	7.2%
Natural gas enabling strategies	$1,657,000	7.9%
Natural gas advertising	$710,000	3.4%
Natural gas program costs (sub-total)	$3,889,000	18.5%
Overall portfolio – private sector program costs		
Overall program delivery	$5,164,000	7.4%
Overall enabling strategies	$6,739,000	9.6%
Overall advertising	$1,861,000	2.7%
Overall program costs (total)	$13,765,000	19.7%

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding

TABLE 4.7 ANNUAL STAFF BUDGETS ($ AND %) – EFFICIENCY MANITOBA STAFF

	Annual average	
Electric portfolio – staff costs		
Electric program design/modelling, admin. and support	$4,491,000	9.2%
Electric enabling strategies	$1,176,000	2.4%
Electric corporate overhead	$1,070,000	2.2%
Electric staff costs (sub-total)	$6,738,000	13.8%
Natural gas portfolio – staff costs		
Natural gas program design, admin. and support	$1,940,000	9.2%
Natural gas enabling strategies	$339,000	1.6%
Natural gas corporate overhead	$357,000	1.7%
Natural staff costs (sub-total)	$2,637,000	12.6%
Overall portfolio – staff costs		
Overall program design/modelling, admin. and support	$6,431,000	9.2%
Overall enabling strategies	$1,515,000	2.2%
Overall corporate overhead	$1,427,000	2.1%
Overall staff costs (sub-total)	$9,375,000	13.4%

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding.

PROGRAM DELIVERY

Program delivery budgets include private sector providers that are contracted to provide third-party program implementation services. This would include turn-key contractor delivery of Efficiency Manitoba programs such as the Residential Direct Install and Product Rebate offers, Home Energy Check-Ups offered to Income Qualified Customers, and Small Business Offers available to Indigenous and Commercial customers. This program cost category also includes outsourced program delivery support functions such as creative services (copy writing, ad development, web design, etc.), call centre support, information technology support, and legal services. Besides direct private sector engagement, energy efficiency programming and incentives stimulates new business for existing contractors, installers, design professionals and service providers.

Private sector costs within this program delivery category also include program specific creative services; website or social media support; legal services; and marketing materials.

Efficiency Manitoba will use a transparent and competitive public procurement process, in accordance with trade agreements, to select third-party service providers that may be required as set forth in the Plan. Performance contracts will ensure vendors and service providers are held responsible for their individual performance, expenditures, and/or customer interactions.

Table 4.6 summarizes the resulting program delivery budgets represented in the Plan in dollars and percentages of the overall budget values respectively.

PROGRAM DESIGN, MODELLING, MANAGEMENT, ADMINISTRATION, TECHNICAL SUPPORT AND CUSTOMER SUPPORT BUDGET

With respect to staff time, programming budgets represent the costs required to design and model, manage, administer and support programming. This also includes the staff time required to procure and manage any third-party service providers.

Through this program budgeting, Efficiency Manitoba is targeting an optimal mix of internal and external resources to deliver results in the most cost-effective manner. Although Efficiency Manitoba is leveraging the private sector, the following functions are purposely kept internal:

- program design & modelling;
- quality assurance & control;
- customer interactions;
- program reporting; and
- continuous improvement.

This approach results in service and programming continuity by leveraging years of training and development investment in experts who understand the energy efficiency technologies; the Manitoba customer markets and delivery channels; and DSM industry metrics and modelling. Further, where customer relationships are strategically important, greater control over customer interactions is possible when staff are internal. Table 4.7 summarizes the resulting staff budgets represented in the Plan in dollars and percentages of the overall budget values.

ENABLING STRATEGIES

General energy efficiency support activities that are not specific to a program or offer are included within the enabling strategies category. Examples of these activities include education; energy assessments or studies; market research; and the development of community energy plans for rural and Indigenous customers. Also included within this category are private sector program support functions such as DSM expertise consulting; outsourced non-program specific legal services, IT, business services or consulting; CRM/DSM system expenses; and staff professional development expenses.

From a cost allocation approach, for energy efficiency support activities directed at customers or technologies that are predominately electric focused, 100 percent of the support activity budget has been allocated to the electric portfolio. For the remaining energy efficiency support activities, costs of these supporting activities have been allocated where 75 percent of these supporting costs reside with the electric portfolio and the remaining 25 percent are allocated to the natural gas portfolio.

Additional budget items included in the Enabling Strategies category are associated with general Efficiency Manitoba branding and engagement; independent program evaluation; Efficiency Plan development; research and development (innovation) costs; and development of energy-efficient codes & standards. In each of these instances, 75 percent of the budgeted costs have been allocated to the electric portfolio with the remaining 25 percent residing with the natural gas portfolio based on historical spending patterns. Table 4.6 and 4.7 summarize the enabling strategies budgets represented in the Plan in dollars and percentages of the overall budget

values. Table 4.6 shows these cost components for the private sector while Table 4.7 provides the budget for Efficiency Manitoba staff related to enabling strategies.

PROGRAM ADVERTISING BUDGET

Program advertising includes dollars budgeted for specific programs that are required to achieve the forecasted participation and resulting energy savings. These costs represent external services contracted by Efficiency Manitoba. Table 4.6 summarizes the resulting program advertising budgets represented in the Plan in dollars and percentages respectively.

4.4.3 CORPORATE OVERHEAD BUDGET

The corporate overhead budget includes leadership and general administration staff in human resources, government relations, finance and accounting, and other corporate administration functions. Detailed organizational planning and resourcing of these corporate areas are in the development stages. Efficiency Manitoba corporate overhead staff costs have been included in Table 4.7.

Also included within the corporate overhead budget category are private sector expenses such as regulatory costs, office space rental, furniture, and managed services such as corporate information technology.

Table 4.8 summarizes the resulting corporate overhead budgets represented in the Plan in dollars and percentages, respectively. The approximate $1.4 million increase between years one and three of the Plan is due to the PUB regulatory expenditures required by legislation prior to implementation of the 2023/26 Efficiency Plan. Table 4.15 provides the overhead budget associated with Efficiency Manitoba staff.

TABLE 4.8 ANNUAL OVERHEAD BUDGETS ($ AND %) – PRIVATE SECTOR

	Annual average	
Electric portfolio	$1,121,000	2.3%
Natural gas portfolio	$374,000	1.7%
Total (overall portfolio)	$1,495,000	2.1%

Note. Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding

4.5 BENCHMARKING DEMONSTRATES THAT EFFICIENCY MANITOBA'S COST STRUCTURE IS REASONABLE

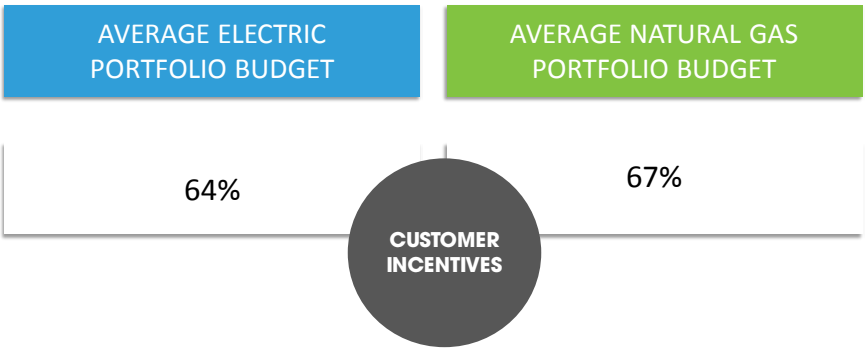
Efficiency Manitoba contracted an analysis[1] to review how energy efficiency program administrators may define and categorize their budgets in comparison to the cost categories used by Efficiency Manitoba. Based on the available information from public regulatory filings and other reports, Massachusetts, Oregon, and Nova Scotia were selected as jurisdictions that were regulated energy efficiency program administrators with data available. This review demonstrated that program administrator definitions of budget categories vary widely in terms of how costs are allocated, the level of detail in which each category is defined, and how costs are shared among categories. As such, it was concluded that it is not possible to provide detailed cost category comparisons between jurisdictions and Efficiency Manitoba.

However, resulting from this analysis was an overall comparison of the percentage of budget devoted to customer incentive costs. For the comparable jurisdictions selected, the results are summarized as follows:

- Massachusetts: 69 to 76 percent of budget allocated for incentives
- Oregon: 46.8 to 54.1 percent of budget allocated for incentives
- Nova Scotia: 60.1 percent of budget allocated for incentives

[1] Please refer to the details provided by Dunsky Energy Consulting included in *Attachment 4 – Consultant Memos*

For benchmarking purposes, the comparable data for the Efficiency Manitoba Plan is shown below:



This benchmarking exercise demonstrates overall reasonableness of the incentive budgets as compared to the overall electric and natural gas portfolio budget. This provides confirmation that the electric and natural gas incentive budgets as planned compares well with similar leading program administrators. It further indicates that Efficiency Manitoba is spending a comparable or lower component of the overall budget on the remaining budget areas required including program delivery, corporate overhead, enabling strategies, program administration and advertising.

SECTION 5
THE PLAN ACHIEVES SAVINGS TARGETS & IS COST-EFFECTIVE WITH LOW RATE IMPACTS

2020/23 EFFICIENCY PLAN

PROGRAM ADMINISTRATOR COST TEST
LIFECYCLE REVENUE IMPACT
CUSTOMER BILL IMPACTS
BENCHMARKING

EFFICIENCY MANITOBA

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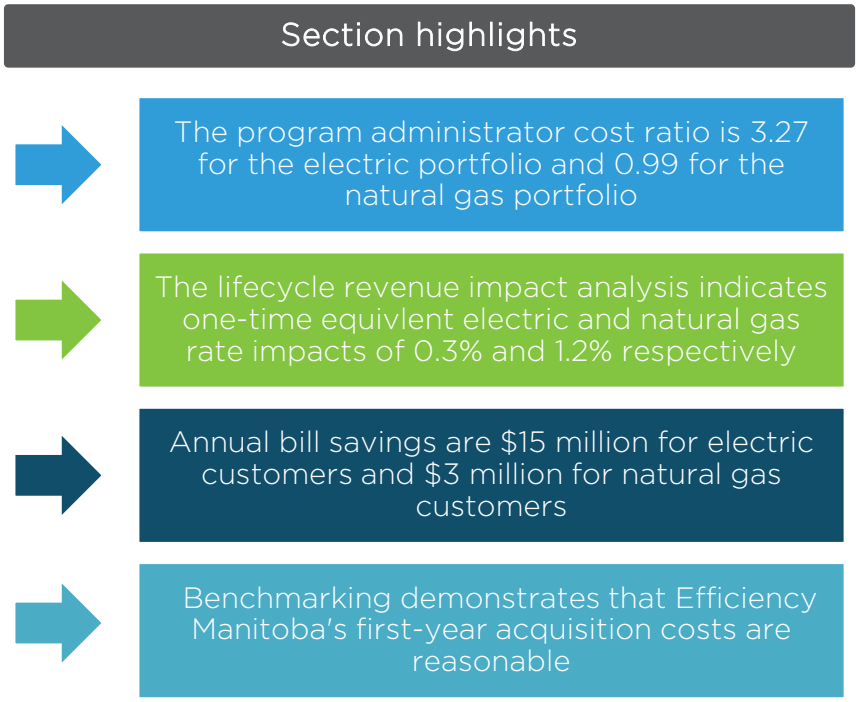
FIGURES

TABLES

SECTION 5 – THE PLAN ACHIEVES SAVINGS TARGETS & IS COST-EFFECTIVE WITH LOW RATE IMPACTS

ELECTRIC PORTFOLIO		NATURAL GAS PORTFOLIO
2.24 cents / kWh	LOW LEVELIZED COSTS	18.69 cents / m^3
0.019 cents / kWh	LOW RATE IMPACTS	0.23 cents / m^3
$14,900,000 (Annually)	CUSTOMER BILL SAVINGS	$3,000,000 (Annually)
35% Higher Savings 39% Lower Acquisition Costs	VERSUS MANITOBA HYDRO	42% Higher Savings 10% Lower Acquisition Costs

The 2020/23 Efficiency Plan (the "Plan") demonstrates that energy efficiency is a low-cost energy resource that can be leveraged to satisfy a portion of the province's future electric and natural gas energy needs. The Plan supports the deferral of future capital investments, such as major generation and transmission, and reduces the need to import and combust fossil fuels from outside of Manitoba. By achieving mandated energy savings targets in a cost-effective manner, the programs outlined in the Plan will provide long-term utility benefits and bill savings to participating customers.



5.1 EFFICIENCY MANITOBA USES THE PROGRAM ADMINISTRATOR COST TEST TO MEASURE THE COST-EFFECTIVENESS OF THE PLAN AS PRESCRIBED IN REGULATION

Demand-side management (DSM) cost-effectiveness tests provide a standardized methodology for comparing the energy efficiency program benefits with their associated costs. The Program Administrator Cost Test (PACT) is used in the Plan to satisfy the cost-effectiveness criteria outlined in the Efficiency Manitoba Regulation (the "Regulation"). In order to isolate the impacts of the Plan, only those costs and benefits associated with the activity occurring in the three years of the Plan were included in the analysis. All present values were determined over a 30-year time span. The number of years considered as the discount period is consistent with past DSM practice in Manitoba. Although 30 years was selected, only program benefits resulting from activities occurring within the Plan were considered. Specifically, no additional incremental programs, costs, or savings were assumed beyond 2022/23. An overall

nominal discount rate of six percent was provided by Manitoba Hydro for use in the cost-effectiveness analysis.

While *Appendix A – Section A2* provides the details behind the cost-effectiveness methodology and analysis, including the formulae and description for the cost tests, the following sections outline the costs and benefits along with resulting metrics applied to determine the cost-effectiveness of the Plan. The analyses for electric and natural gas are kept separate as each fuel has a distinct benefit stream and will be funded separately through electric and natural gas customers, respectively.

It is important to note that additional benefits, such as GHG savings, air quality benefits, macroeconomic benefits and improved participant comfort or productivity, are not included in the benefit stream used to calculate the PACT.

5.1.1 PACT COSTS

In order to calculate the PACT, the electric and natural gas budgets associated with the Plan are considered at both the program bundle level and the overall portfolio level.

As illustrated in Table 5.1, at the program bundle level, PACT costs include the program planning and design, delivery, marketing, implementation, incentives, administrative, and evaluation costs.

At the overall portfolio level, PACT costs include all costs at the program bundle level plus enabling strategies and corporate overhead costs.

TABLE 5.1 PACT PROGRAM BUNDLE VS PORTFOLIO COST CONSIDERATIONS

PACT COSTS	INCLUDED	
PROGRAM BUNDLE LEVEL	Program delivery Program design Advertising Program administration Incentives	
OVERALL PORTFOLIO LEVEL	Program delivery Program design Advertising Program administration	Incentives Enabling strategies Corporate overhead

5.1.2 PACT ENERGY BENEFITS

Consistent with the cost inputs of the PACT, the electric and natural gas benefits associated with energy savings in the Plan are considered at both the program bundle level and overall portfolio level. There are several factors used to determine the unique DSM program bundle level net energy savings. These savings are used to calculate the benefits associated with the PACT. These factors include:

- product mix;
- weather normalization;
- savings and electric / natural gas load shape;
- capacity savings (electric only);
- interactive effects; and
- savings persistence.

At the program bundle level, the benefits used to determine cost-effectiveness include only the net electric or natural gas savings directly associated with the respective program bundle. Specifically, program bundle cost-effectiveness does not include any benefits or impacts of codes and standards or cross-fuel interactive

effects. The impact of cross-fuel interactive effects was not considered at the program bundle level to isolate the cost-effectiveness of the specific electric or natural gas savings and costs directly associated with program bundle activities.

At the portfolio level, the benefits used to determine cost-effectiveness are based on net electric or natural gas energy savings including all the energy and capacity (for electric only) savings associated with program offers and are net of all heating and cooling interactive effects. Specifically, all interactive effects and the costs of codes and standards are considered at the portfolio level PACT benefit analysis. *Appendix A – Section A2* provides additional information related to net energy savings determination.

ELECTRIC ENERGY BENEFITS

Manitoba Hydro marginal values are required in order to determine the electric benefits to Manitoba Hydro used in cost-effectiveness tests prescribed in the Regulation. The determination of marginal values is done independently by Manitoba Hydro, and Efficiency Manitoba accepts and applies the values as received.

Manitoba Hydro provides the energy and capacity marginal values to Efficiency Manitoba for annual and seasonal time frames. Further, Manitoba Hydro also provides the marginal values by both energy and capacity components. It is Efficiency Manitoba's understanding that the marginal values include projected capital deferral value due to winter capacity savings and value projected in the export market.

The details of the marginal values provided by Manitoba Hydro are considered commercially sensitive information. For indicative purposes, a portfolio weighted marginal value is provided in *Section 5.2* as a basis for comparison for future

evaluations. Due to the detailed energy savings and capacity savings associated with each program or bundle, the weighted marginal value realized will vary depending on the specific electric energy and demand savings profile of the program or bundle. Therefore, the portfolio weighted marginal value is not directly comparable to prior representative marginal values provided by Manitoba Hydro as the derivation of this value depends on the individual savings magnitudes and profiles of programs found within the electric profile.

NATURAL GAS ENERGY BENEFITS

For natural gas savings, Efficiency Manitoba measures the levelized program administrator cost against the alternative option of acquiring natural gas from neighbouring regions. Manitoba Hydro marginal values are required in order to determine the natural gas benefits to Manitoba Hydro used in cost-effectiveness tests prescribed in the Regulation. The determination of the natural gas marginal values is done independently by Manitoba Hydro, and Efficiency Manitoba accepts and applies the values as received.

Manitoba Hydro provides a table to Efficiency Manitoba documenting marginal values annually for natural gas purchasing and transportation costs. It is Efficiency Manitoba's understanding there are no avoided cost components included within the natural gas marginal benefits associated with the deferral of natural gas distribution or transmission facilities. Additionally, there are no avoided cost components included within the natural gas marginal benefits associated with greenhouse gas (GHG) emission reductions. The details of the natural gas marginal values provided by Manitoba Hydro are considered commercially sensitive information. For indicative

purposes, a portfolio weighted marginal value is provided in *Section 5.2* as a basis for comparison for future evaluations.

5.1.3 2020/23 EFFICIENCY PLAN PACT METRICS

Figures 5.1 and 5.2 summarize the overall intent of the PACT based on the preceding descriptions regarding the balance between portfolio costs and benefits. Table 5.2 further provides a summary of the various formats for the PACT results. For each of the three formats shown, Table 5.2 provides a summary of the formula used to determine the metric and the associated interpretation of the resulting values. *Appendix A – Section A2* provides additional information related to determination of the PACT.

FIGURE 5.1 ELECTRIC PROGRAM ADMINISTRATOR COST TEST ILLUSTRATION: BALANCING BENEFITS VS COST

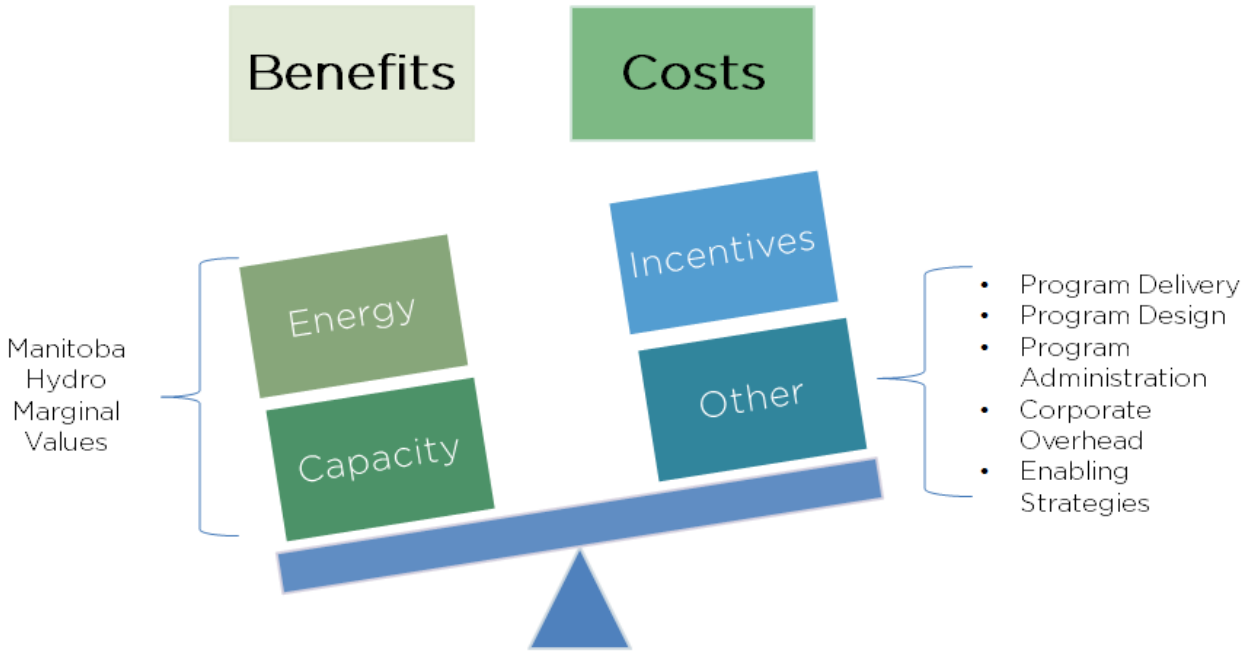


FIGURE 5.2 NATURAL GAS PROGRAM ADMINISTRATOR COST TEST

ILLUSTRATION: BALANCING BENEFITS VS COST

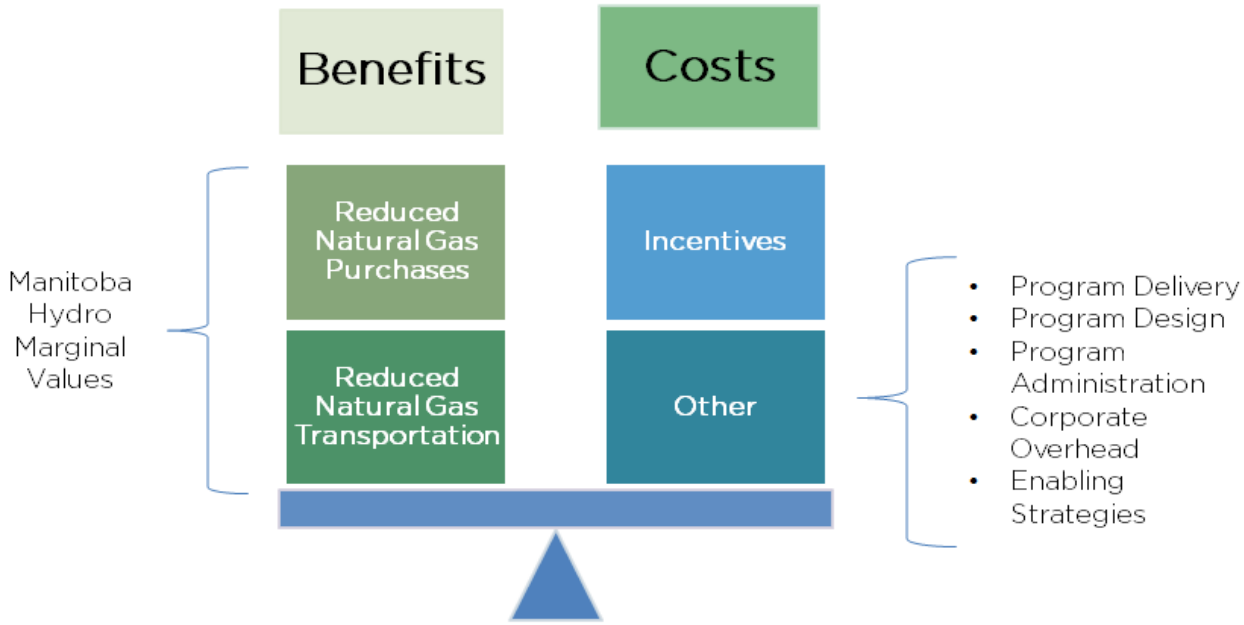


TABLE 5.2 PORTFOLIO PROGRAM ADMINISTRATOR COST TEST ILLUSTRATION: INDIVIDUAL METRIC FORMATS

FORMAT	FORMULA	INDICATOR
RATIO	NPV Benefits / NPV Costs	1.0 or higher = net positive benefits
NET PRESENT VALUE (NPV)	NPV Benefits - NPV Costs	Positive value = net positive benefits
LEVELIZED COST	NPV Costs / NPV Energy	Cost per unit saved

5.2 THE PACT RATIO IS 3.27 FOR THE ELECTRIC EFFICIENCY PORTFOLIO & 0.99 FOR THE NATURAL GAS EFFICIENCY PORTFOLIO

Table 5.3 provides the overall electric portfolio cost-effectiveness results. Based on the results of this test, Efficiency Manitoba's overall electric DSM efforts will result in customers (in aggregate) having lower costs for meeting their electricity needs. This is demonstrated by the PACT ratio being much greater than 1.0, the positive net

present value (NPV), and the levelized cost of 2.24¢/kWh. The PACT ratio demonstrates that the portfolio weighted marginal benefits are over three times greater than the costs for the electric portfolio. For comparison purposes, a representative portfolio weighted electric marginal value, determined by multiplying the PACT ratio by the levelized cost, is 7.33¢/kWh. *Attachment 3* provides additional details related to the program bundle level.

Also shown in Table 5.3 are the PACT results for electric program activity only. These results isolate the programming component of the overall electric portfolio by removing enabling strategies and corporate overhead costs. When isolating only the programming component of the overall electric portfolio, the PACT ratio is 3.88 with a PACT NPV of $369 million.

TABLE 5.3 ELECTRIC PROGRAMMING AND PORTFOLIO COST-EFFECTIVENESS METRICS

	PACT ratio	PACT NPV	PACT Levelized Cost
Program only metrics	3.88	$369 million	1.89¢/kWh
Overall portfolio metrics	3.27	$345 million	2.24¢/kWh

Note. Program only metrics do not include impact of enabling strategies or corporate overhead. Overall portfolio metrics include those impacts.

Table 5.4 provides the overall natural gas portfolio cost-effectiveness results. Based on the results of this test, Efficiency Manitoba's overall natural gas DSM efforts will result in customers (in aggregate) realizing similar costs versus the benefits for meeting their natural gas needs through this portfolio. This is demonstrated by the PACT ratio of 0.99 and a levelized cost of 18.69 ¢/m^3. For comparison purposes, a representative portfolio weighted natural gas marginal value, determined by multiplying the PACT ratio by the levelized cost, is 18.45¢/kWh. The Plan proposes to achieve the natural gas savings targets with a balanced portfolio from a cost-benefit perspective.

To illustrate the impact of interactive effects on the natural gas portfolio, also shown in Table 5.4 are the PACT results for natural gas program activity only. These results isolate the programming component of the overall natural gas portfolio by removing the negative energy savings impact of electric programming interactive effects. The program activity PACT results also do not consider enabling strategies and corporate overhead costs. When isolating only the programming component of the overall natural gas portfolio, the PACT ratio is 1.42 with a positive PACT NPV of $22 million. The inclusion of the electric programming interactive effects plays a significant role in

reducing the PACT NPV and resulting metrics. As shown in *Attachment 3,* the interactive effects reduce the PACT NPV of the natural gas portfolio by $15 million.

TABLE 5.4 NATURAL GAS PROGRAMMING AND PORTFOLIO COST-EFFECTIVENESS METRICS

	PACT ratio	PACT NPV	PACT Levelized Cost
Program only metrics	1.42	$22 million	13.03¢/m^3
Overall portfolio metrics	0.99	($0.8 million)	18.69¢/m^3

Note. Program only metrics do not include impact of interactive effects, enabling strategies or corporate overhead. Overall portfolio metrics include those impacts.

PACT SENSITIVITY ANALYSIS

As previously indicated, an overall six percent nominal discount rate and a 30-year time horizon were used as inputs to determine the electric and natural gas PACT metric results shown in Table 5.3 and 5.4. For sensitivity testing purposes, a few scenarios were examined to determine the overall impact and magnitude of varying these assumptions. Overall, the electric portfolio PACT results were found to have very little sensitivity to variations in either the nominal discount rate or the time horizon while natural gas PACT results were found to have relatively low sensitivity to changes in the nominal discount rate with higher sensitivity to the time horizon considered. A summary of this sensitivity analysis is shown in Table 5.5.

TABLE 5.5 PROGRAM COST-EFFECTIVENESS SENSITIVITY

	PACT Ratio	PACT NPV	PACT Levelized Cost
ELECTRIC PORTFOLIO			
Nominal discount rate (change of ±1%)	3.10 to 3.47	$314 to $380 million	2.13 to 2.35¢/kWh
Time horizon (decrease to 15 years)	3.00	$303 million	2.36¢/kWh

	PACT Ratio	PACT NPV	PACT Levelized Cost
NATURAL GAS PORTFOLIO			
Nominal discount rate (change of ±1%)	0.90 to 1.08	($6) to $5 million	17.16 to 20.24¢/m^3
Time horizon (decrease to 15 years)	0.72	($17 million)	24.20¢/m^3

5.3 EFFICIENCY MANITOBA USES THE LIFECYCLE REVENUE IMPACT METRIC AS A SIMPLIFIED INDICATOR OF THE RATE IMPACTS OF THE PLAN

Although cost-effective, achieving the mandated energy savings targets is an investment that comes with associated costs that will be passed on to customers through electric and natural gas rates. Efficiency Manitoba completed a simplified rate and customer bill impact analysis to serve as indicators of the Plan's impact. *Appendix A – Section A2* provides the details behind the rate and customer bill impact methodology and analysis while the following sections provide an overall summary of the impacts associated with the Plan. Throughout the analysis, electric and natural gas portfolios are kept separate as each has a distinct benefit stream and will be funded separately through electric and natural gas customers respectively.

As with the cost-effectiveness analysis, and in order to isolate the impacts of the Plan, only those costs and benefits directly associated with the three years considered in the Plan were included in the analysis.

LIFECYCLE REVENUE IMPACT

Efficiency Manitoba has used a lifecycle revenue impact (LRI) measure to indicate an equivalent one-time change in rates that is required to establish a balance between utility revenues, the marginal benefits, and the program costs required within the Plan. The LRI analysis is completed on a 30-year net present value basis separately for both

the entire electric and natural gas portfolios. This metric was selected as it applies the standard components of the DSM rate impact measure cost test. In general, if the change in utility revenue and costs associated with a portfolio is greater than the utility benefits, the LRI will indicate an increase in rates. Similarly, if the utility benefits associated with a portfolio are greater than the change in utility revenue and costs, the LRI will indicate a decrease in rates. Therefore, the LRI test will indicate the direction and magnitude (measured per unit energy) of the expected change in utility rate levels attributed solely to the Plan.

The benefits used in the analysis are identical to those determined using the PACT described above; namely, this component includes the levelized benefits of the marginal values. The costs for this test include both the portfolio costs and the decrease in utility revenues resulting from the decrease in electric or natural gas consumption. Levelized portfolio costs are determined using the identical PACT costs and for both electric and natural gas portfolios and are inclusive of all program costs, enabling strategies, and corporate overhead amounts associated with the Plan. Decreases in utility revenues are considered over the same 30-year time horizon as the PACT. The identical nominal discount rate of six percent that was used for the PACT was also used for the LRI analysis. The current electric and natural rates adjusted for inflation are used to determine the change in revenue from the portfolio's projected decrease in electric or natural gas consumption. *Appendix A – Section A2* provides additional details related to the determination of the LRI.

5.4 THE LIFECYCLE REVENUE IMPACT METRIC INDICATES A MAXIMUM ONE-TIME EQUIVALENT RATE INCREASE OF 0.3% & 1.2% IS REQUIRED FOR THE ELECTRIC & NATURAL GAS PORTFOLIO RESPECTIVELY

5.4.1 ELECTRIC RATE IMPACTS

The LRI metric is a directional estimate that calculates the impact on electric rates resulting from the activities and costs proposed within the Plan. This analysis does not include factors such as rate class cost allocation, utility capital expenditure plans, utility operating and maintenance costs, financing expenses, or utility targeted debt-to-equity ratios. These factors are all outside the purview and mandate of Efficiency Manitoba. Table 5.6 provides the LRI measure for the entire electric portfolio within the Plan indicated as both an equivalent single year cents/kWh increase required, and as a percentage assuming various average electric rates as a means of comparison. To illustrate, if a base electric rate of 8¢/kWh is considered, a 0.24 percent one-time equivalent rate increase is determined through the LRI. In this example, the 0.24 percent increase corresponds to an increase of 0.019¢/kWh to restore balance on a net present value basis between utility revenue decreases, program costs, and the utility benefits provided through the electric portfolio energy savings.

TABLE 5.6 LIFECYCLE REVENUE IMPACT RESULTS – ELECTRIC PORTFOLIO

	One-time equivalent rate increase
Lifecycle revenue impact (¢/kWh)	0.019¢/kWh
Percent increase (using 6¢/kWh)	0.32%
Percent increase (using 8¢/kWh)	0.24%
Percent increase (using 10¢/kWh)	0.19%

5.4.2 NATURAL GAS RATE IMPACTS

The LRI metric provides a directional estimate of the impacts on natural gas rates resulting from the expenditures proposed within the Plan. As with the electric impact, there are several factors that are not included within this natural gas LRI analysis such

as rate class cost allocation, utility capital expenditure plans, utility operating and maintenance costs, or financing expenses. These factors are all outside of the purview and mandate of Efficiency Manitoba.

For the purposes of determining the LRI for the natural gas portfolio, the costs associated with the Furnace Replacement Program (FRP) were excluded from the overall levelized PACT cost. This separate component was removed as those budgeted costs have already been collected from natural gas customers. Per the Act and the Regulation, as of Efficiency Manitoba's commencement date, residual amounts in the FRP are to be applied against natural gas DSM initiatives set out in an approved efficiency plan. Although already collected from customers, all costs are included within the overall natural gas portfolio budget. Considering only the FRP with the Plan, the following amounts were removed from the LRI levelized program cost determination:

- $2.3 million in 2020/21;
- $2.0 million in 2021/22; and
- $2.7 million in 2022/23.

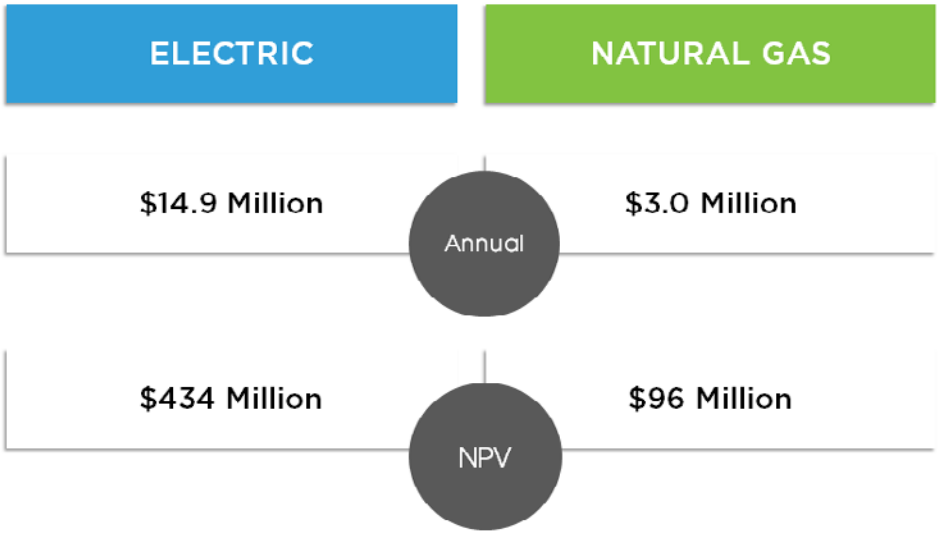
Table 5.7 provides the LRI measure for the entire natural gas portfolio within the Plan indicated as both an equivalent single year cents/m^3 increase required and as a percentage assuming various average natural gas rates. To illustrate, if a base natural gas rate of 21¢/m^3 is considered, a 1.10% one-time equivalent rate increase is determined through the LRI. In this example, the 1.10 percent increase corresponds to a 0.23¢/m^3 increase in the rate required to restore balance on a net present value

basis between utility revenue decreases, program costs, and the utility benefits provided through the natural gas portfolio energy savings.

TABLE 5.7 LIFECYCLE REVENUE IMPACT RESULTS – NATURAL GAS

	One-time equivalent rate increase
Lifecycle revenue impact (¢/m^3)	0.23¢/m^3
Percent increase (using 19¢/m^3)	1.22%
Percent increase (using 21¢/m^3)	1.10%
Percent increase (using 23¢/m^3)	1.00%

5.5 ANNUAL BILL SAVINGS FOR PARTICIPATING CUSTOMERS ARE PROJECTED AT $15 MILLION FOR ELECTRIC CUSTOMERS & $3 MILLION FOR NATURAL GAS CUSTOMERS



5.5.1 ELECTRIC CUSTOMER BILL IMPACTS

The estimated electric rate impacts will apply to all Manitoba electric customers as summarized in Table 5.6. Customers that choose to participate in the programming offered by Efficiency Manitoba will see the same rate impacts but will realize annual bill reductions based on their respective energy savings.

Table 5.8 provides the anticipated annual average customer bill savings for participating customers by customer segment, representing a total $14.9 million annually. Also shown within these tables are the estimated annual bill savings by customer based on projected participation in the various program bundles available within each customer segment. The resulting magnitude of bill savings are directly related to both customer participation and the average energy usage per customer within that segment. To illustrate, the forecasted participation within the Income Qualified Offers bundle is much larger than that expected within any of commercial, industrial and agricultural customer bundles. However, the average energy consumption of a residential customer is less than an average commercial, industrial, or agricultural customer. Recognizing that the energy and customer bill savings persist as long as the energy-efficient measure is in place, a 30-year NPV of the electric customer bill savings was determined to be $434 million.

TABLE 5.8 ANNUAL AVERAGE ELECTRIC CUSTOMER PARTICIPATION & BILL SAVINGS

Customer segment / program bundle		Annual average electric bill savings	Total annual electric bill savings
Indigenous	Homes	$260/house	$147,000
	Small business	$900/business	
Income qualified		$60/house	$203,000
Residential		$80/house	$1,769,000
Commercial, industrial & agricultural	Small business	$1,000/business	$12,567,000
	Suites	$60/suite	
	Other business	$4,300/business	
Emerging Technology Programs		$1,500/project	$171,000
Total annual electric customer bill savings			**$14,857,000**

5.5.2 NATURAL GAS CUSTOMER BILL IMPACTS

The natural gas rate impacts will apply to all Manitoba natural gas customers as summarized in the natural gas rate impacts shown in Table 5.7. In addition to the annual natural gas bill reduction based on the energy savings associated with participating in Efficiency Manitoba's programs and offers, participating customers will further reduce their payment amounts associated with the federal carbon charge (included on a customer's Manitoba Hydro bill). The federal carbon charge came into effect on April 1, 2019 and is currently $20/tonne CO_2e.

Table 5.9 provides the anticipated annual average customer bill savings for participating customers by customer segment. The customer bill savings associated with reduced GHG emissions are also included based on the federal carbon charge annual increases of $10/tonne CO_2e per fiscal year up to $50/tonne CO_2e[1]. Also shown within these tables is the estimated annual bill savings by customer based on projected customer participation in the various program bundles available within each customer segment. The magnitude of the resulting bill savings is directly related to both customer participation and the average energy usage per customer within that segment. Recognizing that the natural gas energy and carbon charge customer bill savings persist as long as the energy-efficient measure is in place, a 30-year NPV of the natural gas customer bill savings was determined to be $96 million.

[1] https://wwwhydro.mb.ca/accounts_and_services/carbon_charge/

TABLE 5.9 ANNUAL AVERAGE NATURAL GAS CUSTOMER PARTICIPATION & BILL SAVINGS

Customer segment / program bundle		Annual average natural gas bill savings	Total annual natural gas bill savings
Indigenous		$140/house	$14,000 (natural gas) $4,000 (carbon charge) $18,000
Income qualified		$130/house	$287,000 (natural gas) $82,000 (carbon charge) $369,000
Residential		$20/house	$426,000 (natural gas) $131,000 (carbon charge) $557,000
Commercial, industrial & agricultural	Small business	$70/business	$1,452,000 (natural gas) $567,000 (carbon charge) $2,019,000
	Suites	$20/suite	
	Other business	$3,800/business	
Emerging Technology Programs		< 10 projects	$23,000 (natural gas) $9,000 (carbon charge) $32,000
Total annual natural gas customer bill savings			$3,000,000

5.6 BENCHMARKING DEMONSTRATES THAT EFFICIENCY MANITOBA'S FIRST-YEAR ACQUISITION COSTS ARE REASONABLE WHEN COMPARED TO OTHER SIMILAR JURISDICTIONS

Efficiency Manitoba contracted a review to compare DSM cost-effectiveness amongst other efficiency program administrators[2]. Based on the availability of information from public regulatory submissions and other reports, a review of relevant cost-effectiveness metrics and North American jurisdictions was completed. This review demonstrated the PACT cannot be readily compared to other jurisdictions due to the variation in which tests results are available from other jurisdictions and the way they are applied[3]. In order to provide a reasonable and accurate cost-effectiveness

[2] Please refer to the details provided by Dunsky Energy Consulting included in *Attachment 4 – Consultant Memos*

[3] For example, jurisdictions differ in which cost components are included in the cost test or whether electric savings are measured at meter or at generation.

evaluation with comparable jurisdictions, "first-year acquisition cost"[4] (measured in $/kWh or $/GJ) was used as the metric for comparison. This metric represents a clear indication of the first cost of procuring DSM first-year savings. Lower values directionally indicate that an equivalent kWh or GJ of first-year savings can be achieved at a lower first cost than those with a higher first-year acquisition cost. The acquisition cost metric is distinct from the PACT levelized cost metrics as it does not account for the lifespan or persistence of energy savings.

Figures 5.3 shows the benchmark data for the resource acquisition cost for both electric and natural gas portfolios for various jurisdictions. The resource acquisition cost is represented on the vertical axes for both electric and natural gas while the energy savings target (as a percentage of load) is represented on the horizontal axes. These figures illustrate that there is not necessarily a direct linear correlation between a jurisdiction's acquisition cost and energy savings target to achieve those targets. For comparison, the Plan's portfolio level electric and natural gas first-year acquisition costs are summarized in Table 5.10. Comparing these acquisition costs to the values in Figure 5.3 confirms the reasonableness and cost-effectiveness of the Efficiency Manitoba electric and natural gas portfolios as compared to other jurisdictions.

[4] First-year acquisition costs = the total costs of the portfolio divided by total savings achieved in year 1

FIGURE 5.3 ELECTRICITY AND NATURAL GAS PROGRAM SAVINGS VS ACQUISITION COSTS COMPARISON[5]

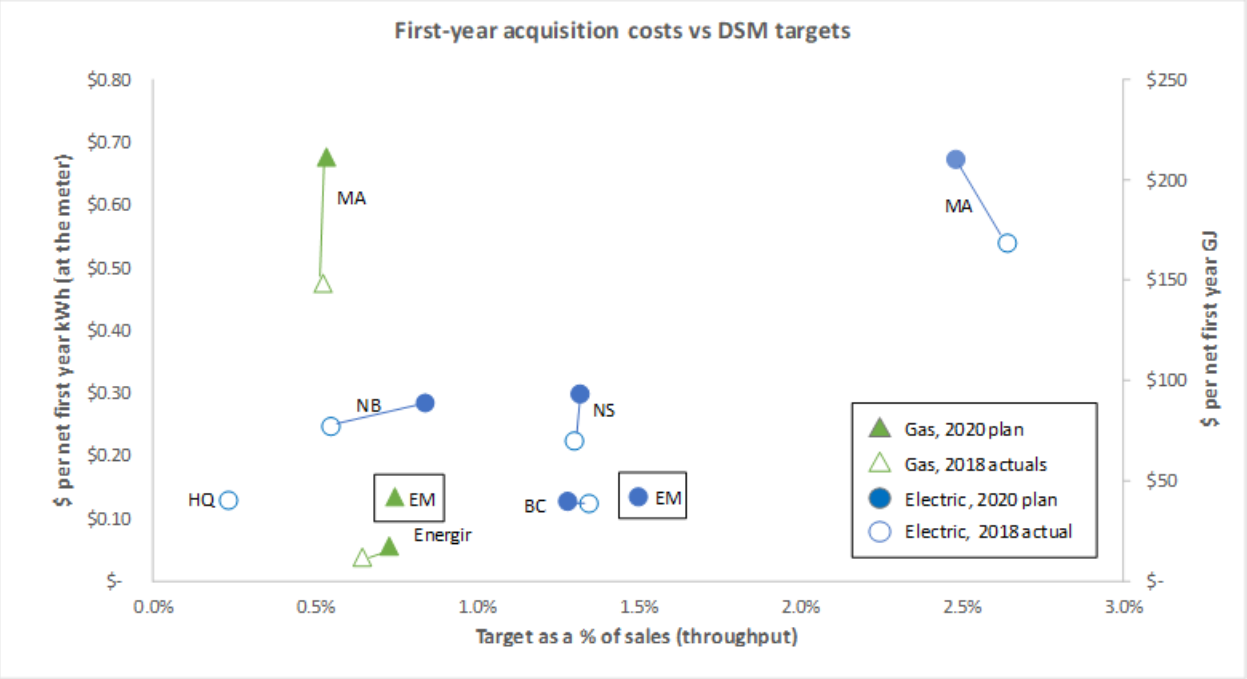


TABLE 5.10 EFFICIENCY MANITOBA ACQUISITION COSTS

Fiscal year	Electric acquisition cost	Natural gas acquisition cost
2020/21	$0.12/kWh	$1.59/$m^3$ ($42.1/GJ)
2021/22	$0.13/kWh	$1.67/$m^3$ ($44.2/GJ)
2022/23	$0.12/kWh	$1.74/$m^3$ ($46.0/GJ)

5.7 THE PLAN ACHIEVES ADDITIONAL ELECTRIC ENERGY SAVINGS OF 35% & NATURAL GAS ENERGY SAVINGS OF 42% WHEN COMPARED TO THE 2015/16 EFFICIENCY PLAN

285 An equitable comparison of the Plan savings and budget to prior Manitoba Hydro
286 DSM plans cannot be readily completed. There are many differences with respect to
287 scope and budget items included and energy savings. This section provides a
288 representative side-by-side analysis of the electric and natural gas total planned

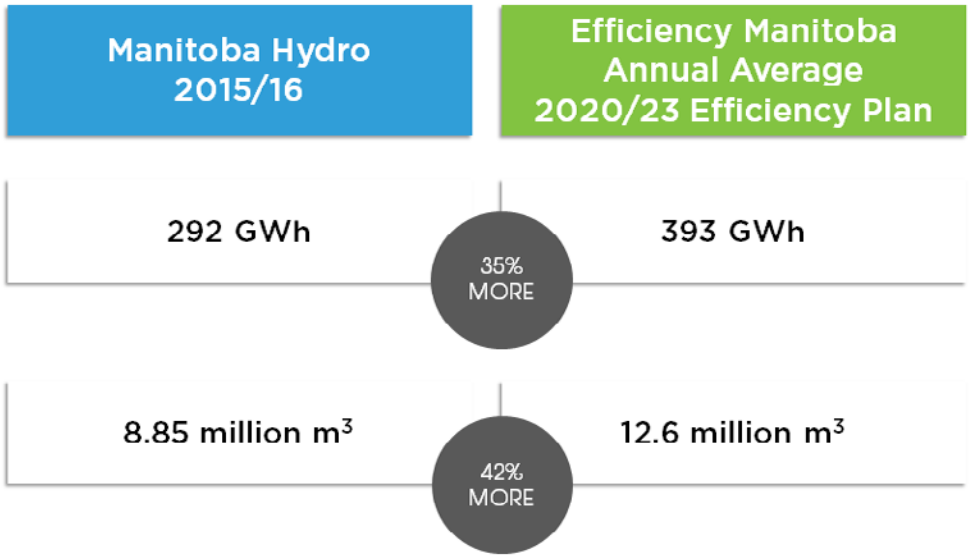
[5] Provided by Dunsky Energy Consulting and included in *Attachment 4 – Consultant Memos*

energy savings and the corresponding budgets for each year of Efficiency Manitoba's 2020/23 Efficiency Plan with the 2015/16 Manitoba Hydro DSM Plan. It provides the context and explanation of the challenges associated with this comparison. The 2015/16 Manitoba Hydro DSM Plan was selected as the benchmark year as that plan was issued with a full complement of DSM staff delivering a plan that considered enhancements that were proposed during the Needs for and Alternative To (NFAT) review of Manitoba Hydro's Preferred Development Plan. The 2015/16 benchmark year also pre-dates the establishment of the Efficiency Manitoba Act which legislated the function transition out of Manitoba Hydro. Staffing and DSM planning at Manitoba Hydro in the years since has reflected the pending transfer of responsibilities.

For the purposes of the comparison analysis below, the Curtailable Rates Program costs have been removed from the 2015/16 Manitoba Hydro DSM Plan. This program offers electric capacity savings; since capacity savings do not contribute to overall achievement of the Efficiency Manitoba mandated electric energy savings targets, this program component is not included within the scope of the Plan and will remain under the administration of Manitoba Hydro. Removal of this cost component was done to facilitate the following budget and performance comparisons.

Figure 5.4 illustrates that the Efficiency Manitoba three-year annual average electric savings will be 35 percent higher than those proposed under the Manitoba Hydro programs in 2015/16. This figure also illustrates that the Efficiency Manitoba three-year average natural gas savings will be 42 percent higher than those proposed within the Manitoba Hydro 2015/16 DSM Plan.

FIGURE 5.4 PORTFOLIO ENERGY SAVINGS COMPARISON



311 Figure 5.5 provides a side-by-side comparison of the Manitoba Hydro 2015/16 DSM
312 Plan and annual averages associated with the 2020/23 Efficiency Plan. It illustrates
313 that Efficiency Manitoba's planned overall annual budgets are over $6 million less.
314 Figure 5.5 illustrates the relative contributions of customer incentives, private sector
315 programming costs, Efficiency Manitoba staff, and overhead costs that contribute to
316 the overall reduction.

FIGURE 5.5 COMBINED PORTFOLIO BUDGET COMPARISON

Manitoba Hydro 2015/16		Efficiency Manitoba Annual Average 2020/23 Efficiency Plan
$49,329,000	INCENTIVE COSTS	$45,247,000 ↓ 8%
$9,927,000	PROGRAM COSTS	$13,765,000 ↑ 39%
$14,949,000	STAFF COSTS	$9,375,000 ↓ 37%
$2,190,000	OVERHEAD COSTS	$1,495,000 ↓ 32%
$76,396,000	**TOTAL COSTS**	**$69,881,000** ↓ 9%

Figure 5.6 illustrates the electric and natural gas portfolio acquisition cost comparisons between the Manitoba Hydro 2015/16 DSM Plan and the annual average associated with the 2020/23 Efficiency Plan. This figure illustrates that both the higher electric and natural gas savings are being achieved at a lower first-year acquisition cost.

FIGURE 5.6 ACQUISITION COST COMPARISON

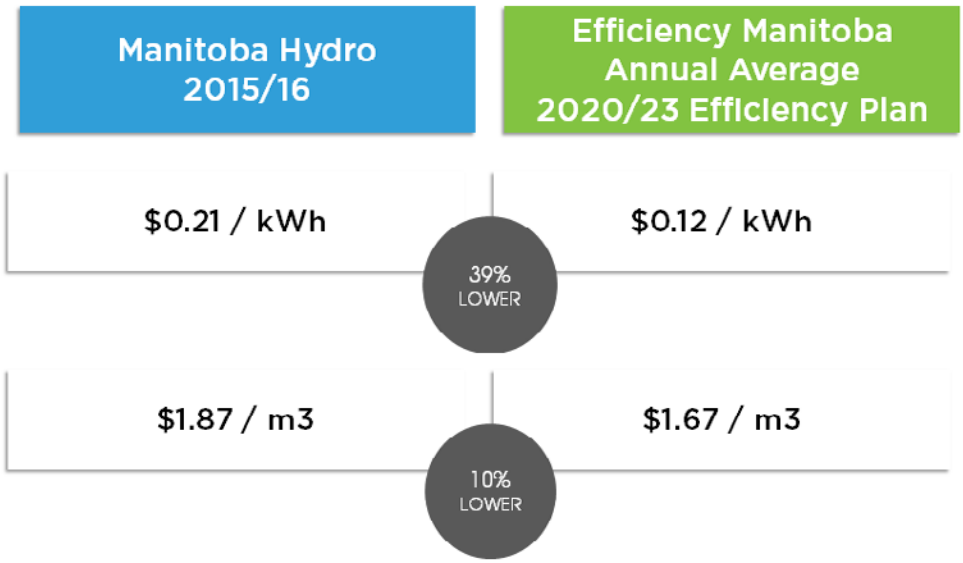
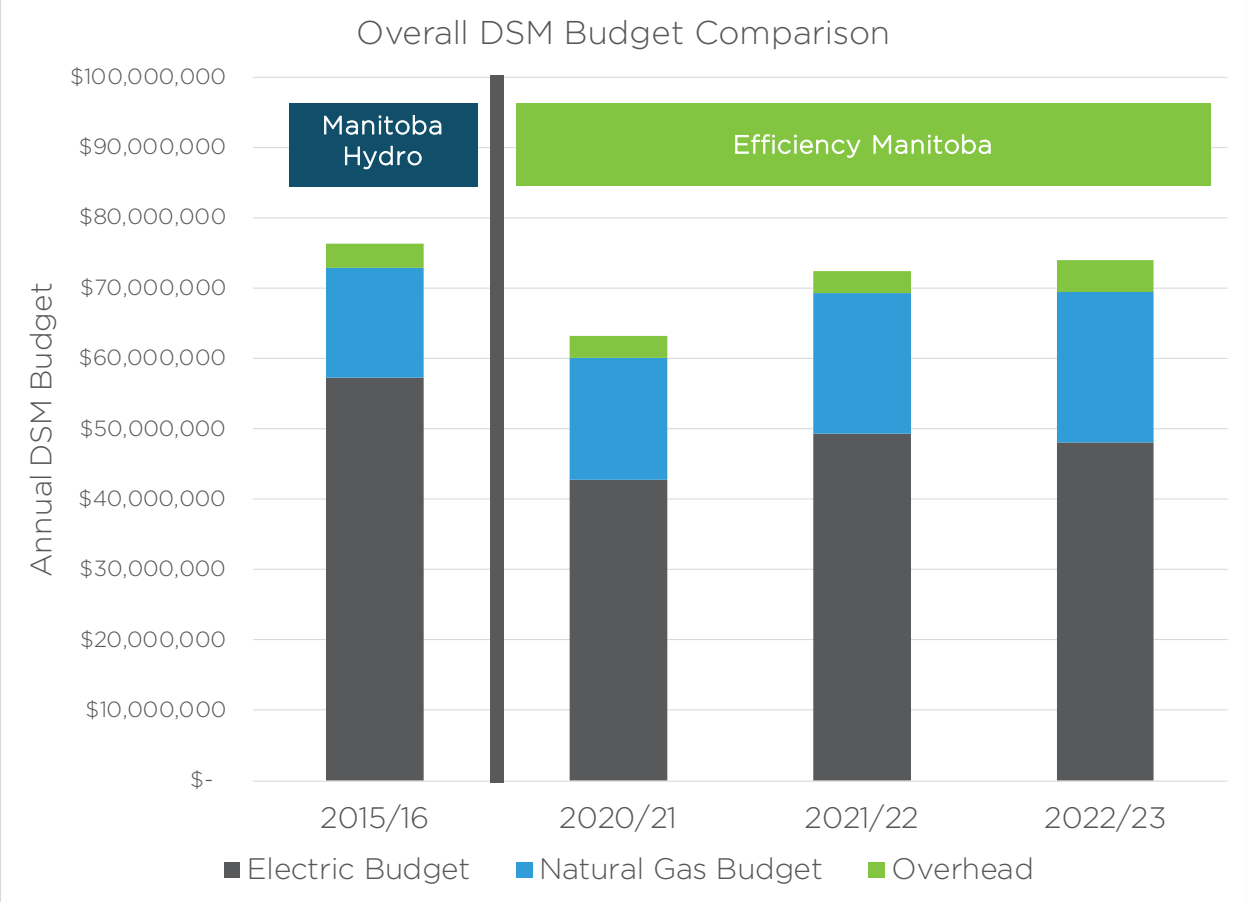


Figure 5.7 compares overall electric and natural gas portfolio budgets between the Manitoba Hydro 2015/16 DSM Plan and the three years included in the Plan. It illustrates the relative contribution of the annual Efficiency Manitoba electric, natural gas, and overall overhead budgets as compared to the Manitoba Hydro benchmark. Within this figure, the overhead budgets for both Manitoba Hydro and Efficiency Manitoba are inclusive of both corporate overhead staff and other overhead expenses.

FIGURE 5.7 ELECTRIC AND NATURAL GAS PORTFOLIO BUDGET COMPARISON



There are several factors driving the differences between to the 2015/16 Manitoba Hydro DSM Plan and the 2020/23 Efficiency Plan including the following:

- Increased energy savings outcomes:
  - As illustrated in Figure 5.4, the planned energy savings are higher for both the electric and natural gas portfolios. In the absence of programming changes, this would tend to increase program administrator costs.
  - The increase in electric energy savings being achieved also increases the impact of interactive effects. For Efficiency Manitoba, interactive effects increase the gross natural gas savings required to achieve the mandated savings target by 20 percent.
- Increased energy savings achieved through lower acquisition cost programming:
  - The LED Roadway Lighting Conversion Program is not included in the 2020/23 Efficiency Manitoba Plan. This program accounts for $11 million in costs and 9.4 GWh in savings within the Manitoba Hydro Plan, representing an acquisition cost of $1.17/kWh. Efficiency Manitoba understands this program will be completed by Manitoba Hydro within the 2019/20 fiscal year.
  - Efficiency Manitoba has planned to meet the more aggressive electric energy savings targets through commercial, industrial, and agricultural customer segment programming. Combined, programs

within this customer segment represent an acquisition cost of $0.11/kWh.

- Similarly, Efficiency Manitoba has planned to meet the more aggressive natural gas savings targets through commercial, industrial, and agricultural customer segment programming. Combined, programs within this customer segment represent an acquisition cost of approximately $1.00/$m^3$.

SECTION 6
EFFICIENCY MANITOBA HAS AN INCLUSIVE & DIVERSE PORTFOLIO THAT PROVIDES ADDITIONAL NON-ENERGY BENEFITS TO MANITOBANS

2020/23 EFFICIENCY PLAN

CUSTOMER SEGMENT DIVERSITY

INCLUSIVE PROGRAMMING FOR HARD-TO-REACH CUSTOMERS

SOCIAL, ECONOMIC & ENVIRONMENTAL BENEFITS

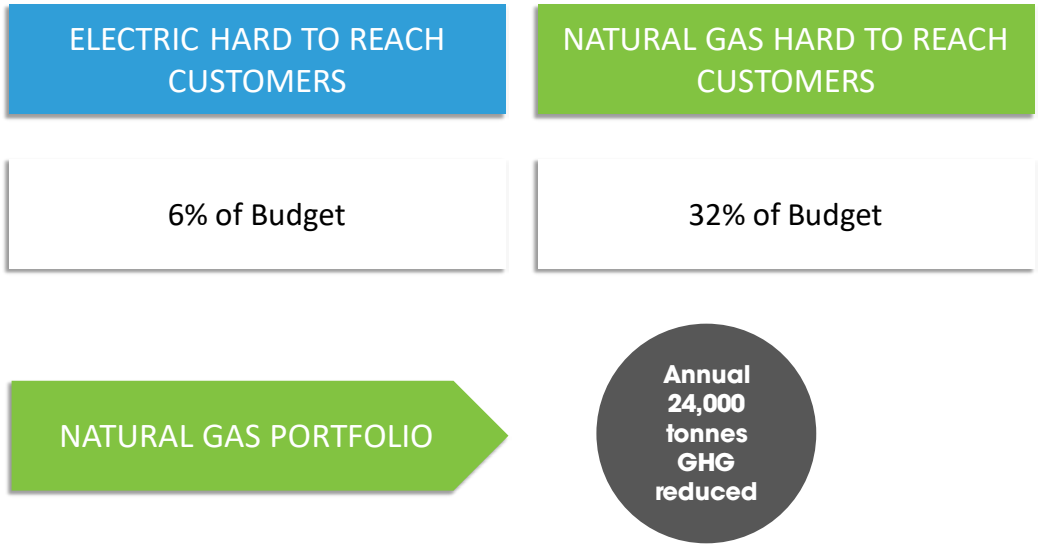
EFFICIENCY MANITOBA

CONTENTS

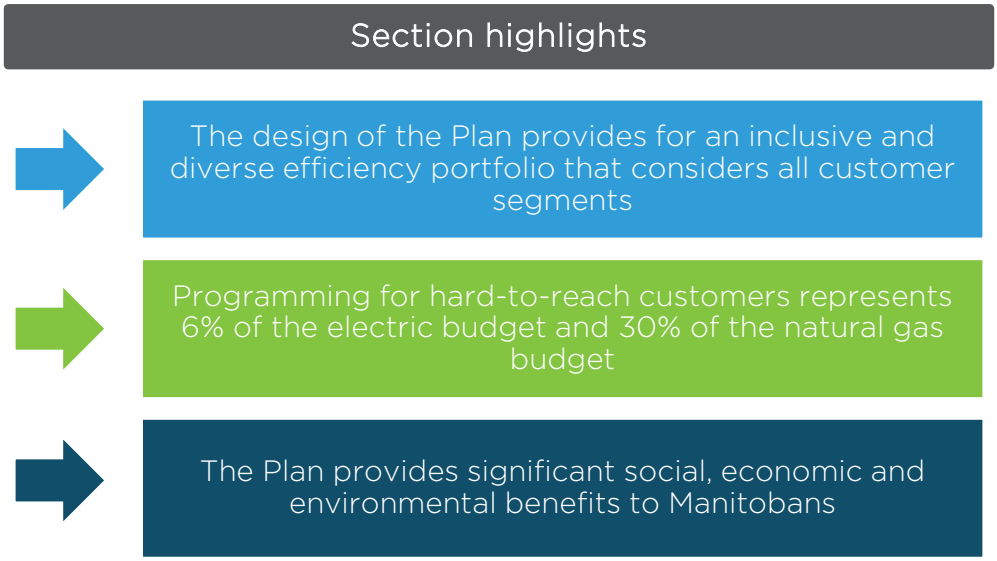
FIGURES

TABLES

SECTION 6 – EFFICIENCY MANITOBA HAS AN INCLUSIVE & DIVERSE PORTFOLIO THAT PROVIDES ADDITIONAL NON-ENERGY BENEFITS TO MANITOBANS



The 2020/23 Efficiency Plan (the "Plan") demonstrates that Efficiency Manitoba can achieve the mandated electric and natural gas savings targets along with any resulting reductions in greenhouse gas emissions ("GHG") in a manner that reaches all Manitobans. Two important considerations while developing the Plan were to identify the various customer segments represented in Manitoba and to develop a portfolio of energy efficiency programs that provide energy and non-energy benefits to Efficiency Manitoba's diverse customers. Efficiency Manitoba has reasonably apportioned the electric and natural gas budgets that are used to capture energy savings within each customer segment. Further, the Plan provides for numerous resulting Manitoba social, economic, and environmental benefits derived from the energy efficiency portfolios beyond the quantitative cost-effectiveness results and rate impacts summarized in *Section 5*.



6.1 THE DESIGN OF THE PLAN PROVIDES FOR AN INCLUSIVE & DIVERSE EFFICIENCY PORTFOLIO THAT CONSIDERS ALL CUSTOMER SEGMENTS

This section provides the context and details necessary to determine the planned energy savings within each customer segment and establish that the associated portfolio budget breakdown is both reasonable and accessible to the diverse customers within Manitoba.

6.1.1 APPROACH

Efficiency Manitoba has grouped activities, savings and costs by customer segment. As detailed in *Section 3.1.1*, Efficiency Manitoba has identified residential, residential income qualifying, Indigenous, and commercial, industrial, and agricultural (CIA) customer segments. These customer segments have been selected to be inclusive to all Manitobans and to capture unique customer characteristics and energy consumption patterns. Efficiency Manitoba will customize marketing and engagement efforts as well as delivery of its offers and programs based on unique and diverse customer needs. Members of the Energy Efficiency Advisory Group (EEAG), who

bring direct perspectives of the each of these customer segments, will be engaged to further assist Efficiency Manitoba in tailoring approaches that will result in the most effective strategies to reach customers.

Figure 6.1 illustrates the relative net savings contributions by customer segment (including codes and standards) toward the overall electric energy savings target. The figure demonstrates that Efficiency Manitoba can achieve an average 1.51 percent energy savings through the Plan while offering energy efficiency programming to all customer segments.

FIGURE 6.1 ELECTRIC PORTFOLIO SAVINGS & TARGET SUMMARY

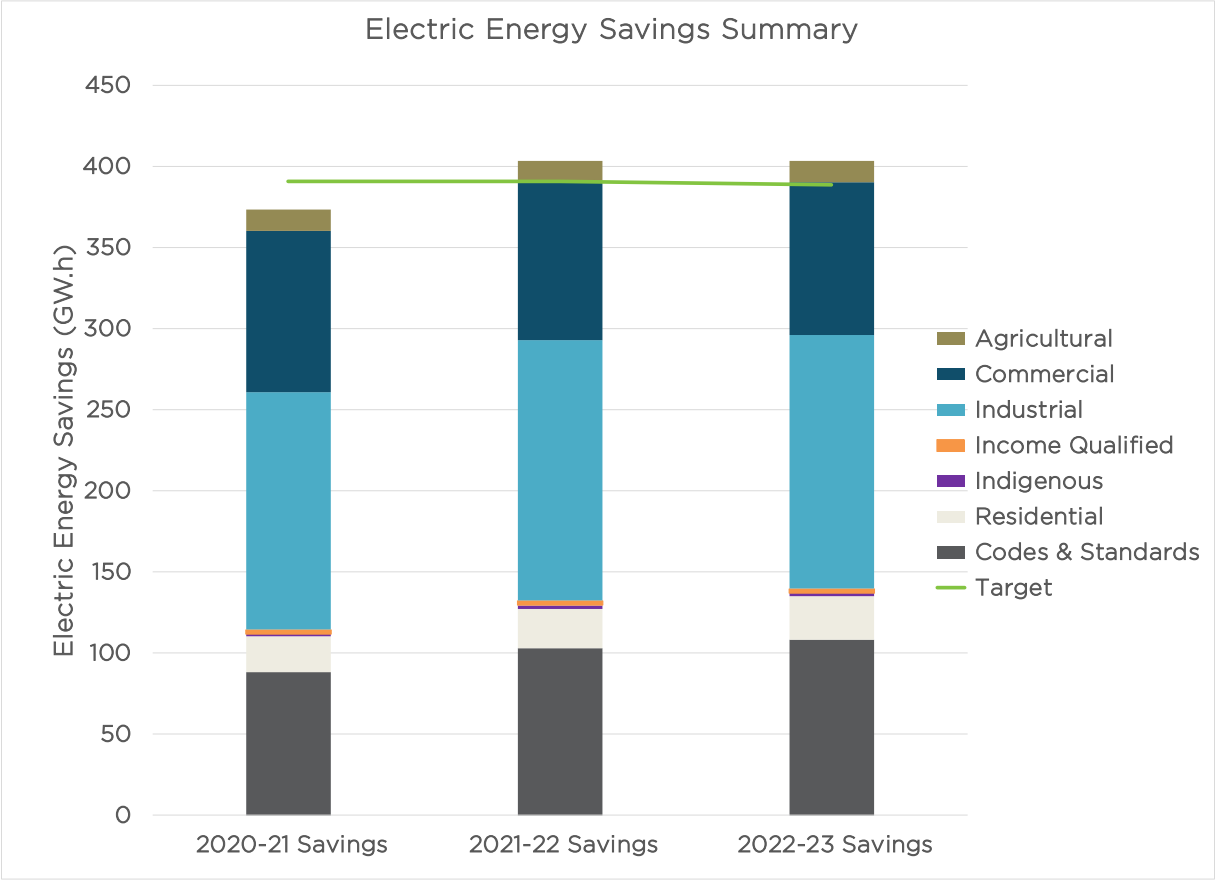
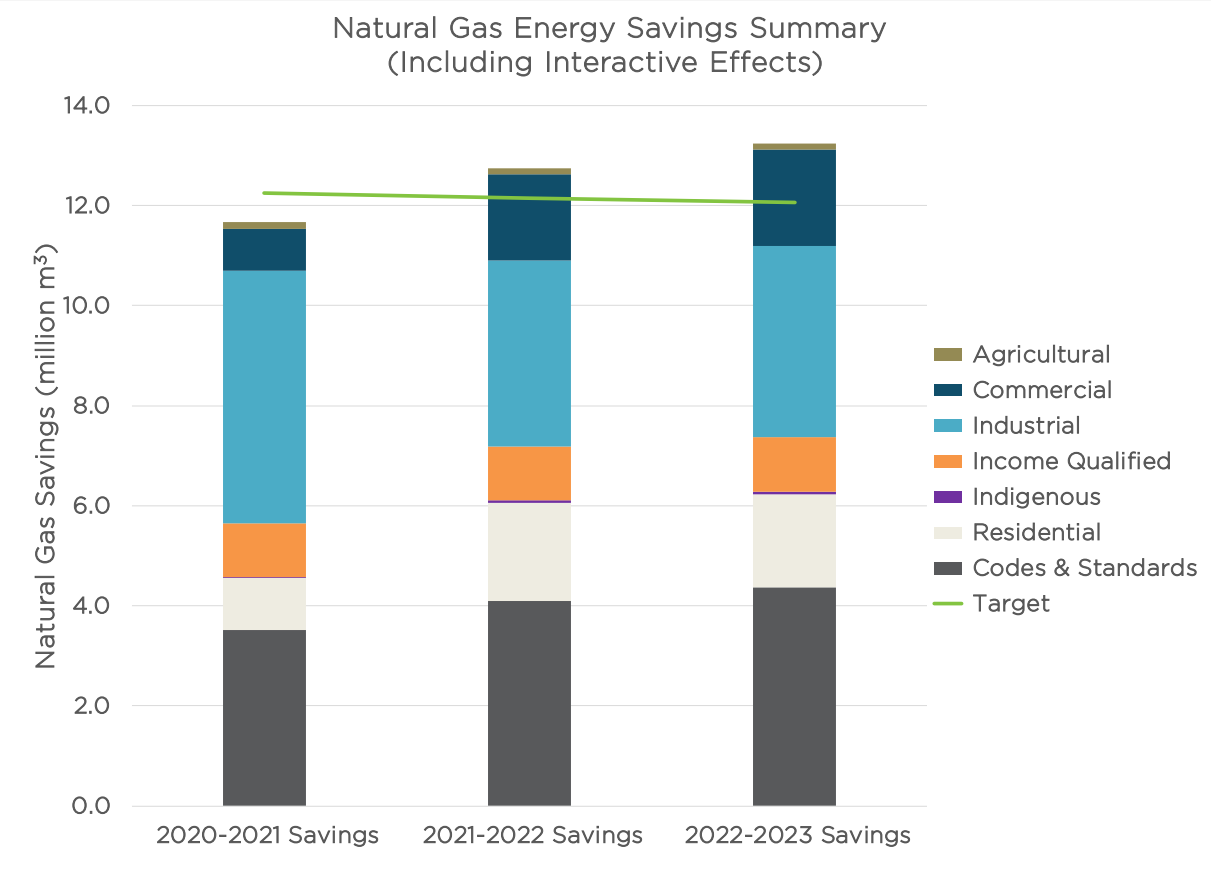


Figure 6.2 illustrates the relative net savings contributions by customer segment (including codes and standards) toward the overall achievement of the natural gas

energy savings target. Included within the residential and commercial segments are the interactive effects from the net electric energy savings. These interactive effects reduce the net natural gas energy savings from these customer segments. The figure demonstrates that on average the Plan achieves 0.78 percent of the 2017/18 natural gas baseline used while offering energy efficiency programming to all customer segments.

FIGURE 6.2 NATURAL GAS PORTFOLIO SAVINGS & TARGET SUMMARY



6.1.2 CUSTOMER SEGMENT CONSIDERATIONS

This section demonstrates the overall diversity of the Plan by including savings projections and associated program budgets represented within each customer segment.

ELECTRIC PROGRAM DESIGN: CUSTOMER SEGMENT SAVINGS & BUDGET

Figure 6.3 provides a summary of the projected annual electric energy savings by customer segment. Annual changes in electric energy savings are driven by changes in programming and participation within each of the customer segments.

FIGURE 6.3 ELECTRIC PORTFOLIO – ANNUAL SAVINGS SUMMARY

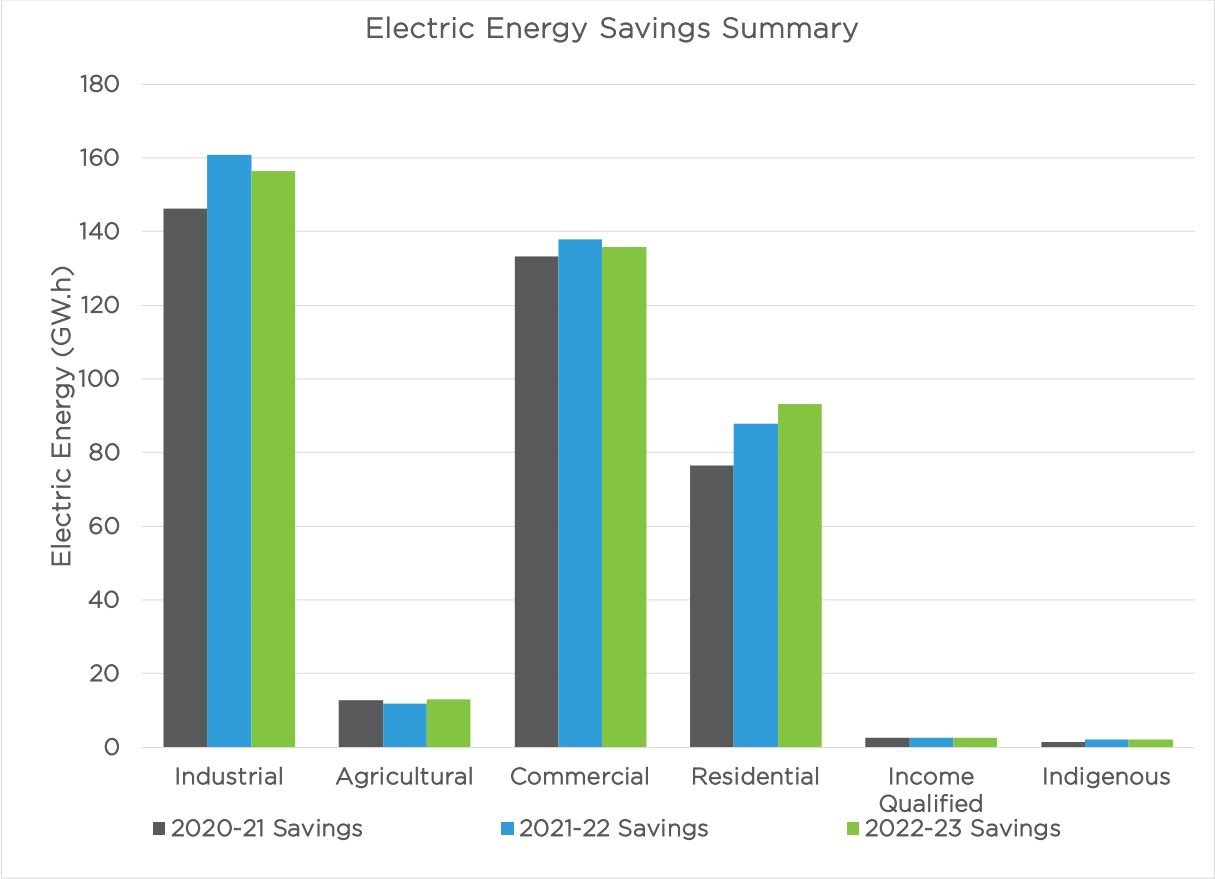


Figure 6.4 provides a summary of the projected annual electric budget by customer segment. In addition to the planned electric programming budget, included are the relative costs of the enabling strategies and corporate overhead components described in *Section 4*. In most cases, annual budget amounts are expected to remain relatively flat across an individual customer segment. Exceptions in the industrial customer segment are anticipated due to the large energy savings associated with

individual projects and the resulting one-time incentive payments. Within the residential market, increased codes and standards attribution due to targeted compliance activities along with planned new programming in the Home Renovation Bundle introducing incentive offers for measures such as high efficiency windows and doors in 2021/22 results in the increased electric energy savings. The trajectory of the budget within this segment between 2020/21 and the following two years is caused by this new residential programming.

FIGURE 6.4 ELECTRIC PORTFOLIO – ANNUAL BUDGET SUMMARY

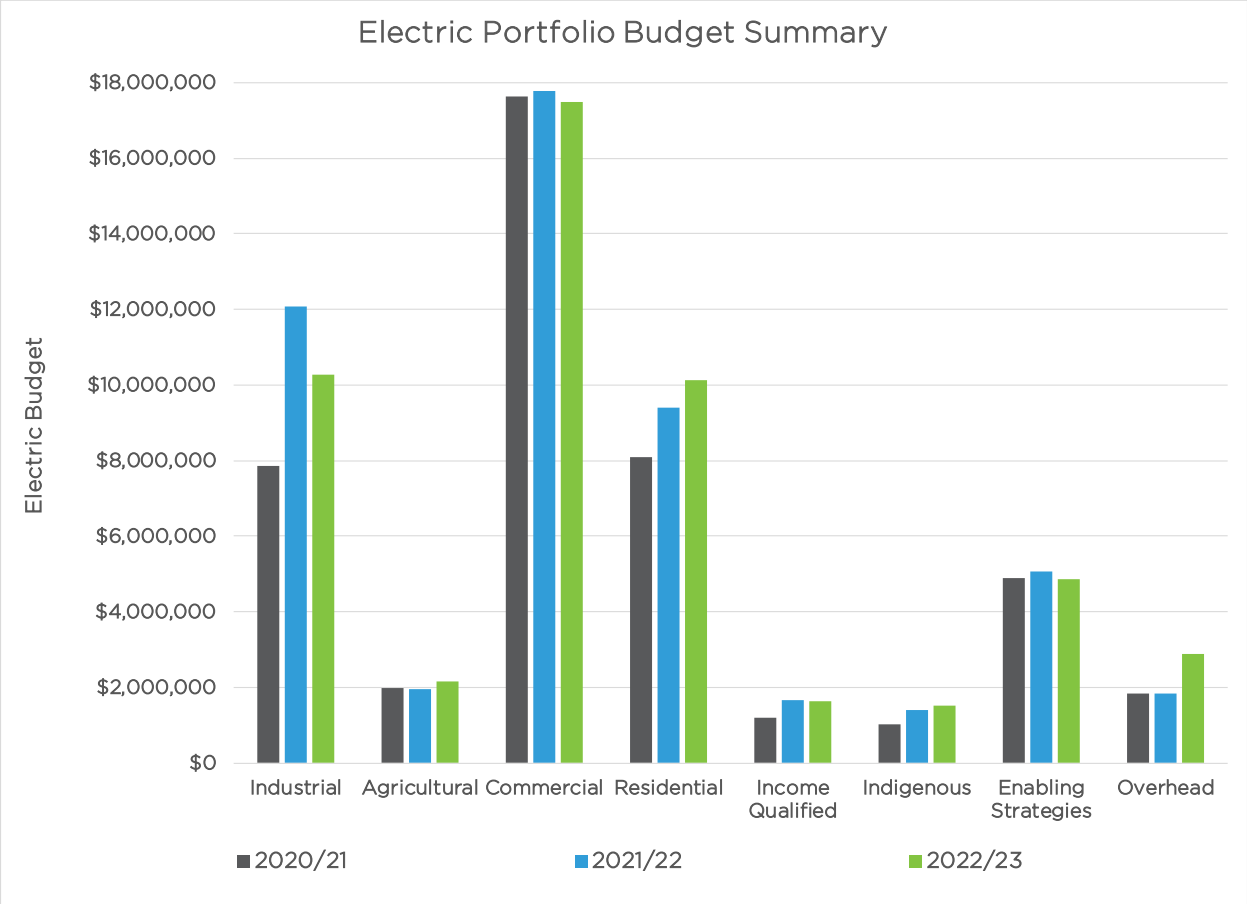


Table 6.1 provides additional context comparing the percent of overall electric savings and budget by customer segment. Also shown is a representative percentage of annual electric energy consumptions based on fiscal 2017/18 data from the Manitoba Hydro Annual Report[1]. Energy savings projections generally correspond to the magnitude of the energy consumption or opportunity within a customer segment. Deviations of this correlation are due to inclusion of existing residential and commercial codes and standards, as well as other factors such as the available energy efficiency technologies and programs, and the cost of programming. First Nation on-reserve consumption is separated out in Table 6.1 and includes both residential and commercial components. Differences between the relative proportion of savings and budget shown in Table 6.1 are driven by the different acquisition costs (the cost to achieve a unit of energy saved, expressed as $/first year savings in kWh or m^3) encountered within the various customer segments. To illustrate, industrial energy savings are projected to be available at a relative low acquisition cost when compared to Indigenous energy savings which due to geographic and other considerations represent higher energy savings acquisition costs. Additional customer segment details and analysis are provided in *Appendix A. – Section A4 through Section A7*.

[1] Manitoba Hydro 2017/18 Annual Report, Page 107. https://wwWhydro.mb.ca/corporate/ar/

TABLE 6.1 ELECTRIC PORTFOLIO SUMMARY – COMPOSITION OF ANNUAL ENERGY SAVINGS & BUDGET BY CUSTOMER SEGMENT

Customer segment / category	2020-23 Average		2017/18
	Savings (%)	Budget (%)	Energy consumption (%)
Industrial	39%	20%	66.1%
Agricultural	3%	4%	
Commercial	35%	36%	
Residential	22%	19%	33.9%
Income qualified	1%	3%	
Indigenous	0.5%	3%	
Enabling strategies	-	10%	-
Overhead	-	4%	-
Total	100%	100%	100%

Note. May not add up exactly due to rounding. 2017/18. Energy Consumption from the Manitoba Hydro 2017/18 Annual Report.

NATURAL GAS PROGRAM DESIGN: CUSTOMER SEGMENT SAVINGS & BUDGET

Figure 6.5 provides a summary of the projected annual natural gas savings by customer segment. Interactive effects resulting from the electric portfolio are accounted for separately instead of being allocated to an individual customer segment or natural gas program bundle in this figure. Annual changes in natural gas energy savings are driven by changes in programming and participation within each of the customer segments.

FIGURE 6.5 NATURAL GAS PORTFOLIO – ANNUAL SAVINGS SUMMARY

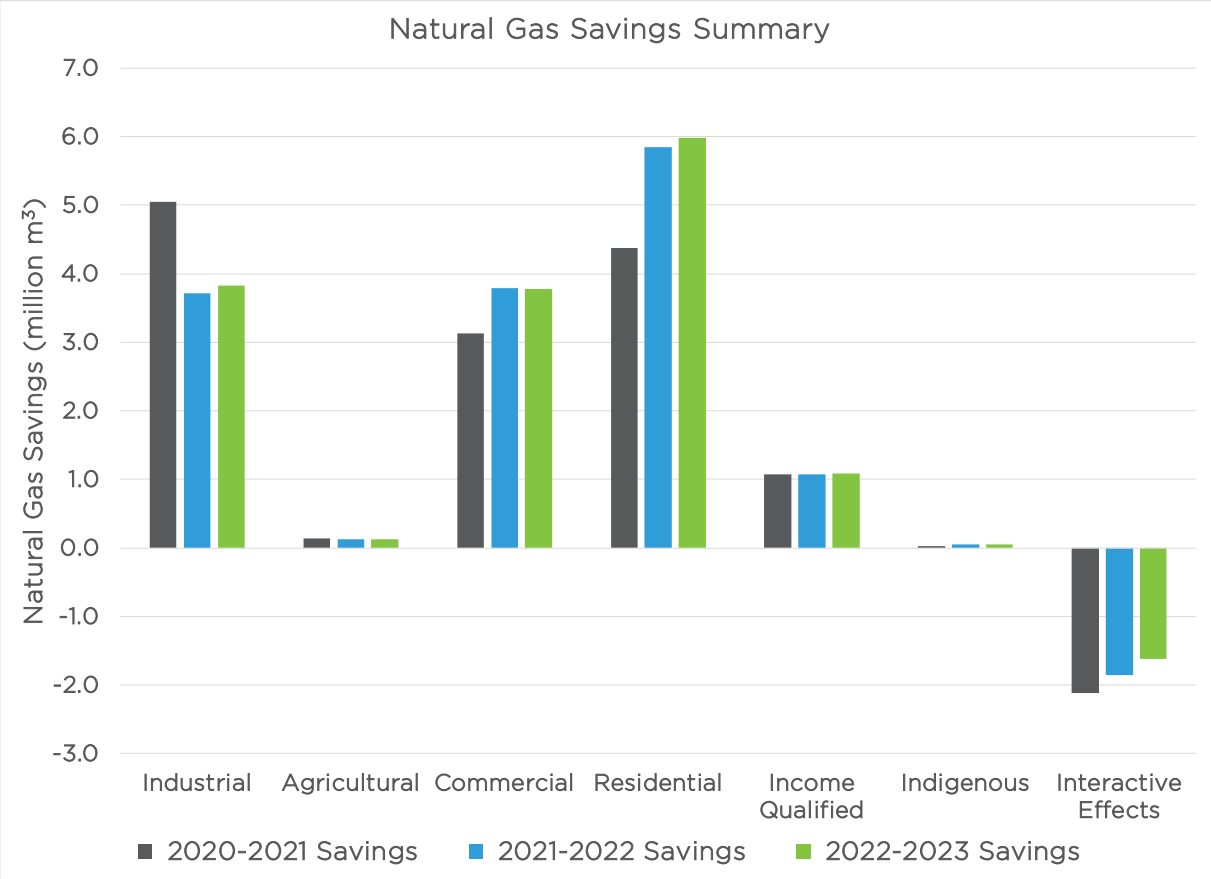


Figure 6.6 provides a summary of the projected annual natural gas budget by customer segment. As with the electric budget, included within Figure 6.6 are the relative costs of the enabling strategies and corporate overhead components described in *Section 4* and allocated to the natural gas portfolio. In most cases, annual budget amounts are expected to remain relatively flat across an individual customer segment. Exceptions in the residential market are driven by planned increased programming and correspondingly higher natural gas energy savings which are influencing the trajectory of the budget within this segment.

FIGURE 6.6 NATURAL GAS PORTFOLIO - ANNUAL BUDGET SUMMARY

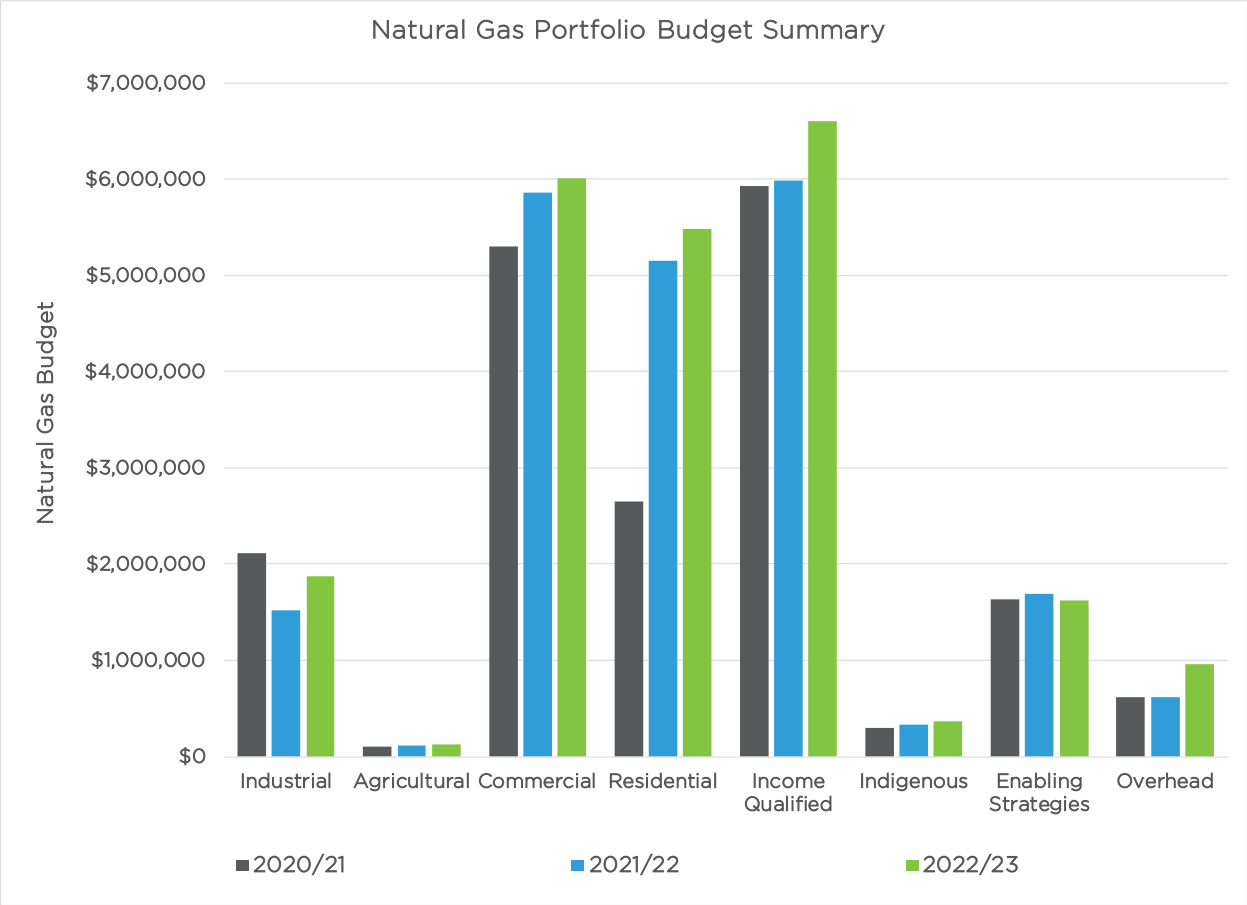


Table 6.2 provides the percent of overall savings and budget associated with the natural gas portfolio by customer segment. It provides a relative comparison to natural gas energy consumption within various customer segments. Consumption values are based on fiscal 2017/18 data from the Manitoba Hydro Annual Report[2]. Natural gas energy savings projections generally correspond to the magnitude of the natural gas consumption or opportunity within a customer segment. Deviations of this correlation are due to the impact of residential and commercial codes and standards, inclusion of interactive electric portfolio effects on residential and commercial

[2] Manitoba Hydro 2017/18 Annual Report, Page 107. https://www.hydro.mb.ca/corporate/ar/

customer segments as well as the available energy efficiency programs and the required cost of programming. The natural gas income qualified and Indigenous natural gas program bundles lower the impact of a homeowner's winter heating energy bill through energy efficiency upgrade support. This programming captures the resulting natural gas energy savings towards achievement of the targets through offers for free insulation upgrades and upgrades to high-efficiency furnaces.

TABLE 6.2 NATURAL GAS PORTFOLIO SUMMARY – COMPOSITION OF ANNUAL ENERGY SAVINGS & BUDGET BY CUSTOMER SEGMENT

Customer segment / category	2020-23 Average		2017/18
	Savings (%)	Budget (%)	Energy consumption (%)
Industrial	29%	9%	60.5%
Agricultural	1%	1%	
Commercial	25%	27%	
Residential	37%	21%	39.5%
Income qualified	7%	30%	
Indigenous	0.3%	2%	
Enabling strategies	-	8%	-
Overhead	-	3%	-
Total	100%	100%	100%

Note. May not add up exactly due to rounding. 2017/18 Energy Consumption from the Manitoba Hydro 2017/18 Annual Report.

Differences between the relative proportion of savings and budget shown in Table 6.2 are driven by the different acquisition costs ($ per first year savings) encountered within the various customer segments. As with the electric portfolio, it is anticipated that industrial energy savings are available at a relative low acquisition cost when compared to income qualified or Indigenous energy savings. Within these latter customer segments, higher energy savings acquisition costs are due to their hard-to-

reach nature and therefore there are additional incentives and program delivery costs associated with reaching these customer segments.

Indigenous programming is primarily based in areas without access to natural gas; therefore, this natural gas savings and the natural gas budget for this customer segment is exclusive to the Metis Income Qualified program described in *Appendix A – Section A6*. Further customer segment details associated with the natural gas portfolio and analysis are provided in *Appendix A*.

6.2 PROGRAMMING FOR HARD-TO-REACH CUSTOMER SEGMENTS REPRESENTS 6% OF THE ELECTRIC EFFICIENCY BUDGET & 32% OF THE NATURAL GAS EFFICIENCY BUDGET

6.2.1 ELECTRIC PORTFOLIO

Referring to the electric portfolio budget summary provided in Table 6.1, programming for the income qualified customer segment represents an average of three percent of the total overall electric budget. Electric portfolio budget represented by the Indigenous customer segment represents an additional three percent of the total annual average electric budget. When combined, the electric program expenditure includes six percent of the total planned budget for these hard-to-reach customer segments. This corresponds to Section 11(c) of the Efficiency Manitoba Regulation (the "Regulation"), which requests the Public Utilities Board's consideration to allocate at least five percent of Efficiency Manitoba's DSM budget to lower income and hard-to-reach customer segments, if practical.

6.2.2 NATURAL GAS PORTFOLIO

Based on the natural gas portfolio budget summary provided in Table 6.2, programming for income qualified customers represents an average of 30 percent of

the total overall natural gas budget. Natural gas portfolio budget represented by the Indigenous customer segment represents an additional two percent of the total annual average budget. When combined, the natural gas program expenditure includes 32 percent of the total planned budget for these hard-to-reach customer segments. This also addresses Section 11(c) of the Regulation.

6.3 THE PLAN PROVIDES SIGNIFICANT SOCIAL, ECONOMIC & ENVIRONMENTAL BENEFITS TO MANITOBANS

The programming, technologies, and incentives packaged within the Plan all provide additional benefits to Manitobans beyond direct electric and natural gas energy and cost savings. These "non-energy" benefits do not appear in the cost-effectiveness tests, bill or rate impacts. This section highlights these additional unique benefits that add to the overall social, economic and environmental value of Efficiency Manitoba.

6.3.1 SOCIAL BENEFITS

Social benefits of energy efficiency may be realized within the home, business, or community of participating customers.

Within a home or business, additional customer benefits may include[3]:

- improved occupant comfort;
- improved indoor air quality;
- improved lighting quality;
- increased property value; and
- reduced cost of maintenance.

[3] IEA, Capturing the Multiple Benefits of Energy Efficiency, 2014, Page 28, https://www.iea.org/publications/freepublications/publication/Multiple_Benefits_of_Energy_Efficiency.pdf

For example, a customer that upgrades to a ground source heat pump from an electric baseboard heating system will realize the reduced energy costs associated with the more efficient technology. Additionally, this customer may also experience improved home comfort during summer months as the new ground source heat pump system offers space cooling capabilities.

For the income qualified customer segment, social benefits of energy efficiency are particularly helpful. In addition to improving home comfort, lowering a customer's energy use assists to reduce overall home ownership operating expenses.

Within a community, energy efficiency programing helps to reduce operating costs for shared buildings and facilities, which could provide for a positive social impact[4]. This is particularly true in the case of rural municipalities, where recreational facilities may be faced with increasing operating costs. When energy efficiency programming is leveraged to reduce energy costs and extend the lifespan of a recreational facility, this can help sustain these important places of social gathering at the local level.

Efficiency Manitoba Act Section 9(g)(iii) references energy security when assessing the benefits of energy efficiency that all Manitobans may realize. The International Energy Agency (IEA) defines the benefit as it relates to energy security as follows:

> *"Energy efficiency can bolster regional or national energy security. By reducing overall energy demand, efficiency can reduce reliance on imports of oil, gas and coal. Energy efficiency also reduces the likelihood*

[4] IEA, Capturing the Multiple Benefits of Energy Efficiency, 2014, Page 77, https://www.iea.org/publications/freepublications/publication/Multiple_Benefits_of_Energy_Efficiency.pdf

of supply interruptions; the only energy source that cannot be interrupted is the energy that is not used."[5]

There are several additional possible interpretations of energy security benefits specific to the Manitoba context including the following:

- for the electric portfolio, energy efficiency provides a means to defer costs associated with distribution and transmission infrastructure. Less poles and wires mean there are fewer physical systems that are susceptible to potential failure or damage due to extreme weather events which notionally results in a more secure electric grid;
- for electric customers that choose to participate in emerging energy technology program offerings such as the solar photovoltaic incentive program, energy security to these customers could mean satisfying a portion of building energy needs through the production of local electricity thus displacing a portion previously purchased from Manitoba Hydro;
- in a similar fashion, for customers that choose to switch to a biomass heating system through the emerging energy technology program, energy security could be interpreted as diversifying the source of heating fuels from electric or natural gas to locally sourced biomass providing a degree of potential redundancy; and
- with respect to the natural gas portfolio, energy efficiency provides a means to reduce reliance and purchases of a fossil-fuel energy supply that is sourced outside of Manitoba.

[5] https://www.iea.org/topics/energyefficiency/multiplebenefits/energy-security-.html

6.3.2 ECONOMIC BENEFITS

According to Environmental Careers Organization (ECO) Canada, the energy efficiency sector directly employed 436,000 workers across 51,000 establishments within six key industries across Canada in 2018. These six key industries include construction, manufacturing, wholesale trade, professional and business services, utilities, and other services. Together, these establishments and workers generated $82.6 billion in estimated energy efficiency operating revenues in 2018[6]. The energy efficiency workforce is positioned to grow by 8.3 percent from 2018 to 2019, creating over 36,000 jobs nationally (ECO2019). According to a study commissioned by Clean Energy Canada, Manitoba is projected to see a net employment increase of 58,612 full-time equivalent jobs related to energy efficiency from 2017 to 2030[7].

Energy efficiency can also provide economic benefits to participating customers and organizations that provide external support services to Efficiency Manitoba, as well as installers, contractors, service providers and communities that deliver and install energy efficient technologies. Many initiatives recommended in the Plan help to support the energy efficiency industry in the province. For example, retail rebate offers drive traffic to stores throughout Manitoba, helping to increase retail foot traffic and sales revenue. Offering financing programs also lends support to contractors in both urban and rural areas. These programs help contractors to work with customers who may not have been able to afford energy efficiency upgrades on their own and

[6] Energy Efficiency Employment in Canada. ECO Canada. April 2019. Error! Hyperlink reference not valid., https://www.eco.ca/wp-content/uploads/ECO-Canada-Energy-Efficiency-Employment-in-Canada.pdf
[7] Economic Impact of Improved Energy Efficiency in Canada, Clean Energy Canada, 2018. https://cleanenergycanada.org/wp-content/uploads/2018/04/TechnicalReport_EnergyEfficiency_20180403_FINAL.pdf, Page 8.

provide a marketing tool for the business. In addition, offering incentives and support for new builds and major renovations allows Efficiency Manitoba to grow the network of general contractors and sub-trades across the province. These programs also serve to educate contractors and consumers on sound building science principles and energy efficient construction practices.

For commercial, industrial, and agricultural customers, energy efficiency may be part of a broader business strategy to pursue waste reduction, sustainability objectives, or productivity upgrades. Considering energy efficiency within broader industrial projects may lead to economic benefits such as supporting facility expansion in Manitoba or supporting projects to reduce overall maintenance expenses of equipment. For agricultural customers specifically, energy technology offerings such as a bioenergy program may support a broader utilization of agricultural waste products. This offering could create increased demand for local biomass products which may lead to agricultural waste reduction when it is more profitable for agricultural producers to convert waste to a biomass supply for marketing purposes.

For Indigenous customers, programming within the Plan is designed to not only encourage energy efficiency but to also create economic development opportunities through leveraging local labour to perform installs and retrofits. In communities where economic development may be limited, these opportunities not only provide energy efficiency benefits but much needed labour skills and employment.

6.3.3 ENVIRONMENTAL BENEFITS

GHG emissions associated with energy are an important consideration when evaluating the impacts of the Plan. Based on the very low domestic GHG emission

intensity of Manitoba's hydroelectric generation, GHG emissions associated with electricity savings are not included in this Plan.

For the combustion of natural gas, Efficiency Manitoba uses a GHG emission factor of 0.0019 tonnes CO_2e/m^3 as based on data from Manitoba Hydro[8]. Table 6.3 summarizes the annual incremental GHG emission reductions associated with the natural gas portfolio. These GHG savings are equivalent to removing over 5,000 cars per year from within Manitoba.

TABLE 6.3 NATURAL GAS SAVINGS SUMMARY – TOTAL ANNUAL GHG SAVINGS

2020/21	2021/22	2022/23
22,200 tonnes CO_2e	24,200 tonnes CO_2e	25,200 tonnes CO_2e

In addition to electric and natural gas savings, certain programs and initiatives put forth in the Plan also achieve water savings. Several programs across multiple customer segments, such as the Small Business Program and Direct Install Offers, provide customers with water-saving devices including pre-rinse spray valves and energy-efficient showerheads. These devices reduce the volume of water used while reducing the electricity or natural gas required for heating the water.

Waste reduction is another benefit of several Efficiency Manitoba offers. The Appliance Recycling Program is one such program, as approximately 95 percent of refrigerators and freezers picked up through the program can be recycled. Recyclable materials include plastics, metal, and oil, all of which are deferred from landfills. In addition, providing incentives towards technologies with longer product lives (for example, LED bulbs and fixtures) helps to further reduce waste.

[8] https://wwWhydro.mb.ca/environment/pdf/ghg-emission-factors.pdf

SECTION 7
EFFICIENCY MANITOBA IS DEVELOPING A COMPREHENSIVE APPROACH TO MONITOR, EVALUATE & CONTINUOUSLY IMPROVE PERFORMANCE

2020/23 EFFICIENCY PLAN

MONITORING SAVINGS & BUDGETS

DSM SCORECARD

EVALUATION FRAMEWORK & PLAN

EMERGING OPPORTUNITIES & CONTINUOUS IMPROVEMENT

EFFICIENCY MANITOBA

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SECTION 7 – EFFICIENCY MANITOBA IS DEVELOPING A COMPREHENSIVE APPROACH TO MONITOR, EVALUATE, & CONTINUOUSLY IMPROVE PERFORMANCE

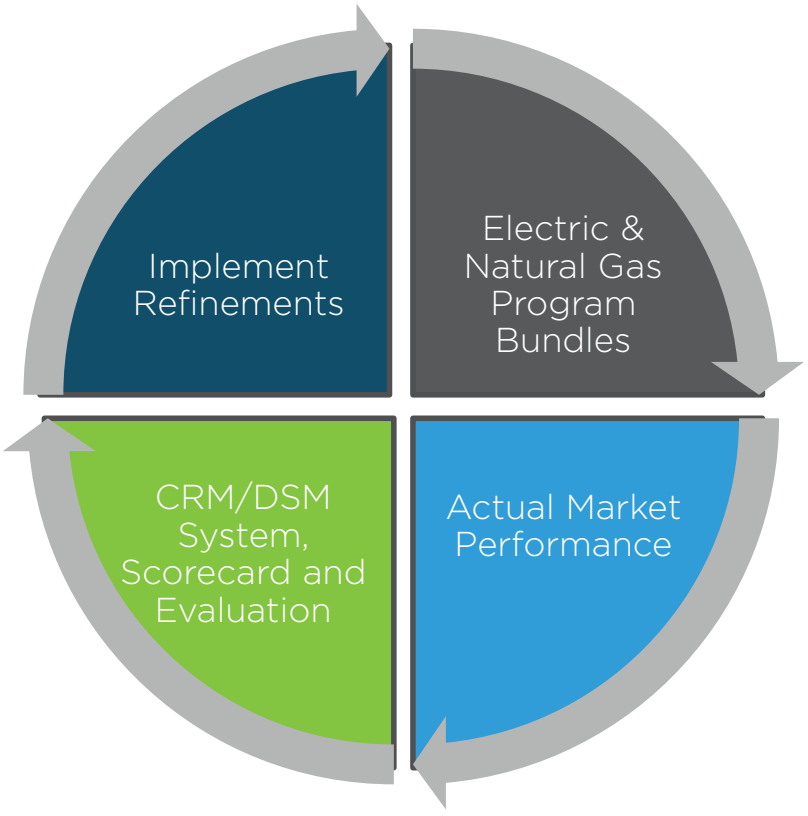
The 2020/23 Efficiency Plan (the "Plan") positions Efficiency Manitoba on a trajectory for long-term attainment of the cumulative electric and natural gas energy savings targets directed within the Efficiency Manitoba Act (the "Act"). The approach adopted within the Plan is based on thorough analysis and reasonable projections; however, Efficiency Manitoba recognizes the benefits of incorporating flexibility to maintain responsiveness to opportunities throughout the Plan time-horizon. The Plan proposes to evaluate performance throughout, implement improvements, and pursue unplanned time-sensitive opportunities as they arise using a contingency fund. This section outlines how Efficiency Manitoba will monitor performance and implement adjustments where required. Figure 7.1 provides a continuous improvement schematic illustrating the various performance monitoring activities discussed within the section.

Section 12(5) within the Act allows Efficiency Manitoba to modify the Plan as deemed necessary during any approved three-year period, provided these changes maximize the amount or cost-effectiveness of net savings and do not exceed approved costs for the three-year plan in place. This section presents the planned actions that will help Efficiency Manitoba identify opportunities and adapt as required to ensure overall portfolio savings and budget targets are achieved.

Section highlights

- Efficiency Manitoba will monitor the energy savings and budgets at the detailed measure level
- A scorecard will be used to benchmark portfolio and corporate performance against other energy efficiency programs
- An evaluation, and measurement and verification framework and plan has been developed
- Efficiency Manitoba is developing a strategy to track and capture emerging opportunities

FIGURE 7.1 PROPOSED PERFORMANCE MONITORING & CONTINUOUS IMPROVEMENT CYCLE

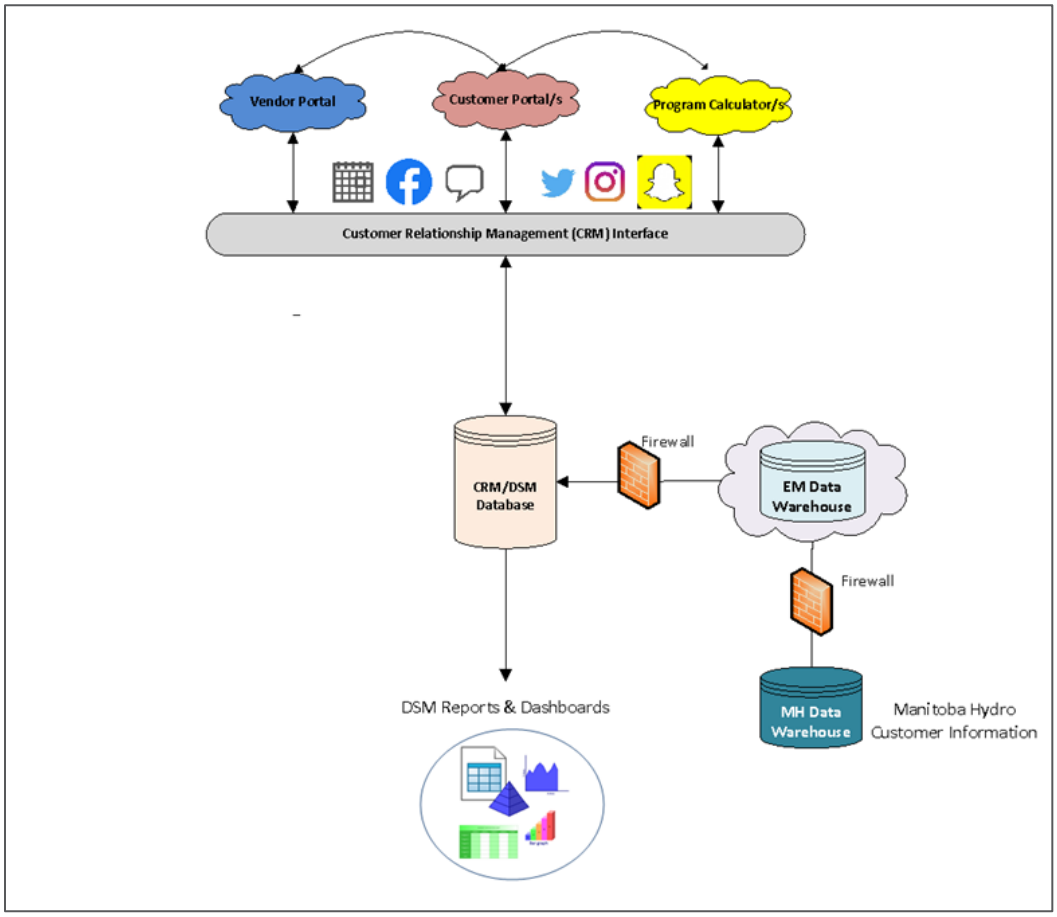


7.1 EFFICIENCY MANITOBA IS PROCURING A CRM/DSM SYSTEM TO CONTINUOUSLY MONITOR & REPORT ON THE SAVINGS & BUDGETS AT THE MEASURE & PROGRAM BUNDLE LEVEL

Foundational to the success of Efficiency Manitoba is the procurement and implementation of a comprehensive and integrated customer relationship management/demand side management (CRM/DSM) system. This is a critical and overarching strategy that will streamline and enhance operations at Efficiency Manitoba from both customer-facing and internal operations perspectives. In addition to the customer service and operational benefits discussed in *Appendix A - Section A2.1.2*, the CRM/DSM system will be an invaluable tool providing Efficiency Manitoba with the ability to continuously monitor and report on savings and budget at the measure and program bundle level. As performance gaps are identified, adjustments can be made to marketing and delivery activities to ensure intended performance is being achieved on a near real-time basis. A schematic illustrating the preliminary architecture of the CRM/DSM system is provided in Figure 7.2.

The ongoing monitoring and evaluations of DSM program energy savings and results will be tracked through reporting and dashboard functions. Additionally, access to portfolio performance data will be provided to independent evaluators.

FIGURE 7.2 PROPOSED HIGH-LEVEL ARCHITECTURE OF CRM/DSM SYSTEM



7.2 EFFICIENCY MANITOBA HAS DEVELOPED A SCORECARD TO BENCHMARK DSM PORTFOLIO & CORPORATE PERFORMANCE AGAINST OTHER ENERGY EFFICIENCY PROGRAM ADMINISTRATORS

Efficiency Manitoba has developed a DSM Scorecard to benchmark both portfolio performance and corporate performance against other energy efficiency program administrators. Integrating regular benchmarking will establish baseline data and measures in critical performance areas and help identify potential practices for adoption by Efficiency Manitoba. The scorecard will be used to report on actual

performance to ensure Efficiency Manitoba is able to identify gaps with actual performance and then prioritize resources and strategies for improvement.

Efficiency Manitoba's Scorecard will be populated annually to gauge year-over-year performance and variances. The Scorecard will evaluate performance across the following categories:

- Operations: Including operational metrics in areas such as stakeholder engagement; DSM portfolio design and evaluation; customer participation; employee satisfaction and positive engagement; leadership, transparency and culture.
- Planning: Including planning metrics in areas such as program equity; data use and sharing; future energy savings targets; emerging technologies; and energy efficiency inclusion in resource planning.
- Results: Including results metrics in areas such as achieved depth of incremental electric and natural gas energy savings; average overall acquisition costs; achievement of energy savings targets; and maximizing benefits, and value, to Manitobans.

This comprehensive approach to benchmarking will provide Efficiency Manitoba with critical feedback not only in the programs and services that are offered, but also in the operation of the business overall thereby maximizing value for money with Efficiency Manitoba's budget while enabling a culture of continuous improvement.

7.3 EFFICIENCY MANITOBA HAS DEVELOPED A COMPREHENSIVE EVALUATION, MEASUREMENT & VERIFICATION FRAMEWORK & PLAN

Efficiency Manitoba recognizes the importance and value of undertaking independent evaluations of DSM initiatives. Evaluation is a feedback mechanism to assess program performance for internal review, adjustment, and continuous improvement. The two primary purposes of conducting DSM program evaluations are to reliably assess and document program effects and to improve program designs and processes to be increasingly cost-effective at achieving the energy savings. As Efficiency Manitoba proceeds with implementation of the Plan, these evaluations are needed to validate delivery of a successful portfolio of programs.

As outlined in Section 16 of the Act, Efficiency Manitoba is required to use an independent assessor to evaluate the results and cost-effectiveness of those results within the Plan. Further, Section 9(m) of the Act prescribes that the Plan must include a description of the assessment methodology. Efficiency Manitoba contracted to develop a 2020/23 Evaluation, Measurement and Verification Framework and Plan[1].

There are three main objectives of this DSM evaluation framework and plan:

- Provide DSM evaluation, planning and implementation guidance for Efficiency Manitoba;
- Provide a common understanding of DSM evaluation, measurement and verification, and terminology; and

[1] Please refer to the details provided by Econoler included in *Attachment 5 – Evaluation Framework and Plan*

- Lay the groundwork for a transparent and rigorous DSM evaluation process throughout the three years of the Plan.

7.3.1 EVALUATION FRAMEWORK

The Evaluation, Measurement, and Verification Framework provides the evaluation guidelines and industry-accepted evaluation definitions and best practices. This framework is designed to be a longer-term document that persists beyond the three-year Plan. Key components of the framework include the establishment of DSM evaluation principles, clarity on the various types of evaluations, and prioritization criteria to be used when developing the customer segment evaluation plan.

The following five principles have been identified within the DSM evaluation framework:

- Results-focused: Evaluation should be an integral component of the ongoing DSM planning process;
- Independent: Results should be unbiased and independent;
- Transparent: Assumptions, methodologies and calculations used should be clearly and thoroughly documented;
- Appropriate rigor: An appropriate level of rigor should be used based on common industry practices and Efficiency Manitoba's evaluation priorities; and
- Efficient: Evaluation activities should be carefully planned and prioritized to maximize the value of the evaluation.

DSM program evaluation involves undertaking various assessments, studies and activities to determine a program's effects. There are several types of evaluations outlined in Table 7.1 that will be utilized in assessing Efficiency Manitoba's initiatives.

TABLE 7.1 SUMMARY OF EVALUATION TYPES

EVALUATION TYPE	EVALUATION TYPE
IMPACT EVALUATION	Determines the energy savings, peak demand savings and non-energy benefits that result from a program
COST-EFFECTIVENESS ANALYSIS	An extension of the impact evaluation that uses the energy, demand and non-energy benefits and compares these benefits to the costs incurred to achieve those benefits
PROCESS EVALUATION	Gauges a program's effectiveness in achieving its objectives and the success of its implementation
MARKET EVALUATION	Assesses a program's influence on a market or sector by examining the evolution of the market and monitoring market transformation indicators

Evaluation activities will be prioritized. Considerations when developing the customer segment evaluation plan included: overall electric or natural gas portfolio savings; level of uncertainty; quality of data required; and timing of the evaluation. Table 7.2 identifies several categories of initiatives where there is need for a specific type of evaluations or a specific level of rigor. These specific requirements were considered when the customer segment evaluation plan was developed. The Evaluation Framework report is available in *Attachment 5 – Evaluation Framework and Plan.*

TABLE 7.2 DSM INITIATIVES REQUIRING ADDITIONAL ANALYSIS

CATEGORY OF INITIATIVES	SPECIFIC REQUIREMENTS
PILOT PROGRAMS	Process and impact evaluations
INCOME QUALIFIED PROGRAMS	Additional evaluation of non-energy benefits
HARD-TO-REACH MARKETS	Additional evaluation of non-energy benefits
NEW TECHNOLOGIES	More rigorous impact evaluations given the relatively limited experience with their implementation

7.3.2 EVALUATION PLAN

The evaluation plan prepared for Efficiency Manitoba's three program years (2020/21 to 2022/23) outlines the programs to be evaluated, the types of evaluations to be conducted, and when and why those evaluations should be carried out over the three-year period.

Efficiency Manitoba's suite of offers and customer segment program bundles were grouped in a manner that would allow evaluation activities to be conducted efficiently and cost effectively. To illustrate, the following were considered when grouping the offerings for evaluation purposes:

- The types of products, measures or services;
- The targeted customers;
- The delivery models or incentive structure; and
- The methods required to calculate savings.

In order to balance evaluation costs with robustness of the assessment, a savings and cost-effectiveness verification of every program will be conducted at a minimum annually, while more costly full impact evaluations will be conducted on every program at least once during the Plan years. One key outcome of the evaluation plan is a preliminary schedule outlining the residential, income qualified, Indigenous, commercial, industrial, and agricultural customer sectoral evaluation activities throughout the Plan years. The evaluation plan also outlines a recommended approach for assessing the net savings resulting from codes and standards or

regulations; this is designed to estimate the impact of codes and standards on energy and demand in Manitoba.

Industry best practices suggest that evaluation specific activities typically account for one to two percent of the total DSM budget for a program administrator[2]. This would not include other studies such as participant surveys, brand and offering awareness and perceptions surveys, and studies to determine non-energy benefits of DSM programs. Table 7.3 below outlines the estimated budget for the evaluation activities outlined in the framework and plan which range from 1.5 to 1.8 percent of the total electric and natural gas budgets in the Plan. These estimated costs are in line with industry best practices.

TABLE 7.3 ESTIMATED ANNUAL EVALUATION COSTS

	2020/21	2021/22	2022/23
Evaluation budget	$1,150,000	$1,274,000	$1,143,000

Note. Currency is expressed in nominal dollars.

7.3.3 EVALUATION NEXT STEPS

The evaluation framework and plan document will be used as the basis for Efficiency Manitoba's request for proposals to contract for external private sector evaluation services. Efficiency Manitoba anticipates working with the Energy Efficiency Advisory Group (EEAG) to review the scope and select the assessor. With input provided through the EEAG, a request for proposals for third-party evaluation will be developed to provide a combination of annual impact, process, market, and cost-effectiveness evaluation activities as outlined in the Evaluation Framework. This

[2] Attachment 5 – Evaluation Framework and Planning Report, Page 31.

request for proposals is expected to be developed within the first half of 2020/21 such that data collection and key activities may commence in advance of 2021/22. These ongoing evaluation activities provide an annual check-up and allow for annual assessment of any program bundle variances to targets.

7.4 EFFICIENCY MANITOBA WILL CAPTURE EMERGING OPPORTUNITIES

The program bundles designed for both the electric and natural gas portfolios each consist of multiple measures, technologies and/or services. One of the benefits of the program bundling approach taken is that it provides a mechanism to alter or re-direct activities and/or incentives within a program bundle in order to compensate for lower performing individual technologies. Efficiency Manitoba will develop an Emerging Opportunities strategy, based on planned monitoring activities, evaluation results, DSM scorecard key performance indicators and ongoing program monitoring through the CRM/DSM system. This strategy will generate a combination of corrective actions and/or enhancements to the program portfolio as opportunities arise. For illustration purposes, if monitoring determined that an individual technology within a program bundle was not reaching the projected number of customers, Efficiency Manitoba could re-direct budget within the program bundle to achieve the same or similar results by encouraging increased customer activity with other measures. Actions such as this would ensure that the customer segment benefits and budgets remain as planned.

As explained in detail in *Appendix A - Section A9*, Efficiency Manitoba has also identified an innovation / research and development budget under the Enabling

Strategies budget. This will support the achievement of longer-term energy savings by establishing pilot programs and projects to evaluate new technologies, approaches, customer services or completing market analysis. Table 7.4 shows the proposed budget for each of the three years in the Plan. Efficiency Manitoba will pursue partnerships with the research industry, leveraging these funds to complete mutually beneficial research projects and encourage further innovation within the energy efficiency industry in Manitoba. Specific activities may also include the funding of demonstrations or pilot projects. Also included within the 2020/21 and 2021/22 fiscal years is budget to hire a service provider to complete a DSM market potential study. These studies are used to identify the technical, economic and achievable energy efficiency savings potential within a jurisdiction.

TABLE 7.4 ANNUAL INNOVATION BUDGET WITHIN ENABLING STRATEGIES

	2020/21	2021/22	2022/23
Innovation budget	$950,000	$968,000	$727,000

Note. Currency is expressed in nominal dollars.

7.4.1 CONTINGENCY

Section 9(l)(iii) of the Act identifies Efficiency Manitoba may budget for a contingency fund for the explicit purpose of pursuing unanticipated DSM opportunities. If an unanticipated energy efficiency opportunity emerges within the Plan years, there are alternatives Efficiency Manitoba may pursue. For example, for opportunities within the proposed electric or natural gas portfolio that would not increase overall electric or natural budgets and would still achieve energy savings targets, Efficiency Manitoba could simply pursue that opportunity through rapid

actions to best leverage any unique savings or other opportunities that cannot be accommodated within the existing Plan.

If an unanticipated DSM opportunity arises during the Plan years which would impact overall budget, Efficiency Manitoba has developed a contingency process to communicate, vet and obtain approval to pursue within certain restrictions (further outlined below). Unanticipated DSM opportunities, if they were to arise, would more likely materialize within the 2021/22 or 2022/23 fiscal years. It is therefore possible that such opportunities would simply be reflected within the subsequent 2023/26 Efficiency Plan. Correspondingly, Efficiency Manitoba has assumed that assigning 10 percent of the overall annual average budget, or an overall cap of $7 million across all three Plan years will sufficiently address this risk. This contingency budget has not been included within the overall portfolio budget or cost-effectiveness analysis included within the Plan.

Although unanticipated, DSM opportunities which may benefit from the use of the contingency in order to acquire time sensitive and cost-effective energy savings to count against achievement of the mandated cumulative electric or natural gas energy savings targets include the following:

- adding a new energy efficiency measure or program which is not included within the Plan that has realized very rapid changes in capital cost which allow a rapid market entry and cost-effective attainment of associated energy savings. This specific scenario was previously encountered with LED lighting technology where purchase price dropped over a short period of time; and

- pursuing energy efficiency opportunities through an unanticipated large commercial, industrial or agricultural facility expansion, upgrade or economic development project. Large capital projects within these customer segments have the potential to offer a time-sensitive opportunity to capture large energy savings towards attainment of future targets with a comparatively low acquisition cost. Additionally, Efficiency Manitoba recognizes that its offerings can help influence these critical economic development decisions in the province.

In the event Efficiency Manitoba encounters such events that lead to the development and proposed use of this contingency Efficiency Manitoba proposes the following process to obtain approval for such changes:

- Efficiency Manitoba to discuss the proposed use of contingency with the Energy Efficiency Advisory Group;
- Efficiency Manitoba to prepare a summary of the energy savings, budget, and cost effectiveness implication of the project or DSM initiative as a stand-alone action;
- Efficiency Manitoba to seek Efficiency Manitoba Board approval for the change including a review of the risks associated with inaction;
- Pending Efficiency Manitoba Board approval, Efficiency Manitoba to review the proposed revised budget schedule with Manitoba Hydro;
- Pending Efficiency Manitoba Board approval:

- Efficiency Manitoba will include description and analysis of the use of the contingency within public annual reporting required under both the Crown Corporations Governance and Accountability Act (CCGAA) and the Act; and
- Efficiency Manitoba will include description and analysis of any contingency use within the subsequent PUB hearing process as part of Efficiency Manitoba's retrospective performance assessment. This may involve sharing information with the PUB on a confidential basis recognizing any commercially sensitive customer information that may have been shared with Efficiency Manitoba in the process determining the use of the contingency fund.

APPENDIX A

2020/23 EFFICIENCY PLAN

EFFICIENCY MANITOBA

2020/23 Efficiency Plan Appendices Contents

APPENDIX A – SECTION A1 INTRODUCTION

2020/23 EFFICIENCY PLAN

INTRODUCTION

EFFICIENCY MANITOBA

APPENDIX A – SECTION A1

INTRODUCTION

The 2020/23 Efficiency Plan (the "Plan") provides the framework and details through which Efficiency Manitoba will achieve the legislated electric and natural gas savings targets via a portfolio of demand-side management (DSM) programs, offers, and initiatives. Through this plan, Efficiency Manitoba will achieve the savings targets, and will be on-track to satisfy the 15-year cumulative savings targets, in a cost-effective manner.

Efficiency Manitoba recognizes that the Plan put forward is subject to Public Utilities Board review and regulatory process which concludes with production of a report and recommendations; final decision-making rests with the responsible Minister.

Appendix A - 2020/23 Efficiency Plan A2 – A9 describes the proposed approach and resulting savings, budget, and performance outcomes related to each of the program bundles and the entire electric and natural gas portfolios respectively. *Appendix A* also provides details regarding specific activities and strategies within each program bundle, customer segment and a description of other planned strategies that will enable Efficiency Manitoba activities related to innovation; evaluation; complementary program support; and codes and standards.

APPENDIX A – SECTION A2 DEVELOPMENT & APPROACH DETAILS

2020/23 EFFICIENCY PLAN

PROGRAM DELIVERY OVERVIEW
PORTFOLIO DEVELOPMENT
QUANTITATIVE ANALYSIS
ENGAGEMENT

EFFICIENCY MANITOBA

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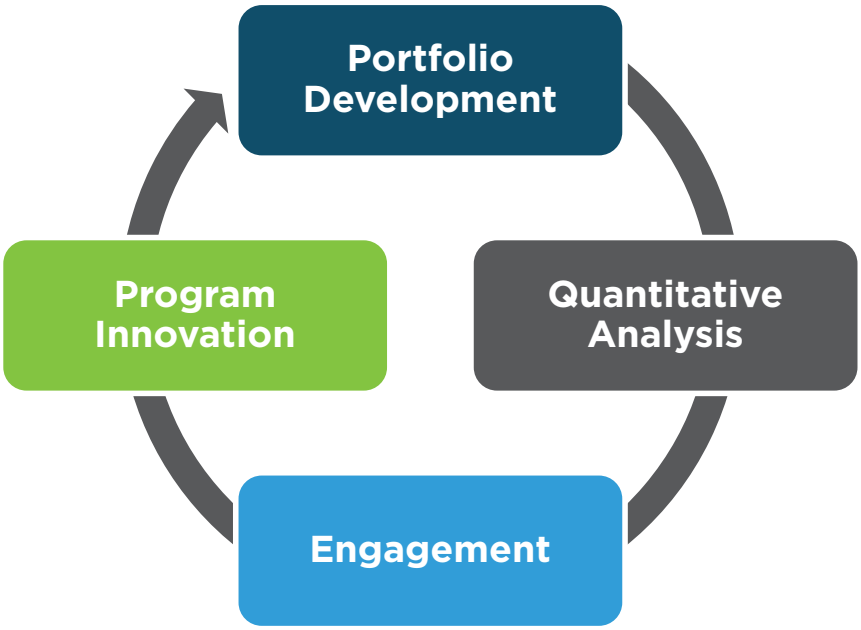
APPENDIX A – SECTION A2

DEVELOPMENT & APPROACH DETAILS

Efficiency Manitoba developed the 2020/23 Efficiency Plan (the "Plan") to achieve legislated electric energy and natural gas savings targets through a robust portfolio of demand-side management (DSM) programs, offers, and initiatives to be delivered during the 2020/21 through 2022/23 fiscal years. DSM programming has had a long history in the province. Manitoba Hydro offered DSM programming starting in 1989; with programs that were well-known to Manitobans and well-utilized by contractors, installers, and service providers to develop and grow their businesses. Moving the responsibility for energy efficiency programming to Efficiency Manitoba requires much more than a simple transfer. This process calls for careful transition, involving re-strategizing programs, offers, and initiatives to provide improved value to Manitobans, while avoiding disruption to the well-developed industry infrastructure as it is critical to the long-term achievement of energy efficiency targets. An overview of the considerations and approach taken throughout the Plan development process is outlined in this Section. Figure A2.1 graphically illustrates the development process.

FIGURE A2.1 ITERATIVE PROGRAM PORTFOLIO DESIGN PROCESS



The Plan development process considered the following:

- the legislated requirements of Efficiency Manitoba's mandate;
- effectively leveraging decades of local demand-side management while setting the foundation for new focused customer segment approaches, processes, and programming;
- designing a Plan that maximizes value for money and benefits for Manitobans and the Manitoba economy; and
- developing a comprehensive approach to evaluate performance and to continuously improve.

Efficiency Manitoba generated new ideas for program enhancement and new initiatives. Quantitative savings, budget and performance metric analysis allowed the

assessment of program bundles and the electric and natural gas portfolios with respect to:

- achievement of mandated energy savings in a cost-effective manner;
- development of a diverse and inclusive portfolio design; and
- creation of economic, environmental and/or social non-energy benefits.

Engagement through the Energy Efficiency Advisory Group ("EEAG"), and other stakeholder feedback throughout the planning process provided additional perspectives. The process of engagement resulted in new and innovative ideas summarized in *Section 3* and highlights a fundamental way of doing business at Efficiency Manitoba.

A2.1 PROGRAM INNOVATION

During the planning process, a comprehensive approach to innovation was adopted which included looking at new programs and technologies, as well as assessing new customer markets, customer engagement strategies, and delivery approaches.

Guided by engagement with stakeholders, customers, and the EEAG, several consistent themes emerged:

- Efficiency Manitoba should offer a breadth of energy efficiency offerings;
- customers should be able to "see themselves" within the portfolio of programs and services;
- information provided to customers should be straightforward, relevant, and complete; and
- customer access to programs should be simple, quick, and easy.

Efficiency Manitoba also considered changes to the energy conservation market while developing the Plan. Notably, many of the high-performing technologies that have traditionally accounted for substantial energy savings are reaching maturity and market saturation such as high-efficiency heating equipment and LED lighting technology. These changes required Efficiency Manitoba to explore new and forward-thinking opportunities to fill the gaps that will be left in the market over the next several years.

It is important to understand where technologies reside on the market adoption curve and identify new and emerging technologies with limited availability in the Manitoba market. Efficiency Manitoba will continue to allocate budget dollars and invest in emerging technologies, provide research and development opportunities, and pilot programs as outlined in *Appendix A – Section A9*. Efficiency Manitoba's investment ensures that each new technology is reviewed for feasibility and viability in the Manitoba market.

A2.1.1 CUSTOMER MARKET SEGMENTS

Efficiency Manitoba's vision of reaching all, and maximizing the benefits for, Manitobans meant that it was imperative to ensure that Manitobans were considered during development of the Plan. As a result of this development process, four customer segments were created: residential, residential income qualified, Indigenous, and commercial/industrial/agricultural. These four segments were chosen due to their unique qualities as they relate to customer behaviour and consumption patterns, marketing approaches, and eligible technologies. Efficiency Manitoba recognizes that these segments have diverse sub-segments each with their own unique needs.

Customer segment descriptions and details are provided in *Appendix A – Sections A4 through A7*.

A2.1.2 CUSTOMER RELATIONSHIP MANAGEMENT & DEMAND-SIDE MANAGEMENT SYSTEM

Foundational to the success of Efficiency Manitoba is the procurement and implementation of a comprehensive customer relationship management and demand-side management (CRM/DSM) system. This is an integral and overarching strategy that will provide optimal performance of Efficiency Manitoba from both customer-facing and internal operations perspectives. A CRM/DSM system will serve as an all-inclusive database of program participation and active projects across all customer segments. Therefore, program data and statistics are anticipated to be centralized and readily available to all staff for reporting purposes. This will reduce time, labour, red tape, and paper waste associated with reporting, leading to internal efficiencies and collaboration.

A CRM/DSM system will improve customer experience, encouraging participation efficiencies and transparency. For example, a customer applying for programs directly through the CRM/DSM system would not require paper application forms and would be able to track the status of all active applications, and view past participation history.

The implementation of a CRM/DSM system will provide tools and resources to Efficiency Manitoba customer sales representatives, who provide direct support to commercial, industrial, and agricultural customers. These tools include the ability to track and update notes and pictures, summarize conversations, archive email

correspondence, and register customers for programs directly on-site using smartphones, tablets, computers, and other connected devices.

Customers who do not have access to these connected devices will be provided the necessary support and resources to participate in Efficiency Manitoba's programs, initiatives, and offers. Paper applications and customer service representatives will be available to ensure all Manitobans can access information and programming. A more traditional customer experience, including face-to-face or telephone support from Efficiency Manitoba staff, will also be available to customers that prefer not to engage online.

The CRM/DSM system's centralized database will eliminate duplication of efforts and ensure ease of staff familiarization with the history of a specific customer to serve their immediate questions and needs. Delays due to incomplete or inaccurate applications will be reduced or eliminated using mandatory and auto-populated fields.

Workflow standardization, completed in conjunction with the acquisition and implementation of a CRM/DSM system, will improve transparency of application stages, internal communication, customer notifications, and savings calculations.

Some additional benefits anticipated include:

- improved overall customer experience;
- personalized offers;
- shorter application cycles;
- organized customer contact data;
- increased details available for each customer segment;

- enhanced marketing opportunities;
- business process and communication automation;
- increased participation conversion ratio;
- increased brand loyalty and engagement; and
- more cost-effective administration, delivery, and evaluation of programs.

A2.1.3 PROGRAM BUNDLING

Recognizing cost effectiveness and continuity for established industry and customer benefits, Efficiency Manitoba made strategic choices on continuation of existing energy efficiency programs, offers, and initiatives. Where programs, offers and initiatives will continue, enhancements will be incorporated to address improvement opportunities to capture additional energy savings where practical. Efficiency Manitoba will also introduce new programs. A few examples of new offerings within the Plan include:

- Programming to support residential window, door and air sealing building envelope improvements;
- New residential major renovation offers which allow for a performance-based incentive for qualifying projects;
- The new Indigenous Small Business Program to reach both First Nation communities and Metis small businesses; and
- A new Solar Energy and Bioenergy Program available to multiple customer segments.

In addition, a new "bundled approach" to programming is being introduced. Energy efficiency initiatives in the province previously operated largely as individual

programs, most of which were run in a mutually exclusive manner. Efficiency Manitoba has bundled programs that share similar features or comparable delivery models together. These program bundles are anticipated to improve the overall customer experience and serve to both streamline and promote internal process efficiencies. From a marketing perspective, program bundling consolidates offers into broader portfolios that better reflect customer behaviour. For example, if a customer wants to renovate their home but is unsure of the project scope, the information categorized within the program bundle helps the customer learn about opportunities that might be considered as part of a renovation project such as upgrades to lighting, windows, doors, and insulation.

Benefits of this program bundling approach include:

- reduced administration and red tape associated with participation;
- increased customer awareness of other opportunities and therefore potential depth of the efficiency upgrade (for example, a customer wanting to replace their boiler will automatically become aware of other related Efficiency Manitoba heating and cooling system offers rather than just high-efficiency boiler offers);
- streamlining of internal processes, resulting in optimized use of human resources;
- inclusion of measures or technologies that have higher acquisition costs but when bundled with other measures and technologies have improved performance metrics;

- flexibility to adjust mid-course within bundles in response to the market; and
- more cost-effective in meeting energy savings targets.

A2.1.4 PROGRAM DELIVERY CHANNELS & APPROACHES

Leveraging Manitoba's experience in offering energy efficiency initiatives will be imperative to Efficiency Manitoba's success. A network of private sector delivery partners including contractors, retailers, suppliers, consultants, and industry associations is already established in Manitoba. Maintaining and continuing to strengthen these relationships is paramount to ensure the success of Efficiency Manitoba. In addition, many of the existing efficiency programs in Manitoba continue to experience high participation and energy savings. Efficiency Manitoba acknowledges these achievements and therefore plans to carry initiatives forward for sustained success of both Efficiency Manitoba and its industry partners working towards achievement of the legislated energy savings targets.

Industry Partners are one delivery channel used to promote energy efficiency projects in the province. These trade allies will have the opportunity to enhance their existing product and service offerings with programs available through Efficiency Manitoba. Industry Partners can be categorized broadly as retailers, contractors, architects, consulting engineers, distributors, and wholesalers. With the private sector actively engaged and assisting with program execution, Efficiency Manitoba staff will focus on design/modelling and strategy, program management and administration, technical support and customer relationships to continuously improve Efficiency Manitoba's offerings for Manitobans.

A developed network of retail locations is essential to ensure energy-efficient products and offers are accessible throughout the province. Manitoba retailers vary in size and scope from big box home improvement centres to smaller independent hardware and appliance shops. Establishing partnerships with retailers is a key strategy for engaging with and delivering programs and initiatives to consumers. Efficiency Manitoba will seek partnerships with Manitoba retailers to promote its campaigns and program offers in flyers, on retailer websites, and through in-store promotions.

In addition to retailers, a large network of contractors across Manitoba is essential to the success of energy efficiency programs in Manitoba. Buy-in from contractors will ensure Efficiency Manitoba has a well-trained network to educate customers on energy-efficient technologies. Knowledgeable contractors help homeowners become aware of Efficiency Manitoba offerings and ensure the application process goes smoothly for the customer. These relationships with contractors provide in-kind promotion of Efficiency Manitoba offers through contractor use of promotional materials and highlighting offers alongside their own advertisements. In turn, this also benefits contractors by attracting customers and potentially gaining additional business.

Third party service providers will be procured to work on behalf of Efficiency Manitoba for a variety of key programming initiatives. Some advantages of utilizing service providers include the following:

- areas that are underserved by the open contractor network can be reached by these service providers (for example, small businesses have not been

actively served by most contractors due to the smaller scale of these projects);

- service providers can be deployed into geographic locations with limited access to qualified trades, where they can, in turn, partner with local trades or community members seeking employment opportunities to deliver programming;
- market presence can be scaled up or down as quickly as needed in response to how well a program is being received (this also allows Efficiency Manitoba to take advantage of unexpected near-term opportunities); and
- a potential economic development benefit exists when employing service providers, as these engagements often result in new job creation with the potential for spin-off work at the community level.

Another strategy to effectively reach both customers and trade allies will be to focus on developing relationships with key customer and industry associations. Efficiency Manitoba will gain access to large membership bases by offering customized training, workshops and other capacity-building events in alignment with association goals and objectives. To ensure visibility and an active presence, Efficiency Manitoba staff will pursue opportunities to join associations or volunteer in other capacities to ensure ongoing communication with the membership base.

The following is non-exhaustive list of key customer and industry associations:

- American Society of Heating, Refrigerating and Air-Conditioning Engineers – Manitoba Chapter

- Association of Consulting Engineering Companies (ACEC) - Manitoba
- Building Energy Management Manitoba (BEMM)
- Building Owners and Managers Association – Manitoba Chapter
- Canada Green Building Council – Manitoba Chapter
- Canadian Condominium Institute – Manitoba Chapter
- Canadian Healthcare Engineering Society – Manitoba Chapter
- Canadian Manufacturers and Exporters – Manitoba Chapter
- Construction Association of Rural Manitoba Inc.
- Engineers Geoscientists Manitoba (EGM)
- Fenestration Manitoba
- Habitat for Humanity – Manitoba Chapter
- Heating Refrigeration & Air Conditioning Contractors Association of Manitoba
- Heating, Refrigeration and Air Conditioning Institute of Canada – Manitoba Chapter
- Illuminating Engineering Society – Manitoba Chapter
- International Building Performance Simulation Association – Manitoba Chapter
- International Facility Management Association – Manitoba Chapter
- Long Term & Continuing Care Association of Manitoba
- Manitoba Association of Architects
- Manitoba Association of School Business Officials
- Manitoba Association of School Superintendents
- Manitoba Building Envelope Council

- Manitoba Chambers of Commerce
- Manitoba Electrical League
- Manitoba Home Builders' Association
- Manitoba Hotel Association
- Manitoba Housing and Renewal Corporation
- Manitoba Non-Profit Housing Association
- Manitoba Restaurant and Foodservices Association
- Mechanical Contractors Association of Manitoba
- Professional Property Managers Association – Manitoba Chapter
- Recreation Connections Manitoba
- Roofing Contractors Association of Manitoba
- Sustainable Building Manitoba (SBM)
- The Certified Technicians & Technologists Association of Manitoba (CTTAM)
- Winnipeg Chamber of Commerce
- Winnipeg Construction Association

A2.2 PORTFOLIO DEVELOPMENT

The ideas generated throughout the innovation stage were populated into program models. These models include the program bundle description as well as the program cost-benefit analysis (as outlined below). Program, measure, and/or technology-specific cost-benefit analyses were completed and then amalgamated to produce bundled savings, costs, and cost-effectiveness analyses, by customer segment, and at the overall portfolio level. Customer segment program bundle descriptions and resulting analysis results are found in *Appendix A – Sections A4 through A8*.

This Section describes the key considerations used to analyze which include:

- detailed program cost modeling;
- analysis of energy savings targets and net program savings;
- determination of energy benefits; and
- identification of complementary (non-energy) benefits.

A2.2.1 PROGRAM COST CONSIDERATION & MODELING

Efficiency Manitoba recognizes the importance of effectively using budget dollars - maximizing customer incentives while putting in place program design, administration, and customer support, program delivery, and corporate overhead to effectively deliver those incentives and offers. This will be accomplished by strategically leveraging the proficiency of existing resources in areas such as program design/modelling, strategy, and technical support while pursuing increased engagement of the private sector through third-party contracting for program implementation and delivery services. A transparent budget has been established that clearly delineates the cost categories outlined within this Section. Program costs at the technology and measure level are determined by leveraging existing program experiences or, in the case of newly developed programs, estimates based on industry data and technical experiences in other jurisdictions. Program cost estimates are done at a detailed annual level for each of the three Plan years in order to quantify the cost components related to the incentive, program delivery, program staff and advertising categories described in the following sections.

INCENTIVES

Incentives include financial contribution made by Efficiency Manitoba to a customer project. These may include in-store rebates, cost reimbursement, or performance incentives (that is, progressive incentives for increasing levels of performance). Typically, the value of these incentives is based on several factors such as existing market penetration, stage in the product lifecycle, customer costs and economics, historical incentives, comparable offerings in other markets, and cost-effectiveness of the program offer. These incentive budgets are typically developed on a per-sale basis where the unit of sale may be a single product, a residence/business, or a project.

PROGRAM DELIVERY

Budgets represent costs associated with private sector providers for implementation services and other outsourced supporting program delivery functions such as direct install and product rebate offers required to design, manage, support, and effectively deliver the program. This program cost category also includes outsourced program delivery support functions such as creative services (copy writing, ad development, web design, etc.), call centre support, information technology support, and program specific legal services. As Efficiency Manitoba's detailed organizational planning and program delivery implementation strategies are still in development, program budgets capture overall anticipated costs with additional consideration given to the optimal resourcing of specific program delivery needs occurring during implementation stages.

PROGRAM DESIGN, MODELLING, MANAGEMENT, ADMINISTRATION, TECHNICAL SUPPORT & CUSTOMER SUPPORT

This category includes Efficiency Manitoba staff time required to design, manage, administer and support the programming. Efficiency Manitoba will maintain and expand the expertise required to assess opportunities, optimize knowledge of the local market, design programs and initiatives, forge long term relationships and partnerships, and ensure delivery of the programs and initiatives needed to meet savings targets. Efficiency program design require nuanced and detailed understanding of the technology and its application within the customer's business. The establishment of strong customer relationships through customer and technical support can help customers participate in efficiency programming where sensitive customer information exists; such is the case with income qualified programs and large industrial projects.

Technical staff within Efficiency Manitoba will provide technical expertise and advice to program staff, customers, and industry on matters related to energy efficiency. Professional engineers apply fundamental engineering and building science principles to support development of program offerings and day-to-day support for customers.

Efficiency Manitoba's technical team is anticipated to include engineers and/or technicians with a broad background of expertise and experience across multiple customer segments. The team will provide positive and practical engagement for electric and natural gas related inquiries from homeowners, design consultants, farmers, industries, businesses, and communities across the province. Technical staff

will play a vital role in providing the level of expertise sought by specific customer segments, as identified by the EEAG.

This cost category also includes Efficiency Manitoba staff requirements for providing oversight and contract management for functions such as creative services, IT support, and legal services provided by the private sector.

PROGRAM ADVERTISING

Program advertising includes budgeted amounts for specific programs that are required to achieve the forecasted participation and resulting energy savings. These costs are derived primarily from external services contracted by Efficiency Manitoba and may include design of advertisements, social media campaigns, website and other marketing collateral materials as well as advertising placement costs.

The corporate overhead and enabling strategies costs are included in Efficiency Manitoba's total budget and are not attributed to individual programs.

PROGRAM SUPPORT AND ENABLING STRATEGIES

Enabling strategies include general energy efficiency support activities by customer segment (described in *Appendix A – Section A9*) that are not specific to a program or offer. This includes activities such as general brand marketing, energy screening studies, industrial technical support, research and development or innovation activities, DSM planning, community energy plans, and codes and standards. Also included within this category are private sector program support functions such as DSM expertise consulting; outsourced non-program specific legal services, IT, business services or consulting; CRM/DSM system expenses; and staff professional development expenses.

CORPORATE OVERHEAD

Functions such as leadership, leased office space and furniture, IT equipment and managed corporate support services are not directly attributable to specific energy savings programming within the plan years and are included within the corporate overhead cost category.

All executive and non-programming Efficiency Manitoba employees as well as private sector support required for human resources, government relations, accounting, procurement, or other corporate administration functions are included in Corporate Overhead. Corporate overhead also includes all regulatory costs.

AFFORDABLE ENERGY FUND & FURNACE REPLACEMENT PROGRAM

As per legislation and the Efficiency Manitoba Regulation (the "Regulation"), the Affordable Energy Fund is to be used to provide support for programs and services that encourage energy efficiency and conservation in the use of home heating fuels other than electricity or natural gas, and not for any other purpose. As the energy savings of these fossil fuels will be used towards meeting natural gas energy savings targets, all related programming costs associated with the use of the Affordable Energy Fund are assigned to the natural gas portfolio budget.

Per legislation and Regulation, as of Efficiency Manitoba's commencement date, residual amounts in the Furnace Replacement Program are to be applied against natural gas DSM initiatives set out in an approved efficiency plan. Although already collected from Centra Gas rate payers, all amounts are included within the overall natural gas portfolio budget in accordance with the Efficiency Manitoba Act (the "Act"). Considering only furnace replacement programming with the Plan, these

amounts are approximately $2.3 million in year one, $2.0 million in year two, and $2.7 million in year three.

FUEL-SWITCHING COST ALLOCATION

Ground source heat pumps (GSHP) are included within the Residential Home Renovation and Commercial, Industrial, Agricultural (CIA) HVAC and Controls bundles as eligible technologies available to residential, commercial, industrial, and agricultural customers regardless of the existing heating system being replaced. Due to the lower cost of heating a home or business with natural gas, the customer economics associated with installing electric GSHP will drive more electric furnace replacements versus natural gas furnace replacements. Efficiency Manitoba is projecting that over 95 percent of the program participants will have existing electric heating systems. Due to the anticipated program participation imbalance, the following energy savings and cost allocation approach was adopted for the fuel switching scenario where GHSP is used to replace natural gas home or business heating:

- with respect to natural gas savings (GSHP replacing natural gas furnace) the reduction in natural gas consumption is counted towards achievement of the natural gas savings targets;
- with respect to electric energy savings, the increase in electricity consumption resulting from this conversion is accounted for as increased electric energy consumption;
- all administration, delivery, and advertising costs are allocated to the electric program; and
- the direct incentive component is captured as a natural gas program cost.

To begin exploring longer-term decisions related to fuel switching cost allocation, Efficiency Manitoba contracted Dunsky Energy Consulting ("Dunsky") to perform an analysis related to fuel switching energy savings and cost allocation. This resulting memo is available in *Attachment 4 – Dunsky Energy Consulting* and can be used as a reference for planning future potential fuel switching programs.

A2.2.2 PROGRAM NET ENERGY SAVING METHODOLOGIES

As indicated in *Section 2* of this submission, the Act mandates the electric energy and natural gas savings targets to be a percentage of prior year energy consumption. For the purposes of the Plan, the following process was used to determine the targets in terms of annual electric energy (in GWh) and natural gas (in million m^3) savings to be achieved in each of the three Plan years.

ELECTRIC TARGETS

The publicly available Manitoba Hydro 2018 Electric Load Forecast was used to provide the estimated future energy consumption, which identifies annual electric consumption (in GWh) at the point of generation. This load forecast accounts for future codes and standards savings from prior years to establish a base electric load for the percent of load calculation. For 2021/22 and 2022/23 years, an adjustment is also made to the load forecast to remove energy savings from prior DSM activity (example 2020/21) included within the Plan. The final step involves multiplying the annual incremental electric energy savings target of 1.5 percent by the prior year's weather adjusted gross forecasted electric load to determine the annual electric energy savings targets in GWh at generation. Table A2.1 summarizes the results of this process in annual energy savings targets for the three Plan years.

TABLE A2.1 THREE-YEAR PLAN ELECTRIC ENERGY SAVINGS TARGETS

	2020/21	2021/22	2022/23
Reference electric load (GWh)	26,047	26,029	25,911
Target percent of load	1.5%	1.5%	1.5%
Electric energy savings required to achieve target (GWh)	391	390	389

Note: Reference electric load and energy savings values are at generation.

NATURAL GAS TARGETS

The Manitoba Hydro Natural Gas Volume Forecast is considered commercially sensitive information. To provide a representative derivation of the natural gas target, Efficiency Manitoba used the 2017/18 gross actual natural gas volume consumption from the Manitoba Hydro 2017/18 annual report (publicly available during the preparation of the Plan). This allows the communication of the natural gas energy savings targets in a manner that does not release commercially sensitive information. The 2017/18 gross actual natural gas volume consumption was adjusted consistent with the "consumption" definition contained within the Act. As with the electric target derivation, the natural gas energy savings attributed to Plan activities within prior years were removed from the volume forecast in 2021/22 and 2022/23 in order to avoid double-counting. The final step involved multiplying the annual incremental natural gas energy savings target of 0.75 percent by the adjusted gross natural gas volume (inclusive of the above noted adjustments) to determine the annual natural gas energy savings targets in million m^3. Table A2.2 summarizes the results of this process in annual energy savings targets for the three Plan years.

TABLE A2.2 THREE-YEAR PLAN NATURAL GAS VOLUME SAVINGS TARGETS

	2020/21	2021/22	2022/23
2017/18 reference natural gas volume (million m^3)	1,632	1,621	1,608
Target percent of load	0.75%	0.75%	0.75%
Natural gas savings required to achieve target (million m^3)	12.2	12.2	12.1

NET ENERGY SAVINGS

Energy savings associated with each program are uniquely determined based on the characteristics of individual programs or technologies. Methods of derivation include engineering calculations, common industry practices, individual measurement and verification plans for large projects, research and development results, and actual data collected via pilot programs or historical programming. The net energy savings are a function of projected sales or program participation.

PRODUCT MIX

Within the cost-benefit analysis tool, a program includes project categories, units per sale, product mixes within each sale, as well as breakdowns of the percentage of sales. This creates a unique product mix with individual energy savings which, when aggregated, represents the overall market.

MARKET ANALYSIS

Program administrators conduct a market analysis for each program which estimates the total market size, natural conservation, annual sales with the program, free-riders, and free-drivers in order to identify program-driven rebated sales.

INCREMENTAL VS. CUMULATIVE SAVINGS

Annual energy savings targets are described as incremental savings or also described as new in-year savings. Incremental energy savings are only those for the first year

the measure is implemented, regardless of product life. Cumulative savings continue to add up, year-over-year, for the entire product life of the measure. For example, a measure which saves 1,000 kWh annually and has a product life of 10 years would have incremental savings of 1,000 kWh and cumulative energy savings of 10,000 kWh.

WEATHER ADJUSTED SAVINGS

The Act states that energy consumption is to be calculated on a weather-adjusted basis. All energy savings planned from programs affected by weather are based on average year weather.

SAVINGS LOAD SHAPE

For electricity, the savings load shape refers to the distribution of energy savings into on-peak or off-peak, and winter and summer. For natural gas, the savings load shape simply refers to the distribution between winter and summer. The load shape varies between programs and can be a function of the target market segment, the end-use for the program technology, or other unique characteristics of the program.

SYSTEM WINTER/SUMMER ON-PEAK CAPACITY SAVINGS (ELECTRICITY ONLY)

This value is determined based on estimates and assumptions which consider the coincidence of demand (capacity) and electric energy savings as they relate to the operational characteristics of each measure in relation to the timing of the hydroelectric system peak on an hourly and monthly basis for both seasonal periods.

INTERACTIVE EFFECTS

Interactive effects consider the impact of the energy-efficient measure on the heating and cooling requirements of the area where it is installed. For example, changing an

incandescent bulb to an LED bulb reduces the electric energy required to produce light, but may also increase the energy required to heat the space in the winter and reduce the cooling energy in the summer without the excess heat being generated from the inefficient incandescent bulb. Interactive effects are considered on an individual program basis.

PARTICIPANT REINVESTMENT

Participant reinvestment is a market assumption which measures the program's influence on a participant's decision to repurchase the energy-efficient technology once the initial product life of the energy-efficient technology has ended. For the purposes of the Plan, only savings resulting from activities within the three Plan years was considered. Therefore, participant reinvestment was excluded from all program cost-benefit analyses.

PERSISTENCE FACTOR

The persistence factor relates to the percentage of energy-efficient measures that remain installed over the product lifetime. Some customers never install a technology even though they have purchased it, some technologies stop working, and some technologies are removed by customers prior to the end of their product life. The persistence factor is determined for each technology based on a number of factors including customer surveys, engineering estimates, program experience with the technology, program evaluations results, feedback from industry partners, utilities and common practices in the energy efficiency industry.

The persistence factor affects the per-sale impacts and, in turn, the benefits of the program. The greater the factor is, the higher the benefits will be. However, the factor cannot be more than 100 percent.

A2.2.3 PROGRAM ENERGY BENEFITS

ELECTRIC

Manitoba Hydro marginal values are required to determine the electric benefits to Manitoba Hydro used in cost-effectiveness tests prescribed in the Regulation. Marginal values are determined independently by Manitoba Hydro, and Efficiency Manitoba accepts and applies the values as received.

Manitoba Hydro provides the energy and capacity marginal values to Efficiency Manitoba for annual and seasonal time frames. Efficiency Manitoba understands that the marginal values include projected capital deferral value due to winter capacity savings and value projected in the export market.

The details of the marginal values provided by Manitoba Hydro are considered commercially sensitive information. For indicative purposes, a portfolio weighted marginal value is provided as a basis for comparison for future evaluations. Due to the detailed energy savings and capacity savings associated with each program or bundle, the marginal value realized will vary depending on the specific electric energy and demand savings profile of the program or bundle. Therefore, the representative portfolio weighted marginal value is not directly comparable to prior representative marginal values provided by Manitoba Hydro as the derivation of this value depends on the individual savings magnitudes and profiles of programs found within the electric profile.

NATURAL GAS

Manitoba Hydro marginal values are required to determine the natural gas benefits to Manitoba Hydro used in cost-effectiveness tests prescribed in the Regulation. Natural gas marginal values are determined independently by Manitoba Hydro, and Efficiency Manitoba accepts and applies the values as received.

Manitoba Hydro provided a table to Efficiency Manitoba documenting marginal values annually for natural gas primary gas (commodity) pricing as well as natural gas purchasing costs and transportation costs. The details of the natural gas marginal values provided by Manitoba Hydro are considered commercially sensitive information. For indicative purposes, a portfolio weighted marginal value is provided as a basis for comparison for future evaluations.

A2.2.4 PROGRAM NON-ENERGY BENEFITS

The Plan considers factors beyond the quantified electric and natural gas savings. The programs, offers, and initiatives included within the Plan will result in numerous non-energy benefits that will positively impact Manitobans. Typical non-energy benefits include:

- reduced greenhouse gas emissions;
- reduced water consumption;
- reduced waste;
- economic benefits (for example, job creation and reduced operating expenses)

- social benefits (for example, energy access and affordability, and health and well-being)[1];
- improved occupant comfort, indoor air quality, and lighting quality;
- increased convenience (for example, through installing automated smart home devices); and
- reduced frequency, time, and cost of maintenance.

Non-energy benefits are identified by individual programs within *Appendix A4 through A8*. Detailed descriptions of the social, economic, and environmental benefits are provided in *Section 6.*

A2.3 QUANTITATIVE ANALYSIS

Efficiency Manitoba analyzed the portfolio, program bundles, and customer segments to quantitatively demonstrate the merits of the Plan. Developing a transparent budget while ensuring stakeholders benefit from the Plan required a detailed and systematic quantitative analysis of costs and benefits associated with proposed programs, offers, and initiatives; this is included within this Section. The quantitative analysis completed included program costs, savings per year, and cost-effectiveness tests. For each of these analyses, multiple perspectives were reviewed through evaluation layers including overall portfolio, customer segment, and program bundle. These layers afforded the opportunity to maintain overall portfolio performance while acquiring insights with respect to individual customer segment or bundle contributions. Using this multi-criteria decision framework allowed Efficiency Manitoba to select or reject

[1] International Energy Agency (2014). *Capturing the Multiple Benefits of Energy Efficiency*. Retrieved from www.iea.org

individual DSM initiatives or make program-specific adjustments in order to develop the proposed electric and natural gas portfolios.

A2.3.1 COST-EFFECTIVENESS TESTS

Several formats of the program administrator cost-effectiveness test (PACT) were used throughout the analysis process. The PACT calculations were completed on a ratio, the net present value (NPV), and levelized cost basis. The PACT was selected to determine cost-effectiveness in the manner prescribed within Section 12(1) of the Regulation.

The discount rate and time-horizon considered are common inputs needed when evaluating the PACT. Discount rates are consistent across all programs and were provided by Manitoba Hydro. Table A2.3 shows the economic assumptions used during the development of the Plan. A 30-year time horizon was used for all net present value, PACT calculations. The 30 years considered as the discount period is consistent with past DSM practice in Manitoba. Although 30 years was selected, for clarity, only program benefits resulting from activities occurring within the Plan were considered. Specifically, no additional incremental programs, costs, or savings were assumed beyond 2022/23. Inputs for both discount rates and time-horizon were tested for sensitivity purposes, as outlined in *Section 5.*

TABLE A2.3 ECONOMIC ASSUMPTIONS

Description	Rate
Real weighted average cost of capital	4.00%
Inflation	1.92%
Nominal weighted average cost of capital	6.00%

PROGRAM ADMINISTRATOR COST TEST RATIO

The PACT ratio is a benefit/cost ratio of the DSM program from the perspective of the entity implementing the program and administering the incentives. The specific formula used for determining the program bundle and portfolio PACT ratio is provided as follows:

$$PACT\ Ratio = \frac{Present\ Value\ (PV)\ Marginal\ Benefits}{PV\ (Program\ Costs + Incentives)}$$

Where:

- for electricity, the marginal benefits include the electric benefits realized by Manitoba Hydro from conserved electricity for both energy and capacity components;
- for natural gas, the marginal benefits include Manitoba Hydro's avoided cost of purchasing natural gas and avoided transportation costs;
- program costs include all internal and contracted costs incurred by Efficiency Manitoba for program planning, design, marketing, implementation, and evaluation, and includes all costs associated with offering energy efficiency programming (except for customer incentive costs); and

- incentives include the financial benefit provided by Efficiency Manitoba to encourage energy-efficient behaviours and/or actions.

When determined at a portfolio level, corporate overhead and enabling strategies costs are also included within the overall program costs in determining the PACT ratio.

PROGRAM ADMINISTRATOR COST TEST NET PRESENT VALUE

The PACT Net Present Value (NPV) calculation reveals if the economic value of the benefits associated with an energy efficiency program are greater than the costs. It applies the identical marginal benefit and cost streams as the PACT ratio, but calculates the NPV using the present value (PV) of the marginal benefits, program costs and incentives as shown in the following formula:

$$NPV = PV(Marginal\ Benefits) - PV(Program\ Costs + Incentives)$$

PROGRAM ADMINISTRATOR COST TEST LEVELIZED COST

The PACT Levelized Cost is used to provide an economic cost value for the energy saved through an energy efficiency program. The levelized cost provides the total cost of the conserved energy on a per-unit basis levelized over a fixed time period. The cost value allows for a comparison to other supply options and other DSM programs occurring over different timeframes. The levelized cost is determined using the PV of the energy savings, program costs and incentives as shown in the following formula

$$Levlized\ Cost = \frac{PV\ (Program\ Costs + Incentives)}{PV\ (Energy\ Savings)}$$

Where:

- energy savings includes the annual energy savings resulting from the DSM initiatives proposed within the Plan that persist throughout the 30-year time horizon.

A2.3.2 RATE & CUSTOMER BILL IMPACT MODELING

RATE IMPACT

Efficiency Manitoba has adopted a lifecycle revenue impact (LRI) metric to indicate an equivalent one-time change in rates that is required to establish a balance between utility revenues, the marginal benefits, and the program costs required within the Plan. This metric was selected by Efficiency Manitoba as it utilizes the identical marginal benefits and cost analysis completed for the PACT with the addition of the change in utility revenue associated with the Plan, which is also determined by Efficiency Manitoba. LRI was selected as a proxy to approximate the rate implications. Efficiency Manitoba defers any detailed rate analyses and considerations to Manitoba Hydro or Centra Gas during future general rate applications.

As with the PACT, the LRI analysis is completed on a 30-year NPV basis using the identical discount rates shown in Table A2.3. The specific formula used for determining the LRI is provided as follows:

$$LRI = \frac{PV\ (Program\ Costs + Incentives) + PV(Revenue\ loss) - \ (PV)\ Marginal\ Benefits}{PV\ (System\ Energy)}$$

Where:

- program costs and incentives are defined consistently within the PACT with one exception pertaining to the natural gas portfolio. For the purposes of determining the LRI for the natural gas portfolio, Section 15(2) of the

Regulation indicates that the residual amount in the Furnace Replacement Program account is to be used to offset the cost of the natural gas portfolio. Therefore, scenarios were developed to reduce the natural gas program costs and incentives to illustrate the sensitivity to various assumed uses of this account;

- marginal benefits are defined consistently with the PACT;
- revenue loss includes the decrease in revenue realized by Manitoba Hydro resulting from electricity or natural gas energy savings included within the electric and natural gas portfolios, respectively; and
- system energy is the Base Electric Load Forecast or Actual Natural Gas Volume described in *Section 2* extended throughout the 30-year time horizon. For the electric load forecast, it is further adjusted to represent energy measured at-meter instead of at-generation (that is, where rates are applied).

In general, if the change in utility revenue and costs associated within a portfolio is greater than the utility benefits, the LRI will indicate an increase in rates. Similarly, if the utility benefits associated with a portfolio are greater than the change in utility revenue and costs, the LRI will indicate a decrease in rates. Therefore, the LRI test will indicate the direction and magnitude (measured per unit of energy) of the expected change in utility rate levels attributed solely to the Plan.

The resulting LRIs are shown on a per-unit energy basis and are subsequently compared to a range of electric or natural gas rates for analysis of both the electric and natural gas portfolio respectively.

CUSTOMER BILL IMPACT

Efficiency Manitoba completed a participating customer bill impact analysis to address Section 11(g) of the Regulation. To determine the participating customer bill impact, the revenue loss calculation conducted for the LRI analysis was completed on a program bundle basis. This included the decrease in revenue realized by Manitoba Hydro (shown in this analysis as customer bill savings) resulting from electricity or natural gas energy savings included within the electric and natural gas portfolios. Consideration is given to the electric or natural gas rate class of the participating customer. For electric participating customer bill impact analysis, the Public Utilities Board (PUB) approved rates from June 1, 2019 were used. For the natural gas participating customer bill impact analysis, the PUB approved rates from November 2018, available at the point of plan preparation, were used. For the natural gas customer bill impact analysis, additional quantification of the customer bill savings due to reduced federal carbon charges was also completed by Efficiency Manitoba. The federal carbon charge (included on a customer Manitoba Hydro bill), came into effect on April 1, 2019, and is currently $20 per tonne carbon dioxide equivalent (CO_2e). The analysis of this customer natural gas bill impact component included the 2020/21 federal carbon charge, including the planned annual increases (an additional $10 per tonne CO_2e per year up to $50 per tonne CO_2e).

A2.3.3 PROGRAM DIVERSITY EVALUATION

To ensure a balanced approach was taken, the program diversity evaluation provides analysis on a percent of total energy savings as well as percent of total budget. Efficiency Manitoba evaluated savings and budget breakdowns for a variety of perspectives including customer segment, program bundle, and total portfolio. The

purpose of this analysis is to determine that savings and costs per breakdown were reasonable and to ensure that requirements in Section 11(c) of the Regulation[2] were met.

A2.3.4 MULTI-CRITERIA PORTFOLIO DECISIONS

Figure A2.2 illustrates the multi-criteria decision framework that allowed Efficiency Manitoba to make program-specific adjustments and selections required to develop the proposed electric and natural gas portfolios. From the quantitative analysis perspective, program costs, savings, and cost-effectiveness were primarily relied upon at program bundle, customer segment, and overall portfolio evaluation levels.

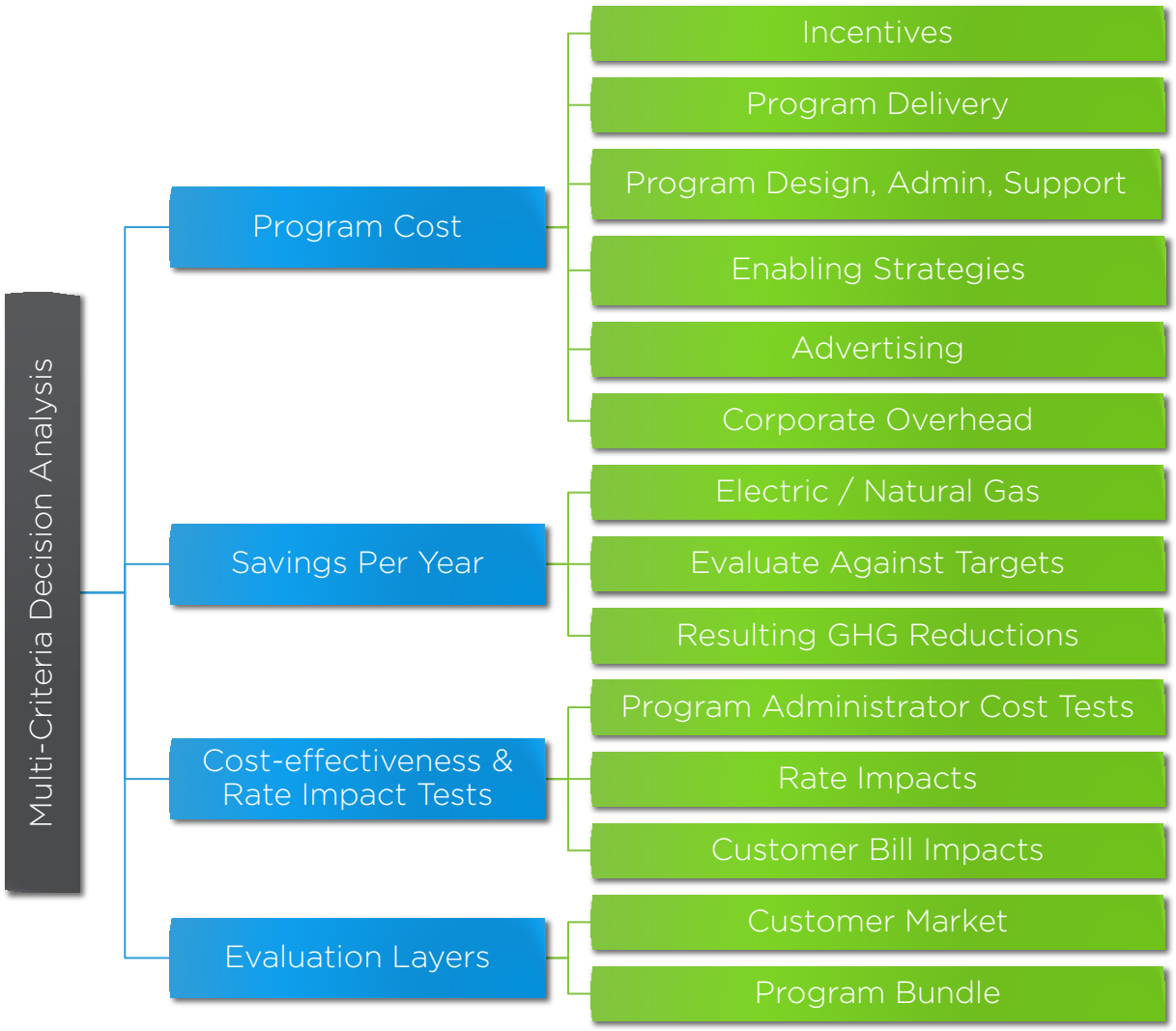
Cost analysis provided annual electric and natural gas budgets for programs by customer segment, enabling strategies, and corporate overhead. This allowed Efficiency Manitoba to compare customer segments year over year and compare individual bundles within and across customer segments.

Additionally, savings analysis shows annual electric energy and natural gas savings for programs by customer segment year-over-year, along with interactive effects and codes & standards impacts. This allows year-over-year comparisons of individual bundles and across customer segments. Annual electric energy and natural gas savings are summed and compared to the annual target. This enables comparisons to be made with respect to relative contribution of each customer segment and codes & standards.

[2] Section 11(c) of the Regulation requires at least 5% of Efficiency Manitoba's budget for demand-side management initiatives is allocated to initiatives targeting low income or hard-to-reach customers, if it is practical to do so.

680 Program administrator cost-effectiveness tests demonstrate NPV and levelized cost
681 for both electric and natural gas program bundles. These tests, organized by
682 customer segment, allow for year-over-year comparison of individual and customer
683 segment cost-effectiveness.

FIGURE A2.2 MULTI-CRITERIA DECISION ANALYSIS ILLUSTRATION



PORTFOLIO DESIGN DECISIONS

684 While developing the electric and natural gas portfolios, Efficiency Manitoba
685 completed refinements based on the multi-criteria analysis. These refinements

included rejection of individual technologies within a portfolio; adjustments to the planned incentive levels; and adjustment to the targeted participation and resulting savings.

A2.4 ENGAGEMENT

To ensure the Plan considers the interests and provides optimal value to Manitobans, Efficiency Manitoba engaged with key stakeholders throughout the Plan development process. The engagement strategy included the formation of the EEAG in accordance with Section 27 of the Act, the development of a stakeholder survey, as well as engagement through program delivery activities with contractors, installers, retailers, customers, and associations. The engagement activities provided invaluable insight and perspectives to Efficiency Manitoba as strategies to meet mandated savings targets in a cost-effective manner were considered. Further information on engagement can be found in *Section 3*. Through implementation of the stakeholder engagement model, Efficiency Manitoba will continue to build strong and lasting relationships with organizations, government, community groups, industry, and experts.

A2.4.1 ENERGY EFFICIENCY ADVISORY GROUP

Efficiency Manitoba worked with the EEAG in advance of the submission to ensure that the Plan includes input and optimizes actions and strategies while meeting the mandated savings targets in a cost-effective manner. To ensure a robust, impartial, and thoughtful process, Efficiency Manitoba retained a third-party service provider to facilitate the process.

The EEAG was formed to:

- ensure the Plan reflects Indigenous, social, environmental, technical and economic perspectives;
- solicit advice and perspectives on the process, programs, analysis, priorities, and approaches; and
- encourage participation of Efficiency Manitoba stakeholders in the planning process.

Efficiency Manitoba recognized the importance of building strong, lasting relationships with organizations, government, community groups, industry, and experts. The diverse EEAG perspectives include (but are not limited to):

- experience and expertise in energy efficiency; and
- experience acting for a customer group whose interests Efficiency Manitoba would like to ensure are represented in the Plan.

EEAG members during the Plan development included the following:

- Association of Manitoba Municipalities (AMM)
- Consumers' Association of Manitoba (CAC-MB)
- Expert Advisory Council on the Climate and Green Plan (EACCGP)
- Green Action Centre (GAC)
- Manitoba Industrial Power Users' Group (MIPUG)
- International Institute of Sustainable Development (IISD)
- Keystone Agricultural Producers (KAP)
- Manitoba Keewatinowi Okimakanak Inc. (MKO)
- Manitoba Metis Federation (MMF)
- Southern Chiefs Organization (SCO)

A2.4.2 EEAG REPORTS & MINUTES

Six scheduled meetings were held between Efficiency Manitoba and the EEAG between end of May and September of 2019. Meeting reports are included in *Attachment 2*. In addition to the structured meetings, additional discussions with members of the EEAG occurred, and Efficiency Manitoba also presented material separately to member groups upon request.

A2.4.3 OTHER STAKEHOLDER ENGAGEMENT ACTIVITIES

STAKEHOLDER ENGAGEMENT SURVEY

To prepare for this initial three-year plan, Efficiency Manitoba surveyed stakeholders of Manitoba Hydro's energy efficiency programs to gain feedback on the programs and services offered, as well as to generate ideas for future programming. The information from the respondents was considered when formulating the offerings and enhancements described throughout the Plan. In total, over 2,500 contractors, suppliers, installers, consultants, engineering firms, architectural firms, government departments, and associations were contacted.

When asked about existing energy efficiency programs, stakeholders were very satisfied with the quality of customer service; technical support; timeliness of approval; and incentive amounts. Common responses related to areas for possible improvement, included:

1) paperwork is too onerous and not worth the customer or the contractor's time;
2) an online application process would be easier and less time-consuming; and
3) solar rebates should be brought back.

When asked which initiatives/technologies stakeholders would like to see Efficiency Manitoba support, the top responses were:

1) solar photovoltaic panels;
2) windows; and
3) additional areas for insulation.

When asked which services would be of most value to the stakeholder, the top three responses were:

4) online applications;
5) technical support; and
6) research and development for new technologies.

STAKEHOLDER ENGAGEMENT SUMMARY

To help inform the Plan development, Efficiency Manitoba requested that Manitoba Hydro document the many facets of public engagement with various stakeholders as it pertains to program enhancements and new opportunities. Examples of the engagement activities that took place in spring 2019 include in-person meetings, phone conversations, "lunch and learns," association meetings, site visits, presentations, and webinars. Ongoing future engagement will help Efficiency Manitoba continuously improve its offerings through this Plan and successive three-year plans.

A2.4.4 CONTINUED ENGAGEMENT

In accordance with organizational guiding principles and following the overall stakeholder engagement model that was created, Efficiency Manitoba will continue to

seek ways of engaging with stakeholders in order to be open, transparent and accountable. Executives will continue to meet regularly with the EEAG to discuss customer segment topics related to specific program delivery, achieved savings, investment, and overall evaluation.

APPENDIX A – SECTION A3 PORTFOLIO OVERVIEW: SAVINGS, BUDGET & COST-EFFECTIVENESS

2020/23 EFFICIENCY PLAN

PROGRAM BUNDLE ENERGY SAVINGS
PROGRAM BUNDLE BUDGETS
PROGRAM BUNDLE PERFORMANCE METRICS

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APPENDIX A – SECTION A3

PORTFOLIO OVERVIEW: SAVINGS, BUDGET & COST-EFFECTIVENESS

This section provides an overview of the electric and natural gas portfolio from the program bundle perspective and details the energy savings, budgets required, and cost-effectiveness metrics.

A3.1 ACHIEVING MANDATED ENERGY SAVINGS TARGETS

A3.1.1 ANNUAL PORTFOLIO ENERGY SAVINGS

Table A3.1 provides the annual and overall average electric energy savings in gigawatt-hours (GWh) and as a percentage of electric load for both program impacts and the contribution of electric codes and standards. Also shown in Table A3.1 are the annual electric capacity savings resulting from the electric portfolio.

TABLE A3.1 2020/23 EFFICIENCY PLAN SUMMARY – ELECTRIC PORTFOLIO SAVINGS

	2020/21	2021/22	2022/23	Average
Annual program electric savings (GWh)	285	300	295	293
Codes and standards (GWh)	88	103	108	100
Total electric savings (GWh)	373	403	403	393
Savings as a percent of electric load	1.43%	1.55%	1.56%	1.51%
Annual capacity savings (MW)	85	93	93	90

Note. Electric energy and capacity savings determined at generation.

A3.1.2 PROGRAM BUNDLE ENERGY SAVINGS

This section further provides a perspective on the data presented in Table A3.1 with respect to the individual customer segments, codes and standards, and program bundle contributions towards achieving the electric savings targets. Figure A3.1 illustrates the annual electric energy savings at generation for each customer segment inclusive of all program bundles, and the relative contribution of savings related to codes and standards.

FIGURE A3.1 ELECTRIC ENERGY SAVINGS SUMMARY – ANNUAL CUSTOMER SEGMENT ENERGY SAVINGS VERSUS TARGET

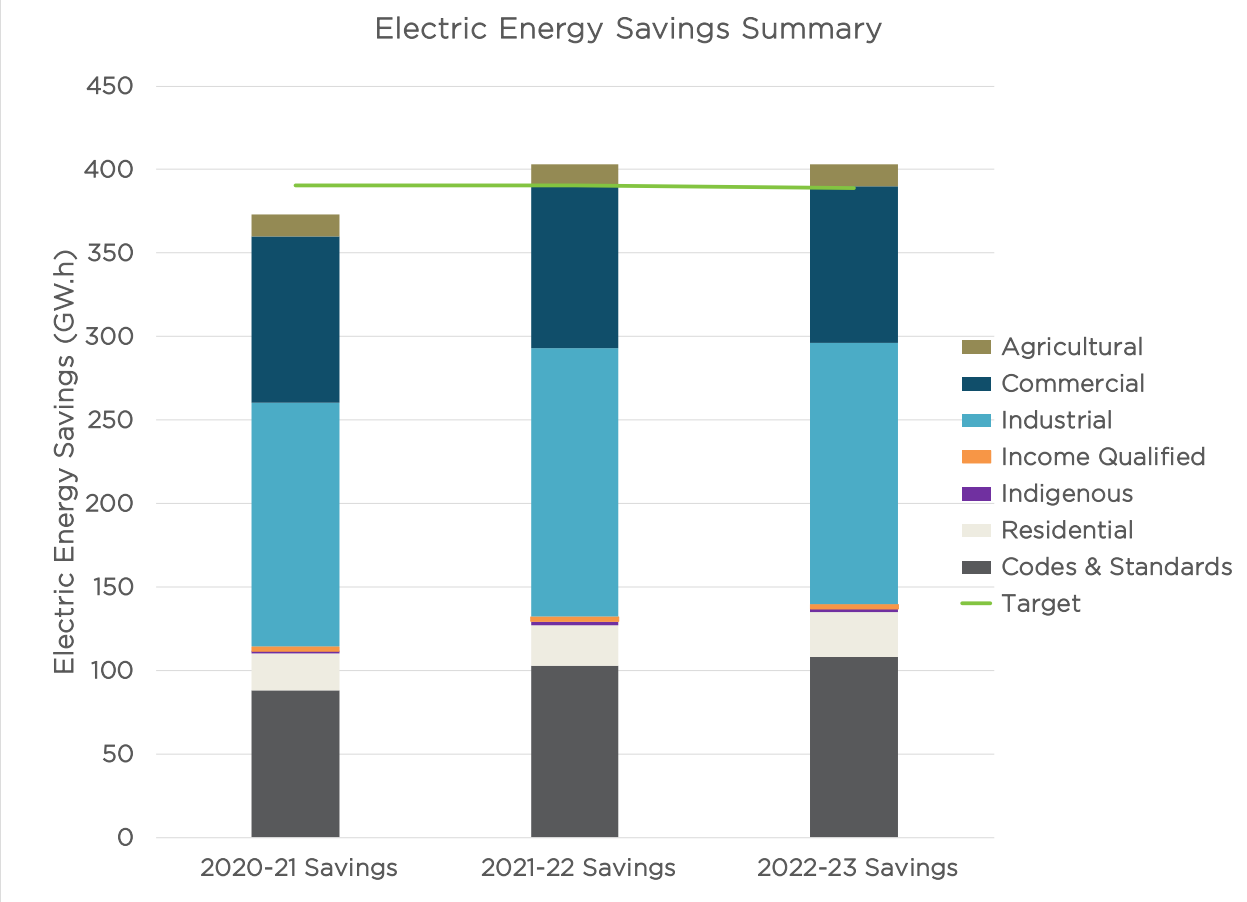
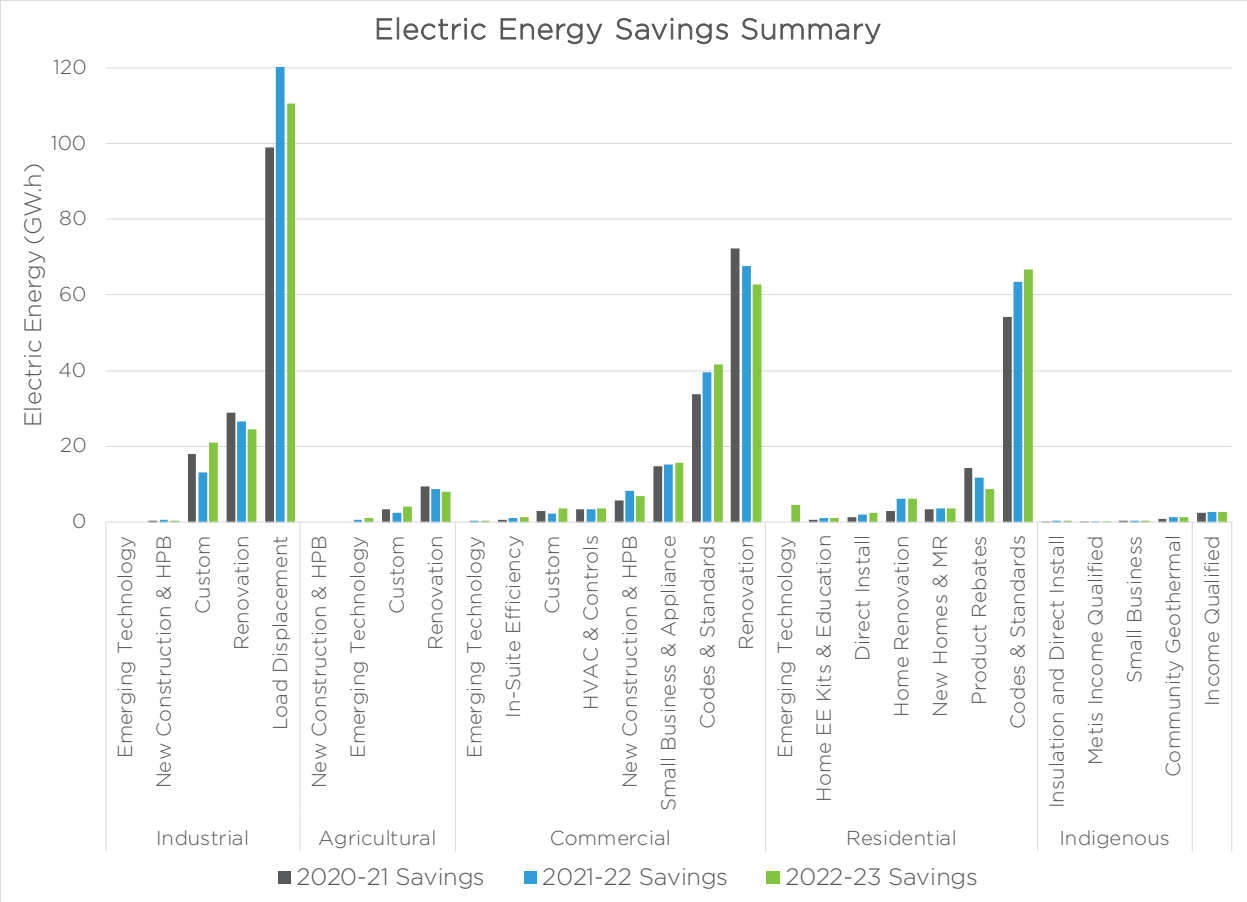


Figure A3.2 illustrates the annual electric energy savings at generation in GWh by program bundle and is organized by customer segment, as well as the relative

contribution of codes and standards savings. *Attachment 3* provides the detailed program bundle annual electricity energy and capacity savings tables.

FIGURE A3.2 ELECTRIC ENERGY SAVING SUMMARY – ANNUAL PROGRAM BUNDLE SAVINGS BY CUSTOMER SEGMENT



A3.1.3 ANNUAL NATURAL GAS PORTFOLIO ENERGY SAVINGS

Table A3.2 provides the annual and overall average natural gas savings in millions of cubic meters (million m^3) and as a percentage of natural gas consumption volumes. Shown are gross program impacts, the contribution of codes and standards, and program interactive effects resulting from the electric portfolio. Also shown in Table A3.2 are the annual greenhouse gas (GHG) emission reductions resulting from the natural gas portfolio.

TABLE A3.2 2020/23 EFFICIENCY PLAN SUMMARY – NATURAL GAS PORTFOLIO SAVINGS

	2020/21	2021/22	2022/23	Average
Annual gross program natural gas savings (million m^3)	10.3	10.5	10.5	10.4
Codes and standards (million m^3)	3.5	4.1	4.4	4.0
Program interactive effects (million m^3)	-2.1	-1.8	-1.6	-1.9
Net annual natural gas savings (million m^3)	11.7	12.8	13.2	12.6
Savings as a percent of natural gas volume	0.72%	0.79%	0.82%	0.78%
Annual GHG savings (tonnes CO_2e)	22,000	24,000	25,000	24,000

Note. After consideration of electric programming interactive effects.

A3.1.4 NATURAL GAS PROGRAM BUNDLE ENERGY SAVINGS

This section further provides a perspective on the data presented in Table A3.2 with respect to the individual customer segments, codes and standards, program bundle contributions, and interactive effects of the electric portfolio towards achieving the net natural gas annual savings targets. Figure A3.3 illustrates the annual natural gas savings in million m^3 for each customer segment inclusive of all program bundles. The program bundle totals are net of any interactive effects, and the relative contribution of codes and standards related savings.

FIGURE A3.3 NATURAL GAS SAVINGS SUMMARY – ANNUAL CUSTOMER SEGMENT ENERGY SAVINGS VERSUS TARGET

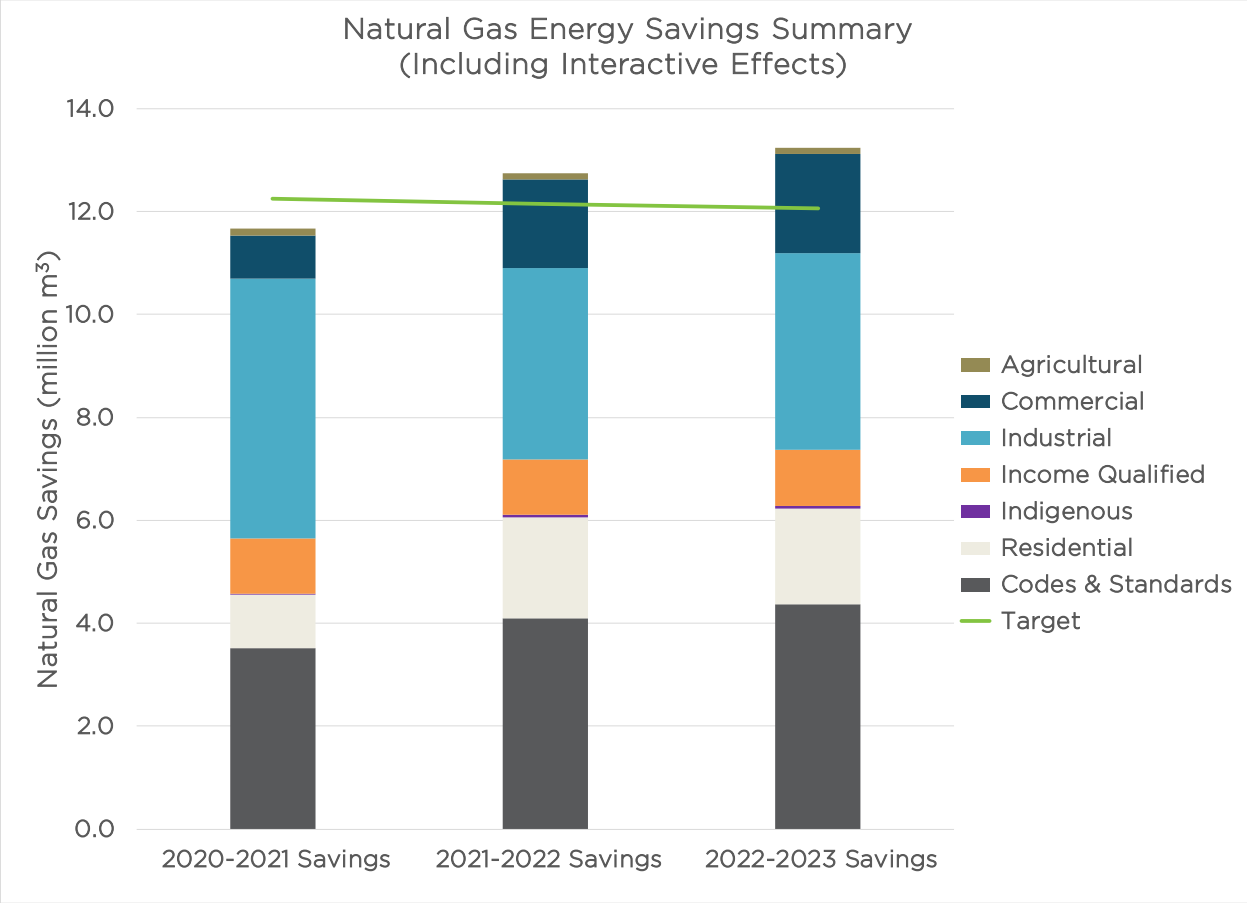
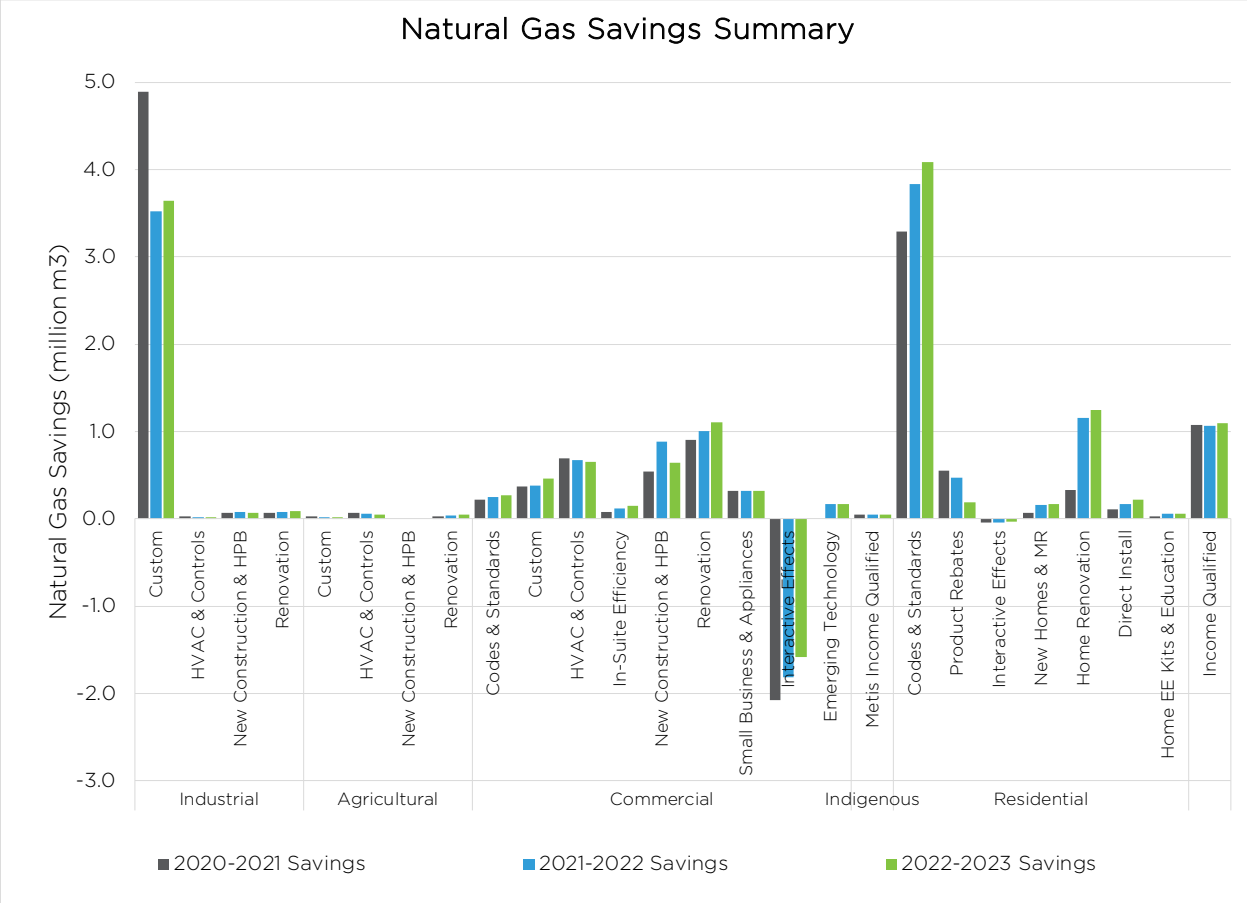


Figure A3.4 illustrates the annual natural gas savings by customer segment and further by program bundle, and the relative contribution of savings related to codes and standards, and the negative savings impact of interactive effects within the commercial and residential customer segments. *Attachment 3* provides detailed program bundle annual natural gas and GHG savings tables.

FIGURE A3.4 NATURAL GAS SAVINGS SUMMARY – ANNUAL PROGRAM BUNDLE SAVINGS BY CUSTOMER SEGMENT



A3.2 BUDGET

A3.2.1 ANNUAL ELECTRIC PORTFOLIO PROJECTED BUDGET

Table A3.3 shows the annual budget required to deliver the electric portfolio, including overall programming, enabling strategies, and corporate overhead costs. *Section 4* provides additional analysis and details of the enabling strategies and the corporate overhead budget.

TABLE A3.3 2020/23 EFFICIENCY PLAN SUMMARY – ANNUAL ELECTRIC BUDGET

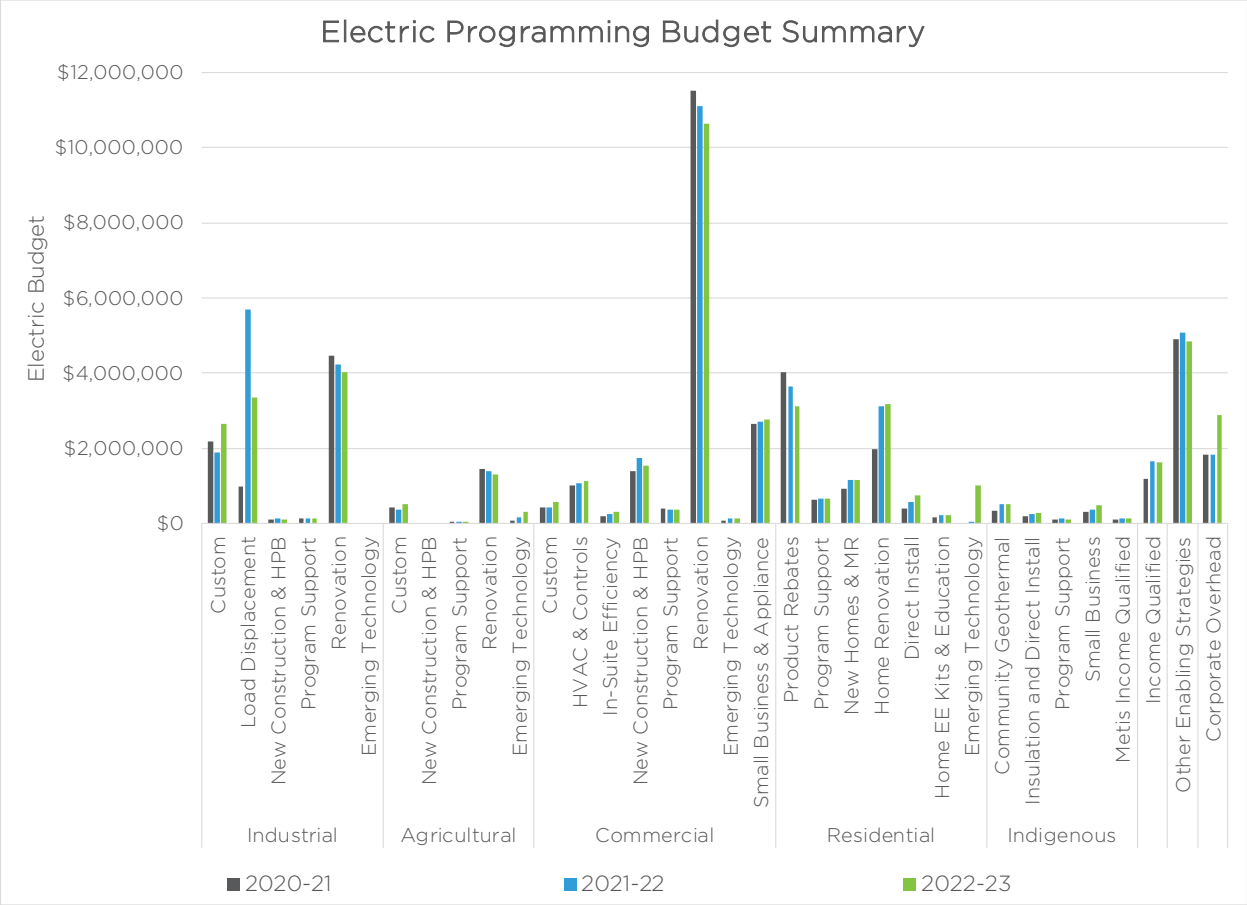
	2020/21	2021/22	2022/23
Program bundle budget	$36,515,000	$42,930,000	$41,885,000
Enabling strategies budget	$6,187,000	$6,380,000	$6,208,000
Corporate overhead budget	$1,844,000	$1,841,000	$2,889,000
Total budget	$44,545,000	$51,151,000	$50,983,000

Note. Currency is expressed in nominal dollars. Values may not add due to rounding.

A3.2.2 ELECTRIC PROGRAM BUNDLE BUDGET

Figure A3.5 illustrates the annual electric budget by program bundle and is organized by customer segment. Also included within each customer segment are the program support budgets for enabling strategies, which include activities such as programming, technical support, and educational initiatives. Other enabling strategies such as general DSM expert consulting services, the CRM/DSM System, portfolio evaluation and the innovation budget that are not specific to customer segments are included under the "other enabling strategies" horizontal axis label in Figure A3.5.

FIGURE A3.5 ELECTRIC BUDGET SUMMARY – ANNUAL PROGRAM BUNDLE BUDGET BY CUSTOMER SEGMENT



A3.2.3 ANNUAL NATURAL GAS PORTFOLIO PROJECTED BUDGET

Table A3.4 shows the annual budget required to deliver the natural gas portfolio, including overall programming, enabling strategies, and corporate overhead costs. *Section 4* provides additional analysis and details of the enabling strategies and the corporate overhead budget.

TABLE A3.4 2020/23 EFFICIENCY PLAN SUMMARY – ANNUAL NATURAL GAS BUDGET

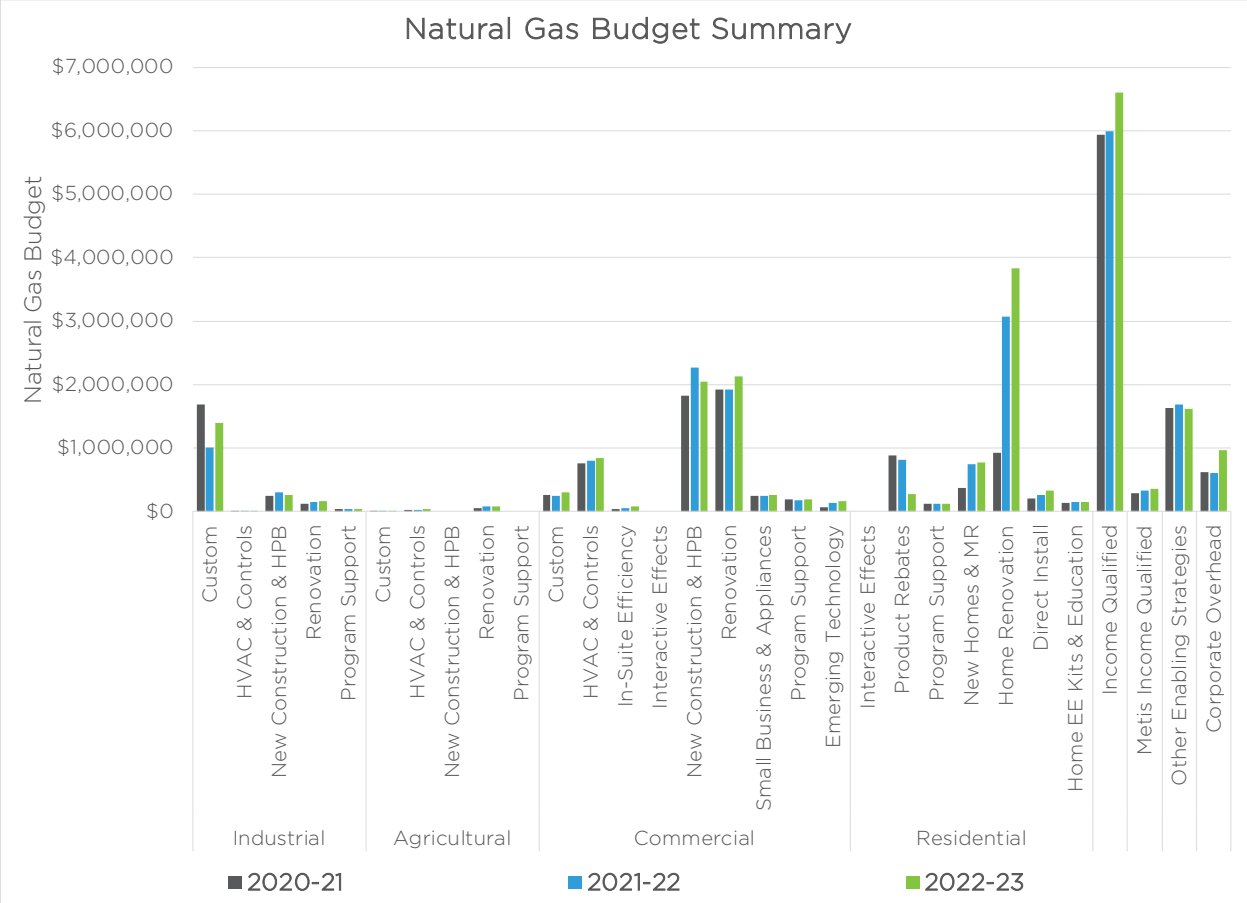
	2020/21	2021/22	2022/23
Program bundle budget	$16,041,000	$18,631,000	$20,110,000
Enabling strategies budget	$1,986,000	$2,030,000	$1,973,000
Corporate overhead budget	$614,599	$613,677	$963,100
Total budget	$18,641,000	$21,275,000	$23,047,000

Note. Currency is expressed in nominal dollars. Values may not add due to rounding.

A3.2.4 NATURAL GAS PROGRAM BUNDLE BUDGET

Figure A3.6 illustrates the annual natural gas budget program bundle and is organized by customer segment. Also included within each customer segment are program support budgets for enabling strategies, which include activities such as programming, technical support, and educational initiatives. Other enabling strategies that are not specific to customer segments such as general DSM expert consulting services, the CRM/DSM System, portfolio evaluation and the innovation budget are included under the “other enabling strategies” horizontal axis label in Figure A3.6.

FIGURE A3.6 NATURAL GAS BUDGET SUMMARY – ANNUAL PROGRAM BUNDLE BUDGET BY CUSTOMER SEGMENT



A3.2.5 PROPOSED FUNDING SCHEDULE

It is proposed that Efficiency Manitoba receive monthly funding from Manitoba Hydro to deliver both the electric and natural gas portfolios. Table A3.5 and Table A3.6 provide the proposed Manitoba Hydro/Centra Gas funding schedule for the electric and natural gas portfolio, respectively. Efficiency Manitoba assumes the proposed funding schedules are provided on the first business day of each month throughout the duration of the Plan, once approved by the Minister responsible.

TABLE A3.5 2020/23 EFFICIENCY PLAN – MONTHLY ELECTRIC FUNDING SCHEDULE

Month	2020/21	2021/22	2022/23
April	$4,943,000	$6,677,000	$6,681,000
May	$3,770,000	$4,106,000	$4,071,000
June	$3,791,000	$4,106,000	$4,039,000
July	$4,672,000	$4,950,000	$4,301,000
August	$3,755,000	$4,056,000	$3,995,000
September	$3,924,000	$4,228,000	$4,209,000
October	$4,195,000	$6,099,000	$6,251,000
November	$3,791,000	$4,106,000	$4,146,000
December	$2,694,000	$2,978,000	$3,046,000
January	$3,622,000	$3,888,000	$4,168,000
February	$2,694,000	$2,978,000	$2,990,000
March	$2,694,000	$2,978,000	$3,084,000
Fiscal year total	$44,545,000	$51,150,000	$50,981,000

Note. Currency is expressed in nominal dollars. Values may not add up exactly due to rounding.

TABLE A3.6 2020/23 EFFICIENCY PLAN – MONTHLY NATURAL GAS FUNDING SCHEDULE

Month	2020/21	2021/22	2022/23
April	$2,901,000	$2,035,000	$2,540,000
May	$1,580,000	$1,863,000	$1,980,000
June	$1,585,000	$1,863,000	$1,980,000
July	$1,478,000	$2,039,000	$1,853,000
August	$1,406,000	$1,683,000	$1,781,000
September	$1,463,000	$1,740,000	$1,840,000
October	$1,496,000	$1,810,000	$2,210,000
November	$1,585,000	$1,863,000	$1,980,000
December	$1,254,000	$1,490,000	$1,598,000
January	$1,385,000	$1,907,000	$2,090,000
February	$1,254,000	$1,490,000	$1,598,000
March	$1,254,000	$1,490,000	$1,598,000
Fiscal year total	$18,641,000	$21,273,000	$23,048,000

Note. Currency is expressed in nominal dollars. Values may not add up exactly due to rounding.

A3.3 PERFORMANCE METRICS

A3.3.1 ELECTRIC PORTFOLIO PROGRAM COST EFFECTIVENESS

Table A3.7 provides the overall cost test results for the electric portfolio. The Program Administrator Cost Test (PACT) has been used to satisfy requirements in the Regulation and evaluate the costs required to deliver the portfolio of energy efficiency programs along with the resulting electric benefits to Manitoba Hydro from those savings. *Section 5* discusses these cost test results while *Appendix A – Section A2* provides the methodology used. The PACT results are provided in the form of a ratio, net present value (NPV), and levelized cost. For the overall cost test results shown in Table A3.7, Efficiency Manitoba costs are inclusive of costs required to run the organization and enable future savings, such as enabling strategies and corporate overhead, also referred to as "all-in." The PACT ratio demonstrates that the portfolio weighted marginal benefits are over three times greater than the costs for the electric portfolio. The magnitude of the PACT NPV provides context for the difference between the benefits and costs.

TABLE A3.7 2020/23 EFFICIENCY PLAN SUMMARY – ELECTRIC PORTFOLIO COST TEST RESULTS

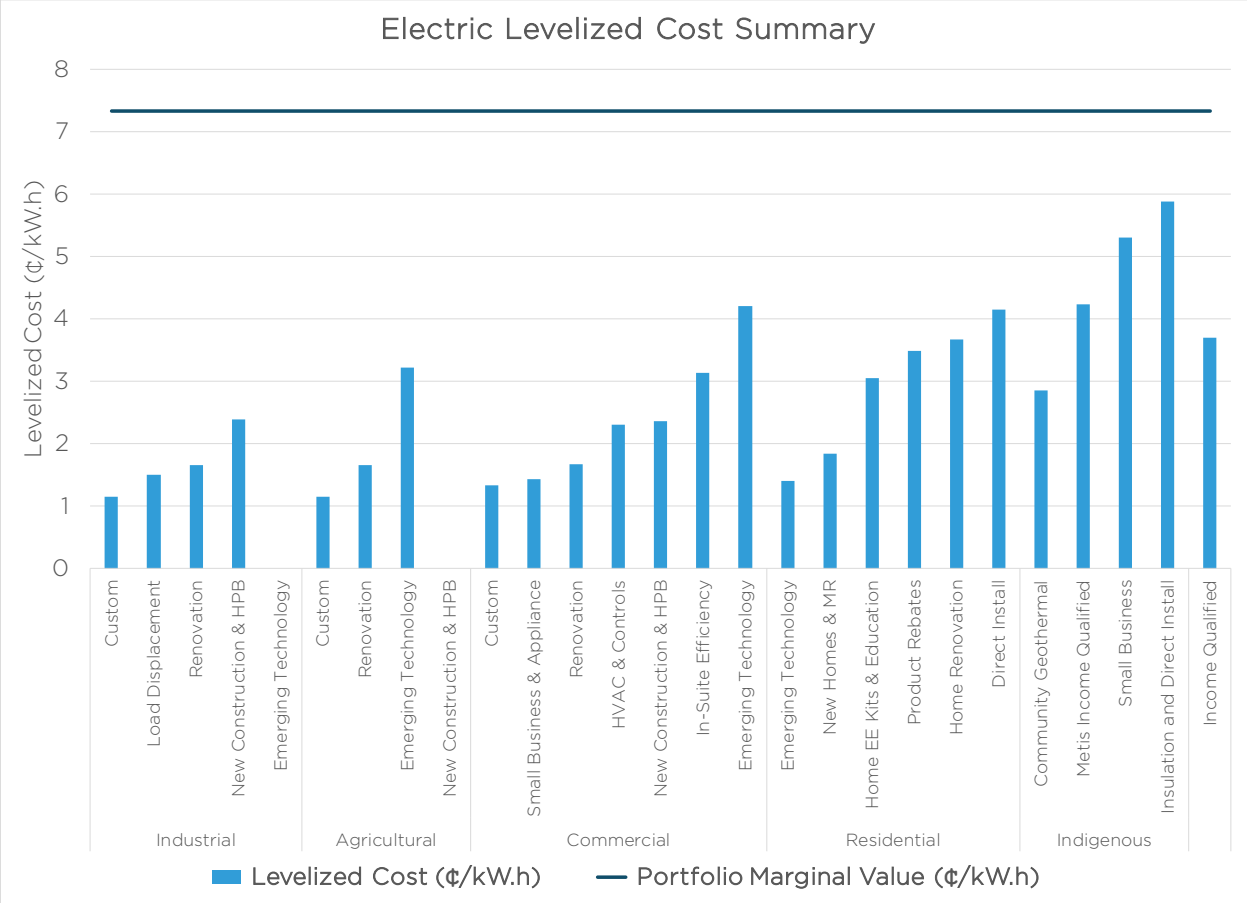
Cost test	Electric
PACT ratio	3.27
PACT net present value ($)	$345,138,000
PACT levelized cost	2.24¢/kWh

A3.3.2 ELECTRIC PROGRAM BUNDLE COST EFFECTIVENESS

Figure A3.7 illustrates the electric PACT levelized cost for each program bundle and is organized by customer segment. In contrast to the portfolio level costs, enabling strategies and corporate overhead components are not included in the program

bundle level analysis. This allows for an equitable comparison of program-specific costs from Plan activities versus the levelized energy savings. Within each customer segment, the program bundles are sorted from lowest to highest PACT levelized cost. Also shown in Figure A3.7 is the portfolio weighted average value of 7.33¢/kWh. *Appendix A – Section A2* discusses this portfolio weighted average marginal value. This value can be determined from the overall electric portfolio PACT results, shown in Table A3.7, by multiplying the PACT ratio with the PACT levelized cost. All-electric programs are below this threshold value.

FIGURE A3.7 ELECTRIC PACT LEVELIZED COST SUMMARY – PROGRAM BUNDLE BY CUSTOMER SEGMENT

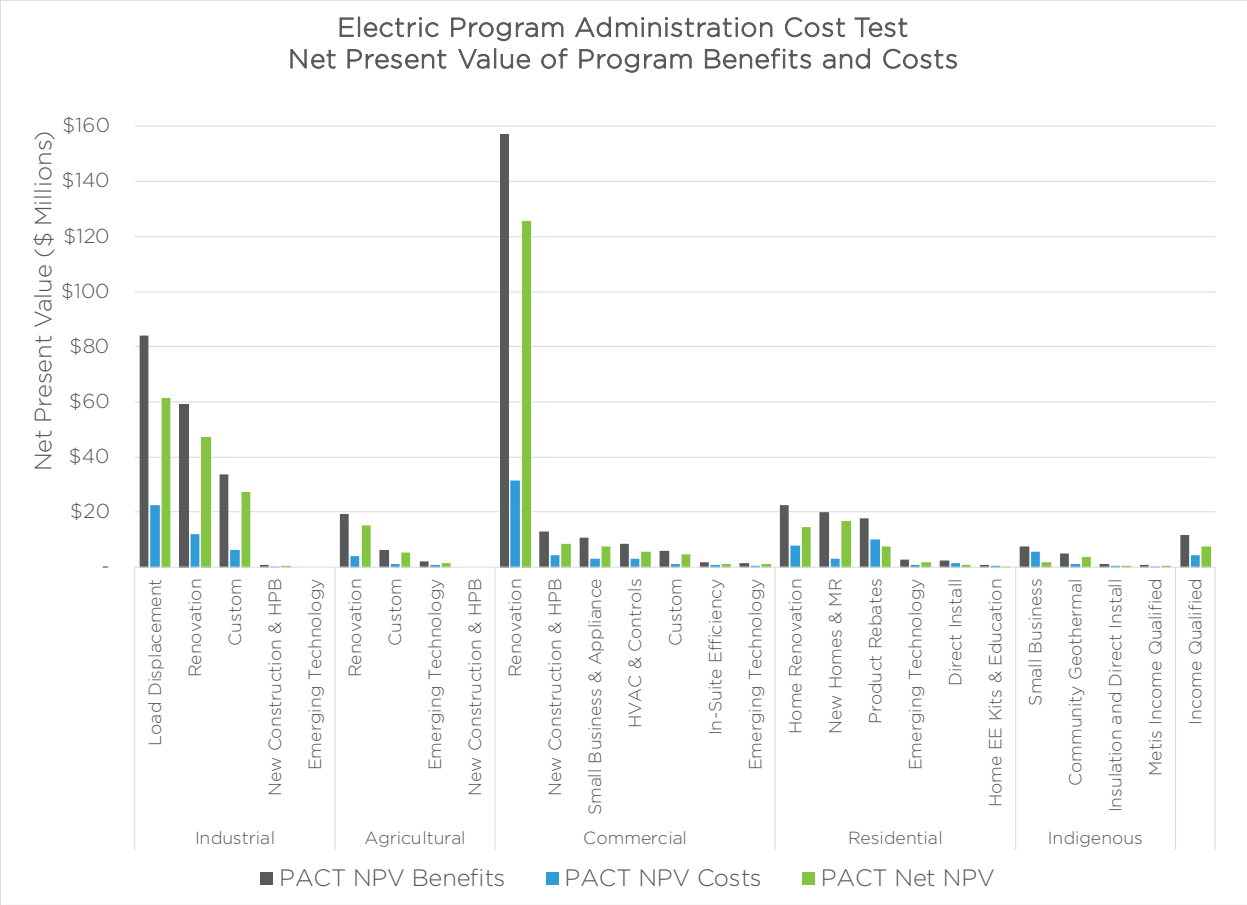


Note. Where no data is shown, such as in the emerging technology program offers for industrial customers, there are zero anticipated participating customers within this combination of program bundle and customer segment.

Figure A3.8 illustrates the electric PACT NPV for each program bundle and is organized by customer segment and provides details on the present value of the benefits, costs, and the net. This provides an opportunity to distinguish the program bundle magnitude of each of these PACT NPV components. For example, the commercial, industrial, and agricultural renovation program bundle available to customers represents over 50 percent of the portfolio net NPV. In contrast to the electric portfolio level PACT analysis, enabling strategies and corporate overhead

components are not included in the program bundle level PACT costs. This allows for an equitable comparison of program-specific costs from Plan activities.

FIGURE A3.8 ELECTRIC PACT NPV SUMMARY – PROGRAM BUNDLE BY CUSTOMER SEGMENT

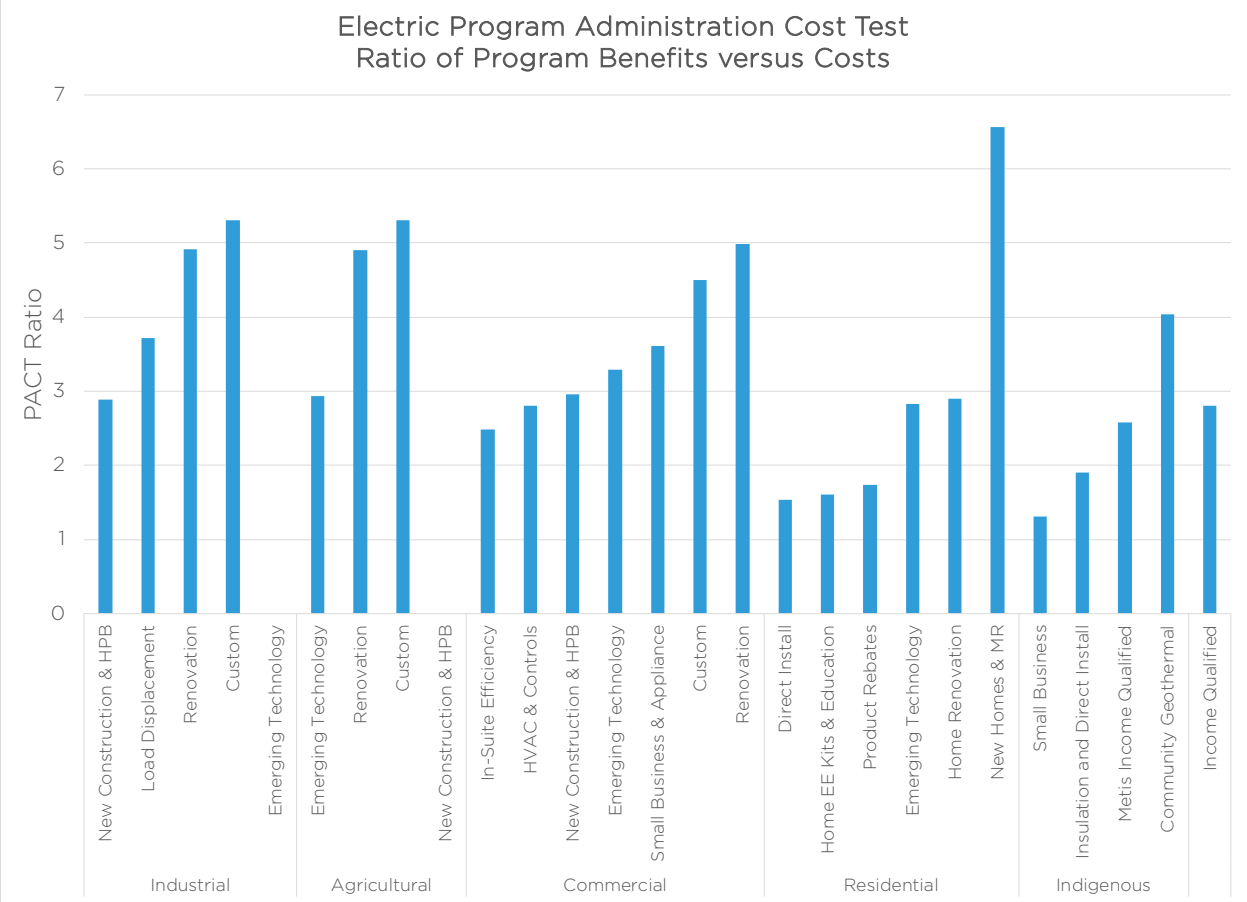


Note. Where no data is shown, such as in the emerging technology program offers for industrial customers, there are zero anticipated participating customers within this combination of program bundle and customer segment.

Figure A3.9 illustrates the electric PACT ratio for each program bundle and is organized by customer segment. Again, enabling strategies and corporate overhead components are not included in this program bundle level analysis. This allows for an equitable comparison of program-specific PACT ratio from Plan activities. Within each customer segment, the program bundles are sorted from lowest to highest PACT

ratio. A PACT ratio greater than 1.0 indicates the program bundle levelized benefits exceed the program bundled levelized costs. Similar to the PACT NPV, the magnitude of this ratio provides another perspective of the relative magnitude of these benefits versus costs. All electric programs are above the threshold value of 1.0.

FIGURE A3.9 ELECTRIC PACT RATIO SUMMARY – PROGRAM BUNDLE BY CUSTOMER SEGMENT



Note. Where no data is shown, such as in the emerging technology program offers for industrial customers, there are zero anticipated participating customers within this combination of program bundle and customer segment.

A3.3.3 NATURAL GAS PORTFOLIO PROGRAM COST EFFECTIVENESS

Table A3.8 provides the overall cost test results for the natural gas portfolio. As required by Regulation, the PACT has been used to evaluate the costs required to deliver the portfolio of energy efficiency programs and the resulting natural gas benefits to Centra from those savings. *Section 5* provides discussion of these cost test results while *Appendix A – Section A2* provides the methodology used. For the overall cost test results shown in Table A3.8, costs are all-in as previously defined. The PACT ratio demonstrates that the portfolio weighted marginal benefits are nearly equivalent to the costs for the natural gas portfolio. The magnitude of the PACT NPV provides context for the difference between the benefits and costs. The PACT does not include any value of marginal benefits related to avoided GHG emissions resulting from the natural gas portfolio.

TABLE A3.8 2020/23 EFFICIENCY PLAN SUMMARY – NATURAL GAS PORTFOLIO COST TEST RESULTS

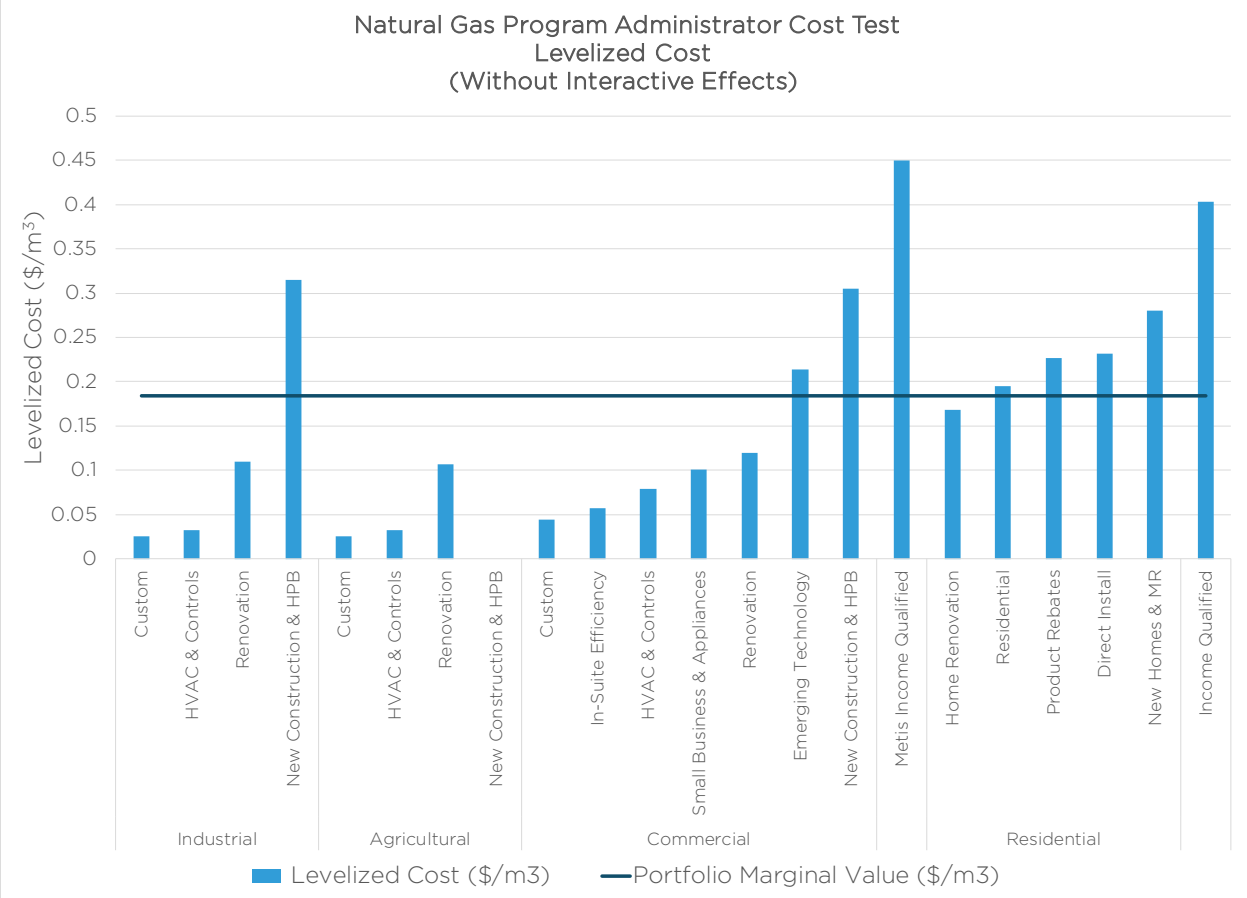
Cost test	Natural gas
PACT ratio	0.99
PACT net present value ($)	($756,000)
PACT levelized cost	18.69¢/m^3

A3.3.4 NATURAL GAS PROGRAM BUNDLE COST EFFECTIVENESS

Figure A3.10 illustrates the natural gas PACT levelized cost for each program bundle and is organized by customer segment. In contrast to the natural gas portfolio level PACT analysis, enabling strategies and corporate overhead components are not included in the program bundle level PACT costs. Additionally, the interactive effects of electric programs have not been included within this analysis. This allows for an equitable comparison of program-specific costs from Plan activities versus the

levelized energy savings. Within each customer segment, the program bundles are sorted from lowest to highest PACT levelized cost. Also shown in Figure A3.10 is the portfolio weighted average value of 18.45¢/m^3 based on Manitoba Hydro's marginal values for comparison. *Appendix A – Section A2* discusses the derivation of this portfolio weighted average marginal value. This value can be directly determined by multiplying the PACT ratio by the PACT levelized cost. Natural gas programs fall on both sides of this threshold value.

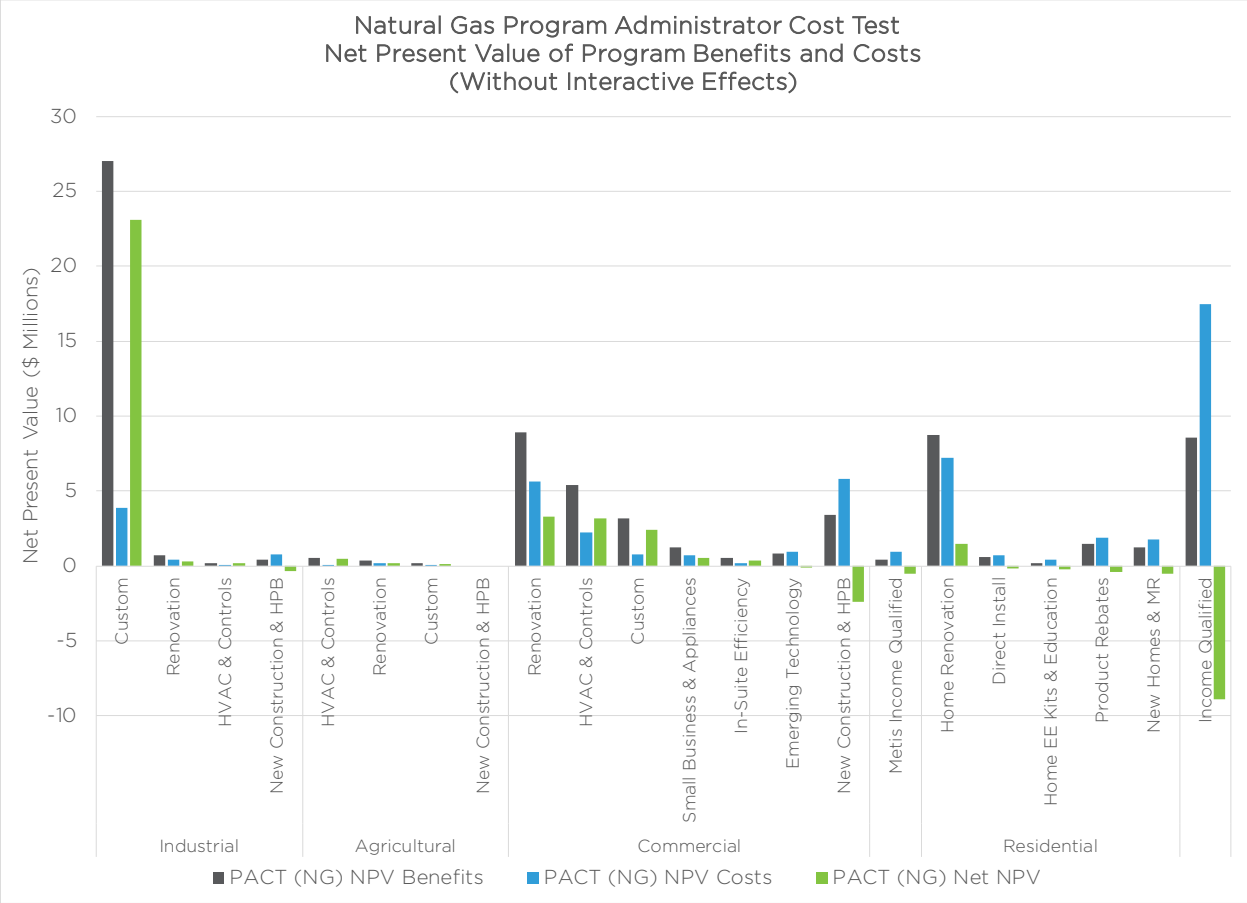
FIGURE A3.10 NATURAL GAS PACT LEVELIZED COST SUMMARY – PROGRAM BUNDLE BY CUSTOMER SEGMENT



Note. Where no data is shown, such as in the emerging technology program offers for industrial customers, there are zero anticipated participating customers within this combination of program bundle and customer segment.

Figure A3.11 illustrates the natural gas PACT NPV for each program bundle and is organized by each customer segment and provides details on the present value of benefits, costs, and the net. This provides an opportunity to distinguish the program bundle magnitude of each of these PACT NPV components. Where program bundles show negative PACT NPVs, this represents that the present value of the program costs exceed the present value of the Centra marginal values. In contrast to the natural gas portfolio level costs, enabling strategies and corporate overhead components are not included in this program bundle level costs. Similarly, the interactive effects from the electric portfolio of programs are not included in this analysis. This allows for an equitable comparison of program-specific costs from Plan activities.

FIGURE A3.11 NATURAL GAS PACT NPV SUMMARY – PROGRAM BUNDLE BY CUSTOMER SEGMENT

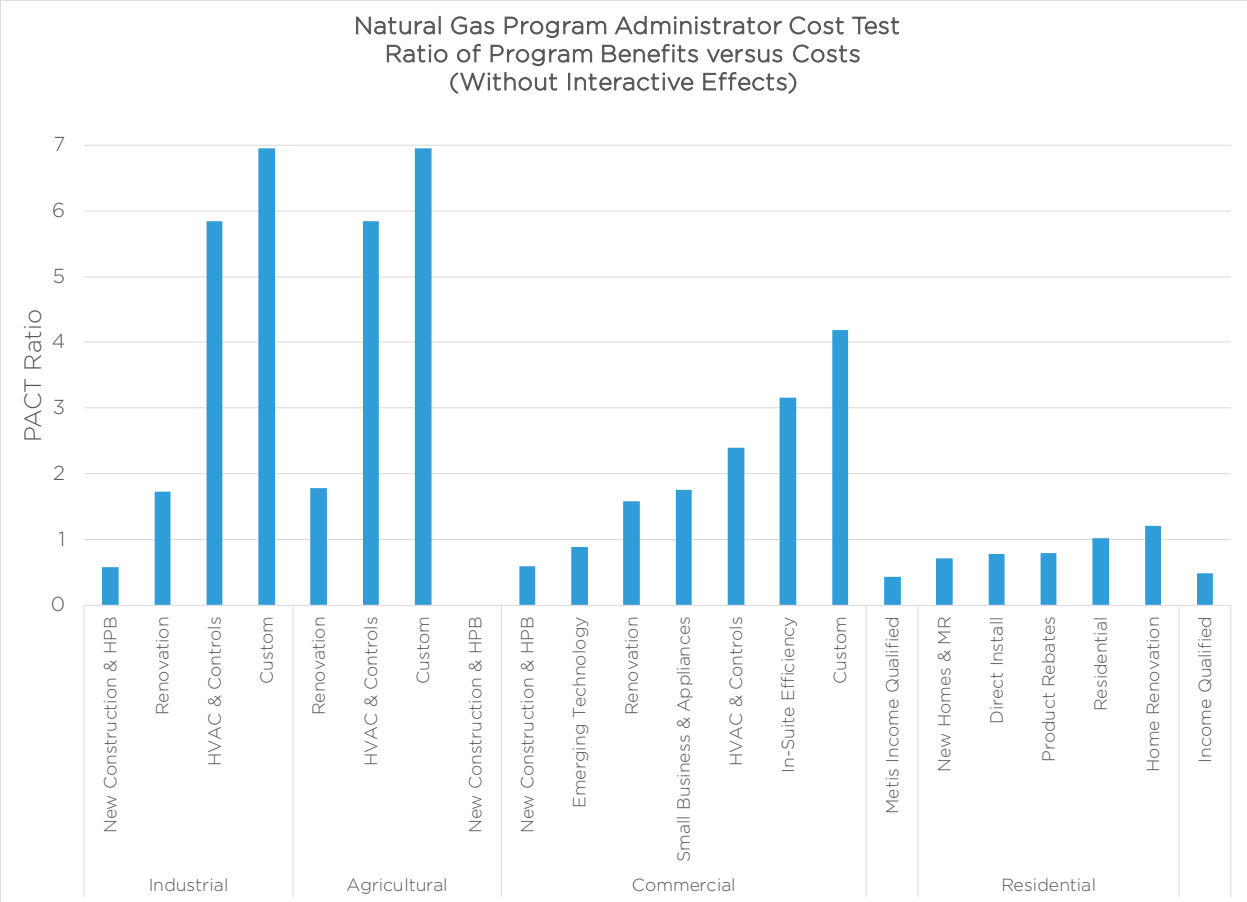


Note. Where no data is shown, such as in the emerging technology program offers for industrial customers, there are zero anticipated participating customers within this combination of program bundle and customer segment.

Figure A3.12 illustrates the natural gas PACT ratio for each program bundle and is organized by customer segment. In contrast to the natural gas portfolio level costs, enabling strategies and corporate overhead components are not included in the program bundle level costs. Similarly, the interactive effects from the electric portfolio of programs are not included in this analysis. This allows for an equitable comparison of program-specific costs from Plan activities. Within each customer segment, the program bundles are sorted from lowest to highest PACT ratio. A PACT ratio greater than 1.0 indicates that the program bundle levelized benefits exceed the program

bundle levelized costs. Similar to the PACT NPV, the magnitude of the PACT ratio provides another perspective of the benefits versus costs.

FIGURE A3.12 NATURAL GAS PACT RATIO SUMMARY – PROGRAM BUNDLE BY CUSTOMER SEGMENT



Note. Where no data is shown, such as in the emerging technology program offers for industrial customers, there are zero anticipated participating customers within this combination of program bundle and customer segment.

APPENDIX A – SECTION A4 RESIDENTIAL PROGRAMS

2020/23 EFFICIENCY PLAN

DIRECT INSTALL OFFERS
PRODUCT REBATE OFFERS
HOME RENOVATION OFFERS
NEW HOMES & MAJOR RENOVATION OFFERS
HOME ENERGY EFFICIENCY KITS & EDUCATION

EFFICIENCY MANITOBA

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APPENDIX A – SECTION A4

RESIDENTIAL PROGRAMS

Programs, offers, and initiatives in the residential sector are designed to increase awareness of energy-efficient technologies and practices and provide consumers with information and incentives to encourage them to make their homes more energy efficient. The main objectives are as follows:

1) to encourage the adoption and installation of energy-efficient products/technologies and behaviours in the residential sector in Manitoba;

2) to accelerate market transformation of cost-effective energy-efficient products/technologies in the residential market;

3) to develop a robust suite of offerings that is beneficial to the homeowner/tenant and the private sector;

4) to provide homeowners and tenants with tools and information to effectively make decisions about their home energy use;

5) to initiate integrated energy efficiency marketing campaigns involving participating retailers, suppliers, and contractors;

6) to reduce the initial cost of new technologies by providing rebates and incentives; and

7) to provide an avenue for Manitobans to feel empowered in their efforts to save energy and reduce their carbon footprint.

There are several market barriers and challenges that prevent the wide-spread adoption of energy efficiency in the residential sector including:

1) high upfront cost of energy-efficient products/technologies relative to inefficient options;
2) lack of awareness of energy-efficient products or behaviours and their benefits;
3) low inventories and limited availability of certain energy-efficient products;
4) lack of information available on how to properly use energy-efficient devices;
5) homeowner reluctance to make the switch to energy-efficient products due to previous poor performance (for example, products such compact fluorescent light bulbs have a historically poor reputation, and even though LED bulbs perform well, consumers are sceptical of energy-efficient lighting overall);
6) misconceptions that Manitoba homes are already energy efficient; and
7) low residential energy rates in Manitoba, which extend payback periods for energy efficiency investments relative to other jurisdictions with higher energy rates.

Shifting customer demographics require organizations to reach customers in new places and on new platforms. For example, younger generations may be strong advocates for sustainability and reducing energy consumption; however, they may also have less disposable income, competing financial priorities, and less free time to compare and investigate opportunities for energy efficiency. Leveraging technology and using preferred communication channels to offer simple and straightforward

solutions will be critical to gain participation from this group. In comparison, older demographics may be keen to improve the energy efficiency of their homes but require more personalized customer service for information and advice. Providing superior customer experiences is essential so all homeowners and renters can successfully access programs and information.

Rebates for energy-efficient lighting, insulation incentives, refrigerator and freezer retirement, and the distribution of free water and energy saver kits to Manitobans have been available through Manitoba Hydro for many years and have seen high levels of participation. Due to the high market penetration of these initiatives, the incremental acquisition cost to reach customers who have not yet participated may be higher than previous initiatives. Targeted, customer-focused, and cost-effective strategies will be necessary to identify and attract these remaining households.

In an increasingly connected "smart" world, consumer energy use is strongly linked to behavioural factors. Understanding how to influence behaviour to reduce energy consumption is important but creating strategies to measure and maintain those behavioural changes over time will be vital to deliver deeper, ongoing energy savings in the future.

Agencies and utilities can leverage smart metering infrastructure (SMI) to support and deliver demand-side management (DSM) activities. SMI facilitates greater customer choice and control by offering real-time, in-home feedback tools to push direct and timely information to customers about their energy consumption. SMI also provides a platform upon which behavioural programming could improve program delivery, addressing the barriers presented by hard-to-reach or geographically distant

customer groups. Until SMI is adopted in Manitoba, aspects of residential DSM program delivery may be more costly and less effective in their ability to reach and influence all customers.

With the rise of mobile technology and e-commerce, customers have increasingly high expectations for real-time information and feedback. By investing in a necessary customer relationship management/demand side management (CRM/DSM) system for email marketing and an online customer portal, along with increased social media and digital presence, Efficiency Manitoba will meet the changing needs of consumers.

Homeowners may have a strong desire to improve their home's energy efficiency but may not know how to initiate the process. Conversely, energy-savvy individuals may want to take on a specific project on their own. Information and offers will be tailored to unique customer needs and will appeal to a range of consumers from first-time homeowners, families building a new home, renovators, or do-it-yourself customers.

Efficiency Manitoba will offer several tools for customers to determine which renovations or upgrades may be useful to them. The Online Home Energy Questionnaire is a self-service option for the do-it-yourself customer that will collect information to identify energy efficiency opportunities and outline available rebates and incentives. The Home Energy Check-Up is available for homeowners who require more assistance. A third-party service provider will complete a basic check-up of the home to identify energy-saving opportunities and will install energy-efficient devices during their visit. The customer will also receive a customized report identifying opportunities in the home, outlining additional rebates and incentives available through Efficiency Manitoba, and describing the next steps to have any additional

energy-efficient devices installed. The Home Energy Audit will assist customers who want to undertake major improvements to the efficiency of their homes. A thorough pre and post-renovation audit will be conducted by a contracted third-party, during which information will be collected about the home; energy efficiency opportunities will be identified in a detailed report. These opportunities will be available on the customer's online profile, allowing the customer to see rebates and incentives available through Efficiency Manitoba.

The suite of residential offers planned for customers through Efficiency Manitoba is outlined in the chart below. The list of measures includes products/technologies as well as services. The status column indicates offers that are new to Manitobans versus those that may have been informed by a program previously offered through Manitoba Hydro. Delivery channels for each offer are detailed in the delivery column.

TABLE A4.1 CUSTOMER SEGMENT OFFER SUMMARY

BUNDLES	MEASURES	STATUS	DELIVERY
DIRECT INSTALL OFFERS	Online Home Energy Questionnaire	New offer	Online
	Home Energy Check-Up	New offer	Contracted third-party
	Free basic energy-efficient upgrades: • Up to two energy-efficient showerheads (5.7 LPM) • Up to two energy-efficient bathroom aerators (5.7 LPM) • Up to five LED bulbs • Tier 2 advanced power strips • Window insulating kits • Weatherstripping • Outdoor car plug timers	Existing program with enhancements	Contracted third-party (supply and installation)
	Incentive-based energy-efficient upgrades: • Heat recovery ventilator (HRV) controls • Smart thermostats	Existing program with enhancements	Contractors, industry (installation)
PRODUCT REBATE OFFERS	Retail Rebates • ENERGY STAR® certified LED bulbs • ENERGY STAR certified integrated LED fixtures • Lighting controls • Outdoor car plug timers & smart plugs • Energy-efficient showerheads (5.7 LPM) • Tier 1 advanced power strips • Weatherstripping • Window insulating kits • ENERGY STAR certified clothes washers • ENERGY STAR certified clothes washer/dryer pairs • ENERGY STAR certified refrigerators • ENERGY STAR certified dishwashers • ENERGY STAR certified smart thermostats • Clotheslines (giveaways at select events)	Existing program with enhancements	Retailers (supply), contracted third-party (coordination)

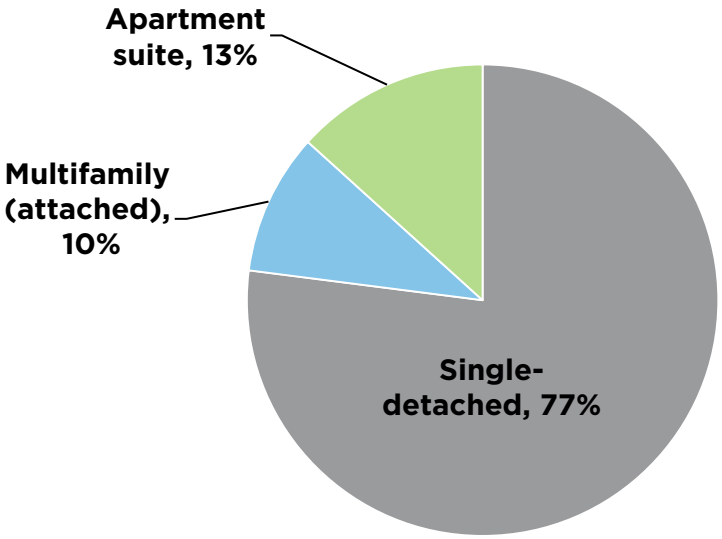
BUNDLES	MEASURES	STATUS	DELIVERY
	Appliance Recycling Program • Refrigerators • Freezers • Dehumidifiers • Window air conditioners • Bar fridges	Existing program with enhancements	Contracted third-party (coordination)
HOME RENOVATION OFFERS	Home Energy Audit	New offer	Industry
	Rebates: • Building envelope: insulation upgrades (attic, wall, foundation), windows & doors, air sealing • Appliances: clothes washers & dryers, refrigerators, dishwashers • Drain water heat recovery • HVAC: geothermal, HRV controls, smart thermostats • Pool pumps • Air source heat pumps • Bonus incentive (with Home Energy Audit)	Existing program with enhancements	Retailers (supply), industry (installation)
	Loans: • Building envelope • Space and water heating • Ventilation • Emerging technologies • Custom energy efficiency projects	Existing program	Manitoba Hydro (billing), retailers (supply), industry (installation)
NEW HOMES & MAJOR RENOVATION OFFERS	New Homes • Individual measures • Prescriptive Path • Performance Path	Existing program with enhancements	Contracted third-party (modelling), industry (construction)
	Major Renovation	New offer	Contracted third-party (home evaluation), Industry (supply)

BUNDLES	MEASURES	STATUS	DELIVERY
HOME ENERGY EFFICIENCY KITS & EDUCATION OFFERS	Energy Efficiency Kits • Up to two energy-efficient showerheads (5.7 LPM) • Up to two energy-efficient bathroom aerators (5.7 LPM) • Shower timer • Up to five LED bulbs • Tier 2 advanced power strip • Window insulating kit • Weatherstripping • Outdoor car plug timer	New offer	Contracted third-party (supply)

A4.1 CUSTOMER SEGMENT DESCRIPTION

The residential customer segment is comprised of homeowners and tenants in Manitoba. There are approximately 485,000 residential electric accounts in Manitoba (excluding seasonal residences). Approximately 250,000 homes (52 percent) are heated with natural gas and approximately 190,000 (40 percent) are heated with electricity. The remaining 45,000 electric accounts (8 percent) include homes that are heated by other fuel types (predominantly propane and fuel oil) as well as shared accounts (bulk-metered residences and customers without heat on their energy bill). Housing types include single family homes (single-detached) and multifamily (attached) homes including duplexes, triplexes, townhouses, and apartments.

FIGURE A4.1 MANITOBA HOUSING STOCK BY TYPE



Average annual energy use per home varies depending on factors such as the age, size, and number of occupants in the home. According to Manitoba Hydro's 2017 Residential Energy Use Survey[1], the average dwelling size (including single family homes, multifamily homes and apartment suites) in Manitoba is 1,285 square feet with 2.3 occupants. The average consumption for a dwelling using natural gas for space and water heating is approximately 2,200 m^3 and 11,000 kWh per year with an average annual total bill of $1,896. The average dwelling using electric space and water heating consumes about 24,000 kWh per year with an average annual total bill of $2,272.

Several niche markets exist within the residential sector including income qualified households, Indigenous accounts and multi-unit residential buildings (MURBs). Energy

[1] Manitoba Hydro 2019/20 Electric Rate Application - IR Round I - AMC/MH I-7-Attachment 1

efficiency initiatives for these groups involve a unique and tailored approach outlined in *Appendix A – Sections A5 through A7*.

Seasonal residences are not considered in the target market for energy efficiency offers due to low or seasonal energy consumption; however, basic information for maintaining energy-efficient seasonal residences will be available to customers.

A4.2 RESIDENTIAL MARKETING APPROACH

Establishing the marketing mix for residential programs includes:

- the eligible energy efficiency products and services;
- the value of the incentive or rebate;
- the distribution channels for products (where they may be available for purchase); and
- advertising or promotional strategies for the program or offer.

There are various factors that determine product eligibility such as energy consumption, market forces, product availability, building code requirements, and product performance. For example, qualifying LED lighting products and appliances must be ENERGY STAR certified. ENERGY STAR certified products are tested and certified to meet or exceed technical specifications for high efficiency.

Where energy-efficient products have a higher upfront cost, rebates are designed to encourage customers to choose the energy-efficient option rather than the energy inefficient alternative. The customer payback is also considered when setting the rebate amount.

There are multiple channels through which consumers may purchase energy-efficient products:

- In-stores: including large big-box retailers, local hardware stores, grocery/convenience stores, and discount retailers.
- Online: through specific retail sites or product fulfillment sites such as Amazon.ca.
- Contractors: whereby the contracted business supplies and/or installs the product.

Promoting rebates directly at the source is important for program success. In-store point-of-purchase (POP) materials, such as posters, shelf talkers, and stickers will bring attention to rebates. In-store customer engagement events will be hosted at stores in both urban and rural communities to educate customers on energy efficiency in general, available rebates, and other Efficiency Manitoba offers. Efficiency Manitoba will work with retailers to highlight eligible products and rebate amounts on their websites and e-commerce stores where possible.

Overall, residential offers will leverage a variety of promotional channels to drive awareness and participation. These channels include, but are not limited to, online advertising, paid and organic social media, traditional media (radio, newspaper, billboard, etc.), direct mail, trade publications, newsletters, industry forums, community events, and direct sales. Securing a variety of media opportunities in both urban and rural communities will ensure adequate reach throughout the province.

Efficiency Manitoba will also equip the contractor and retailer network with promotional and educational materials to further support marketing efforts. To ensure contractors and retailers are comfortable promoting programs and assisting customers with applications, Training will be provided through online videos and quizzes.

Efficiency Manitoba will secure flyer space, paid media, contest prizes, in-store merchandising, and top-up rebates from retailers and manufacturers. Leveraging paid advertising and promotional activities from retailers and manufacturers increases customer reach and reduces costs for Efficiency Manitoba, ultimately providing more cost-effective programs and offers for customers.

During retail campaigns, contests may be timed and executed to build Efficiency Manitoba's social media following and grow the e-newsletter distribution list. Contest prizes can be provided from retailers and manufacturers in exchange for being included in promotional efforts. Efficiency Manitoba will produce and distribute promotional magazines province-wide highlighting campaigns, programs and offers, energy saving tips, and other general information.

A4.3 DIRECT INSTALL OFFERS

TABLE A4.2 DIRECT INSTALL ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses (electric)	800	1,200	1,600
Annual electric savings (GWh) (at generation)	1.23	1.92	2.55
Annual capacity savings (MW) (at generation)	0.29	0.42	0.51
No. of houses (natural gas)	1,200	1,800	2,400
Annual natural gas savings (million m^3)	0.10	0.17	0.23
Annual GHG emission reductions (tonnes CO_2e)	200	300	400

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A4.3 DIRECT INSTALL COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$406,000	$578,000	$753,000
Annual natural gas budget ($)	$199,000	$264,000	$327,000
Total program budget	$605,000	$842,000	$1,080,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	1.53	0.78
	Net Present Value ($)	$0.86 M	($0.17 M)
	Levelized Cost	4.15¢/kWh	23.19¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A4.3.1 OVERVIEW & OBJECTIVES

Efficiency Manitoba will provide full-service Direct Install Offers for homeowners, beginning with a basic Home Energy Check-Up of their home. The Home Energy Check-Up will identify opportunities, recommend upgrades, and enable customers to

take the next step towards a more energy-efficient home through a direct install option, rebates and incentives on eligible products.

Homeowners may complete a basic energy check-up of their home through two streams: the Online Home Energy Questionnaire and/or the in-person Home Energy Check-Up.

ONLINE HOME ENERGY QUESTIONNAIRE

Homeowners will be able to complete a simple online energy efficiency questionnaire through Efficiency Manitoba's online customer portal. The questionnaire will collect information from the customer to identify energy efficiency opportunities in their home, outline current rebates and incentives available to the customer, and determine their candidacy for an in-person Home Energy Check-Up.

HOME ENERGY CHECK-UP

Once the customer has completed the Online Home Energy Questionnaire, they may opt to book an in-person Home Energy Check-Up. A third-party service provider will complete a basic check-up of the home to identify energy-saving opportunities and will install energy-efficient devices during their visit. The third-party service provider will also collect information to provide a customized report identifying energy efficiency opportunities in the home, outlining additional rebates and incentives available through Efficiency Manitoba, and describing the next steps to have any additional energy-efficient devices installed.

A4.3.2 TECHNOLOGIES

Homeowners may be eligible to have the following devices installed based on the results of the Online Home Energy Questionnaire or Home Energy Check-Up.

Basic energy-efficient upgrades installed at no charge include:

- up to two energy-efficient showerheads (5.7 LPM);
- up to two energy-efficient bathroom aerators (5.7 LPM);
- up to five LED bulbs;
- a tier 2 advanced power strip;
- a window insulating kit;
- weatherstripping; and
- an outdoor car plug timer.

Additional energy-efficient upgrades eligible for incentives include:

- heat recovery ventilator (HRV) controls; and
- a smart thermostat.

A4.3.3 IMPLEMENTATION

Efficiency Manitoba's CRM/DSM system (see *Appendix A – Section A2*) will play a critical role in delivering the Direct Install Offers. To participate in Direct Install Offers, customers will need to visit Efficiency Manitoba's customer portal. From there, customers will complete the Online Home Energy Questionnaire about their home. Based on the results of the questionnaire, customers will receive recommendations for upgrades that are suitable for their home. They may choose to have a Home Energy Check-Up in order to gain further advice/recommendations and have energy-efficient devices installed. Alternatively, customers may choose a "self-service" option and participate in other offers such as retail rebates, the Appliance Recycling Program, or Home Renovation Offers. Participants who do not have access to the online portal will be able to contact an Efficiency Manitoba customer service

representative who will be able to provide the necessary support so that these homeowners can still take part in the offers.

The Home Energy Check-Up will be scheduled and administered through a third-party service provider. The service provider will be responsible for supplying and delivering or installing the energy-efficient products provided during the check-up.

Efficiency Manitoba staff will work with the third-party service provider and local representatives to target rural communities in a phased approach throughout Manitoba.

A4.4 PRODUCT REBATE OFFERS

Efficiency Manitoba's Product Rebate Offers can be divided into two broad categories:

- retail rebates (instant rebates and online rebates); and
- the Appliance Recycling Program.

TABLE A4.4 PRODUCT REBATE ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of products (electric)	354,000	275,000	195,000
Annual electric savings (GWh) (at generation)	14.31	11.72	8.67
Annual capacity savings (MW) (at generation)	2.78	2.11	1.19
No. of products (natural gas)	39,000	34,000	23,000
Annual natural gas savings (million m^3)	0.55	0.47	0.19
Annual GHG emission reductions (tonnes CO_2e)	1,000	900	400

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A4.5 PRODUCT REBATE COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$4,033,000	$3,638,000	$3,120,000
Annual natural gas budget ($)	$890,000	$813,000	$272,000
Total program budget	$4,923,000	$4,451,000	$3,392,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	1.74	0.79
	Net Present Value ($)	$7.53 M	($0.40 M)
	Levelized Cost	3.49¢/kWh	22.68¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A4.4.1 OVERVIEW & OBJECTIVES

RETAIL REBATES

Efficiency Manitoba will provide instant rebates on a variety of energy-saving technologies such as lighting and air sealing products. To take part, customers will visit a participating retailer and purchase an eligible product to receive an instant rebate at the checkout. Instant rebate campaigns will be offered in spring and fall annually starting in spring 2020.

Online rebates will available on technologies with higher upfront costs including appliances and smart thermostats. Customers will participate by purchasing an eligible product either in-store or online and then completing an online form on Efficiency Manitoba's website to claim their rebate. Online rebates will be offered year-round.

Retail rebates provide residential customers with a channel to purchase energy-efficient products at accessible and competitive prices. By providing rebates on energy-efficient products, Efficiency Manitoba aims to reduce market barriers and

ensure that all customers are able and encouraged to choose energy-efficient products over their inefficient counterparts. In addition, due to its low barriers to participation, this initiative serves as a gateway for customers to make additional energy-efficient improvements to their homes.

APPLIANCE RECYCLING PROGRAM

The Appliance Recycling Program will allow residential customers to recycle their old, working and inefficient refrigerators and freezers. They will receive free pick-up of their unit(s) and a financial incentive for each unit collected. The program will also pick up dehumidifiers, window air conditioners, and bar fridges from customer homes in conjunction with an eligible refrigerator or freezer; however, no incentive will be paid for these smaller appliances. Appliances recycled through this initiative must be in working condition and meet specific age and size requirements.

The primary objective for offering this program is to realize energy savings by either completely removing old and inefficient refrigerators and freezers from customer homes or having customers replace their appliance with an energy-efficient model. The program will reduce harmful greenhouse gas emissions that arise from operating old and inefficient units and will decommission these units in a manner that allows the bulk of the appliance to be recycled and reused. The goal of including smaller appliances (dehumidifiers, window air conditioners, and bar fridges) is to achieve additional smaller-scale electricity savings. It also offers a supplementary customer service for customers who wish to dispose of one or more of these smaller appliances but are not sure how to do so in an environmentally responsible manner.

A4.4.2 TECHNOLOGIES

The categories of products listed below may qualify for rebates under Product Rebate offers. Products are continually assessed and must meet specific efficiency requirements; therefore, not all units within each category may be eligible.

RETAIL REBATES: INSTANT

Products eligible for instant retail rebates include:

- ENERGY STAR certified LED bulbs;
- ENERGY STAR certified integrated LED fixtures;
- lighting controls;
- clotheslines;
- outdoor car plug timers and smart plugs;
- energy-efficient showerheads (5.7 LPM);
- Tier 1 advanced power strips
- weatherstripping; and
- window insulating kits.

RETAIL REBATES: ONLINE

Products eligible for online retail rebates include:

- ENERGY STAR certified clothes washers;
- ENERGY STAR certified clothes washer/dryer pairs;
- ENERGY STAR certified refrigerators;
- ENERGY STAR certified dishwashers; and
- ENERGY STAR certified smart thermostats.

APPLIANCE RECYCLING PROGRAM

Appliances eligible for be pick-up through the Appliance Recycling Program include:

- refrigerators;
- freezers;
- dehumidifiers;
- window air conditioners; and
- bar fridges.

A4.4.3 IMPLEMENTATION

RETAIL REBATES

Various delivery activities for both instant and online retail rebates will be contracted to a third-party service provider. Due to the long lead times required to secure inventory, it is necessary to engage retailers well in advance of an instant rebate campaign. Efficiency Manitoba's service provider will work with local, regional, and national retailers to maximize reach and store coverage across Manitoba.

The scope of work for instant rebates will predominantly focus on coordinating with participating retailers. This includes the development of a tendering process to select participating stores, securing contractual agreements with retailers, working with stores to determine eligible product lists, and coordinating retailer-funded marketing opportunities. The service provider will also be responsible for coordinating, managing, hiring, and training staff for in-store customer engagement events, kitting and distributing campaign POP material, and developing and hosting a website for sales associate training.

For online rebates, the service provider will be responsible for coordinating with retailers to determine eligible product lists, creating an online form for customer enrollment, processing applications, issuing customer rebates, securing and processing top-up incentives from retailers and manufacturers, completing kitting and distribution of campaign POP material, and developing and hosting a website for sales associate training.

In order to participate in instant retail rebates, customers visit a participating store during a campaign period and purchase an eligible product as indicated by the in-store signage. The rebate will be applied instantly at the till.

For online rebates, customers complete an online application form. Information about the customer, the product they purchased, and a copy of the sales receipt will be collected by the service provider for processing. A paper version of the application form will be available for customers that do not have access to the internet or customers that choose not to apply online. Incentives will be issued via cheque or electronic money transfer.

APPLIANCE RECYCLING PROGRAM

To implement the Appliance Recycling Program, Efficiency Manitoba will contract turn-key delivery to a third-party service provider. The service provider will manage customer enrollment, coordinate in-home pick-up, decommission the appliances, ensure the appliances are recycled, and administer the incentives. The service provider will also be responsible for providing all customer participation information via the CRM/DSM system's contractor portal.

To participate in the Appliance Recycling Program, customers will access the Efficiency Manitoba customer portal. From there, they may participate in one of two ways: through the Home Energy Check-Up or through a self-service option.

The Home Energy Check-Up (see *Appendix A – Section A4.2*) provides customers with a basic understanding of how they can improve the energy efficiency of their home. Customers must access the customer portal to sign up for their Home Energy Check-Up. On the day of the appointment, a third-party service provider will visit and survey the home, including the customer's existing appliances. If it is identified that the customer has an eligible refrigerator or freezer that can be recycled through the program, the third-party service provider will recommend that the customer enroll in the Appliance Recycling Program and offer to sign them up on the spot. The customer will then answer several questions about their appliance(s) and book their appointment, as desired, during the check-up.

Through the self-service option, customers will be prompted to answer several questions about their appliance(s) and will be able to book an appointment. This appointment booking will filter through to the program's third-party service provider.

Grassroots initiatives are vital to the program's success. Partnerships with rural municipalities and towns will be sought to advertise the program on their websites and social media channels. Under-participating rural communities can easily be identified using historical program participation data. These communities can be targeted specifically using direct mail initiatives and area-specific recycling blitzes.

A4.5 HOME RENOVATION OFFERS

Efficiency Manitoba's Home Renovation Offers include the following:

- Home Renovation Rebate Offers; and
- the Home Energy Efficiency Loan.

TABLE A4.6 HOME RENOVATION ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of projects (electric)	800	4,700	3,900
Annual electric savings (GWh) (at generation)	2.96	6.23	6.09
Annual capacity savings (MW) (at generation)	1.09	2.30	2.27
No. of projects (natural gas)	1,200	9,400	9,000
Annual natural gas savings (million m^3)	0.33	1.15	1.25
Annual GHG emission reductions (tonnes CO_2e)	600	2,200	2,400

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A4.7 HOME RENOVATION COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$1,971,000	$3,107,000	$3,169,000
Annual natural gas budget ($)	$933,000	$3,066,000	$3,839,000
Total program budget	$2,904,000	$6,173,000	$7,008,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	2.90	1.20
	Net Present Value ($)	$14.71 M	($1.48 M)
	Levelized Cost	3.67¢/kWh	16.82¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A4.5.1 OVERVIEW & OBJECTIVES

HOME RENOVATION REBATE OFFERS

Efficiency Manitoba will provide rebates to homeowners on a variety of energy-saving measures and technologies with higher upfront costs such as insulation, windows,

HRV controls, drain water heat recovery units, and geothermal systems. Homeowners can participate through two streams:

1) by scheduling a Home Energy Audit and undertaking multiple energy efficiency upgrades, or
2) by completing an individual project.

Through both streams customers will begin by accessing Efficiency Manitoba's online portal. Through the portal the customer can view applicable rebates and offers available through Efficiency Manitoba and apply for rebates from a computer or mobile device.

HOME ENERGY AUDIT

The Home Energy Audit will assist homeowners who want to upgrade and improve the efficiency of their home but do not know how to initiate the process. The customer starts by booking a pre-renovation audit with an approved third-party energy service provider. Information will be collected about the home, and energy efficiency opportunities such as insulation, air sealing, heating system upgrades, and windows upgrades will be identified. Information from this pre-renovation Home Energy Audit will be sent to the customer along with recommendations customized to their home. The homeowner will also be able to view rebates available through Efficiency Manitoba that will make their upgrades more financially feasible. To encourage homeowners to complete several efficiency upgrades, those customers who participate in the audit stream will be eligible for rebates on individual qualifying upgrades along with a bonus incentive when they complete a minimum of three qualifying upgrades and a post-renovation Home Energy Audit. Home Energy Audit

customers who choose to have a pre and post-renovation blower door test will also be eligible for air sealing incentives.

Customers and contractors will receive electronic communications through the online portal to guide them through the process, including an electronic approval and reminder notifications about their rebate(s). Once the upgrade has been completed, the customer or contractor will submit the final completion documents and invoicing through the online portal to close out the customer's rebate application. A post-inspection may be required prior to finalizing the rebate(s). Customers can easily apply for additional rebate offers in the future should they choose to do other energy-efficient upgrades.

INDIVIDUAL PROJECTS

This stream is designed for homeowners who have one or two specific energy efficiency projects in mind, as well as those who are energy-savvy or may not want to incur the expense of a Home Energy Audit. Once a customer visits the online portal, they can easily apply for qualifying rebates as they perform their upgrades. Customers can apply for rebates on other technologies later through the online portal should they choose to do additional upgrades in the future. To take part, customers will visit Efficiency Manitoba's online portal, identify the desired energy-efficient upgrade, select a participating contractor or retailer, and apply for qualifying rebates before they begin the work.

Offering rebates on energy-efficient measures and technologies will help to establish a market for contractors across Manitoba that support and install energy-efficient technologies and ensure the accessibility of energy-efficient options for technologies

in the early adoption stage. Efficiency Manitoba also aims to reduce the market and financial barriers associated with the higher upfront costs of energy-efficient technologies and ensure that all customers are able and encouraged to choose energy-efficient technologies over their inefficient counterparts.

HOME ENERGY EFFICIENCY LOAN

The Home Energy Efficiency Loan will focus on improving the energy efficiency of existing residential homes by providing financing to homeowners who install qualifying measures. Homeowners can choose from various loan terms for manageable monthly payments that are conveniently applied to their Manitoba Hydro utility bill. The interest rate for the Home Energy Efficiency Loan will be determined by Manitoba Hydro and will be set at a rate that recovers all program administration costs. The methodology used, as confirmed by Manitoba Hydro, for calculating the interest rate is based on the aggregate of Manitoba Hydro's weighted average cost of capital (WACC), credit risk cost, and the average program administration cost.

To be eligible for the Home Energy Efficiency Loan, the applicant must be a Manitoba Hydro customer and the owner of the property. The home must be billed at the residential rate class and must be the owner's primary residence (or the primary residence of the owner's tenant). In addition, the applicant must have approved credit in order to qualify. Through the Home Energy Efficiency Loan, it is anticipated Manitoba Hydro will finance approximately $94.3 million towards energy efficiency improvements over three years.

The primary objective for offering this loan is to complement and support incentive-based programs by assisting customers in managing the installation cost of their

energy-efficient upgrades. The loan also supports emerging technologies where financial incentives are not offered.

A4.5.2 TECHNOLOGIES

Home Renovation Offers will provide rebates for the energy-efficient measures and products listed below. Products and measures must meet specific efficiency requirements to be eligible.

HOME RENOVATION REBATE OFFERS

Products and measures eligible under Home Renovation Rebate Offers include:

- a Home Energy Audit and bonus incentives;
- building envelope:
    - insulation (attic, wall, and foundation);
    - windows and doors; and
    - air sealing;
- appliances:
    - clothes washers and dryers; and
    - refrigerators and dishwashers[2];
- drain water heat recovery units;
- HVAC:
    - geothermal;
    - HRV controls; and
    - smart thermostats;

[2] The incentive is included under retail rebates and qualifying purchases are eligible for the bonus incentive when combined with other home upgrades.

- pool pumps; and
- air source heat pumps.

HOME ENERGY EFFICIENCY LOAN

Products and measures eligible under the Home Energy Efficiency Loan include:

- building envelope;
- space and water heating;
- ventilation;
- emerging technologies; and
- custom energy efficiency projects.

A4.5.3 IMPLEMENTATION

HOME RENOVATION REBATE OFFERS

Home Renovation Rebate Offers include incentives on insulation measures and HRV controls beginning in 2020/21. Starting in the second year of the three-year plan, additional measures will be included for individual incentives.

Participation will be driven through existing retailers, contractors and energy evaluation companies who will be hired by the homeowner to do the work. To participate, customers will individually or with their retailer/contractor complete the online application form for their chosen technology rebate. Information about the customer, the energy-efficient upgrade, existing technologies, and technologies installed will be collected through the online application form. If a customer has participated in the Home Energy Audit, information from their pre and post-audit along with the recommendations and corresponding rebate offers will be sent to them. The customer and contractor will receive an electronic notification that they are

approved for a rebate. Once the technology is installed, the customer or contractor will submit their completion documents and invoices through the online portal. If required, a post-inspection may be completed before a customer's application and rebate is finalized. Once finalized, the rebate payment will be issued to the customer. A wide-reaching network of participating contractors and retailers across Manitoba is essential to the successful implementation of these offers in urban and rural communities.

HOME ENERGY EFFICIENCY LOAN

In order to implement the Home Energy Efficiency Loan, Efficiency Manitoba will need to work in close collaboration with Manitoba Hydro. As a complementary feature of rebate programs, Efficiency Manitoba will facilitate access to Manitoba Hydro financing tools. The Efficiency Manitoba online portal will be the primary tool for program participation.

Participating contractors and retailers will be able to offer on-bill financing to their customers as a payment option when undertaking qualifying energy-efficient improvements. A robust network of contractors and retailers is essential to maximize the reach of the loan across Manitoba, ensuring there are participating suppliers offering the loan in urban and rural communities.

A4.6 NEW HOMES & MAJOR RENOVATION OFFERS

Efficiency Manitoba's New Homes and Major Renovation offers can be divided into two broad categories:

- the New Homes Program; and
- major renovation projects in existing homes.

TABLE A4.8 NEW HOME & MAJOR RENOVATION ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses or suites (electric)	430	440	440
Annual electric savings (GWh) (at generation)	3.32	3.63	3.67
Annual capacity savings (MW) (at generation)	1.66	1.81	1.82
No. of houses or suites (natural gas)	270	290	310
Annual natural gas savings (million m^3)	0.07	0.16	0.17
Annual GHG emission reductions (tonnes CO_2e)	100	300	300

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A4.9 NEW HOME & MAJOR RENOVATION COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$913,000	$1,149,000	$1,168,000
Annual natural gas budget ($)	$371,000	$742,000	$769,000
Total program budget	$1,284,000	$1,891,000	$1,937,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	6.56	0.72
	Net Present Value ($)	$16.89 M	($0.49 M)
	Levelized Cost	1.84¢/kWh	28.07¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A4.6.1 OVERVIEW & OBJECTIVES

The New Homes Program will offer year-round design assistance in the form of energy modelling and one-on-one consultation with a third-party Certified Energy Advisor, coupled with financial incentives. To take part, builders, prime contractors, and/or customers will work either independently or with the energy advisor to design

a new home that will perform at least 20 percent better than a comparable home built to minimum code requirements.

The New Homes Program will provide builders and customers with resources and guidance to learn, evaluate, and implement better housing designs that improve the energy performance, comfort, durability, and affordability of new homes in Manitoba. By providing incentives for energy-efficient new home construction, Efficiency Manitoba will address the significant barrier of contractors not knowing where to begin or what tools to use in order to optimize the performance of new residential buildings. It will also provide a useful benchmark for customers who know they want an energy-efficient home but lack the expertise to create an effective specification for their selected builder.

The program will also provide year-round financial incentives to residential customers for major renovation projects that improve the energy efficiency of their existing home. In order to participate, customers will undertake an EnerGuide home pre-evaluation performed by a Certified Energy Advisor and submit an application before the work takes place. The cost of the pre-evaluation will be partially subsidized by the program upfront and fully reimbursed once the renovation project is completed and post-evaluated. At completion, a performance-based incentive will be paid based on the EnerGuide rating and modelled energy savings of the finished project.

Incentives and tools will be provided for customers and contractors to plan, evaluate, and implement energy-saving renovation projects in existing residential homes. The program will fill a gap in previous incentive programs by providing whole home performance-based incentives for large-scale residential renovations, including deep

energy retrofits. The program will address the problem of quantifying and prioritizing energy-saving renovations to residential housing stock.

A4.6.2 TECHNOLOGIES

NEW HOMES: INDIVIDUAL MEASURES

Eligible upgrades for individual measures under the New Homes Program include:

- attic insulation to R-58 effective;
- wall insulation to R-17 effective;
- windows with a maximum U-value of 1.3;
- foundations and headers to R-18 effective; and
- slab insulation to R-6 effective.

NEW HOMES: PRESCRIPTIVE PATH

In order to participate in the New Homes Program Prescriptive Path, the following requirements must be met:

- increased attic insulation to R-58 effective;
- increased exterior above grade wall insulation to R-17 effective;
- increased basement and floor header insulation to R-18 effective;
- tested air tightness of less than 1.5 air changes per hour;
- windows must be triple glazed, low-e, argon, with low conductivity frame and spacer;
- high-efficient HRV with a sensible heat-recovery efficiency of 65 percent or better;
- HRV controls;
- LED lighting throughout; and
- reduced thermal bridging.

NEW HOMES & MAJOR RENOVATIONS: PERFORMANCE PATH

The Performance Path prescribes no individual technologies. Instead, the final whole-home energy performance is evaluated by a Certified Energy Advisor using the EnerGuide Rating System and a performance-based incentive is paid to the applicant. Major renovation projects only qualify under the Performance Path (that is, there is no prescriptive option).

A4.6.3 IMPLEMENTATION

The New Homes Program will contract a third-party service provider to deliver EnerGuide home evaluations via the Performance Path and perform blower door testing for all Prescriptive Path and Performance Path applications. The selected party will be responsible for pre and post-evaluations including blower door testing, consultation with contractors and customers, and official file submission to Natural Resources Canada (NRCan). NRCan is the department of the federal government responsible for issuing official EnerGuide labels to homes across Canada. NRCan also independently certifies energy advisors and requires regular audits and quality assurance activities on the work done by Certified Energy Advisors delivering EnerGuide. Application approvals and incentives will be administered by Efficiency Manitoba staff.

Under the Individual Measures approach, builders will select from a list of optional energy-saving upgrades. Builders can choose as many or as few upgrades as desired and receive a fixed incentive for each measure selected. The ability to scale the total number of energy-saving upgrades up or down is the key difference between the

Individual Measures offer and the 10 mandatory criteria which constitute the Prescriptive Path.

Major renovation projects in existing homes will be delivered using a third-party service provider and measured using the EnerGuide Rating System. Similar to the New Homes Program approach, services under this program include a single point of contact in the field for consultation and pre- and post-evaluations. Application approvals and incentives will be administered by Efficiency Manitoba staff.

A4.7 HOME ENERGY EFFICIENCY KITS & EDUCATION

Home Energy Efficiency Kits and Education includes the following initiatives:

- distribution of kits with energy-saving devices;
- energy efficiency education curriculum development and implementation; and
- attending community events to deliver devices and education materials.

TABLE A4.10 HOME ENERGY KITS & EDUCATION ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses (electric)	2,300	2,600	2,600
Annual electric savings (GWh) (at generation)	0.58	0.97	0.97
Annual capacity savings (MW) (at generation)	0.03	0.10	0.08
No. of houses (natural gas)	700	1,100	1,100
Annual natural gas savings (million m^3)	0.03	0.06	0.06
Annual GHG emission reductions (tonnes CO_2e)	100	100	100

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A4.11 HOME ENERGY KITS & EDUCATION COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$158,000	$230,000	$234,000
Annual natural gas budget ($)	$135,000	$149,000	$152,000
Total program budget	$293,000	$379,000	$386,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	1.61	0.41
	Net Present Value ($)	$0.35 M	($0.24 M)
	Levelized Cost	3.05¢/kWh	43.90¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A4.7.1 OVERVIEW & OBJECTIVES

The Home Energy Efficiency Kits and Education initiative will encourage residential customers to reduce their energy consumption by providing homeowners with basic home energy efficiency kits and educational resources. The initiative will also educate students and work toward establishing a culture of conservation in Manitoba.

Home energy efficiency kits and resources will be distributed at community events throughout Manitoba. The objective of this strategy is to engage customers at community events throughout Manitoba and answer questions, provide educational resources and information, and provide basic energy-efficient products.

Home energy efficiency kits and resources will also be distributed through schools throughout Manitoba. The objective of this initiative is to work with the Province of Manitoba's education department to expand their current Education for Sustainable Development (ESD) curriculum and work with schools throughout the province to engage youth and promote a culture of conservation in Manitoba. Students will be educated on the benefits of energy-efficient technologies and how they can make

simple changes around their home to save energy and reduce their impact on the environment. Students will be required to complete a basic energy walkthrough of their home with their parent's supervision. During the walkthrough, they will collect information and identify opportunities to improve the energy efficiency of their home. A custom kit will be ordered and delivered directly to the student's home. Students will be able to install the devices with their parent's supervision.

A4.7.2 TECHNOLOGIES

Home Energy Efficiency Kits may include the following devices:

- up to two energy-efficient showerheads (5.7 LPM);
- up to two energy-efficient bathroom aerators (5.7 LPM);
- a shower timer;
- up to five LED bulbs;
- a tier 2 advanced power strip;
- a window insulating kit;
- weatherstripping; and
- an outdoor car plug timer.

A4.7.3 IMPLEMENTATION

A third-party service provider will be responsible for supplying and delivering the energy-efficient products provided in the kits.

Collaboration with the Province of Manitoba's education department and the Manitoba Teachers' Society will be required to develop an energy conservation curriculum and educational resources for students and to schedule participation in schools throughout Manitoba in both urban and rural communities.

Efficiency Manitoba staff, in cooperation with a third-party service provider, will coordinate and manage events throughout Manitoba.

A4.8 NON-ENERGY BENEFITS

The benefits associated with residential energy efficiency programming extend beyond electric and natural gas savings. Efficiency Manitoba's rebates and incentives support local, regional, and national retailers and contractors throughout Manitoba by driving customers to retail stores to purchase energy-efficient technologies (and in the case of contractors, by encouraging customers to purchase materials and installation services).

Utilizing third-party service providers, the programs offered by Efficiency Manitoba will result in the creation of green jobs in Manitoba. These jobs include contractors, project managers, installers/technicians, Certified Energy Advisors, in-store energy efficiency ambassadors, and office and retail staff. The programs drive economic activity and business prosperity by using contractors to supply and install energy-efficient products.

Homeowners will realize a number of non-energy benefits in the home. Occupant benefits include greater personal comfort and freedom from drafts and temperature swings, improved indoor air quality, and a quieter home. Energy-efficient homes also tend to have superior moisture management systems and improved airtightness, creating a more durable building envelope. This translates to lower maintenance costs for homeowners, and lower overall energy use results in less cycling, shorter run times, longer equipment lifecycles, and lower capital investment over the lifetime of the home.

"Smart" technologies provide a high degree of convenience through automation. The range in colour temperatures and light outputs of LED lighting products allow customers to customize their home lighting and enjoy improved lighting quality. Technologies with a long product life, such as LED bulbs, compared to their inefficient counterparts will reduce the amount of waste in landfills.

Through the Appliance Recycling Program, materials such as plastics, metals, and oil will be recycled and deferred from landfills. By recycling these materials, future production of these materials will be avoided, thousands of kilograms of harmful chlorofluorocarbons will be collected and destroyed, and greenhouse gas emissions will be reduced.

Overall, offering incentives and support for residential home renovations and new construction will build industry capacity among general contractors and sub-trades across the province. It also serves to educate contractors and consumers on sound building science and construction principles.

APPENDIX A – SECTION A5 INCOME QUALIFIED OFFERS

2020/23 EFFICIENCY PLAN

RESIDENTIAL INCOME QUALIFIED OFFERS

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INCOME QUALIFIED OFFERS

Income Qualified Offers at Efficiency Manitoba will include and enhance the offerings of the former Affordable Energy Program delivered by Manitoba Hydro.

The Affordable Energy Program (formerly the Lower Income Energy Efficiency Program) was launched by Manitoba Hydro in December 2007. The program was designed to assist lower income homeowners and tenants across the province in implementing energy-efficient upgrades. Recognizing the unique barriers lower income homeowners and tenants face in completing energy-efficient retrofits, the program assists and encourages participation by minimizing the financial burden. The program addresses this burden by offering free insulation upgrades, a high-efficiency natural gas furnace for $9.50 per month for five years or a $3,000 rebate for a high-efficiency natural gas boiler, and free energy-efficient devices such as LED bulbs, energy-efficient showerheads, and faucet aerators. These upgrades provide energy savings to customers and decrease their monthly energy bills while increasing the comfort of their home.

The Affordable Energy Program initially offered insulation upgrades and free energy-efficient devices and was targeted to homeowners. In accordance with the Public Utilities Board's direction in Order 99/07, the Furnace Replacement Program component was introduced in July 2008. The Furnace Replacement Program is a subsidized loan program that assists qualifying lower income homeowners to replace their standard-efficiency natural gas furnace with a high-efficiency furnace. The

customer loan payment was initially set at $19 per month for five years for a total cost to the customer of $1,140. In accordance with the Public Utilities Board's direction in Order 85/13, effective August 1, 2013, this co-payment amount was decreased to $9.50 per month for five years for a total cost to the customer of $570. The boiler replacement incentive was also increased from $2,500 to $3,000 at this time. Additionally, the program expanded the eligibility for participation in 2013 to include tenants, and eligibility was expanded to multi-unit residential buildings (MURBs) in 2015.

Income qualified programming at Efficiency Manitoba will offer enhancements to achieve additional energy savings and increased participation, while simultaneously maintaining the same qualifying measures as the Affordable Energy Program.

The program will work with participating contractors throughout the province to perform energy efficiency upgrades. Efforts will also be made to grow the contractor network in rural areas. Dedicated participating contractors help to maintain a high level of service, which will be required to ensure the ongoing success of this program.

A5.1 CUSTOMER SEGMENT DESCRIPTION

The customer segment for Income Qualified Offers includes lower income customers who own or rent their home and live in a single-detached or multifamily home (duplex, townhouse, or rowhouse). Lower income customers living in MURBs are also included in this customer segment.

The income qualifier is defined by the low income cut-offs (LICO), as estimated by Statistics Canada, for urban centres with more than 500,000 residents. The program

then adds an additional 25 percent to the LICO qualifier (LICO 125) to increase the number of Manitoba customers who are eligible for Income Qualified Offers.

Based on the 2017 Residential End Use Survey, there are approximately 159,000 homes in Manitoba that fall below the LICO 125 threshold. Of these, 111,000 are single-detached homes (70 percent), 18,000 are multifamily homes (12 percent) and 28,000 are MURB suites (18 percent). Approximately 61,000 of these homes are heated with natural gas (38 percent) and 78,000 are heated with electricity (49 percent). The remaining 20,000 homes are heated with alternative fuels such as propane or fuel oil, or have shared heating services (13 percent). Nearly 125,000 of these homes were built prior to 1990 (79 percent).

Approximately 115,000 of these homes and suites are owned by the customer (72 percent), while 44,000 customers rent (28 percent). A total of 38 percent of the homes are a one-person household, 36 percent are a two-person household, and the remaining 26 percent have three or more people living in the house.

Lower income customers can be hard to reach due to a variety of demographic, cultural, social, and economic factors. They often have a higher and disproportionate energy burden, where a larger proportion of their income is allocated towards their energy bills compared to other households. They may be more likely to miss a payment because they cannot afford to pay their energy bill, or they may have to reduce spending on other necessities in order to pay their energy bill. Thus, lower income customers with less disposable income are less inclined to undertake any home energy efficiency improvements.

Lower income customers are also more likely to live in older homes located within older neighborhoods, which means these homes may be in higher need of energy efficiency improvements. However, as previously stated, these customers often lack the financial resources to carry out energy efficiency upgrades. In addition, while energy efficiency improvements may not be technologically complex, the project scope itself may be overwhelming to a lower income customer who may be a senior citizen, an individual, or family with other socio-economic barriers. The process to recruit a reputable contractor or find someone willing to undertake the work can be a challenging task, and one that competes with other priorities within the household. Further outreach and turn-key approaches to simplify processes will need to be leveraged to engage this customer segment. Additional guidance and support may be required to ensure the entire upgrade is completed in a timely manner.

Customers may not want to identify themselves as "lower income," or may not feel comfortable providing their tax documents for income verification purposes. As such, customer engagement efforts must reinforce the benefits of participation, focusing on the offerings, to avoid the stigma that may come from the term "lower income." Additionally, customers can choose to provide alternative documentation from an approved list for income verification purposes. This option is available to help minimize barriers to participation.

A5.2 RESIDENTIAL INCOME QUALIFIED OFFERS

Efficiency Manitoba's Income Qualified Offers include the following technologies and services for customers who fall below LICO 125 income thresholds:

- contracted third-party (delivery and supply);

- a Home Energy Check-Up;
- installation of free energy-saving and water-saving devices;
- air sealing measures;
- insulation upgrades;
- a gas furnace or boiler upgrade;
- a front load clothes washer;
- a smart thermostat; and
- guidance and support to facilitate installation of qualifying measures and implementation of energy-efficient upgrades.

TABLE A5.1 INCOME QUALIFIED ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses/suites (electric)	3,420	3,160	3,180
Annual electric savings (GWh) (at generation)	2.53	2.70	2.65
Annual capacity savings (MW) (at generation)	0.94	0.95	0.93
No. of houses/suites (natural gas)	3,600	2,500	2,400
Annual natural gas savings (million m^3)	1.08	1.07	1.09
Annual GHG emission reductions (tonnes CO_2e)	2,000	2,000	2,000

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A5.2 INCOME QUALIFIED COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$1,188,000	$1,660,000	$1,637,000
Annual natural gas budget ($)	$5,934,000	$5,992,000	$6,606,000
Total program budget	$7,122,000	$7,652,000	$8,243,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	2.80	0.49
	Net Present Value ($)	$7.58 M	($8.89 M)
	Levelized Cost	3.70¢/kWh	40.29¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A5.2.1 OVERVIEW & OBJECTIVES

Income Qualified Offers will assist lower income homeowners and tenants in implementing energy-efficient upgrades in their home, which have the potential to reduce their monthly energy bills while also increasing the comfort of their home.

Efficiency Manitoba's Income Qualified Offers are designed to minimize the financial burden by providing free and/or subsidized energy efficiency upgrades while also simplifying the process for the customer through a turn-key approach. This turn-key approach provides guidance throughout the entire process both through Efficiency Manitoba and the participating contractor network.

A5.2.2 TECHNOLOGIES

The technologies that will be offered through Income Qualified Offers are easy to understand and will reduce energy bills. This benefit may not occur without the guidance, support, and financial assistance the program will provide, as these upgrades often compete with the basic necessities a lower income customer may need to prioritize.

The technologies and measures offered through the Income Qualified Offers will be as follows:

- free installation of up to 10 A-line LED bulbs;
- free installation of energy-efficient showerheads (5.7 LPM) and faucet aerators;
- free window insulating kits, electrical socket draft stoppers and caps, and hot water tank pipe wrap;
- free attic, wall cavity, basement, and crawlspace insulation upgrades, and air sealing, including installation costs;
- a high efficiency natural gas furnace upgrade:
    - the customer pays $9.50 per month for five years (for a total cost of $570) when replacing a standard-efficiency natural gas furnace;
    - the customer pays $36.67 per month for five years (for a total cost of $2,200) when replacing a mid-efficiency natural gas furnace (program enhancement beginning in year three of the Plan);
    - four furnace filters provided for free with furnace upgrades;
- a $3,000 rebate towards the installation of a natural gas boiler with a minimum annual fuel utilization efficiency (AFUE) of 85 percent;
- a free front load clothes washer, based on individual demographics of the home (this is a program enhancement beginning in year two of the Plan); and
- a free smart thermostat based on individual demographics of the home (this is a program enhancement beginning in year two of the Plan).

A5.2.3 MARKETING APPROACH

Two distinct strategies will be used to enlist participants: the individual approach and the community approach.

The majority of participants will fall under the individual approach. Under this method, Efficiency Manitoba will leverage a variety of promotional channels to drive awareness and participation, with a heavy focus on traditional paid media advertising (print, transit, outdoor, and direct mail) as well as online advertising. Rental properties will also be targeted through additional outreach channels, such as property management, landlord associations, and tenancy branches. In rural areas where natural gas may not be available, marketing initiatives will focus on the other technologies offered and may not reference the furnace or boiler offers. This is to avoid customer confusion on participation requirements (for example, a customer interested in applying may believe that natural gas is required as their primary heat).

Under the community approach, the program will work with community groups and partner with Neighborhood Renewal Corporations to reach customers within targeted neighborhoods. The neighbourhoods of particular interest have a higher prevalence of lower income customers living in older (and often larger) homes in need of energy efficiency improvements. Additionally, homes in pre-selected, geo-targeted neighbourhoods can bypass the income qualification process and will be automatically approved to receive a free Home Energy Check-Up.

Initiatives offered under the community approach will include:

- enlisting an energy advocate in the targeted community to act as a champion of Income Qualified Offers (the energy advocate holds a strong

sense of commitment to the revitalization of their community and plays a special role in promoting and endorsing the program to the members of their community);

- implementing grassroots initiatives such as door-to-door canvassing and geo-targeted blitzes on a block-by-block basis;
- attending various seminars and meetings hosted by housing and tenancy branches within the community organizations to enlist their support, build relationships, and reach potential lower income customers; and
- supporting the customer through the application process and providing a contact for the applicant for any questions or concerns they may have.

As part of the community approach, Efficiency Manitoba will work with non-profit social housing providers, who provide low-cost housing for lower income individuals. Many of these social housing providers require tenants to income qualify to live in their housing units; therefore, providers may bypass the income qualification process by providing their mandate, lease agreements, tenant handbooks, or proof that their tenants rent is below the Manitoba Housing set Median Market Rents. Many of these rental properties require energy-efficient upgrades; the Income Qualified Offers may directly target these housing providers through trade shows, conferences, information sessions, and direct outreach activities.

Part of the targeted customer group also includes newcomers to Canada. Community groups and organizations dedicated to working with new immigrants will be engaged as partners. Educating these community groups on the Income Qualified Offers through meetings and presentations will be an important component of this

approach. Presentations can also be modified for their clients' needs and may include plain language or use of a translator to help reduce language barriers.

Lower income customers residing in MURBs are eligible for the Income Qualified Offers and will be reached directly under the individual approach. Under the community approach, they may be reached through neighbourhood or social housing organizations, or their dedicated housing/rental tenancy branches.

A5.2.4 IMPLEMENTATION

Income Qualified Offers previously available through the Affordable Energy Program will be available to customers starting in the first year of the Plan. Front load clothes washers and smart thermostats will be offered to customers in the second year of the Plan. Mid-efficiency natural gas furnace upgrades, when upgrading from a standard-efficiency natural gas furnace, will be offered in the third year of the Plan.

A dedicated third-party service provider will perform the Home Energy Check-Up. The Home Energy Check-Up will be conducted by a trained team of building professionals who will identify and recommend eligible energy efficiency upgrades. The third-party service provider will also perform post-inspections for insulation upgrades as a quality control mechanism.

Insulation and furnace upgrades will be delivered through an established pre-qualified network of participating contractors. Contract administration, management, and onboarding are functions that will be maintained within Efficiency Manitoba. As the program offering expands in year two and beyond, additional contractors will be sourced to install smart thermostats and front load clothes washers.

Insulation and furnace contractors will be on-boarded through a "Pre-Qualifying Application" process. Detailed program information and service expectations will be provided to prospective contractors as well as installation guidelines, a rate schedule, and a general supplier participation agreement. Interested contractors will complete a questionnaire demonstrating their ability to meet the program requirements. Qualifying contractors will then enter into a service agreement specific to the trade work required for the program and will be assigned a service area based on the location of their business.

To implement the community approach, resources will be required to effectively reach the intended market by developing and cultivating energy advocates throughout the province. This will include coordinating hiring and training energy advocates, as well as providing program materials required to effectively deliver the program. Efficiency Manitoba's role will be to provide funding, training, technical, and marketing support to the community group. Funding includes the energy advocate's salary, a provision for administrative expenses, and marketing materials. The community group will be responsible for the overall management of the energy-efficient project, which will include hiring the energy advocate, marketing the program, working with participants (including assistance with filling out forms), and reporting project progress to Efficiency Manitoba. The energy advocate will be required to maintain accurate and complete records related to their activities and the homes they approached.

A5.2.5 NON-ENERGY BENEFITS

The Income Qualified Offers provide many non-energy benefits, including many socio-economic benefits.

By making energy-efficient upgrades to their home, lower income homeowners and tenants see benefits such as improved home comfort and affordability; these benefits result in an increased quality of life. A well-insulated home improves home comfort by blocking outdoor noises, provides additional quality living space (for example, insulated basements make for a more functional space), and may reduce moisture-related problems. It also reduces the risk of frozen water pipes, thus reducing the need for expensive repairs or insurance claims.

As a result of saving energy and lower energy bills, a lower income customer's ability to pay for other necessities may be increased, which may aid in the reduction of debt.

Landlords may see increased tenant retention as a result of completing the energy-efficient upgrades, as homes will be more comfortable and affordable for their tenants to live in. Increased tenant retention means the landlord is less likely to have an empty housing unit, thus realizing more consistent rental revenue. There are fewer cleaning, maintenance, and other associated costs that typically occur between tenant moves, and they may save time and money on having to search for a new tenant.

In addition, the program will provide job creation opportunities within the province:

- A vast network of participating contractors is required throughout the province to complete the energy-efficient improvements. These are jobs that may not otherwise be available in the absence of such a program.

- a third-party service provider to complete Home Energy Check-Ups and post-inspections.
- Energy advocate positions will be sought and developed in partnership with Neighbourhood Renewal Corporations throughout Manitoba.
- Efficiency Manitoba will support on-the-job training opportunities and job creation through partnerships with social enterprises such as BUILD Inc., an organization that provides resources for people who face barriers to employment. Further job creation will be realized through partnerships with social enterprises that will enhance customer participation and address social barriers.

APPENDIX A – SECTION A6 INDIGENOUS PROGRAMS

2020/23 EFFICIENCY PLAN

INSULATION & DIRECT INSTALL OFFERS
SMALL BUSINESS OFFERS
COMMUNITY GEOTHERMAL OFFERS
METIS INCOME QUALIFIED OFFERS

EFFICIENCY MANITOBA

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INDIGENOUS PROGRAMS

Efficiency Manitoba will work with Indigenous partners, which can include communities, organizations, and government, to approach energy efficiency and conservation in a manner that is fair, collaborative, supportive, and contributes to the energy efficiency goals of all parties.

The objective of offering specific and targeted Indigenous programs is to assist with alleviating barriers to participation that may prevent energy efficiency upgrades or offers from being undertaken. Efficiency Manitoba also recognizes that creating programs and offers in coordination with, and targeted to, Manitoba's Indigenous population will have more supplementary positive impacts along with greater participation and overall energy savings.

KEY CONSIDERATIONS

Efficiency Manitoba understands the barriers and challenges for Indigenous customers are not necessarily uniform.

The energy efficiency implementation barriers specific to First Nations have historically stemmed from a lack of available resources, including First Nation individuals to oversee and complete the work, as well as the availability of capital funds. The quality of the housing stock can also present a challenge as other home upgrades may be required before energy efficiency upgrades can occur. Other issues such as a lack of homeownership and higher than average occupancy can also affect both the rate at which participation occurs as well as the time it takes to complete

upgrades. Efficiency Manitoba has considered these barriers and aims to address them through program design and delivery in partnership with First Nations.

Additionally, to learn what particular barriers exist for Metis people within Manitoba and how to appropriately and cost-effectively address them, Efficiency Manitoba will work with the Manitoba Metis Federation (the "MMF") to gain a better appreciation of these challenges and to collaboratively implement effective strategies to overcome them. There are five principal strategies considered for this customer segment:

1) adopting a data driven approach;
2) focusing on community-led demand side management ("DSM") initiatives;
3) supporting energy efficiency through education;
4) establishing long-term partnerships; and
5) developing community energy efficiency plans.

DATA DRIVEN APPROACH

Efficiency Manitoba will work with First Nations on-reserve to provide energy use data to assist in targeting homes for energy efficiency upgrades. This information will be a starting point to identify the highest energy users. Identifying the highest users will then allow Efficiency Manitoba to assist the First Nation in addressing the "why" as it pertains to higher energy use. Understanding whether the high consumption is behaviour based, occupancy driven, or related to the condition of the home will then determine what energy efficiency upgrade(s) should be undertaken and what would be most beneficial to reduce energy use. Efficiency Manitoba will also use this exploratory opportunity to work with First Nations and see if the programs being offered are meeting their needs.

Efficiency Manitoba will look to the MMF to help identify Metis customers, and to better understand the demographics of this customer segment to create a more targeted, data driven approach to help high energy users.

COMMUNITY-LED DSM

A community-led approach consists of two things: Indigenous partners defining energy efficiency goals/objectives and finding a champion within the community to lead. When goals and objectives are established by Indigenous people for Indigenous people, Efficiency Manitoba believes there will be more support to complete energy efficiency projects. In addition to establishing goals and outcomes, having a champion to promote energy efficiency programs and initiatives will lead to increased program participation. A champion can exist in many forms, and Efficiency Manitoba will collaborate with Indigenous partners to determine if an existing member of the community, a Band Councillor, a Housing Manager, or a formal Energy Advocate position is most appropriate.

SUPPORT THROUGH EDUCATION

An important strategy for success is the inclusion of an education or resource component. This will be foundational for both First Nations and Metis customers.

With respect to First Nations, the objective will be to collaborate with First Nations and interested First Nation organizations and agencies to create culturally relevant energy efficiency education resources. Educational materials will be designed specifically for First Nation customers living on reserve land. An educational component for schoolchildren starting at the Kindergarten level will be developed. The goal for school education is to create an environment where energy efficiency

and conservation become part of regular conversation. In addition to schools, the creation of energy efficiency educational materials for distribution to home occupants and band administration will be essential to this strategy. These resources will create a tool kit to draw from for energy efficiency information.

Efficiency Manitoba aims to pursue energy efficiency educational support with the MMF, or other organizations directed by the MMF, to collaborate in developing culturally relevant educational materials and resources. Collaborating with the MMF on these materials will assist Metis customers in understanding energy efficiency and energy use in their homes and businesses.

ESTABLISHING PARTNERSHIPS

Creating strategic partnerships will play a significant role in furthering energy efficiency initiatives with Indigenous partners. Recognizing that building the foundation of partnerships is not a quick process and will take a sustained effort over time, Efficiency Manitoba will work to establish meaningful relationships with not only Indigenous customers and their leadership, but also the organizations and other government agencies that support and work with them. Efficiency Manitoba will coordinate efforts with, but not limited to: First Nation Tribal Councils; Southern Chief's Organization (SCO); Manitoba Keewatinowi Okimakanak (MKO); Assembly of Manitoba Chiefs (AMC); MMF; Natural Resources Canada; and Canada Mortgage and Housing Corporation to leverage other programs or services which may complement proposed DSM initiatives. Efficiency Manitoba also recognizes the need for a strong relationship with Indigenous Services Canada given the funding relationship that exists. Efficiency Manitoba will work with both the First Nations and Indigenous

Services Canada to realize resulting energy or non-energy benefits within the community. Efficiency Manitoba also aims to establish an ongoing volunteer working group with First Nation and Metis representation to discuss and address the unique energy efficiency needs in this customer segment. To initiate this process, Efficiency Manitoba will work through the established Energy Efficiency Advisory Group (EEAG) and then invite the other organizations listed above to be participants in this working group.

DEVELOPMENT OF COMMUNITY ENERGY EFFICIENCY PLANS

Energy efficiency can assist communities with sustainability goals and resiliency to climate change. Efficiency Manitoba will work with interested First Nations and other communities to establish an energy efficiency plan that can fit into a broader Community Energy Plan. This initiative can enhance existing capacity by providing funding, technical, and other staff support towards a Community Energy Advocate who can focus on energy efficiency initiatives in the community and ensure programs and offers are accessed.

Table A6.1 outlines the programs which are specifically targeted to Indigenous customers and provides high level details of the offers.

TABLE A6.1 INDIGENOUS CUSTOMER SEGMENT OFFER SUMMARY

PROGRAM	MEASURES	STATUS	DELIVERY
INSULATION AND DIRECT INSTALL OFFERS	Home energy efficiency upgrades: • Insulation • Direct install measures • Smart thermostats • ENERGY STAR® certified clothes washers	Existing program with enhancements	Participating First Nations (installation)
SMALL BUSINESS OFFERS	Product rebates: • Aerators and showerheads • Lighting • Smart / programmable thermostats	New offer	Contracted third-party (supply, installation)
COMMUNITY GEOTHERMAL	Geothermal heat pumps	Existing program with enhancements	Indigenous social enterprise (coordination), First nation (installation)
METIS INCOME QUALIFIED	Home energy efficiency upgrades: • Insulation • Natural gas furnace • Direct install measures • Smart thermostats • ENERGY STAR certified clothes washers	New offer	Contracted third-party (installation)

A6.1 CUSTOMER SEGMENT DESCRIPTION

As of 2016, the most recently completed census, 18 percent of Manitoba's population identified as Indigenous with the majority identifying as First Nation and or Metis[1].

[1] https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-PR-Eng.cfm?TOPIC=9&LANG=Eng&GK=PR&GC=46

FIRST NATIONS

Within the overall Manitoba Indigenous customer segment, there are 63 First Nations[2] in Manitoba, with approximately 15,500 homes/houses and 2,310 businesses or commercial buildings. These customers are primarily electrically heated with no access to natural gas and will be Efficiency Manitoba's First Nations target market for efficiency programming. First Nations on reserve land have historically been harder to reach than other customer segments for energy efficiency initiatives. Many barriers to participation exist, such as geographic location, lack of home ownership, less disposable income to perform upgrades, and multiple competing resources within the First Nation. Recognizing these barriers, design and delivery of programs will be tailored to specifically address this customer segment. In addition to this, average annual energy use on-reserve has historically been higher than that of other Manitobans. This higher than average use ranges from 11 percent to 21 percent, with Northern First Nations experiencing the highest average use.

DIESEL COMMUNITIES

Of the 63 First Nations, four rely on diesel-generated electricity and use fuel oil to heat their homes and businesses. Efficiency Manitoba's Indigenous Programs will be available to customers in these four diesel communities. Efficiency Manitoba plans to use the Affordable Energy Fund and work with these four First Nations to encourage efficiency improvements and conservation in the use of home heating fuels. Efficiency Manitoba will collaborate not only with the First Nations but also with the Federal

[2] http://fnp-ppn.aandc-aadnc.gc.ca/fnp/Main/Search/FNListGrid.aspx?lang=eng

government to collectively and cost-effectively address energy use and assist with the reduction of fossil fuel use in the communities.

METIS CITIZENS

> *"Métis" means a person who self-identifies as Métis, is of historic Métis Nation Ancestry, is distinct from other Aboriginal Peoples and is accepted by the Métis Nation.*[3]

Efficiency Manitoba recognizes the opportunity to reach this underserved market by working closely with the MMF. Efficiency Manitoba aims to collaborate with the MMF to establish a customer overview to gain better insight into the number of Metis households and businesses in Manitoba with the goal to increase energy efficiency program participation by Metis customers.

A6.2 INSULATION & DIRECT INSTALL OFFER

TABLE A6.2 INSULATION & DIRECT INSTALL OFFER ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses	100	150	180
Annual electric savings (GWh) (at generation)	0.15	0.30	0.34
Annual capacity savings (MW) (at generation)	0.06	0.13	0.14
Annual natural gas savings (million m^3)	-	-	-
Annual GHG emission reductions (tonnes CO2eq)	-	-	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A6.3 INSULATION & DIRECT INSTALL OFFER BUDGET & COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$196,000	$256,000	$272,000
Annual natural gas budget ($)	-	-	-
Total program budget	$196,000	$256,000	$272,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	1.90	-
	Net Present Value ($)	$0.61 M	-
	Levelized Cost	5.88¢/kWh	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A6.2.1 OVERVIEW & OBJECTIVES

For the First Nation Insulation and Direct Install Program, Efficiency Manitoba will partner with the 63 First Nations to identify on reserve housing with high energy use and collaborate on ways to reduce energy consumption. The program offers two different participation paths:

1) insulation and,
2) direct install of small energy-saving items.

Identified homes will receive a walk through by a dedicated Efficiency Manitoba Indigenous Energy Advisor to determine which energy efficiency measures to implement in efforts to reduce energy bills. Efficiency measures identified from the walk through will include insulation, smart thermostats, and ENERGY STAR® certified clothes washers for homes with inefficient washers and over four occupants. The direct install path will not require a walk through and devices can be installed in all homes where needed.

In order to maximize incentive dollars, Efficiency Manitoba will work with the Federal government to leverage federal funding where ever possible. Doing so, will help ensure the costs to First Nations to participate will be minimal, as the cost of technologies and local First Nation labour to execute the installs will be provided through an incentive from Efficiency Manitoba or a potential cost sharing model.

A6.2.2 TECHNOLOGIES

The measures listed below qualify under this initiative:

- insulation;
- direct install measures;
    - low-flow showerheads;
    - faucet aerators;
    - hot water tank pipe wrap;
    - up to 10 LED bulbs;
- smart thermostats; and
- ENERGY STAR certified clothes washers.

A6.2.3 MARKETING APPROACH

Efficiency Manitoba will promote The First Nation Insulation and Direct Install Program through engagement with each community and by establishing relationships with the Housing Manager, where one exists. In addition, coordination with probable federal partners such as Indigenous Services Canada and other Indigenous partners such as the Assembly of Manitoba Chiefs, Southern Chiefs Organization, Manitoba

Keewatinowi Okimakanak, and the First Nation Tribal Councils will occur to ensure awareness of program availability at several different touch points.

Promoting energy efficiency at the community level is vital for ensuring the program's lasting success. The provision of educational materials at the band office as well as coordinating efforts with leadership and the housing department will be crucial for creating program awareness.

A6.2.4 IMPLEMENTATION

Efficiency Manitoba will work with a First Nation to identify homes with the highest energy consumption and will collaborate to gain access to these homes to perform walk throughs that will determine efficiency opportunities. Once efficiency opportunities are identified, qualifying upgrades will be pursued at little to no cost to the resident of the home. The goal of this program is to have the upgrades performed by a qualified local community member. Where needed, Efficiency Manitoba will offer technical support and training to ensure proper installation.

On an ongoing basis, Efficiency Manitoba will review potential additional and new technologies that may deliver additional energy savings to these customers.

A6.3 SMALL BUSINESS OFFERS

TABLE A6.4 SMALL BUSINESS OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of buildings	30	30	40
Annual electric savings (GWh) (at generation)	0.37	0.37	0.44
Annual capacity savings (MW) (at generation)	0.07	0.07	0.09
Annual natural gas savings (million m^3)	-	-	-
Annual GHG emission reductions (tonnes CO_2e)	-	-	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A6.5 SMALL BUSINESS OFFERS BUDGET & COST EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$313,000	$370,000	$472,000
Annual natural gas budget ($)	-	-	-
Total program budget	$313,000	$370,000	$472,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	1.31	-
	Net Present Value ($)	$1.80 M	-
	Levelized Cost	5.31¢/kWh	-

Note. Refer to *Attachment 3 – Technical Tab*les for additional program cost-effectiveness details.

A6.3.1 OVERVIEW & OBJECTIVES

The Indigenous Small Business Program aims to remove barriers, increase awareness of cost-effective energy efficiency measures, and assist small businesses with reducing energy consumption and lowering energy bills.

The focus will be on promoting energy efficiency to this hard-to-reach small commercial market, which can be especially challenging for Indigenous businesses.

The program will be offered to First Nation on reserve business, with consideration being given to urban reserves, and to Metis small business owners. Through the program, eligible small businesses receive free, easy-to-install devices (such as faucet aerators and basic lighting measures), a lighting assessment, and an incentive on qualifying lighting retrofits identified in the assessment. To qualify, the business must be 10,000 square feet or less in size.

A6.3.2 TECHNOLOGIES

The products listed below may qualify for an incentive depending on the findings of the assessment:

- kitchen faucet aerators;
- bathroom faucet aerators;
- pre-rinse spray valves;
- A-line LED bulbs;
- dimmer switches;
- T8 ballasts;
- LED T8 linear lamps;
- Energy efficient T8 linear lamps;
- T8 tandem fixtures;
- specialty LED screw-in lamps;
- exit signs;
- showerheads; and
- programmable or smart thermostats.

A6.3.3 MARKETING APPROACH

Efficiency Manitoba will promote the Indigenous Small Business Program to First Nation communities through direct communication to the First Nation, and in coordination with other Indigenous organizations such as SCO, MKO, AMC, and the First Nation Tribal Councils. To reach Metis small businesses, Efficiency Manitoba will work directly with the MMF to coordinate a strategy that is province-wide to ensure the Manitoba Metis Community is aware of, and has access to, the program.

The program will also partner with a third-party service provider to effectively deliver the program to this customer segment. Through these strategic partnerships, Efficiency Manitoba will build program awareness and drive participation.

A6.3.4 IMPLEMENTATION

The Indigenous Small Business Program will be delivered through a third-party service provider. The service provider will be responsible for installing the free energy saving measures, assessing the customer's current lighting systems, establishing lighting upgrade opportunities, and sourcing materials and installation. To ensure economic development opportunities are created, the service provider will work with local Indigenous electrical contractors whenever possible.

To be eligible, the participating business must be 10,000 square feet or less in size and a Manitoba Hydro commercial customer with electric heating. National chains and new construction projects are not eligible to participate in this offer.

A6.4 COMMUNITY GEOTHERMAL

TABLE A6.6 COMMUNITY GEOTHERMAL ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of homes	50	90	90
Annual electric savings (GWh) (at generation)	0.77	1.24	1.24
Annual capacity savings (MW) (at generation)	0.38	0.62	0.62
Annual natural gas savings (million m^3)	-	-	-
Annual GHG emission reductions (tonnes CO2e)	-	-	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A6.7 COMMUNITY GEOTHERMAL BUDGET & COST EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$323,000	$505,000	$515,000
Annual natural gas budget ($)	-	-	-
Total program budget	$323,000	$505,000	$515,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	4.03	-
	Net Present Value ($)	$3.82 M	-
	Levelized Cost	2.86¢/kWh	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A6.4.1 OVERVIEW & OBJECTIVES

The Community Geothermal Program helps retrofit First Nations homes using electric furnaces to energy efficient geothermal heat pumps. Through the Community Geothermal Program, Indigenous community members are engaged and become active participants in reducing their energy consumption. This is achieved through training community members on how to install and maintain geothermal heat pump

systems. The objective of this program is to attain energy savings while contributing to, and supporting, economic development in Indigenous communities.

The Community Geothermal Program differs from other programs where a direct incentive or rebate is offered. This program is based on a Community Driven Outcomes Contract model (CDOC). A CDOC is a contract with the private sector in which a commitment is made to pay for improved social outcomes that result in public sector savings. In this instance, the desired social outcomes are determined and decided upon by a First Nation. One of the many outcomes decided on is a reduction in energy use. This outcome aligns with Efficiency Manitoba's mandate to reduce electrical energy use. Instead of giving an incentive to a customer once they install a geothermal system, Efficiency Manitoba will "buy" the outcome of saved energy. As this concept is still relatively new, Efficiency Manitoba continues to study the model.

A6.4.2 TECHNOLOGIES

Technologies under this program include:

- geothermal heat pumps;
- horizontal ground loop; and
- vertical ground loop.

A6.4.3 MARKETING APPROACH

The program will be marketed by an Indigenous Social Enterprise (ISE). Efficiency Manitoba will partner with the ISE to promote the program through, but not limited to, direct meetings with Chief and Council from First Nations and First Nation Tribal Councils. While the program is primarily being marketed and driven by the ISE,

Efficiency Manitoba wants to see the model evolve to other Indigenous customers upon being proven successful and will provide input and feedback for program growth.

A6.4.4 IMPLEMENTATION

The ISE's role will be to onboard First Nations, determine geographic suitability for system installation, and facilitate the training components required to install and maintain geothermal systems. Efficiency Manitoba's role will work with the First Nation and identify high energy users in order to maximize energy savings potential in each community. Once community partnerships are established, the ISE will coordinate training activities. As installations are completed, Efficiency Manitoba will purchase the energy savings outcomes.

A6.5 METIS INCOME QUALIFIED

A Metis Income Qualified program provides an opportunity to include and service the broader Indigenous customer segment, help those who need it most, and contribute to Efficiency Manitoba's savings targets. Efficiency Manitoba will leverage the Residential Income Qualified offer and work with the Manitoba Metis Federation (MMF) to offer this program to Metis Citizens. Full details on offers and background on the Income Qualified Offer are in *Appendix A – Section A5.*

A6.5.1 CUSTOMER SEGMENT DESCRIPTION

Customers on a limited or fixed income can often be hard to reach due to a variety of demographic, cultural, social, and economic factors. The customer segment for Metis Income Qualified Offers includes lower income Metis Citizens who own or rent their

home and live in a single-detached or multi-attached home (duplex, townhouse, or rowhouse).

The income qualifier is defined by the low income cut-offs (LICO), as estimated by Statistics Canada, for urban centres with more than 500,000 residents. The program then adds an additional 25 percent to the LICO qualifier to increase the number of Manitoba customers who are eligible for the Income Qualified offers.

Based on the 2017 Manitoba Hydro Residential End Use Survey, there are approximately 159,000 homes in Manitoba which fall below the LICO 125 threshold. Efficiency Manitoba is eager to work with the MMF to gather data on which Metis customers fall within the LICO 125 threshold.

TABLE A6.8 METIS INCOME QUALIFIED ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses/suites (electric)	190	190	300
Annual electric savings (GWh) (at generation)	0.18	0.19	0.19
Annual capacity savings (MW) (at generation)	0.08	0.07	0.07
No. of houses/suites (natural gas)	180	120	120
Annual natural gas savings (million m3)	0.05	0.05	0.05
Annual GHG emission reductions (tonnes CO2e)	100	100	100

Note. Refer to Attachment 3 – Technical Tables for additional program details.

TABLE A6.9 METIS INCOME QUALIFIED BUDGET & COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$97,000	$141,000	$140,000
Annual natural gas budget ($)	$292,000	$330,000	$362,000
Total program budget	$389,000	$471,000	$502,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	2.58	0.44
	Net Present Value ($)	$0.56 M	($0.52 M)
	Levelized Cost	4.23¢/kWh	44.94¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A6.5.2 OVERVIEW & OBJECTIVES

Metis Income Qualified Offers assist lower income Metis homeowners and tenants in implementing energy-efficient upgrades in their home, which have the potential to significantly reduce a customer's monthly energy bill while also increasing the comfort of their home. This turn-key approach provides guidance throughout the entire process. Customers will have Efficiency Manitoba for support to help them through the application process and may also receive additional assistance through the registered contractor network. With the assistance of the MMF, Efficiency Manitoba hopes to establish a network of Metis contractors to support the program and perform the work.

A6.5.3 TECHNOLOGIES

The technologies evaluated and offered through the Metis Income Qualified Offers are easy to understand but will reduce a homeowner's energy bill. These energy savings would likely not occur without the guidance, support, and financial assistance the

program will provide, as these upgrades often compete with the basic necessities a lower income customer may need to prioritize.

The technologies and measures are as follows:

- free installation of up to 10 A-line LED bulbs;
- free installation of energy-efficient showerheads (5.7 LPM) and faucet aerators;
- free window insulating kits, electrical socket draft stoppers and caps, and hot water tank pipe wrap;
- free attic, wall cavity, basement, and crawlspace insulation upgrades and air sealing, including installation costs;
- a high-efficiency natural gas furnace upgrade;
    - the customer pays $9.50 per month for five years (for a total cost of $570) when replacing a standard efficiency natural gas furnace;
    - the customer pays $36.67 per month for five years (for a total cost of $2,200) when replacing a mid-efficiency natural gas furnace (program enhancement beginning in year three of the Plan);
    - four furnace filters provided for free with furnace upgrades;
- a $3,000 rebate towards the installation of a natural gas boiler with a minimum annual fuel utilization efficiency (AFUE) of 85 percent;
- a free front load clothes washer, based on individual demographics of the home (this is a program enhancement beginning in year two); and
- a free smart thermostat based on individual demographics of the home (this is a program enhancement beginning in year two).

A6.5.4 MARKETING APPROACH

Efficiency Manitoba proposes a partnership with the MMF to create marketing materials that are culturally relevant. Collaboration with and guidance from the MMF will ensure Efficiency Manitoba has the appropriate message and content to reach Metis customers. The goal is to have marketing materials distributed through the MMF and to use marketing approaches based on recommendations from the MMF.

A6.5.5 IMPLEMENTATION

The Income Qualified Offers previously available through the Affordable Energy Program will be the offers available to customers in the first year of the Plan. Front load clothes washers and smart thermostats will be offered to customers beginning in year two, and in year three, program enhancements for the upgrade of mid-efficiency natural gas furnaces will begin. The customer relationship/demand side (CRM/DSM) system, as previously stated in *Appendix A – Section A2*, will provide efficiencies for customers and reduce administration costs.

Implementation for the program will be similar to the Residential Income Qualified Offers. A dedicated third-party service provider will perform the Home Energy Check-Up. The Home Energy Check-Up is conducted by a trained team of building professionals that identifies and recommends the eligible energy-efficient upgrades. Installation of the energy- and water-saving devices and air sealing measures will be part of the scope of work. The third-party service provider will also perform post-inspections for insulation upgrades as a quality control mechanism.

Efficiency Manitoba will work with MMF to find Metis insulation and furnace contractors to onboard through a “Pre-Qualifying Application” process.

A6.6 NON-ENERGY BENEFITS

Energy efficiency programming provides supplementary benefits beyond energy savings and a lower energy bill. Insulating a home not only increases its overall comfort and quality, but also provides economic development benefits to the First Nation when local community members perform the work. Leveraging energy efficiency programming to provide employment opportunities and enhance capacity through building skills and knowledge can contribute to future employment opportunities.

The increased comfort in a home on a First Nation from installing a geothermal system is just one of the additional benefits of this offering. Community members who are trained are acquiring knowledge and transferable skills, which can increase confidence and pride, not only in the individual but the community. Training local community members provides economic development opportunities close to home. Community members have an opportunity to work in their community and do not need to leave to find employment.

The benefits associated with the Indigenous Small Business Program extend beyond electricity savings. The program provides economic opportunities within the energy efficiency industry including sub-contracted electricians. The kitchen faucet aerators, bathroom faucet aerators, and pre-rinse spray valves offered through the program result in lower water consumption. Technologies with long product lives, such as LED lighting, compared to their inefficient counterparts will reduce the number of inefficient bulbs in landfills.

The Metis Income Qualified Offers provide many non-energy benefits, including socio-economic benefits. Energy-efficient upgrades to a home provide benefits such as improved home comfort, quality, and affordability; these result in an increased quality of life. In addition, the program provides job creation opportunities within the province:

- A network of dedicated contractors is required throughout the province to complete the energy-efficient improvements. These are jobs that may not otherwise be available in the absence of such a program.
- The program will maintain a team of contracted energy advisors to complete Home Energy Check-Ups and post-inspections.

APPENDIX A – SECTION A7 COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS

2020/23 EFFICIENCY PLAN

SMALL BUSINESS & APPLIANCE OFFERS

IN-SUITE EFFICIENCY

RENOVATION OFFERS

HVAC & CONTROLS OFFERS

NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDINGS OFFERS

CUSTOM OFFERS

EFFICIENCY MANITOBA

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COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS

Offers in the commercial, industrial, and agricultural sectors are designed to increase awareness of energy-efficient technologies and practices and provide customers with information and incentives to encourage facilities and operations to become more energy efficient. The main objectives are:

1) to encourage the adoption and installation of energy-efficient technologies and practices in the commercial, industrial, and agricultural sectors in Manitoba;
2) to accelerate market transformation of cost-effective energy-efficient technologies and practices in the commercial, industrial, and agricultural markets;
3) to reduce the upfront cost of energy-efficient technologies and practices by providing rebates and incentives;
4) to develop a robust suite of offerings that is mutually beneficial to customers and trade allies (private sector contractors, architects, consulting engineers, distributors, wholesalers, etc.);
5) to initiate integrated energy efficiency marketing campaigns involving contractors, architects, consulting engineers, distributors, and wholesalers;
6) to provide customers with tools and information to make decisions about facility and operation energy use; and
7) to provide an avenue for facility and operation decision makers in the commercial, industrial, and agricultural sectors to feel empowered in efforts to save energy and reduce their carbon footprint.

There are several market barriers and challenges that prevent the wide-spread adoption of energy efficiency in the commercial, industrial, and agricultural sectors. These barriers include the following:

1) high upfront cost of energy-efficient technologies and practices relative to inefficient options (or in taking no action whatsoever);
2) lack of awareness of energy-efficient technologies and practices and their benefits;
3) long lead times, low inventories, limited availability, and lack of qualified trade allies related to energy-efficient technologies and practices; and
4) low energy rates in Manitoba, which extend payback periods for energy-efficient technologies and practices relative to other jurisdictions.

A market of interest for Efficiency Manitoba will include municipally owned buildings across Manitoba's 137 incorporated municipalities. Assessed in part through ongoing consultation with the Association of Manitoba Municipalities, Manitoba communities are finding it difficult to operate recreation facilities due to several factors including the rising cost of energy. Energy efficiency offers described in this Section provide incentives for all commercial, industrial, and agricultural customers, including municipally owned buildings, to upgrade their facilities and operations.

This Section will identify a variety of unique approaches and targeted implementation strategies needed within the broader commercial, industrial, and agricultural customer segment, including municipally owned buildings.

A variety of initiatives including combinations of programming, educational workshops, and the creation of customized promotional and informational materials will be developed throughout the three plan years for municipally owned buildings. Examples of this include:

- conducting equipment inventory surveys to identify energy efficiency opportunities in recreation facilities;
- participating in workshops held in conjunction with municipal conferences (such as Recreation Connections Manitoba);
- reviewing program eligibility and providing flexibility to encourage municipal participation; and
- providing in-kind professional engineering and technical support services.

The suite of commercial, industrial, and agricultural offers planned for customers through Efficiency Manitoba is outlined in the chart below. The list of measures includes products, technologies, and services offered. The status column indicates offers that are new to Manitobans versus those that may have been modelled after a program previously offered through Manitoba Hydro. Delivery channels for each offer are detailed in the delivery column; however, in all cases, Efficiency Manitoba sales staff will focus on the continual cross-promotion of all offers when meeting with customers and will work with all trade allies to share knowledge and offer support on offer-related administrative needs.

TABLE A7.1 COMMERCIAL, INDUSTRIAL & AGRICULTURAL OFFER SUMMARY

BUNDLES	MEASURES	STATUS	DELIVERY
SMALL BUSINESS & APPLIANCES OFFERS	Commercial kitchen appliances	Existing program with enhancements	Industry (installation)
	ENERGY STAR® certified appliances listed below may qualify for rebates under this initiative:		
	• Steamers		
	• Fryers		
	• Convection ovens		
	• Dishwashers		
	• Griddles		
	• Hot food holding cabinets		
	Commercial refrigeration equipment	Existing program with enhancements	Industry (installation)
	Products listed below may qualify for rebates under this initiative:		
	• New vertical display case with standard doors		
	• New vertical display case with special (heat free) doors		
	• Anti-sweat heater (ASH) controls		
	• Night covers		
	• High-efficiency compressor		
	• ECM evaporator fan motors		
	• Strip curtains		
	• Automatic door closers		
	• LED display case and walk-in box lighting		
	• Door gaskets		
	• Evaporator efficiency controller		
	Small Business	Existing program with enhancements	Contracted third-party (coordination, supply, installation)
	• Kitchen aerators		
	• Bathroom aerators		
	• Pre-rinse spray valves		
	• A-line LED bulbs		
	• Dimmer switches		
	• T8 ballasts		
	• LED T8 linear lamps		
	• T8 energy-efficient lamps		
	• T8 tandem fixtures		
	• Specialty LED lamps		

BUNDLES	MEASURES	STATUS	DELIVERY
	• Exit signs		
	• Showerheads		
	• Smart thermostats		
	• HVAC and controls offers		
	• Cross promote renovation offers		
IN-SUITE EFFICIENCY	**Energy-efficient upgrades installed at no charge include:**	Existing program with enhancements	Contracted third-party (coordination, supply, installation)
	• Up to two energy-efficient showerheads (5.7 LPM)		
	• Up to two energy-efficient bathroom aerators (5.7 LPM)		
	• Up to nine LED bulbs		
	Energy-efficient upgrades eligible for incentives:		
	• Heat recovery ventilator (HRV) controls		
	• Thermostats		
RENOVATION OFFERS	**Lighting products**	Existing program with enhancements	Industry (installation)
	• LED lamps (screw-in T8, T5)		
	• LED specialty lamps (HID ballast, line voltage)		
	• LED fixtures		
	• Backlit signage		
	Lighting controls		
	• Occupancy sensors		
	• Control systems		
	Building envelope products and systems	Existing program with enhancements	Industry (installation)
	• Surface and cavity insulation for roof, attic, wall, and foundation applications		
	• Window systems including punched, in-fill, curtain wall, and storefront		
	• Glazed doors including overhead, single-swinging, sliding, and garden		
	Building envelope financial assistance		
	• Incidental and dedicated air sealing		
	• Blower door testing (for determining equivalent air leakage)		
	• Building component energy modelling for designing		

BUNDLES	MEASURES	STATUS	DELIVERY
	energy-efficient curtain wall and storefront systems		

BUNDLES	MEASURES	STATUS	DELIVERY
HVAC & CONTROLS OFFERS	**Heating technologies**	Existing program with enhancements and new offer	Industry (installation)
	• Condensing gas boilers		
	• Condensing gas water heaters		
	• Unit heaters		
	• Infrared heaters		
	• Geothermal (ground-source heat pumps)		
	Cooling technologies	Existing program with enhancements and new offer	Industry (installation)
	• Air cooled chillers		
	• Geothermal (ground-source heat pumps)		
	Ventilation technologies	Existing program with enhancements	Industry (installation)
	• CO_2 sensors		
	• HRVs / energy recovery ventilators		
	Other technologies	New offer	Industry (installation)
	• Variable frequency drives		
	• Hotel occupancy sensors		
	• Hotel packaged terminal heat pumps (PTHPs)		
NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDING OFFERS	**New Buildings**	Existing program with enhancements	Industry (modelling, construction)
	Enhanced Building Operations	Existing program with enhancements	Industry (studies, implementation)
	Manitoba Race to Reduce	Existing program with enhancements	Contracted third-party (coordination)
	Energy Scoping Audits	Existing program with enhancements	Industry (audits)
	Deep Energy Retrofits	New offer	Industry (modelling, construction)
CUSTOM OFFERS	**Industrial / Agricultural Custom**	Existing program with enhancements	Industry (studies, implementation)
	Energy Manager Initiative	Existing program with enhancements	Industry (studies, implementation)
	Strategic Energy Management Cohorts	New offer	Contracted third party (coordination, implementation)
	Commercial Custom	Existing program with enhancements	Industry (studies, implementation)

BUNDLES	MEASURES	STATUS	DELIVERY
LOAD DISPLACEMENT OFFERS	Load Displacement Program	Existing program with enhancements	Industry (studies, implementation)

A7.1 CUSTOMER SEGMENT DESCRIPTION

COMMERCIAL

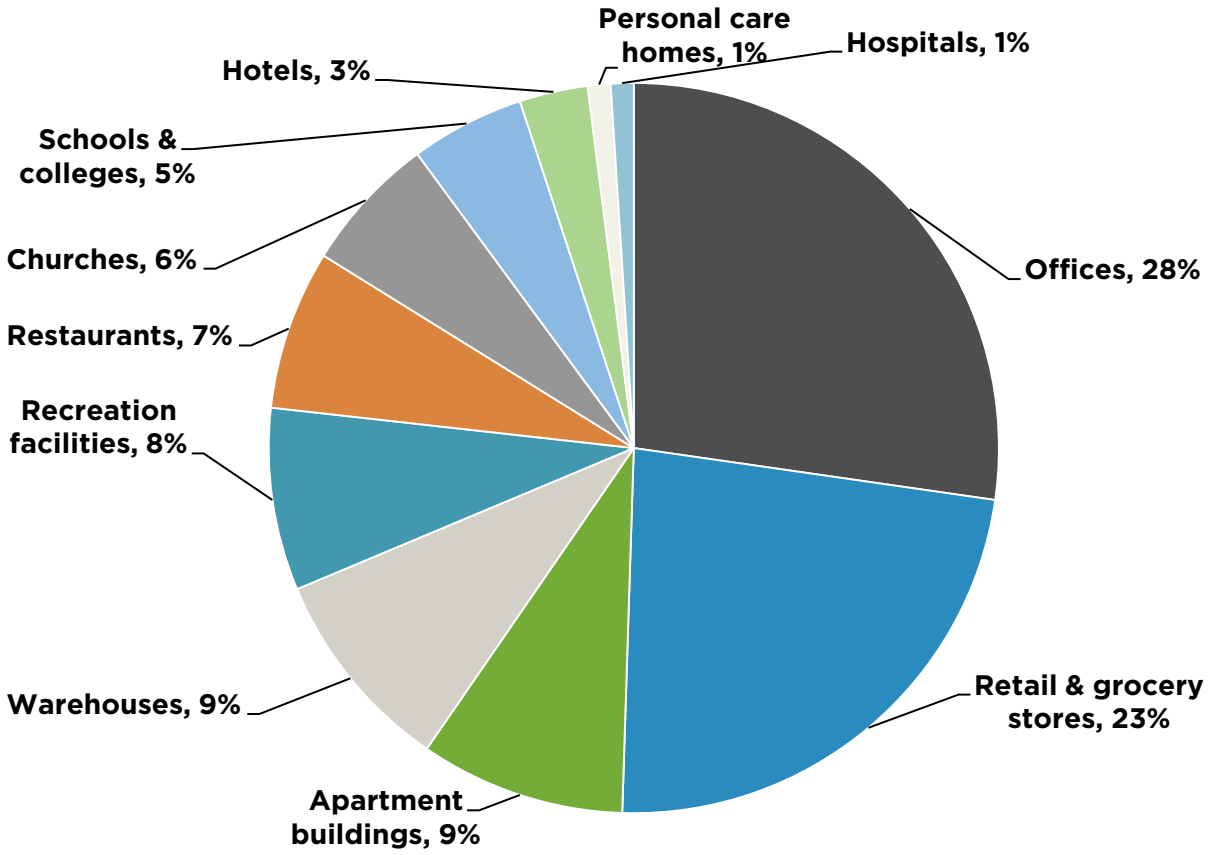
The commercial market in Manitoba is comprised of approximately 40,000 customers with 24,000 (60 percent) heating with natural gas, while 11,000 (30 percent) heat with electricity. The remaining 5,000 customers (10 percent) consume other heating fuels such as propane and fuel oil.

There are fewer commercial buildings in northern and remote areas of Manitoba as commercial businesses tend to operate close to higher population densities found in the south.

Propane is prevalent in communities such as Churchill, Thompson, Flin Flon, and Snow Lake, with the latter three communities being markets where Stittco Energy delivers propane by pipeline. In contrast, fuel oil heating is spread across a much greater geography in Manitoba, including some First Nations, and rural and remote communities.

The commercial market can be further segmented by sector using Manitoba Hydro's Standard Industrial Classification (SIC) codes – a system for classifying industries. The number of customers in the Manitoba commercial market has been summarized in Figure A7.1 below.

FIGURE A7.1 MANITOBA COMMERCIAL MARKET



While the categories above provide insight into the greatest number of opportunities for energy efficiency projects, the energy consumption of the sector is also an important consideration when scoping the market. The share of energy consumption, based on sector, is very much aligned with the market size information illustrated above.

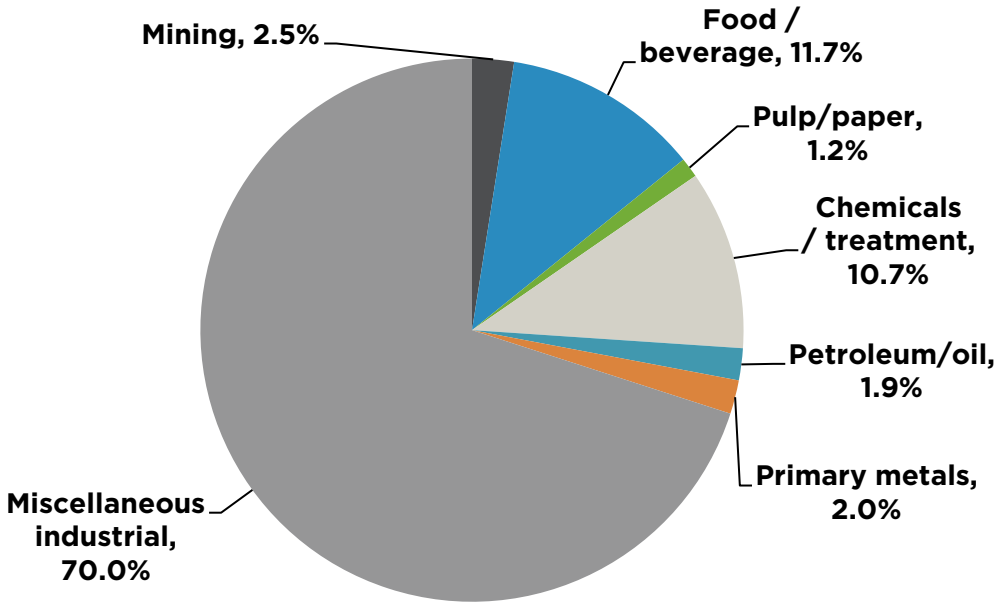
INDUSTRIAL AND AGRICULTURAL

The industrial market in Manitoba is comprised of approximately 2,300 customers with 1,390 (60 percent) being served with natural gas. In the industrial sector, natural gas is used for industrial processes as well as for space heating. Where natural gas is

not available, industrial customers use a combination of propane, electricity, and other fossil fuels for both industrial processes and space heating.

The industrial market can be further segmented by sector using SIC codes. The number of customers in the Manitoba industrial market has been summarized in Figure A7.2 below.

FIGURE A7.2 MANITOBA INDUSTRIAL MARKET



The industrial market can be further segmented by average electricity and natural gas use by sub-sector. The average energy use of the Manitoba industrial market has been summarized in Figure A7.3 below.

FIGURE A7.3 MANITOBA INDUSTRIAL MARKET – AVERAGE ELECTRICITY USE PER CUSTOMER

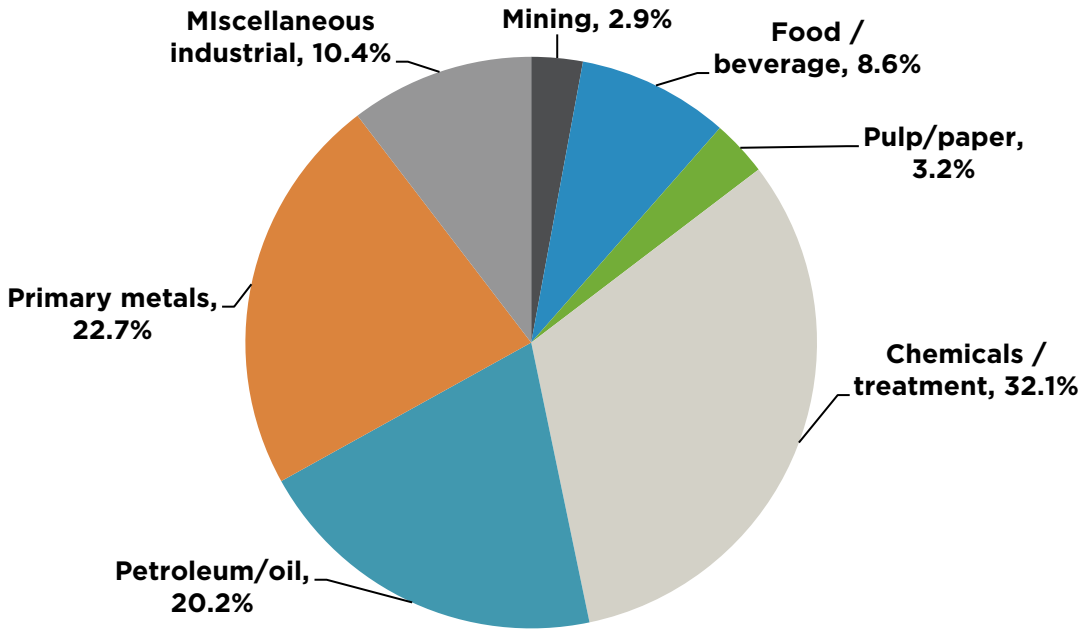
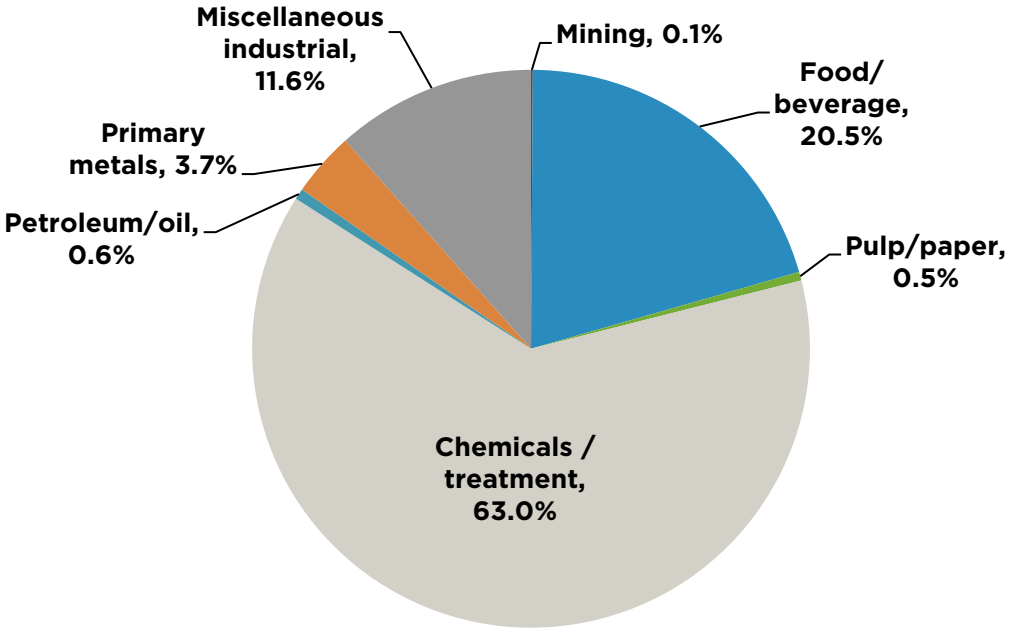


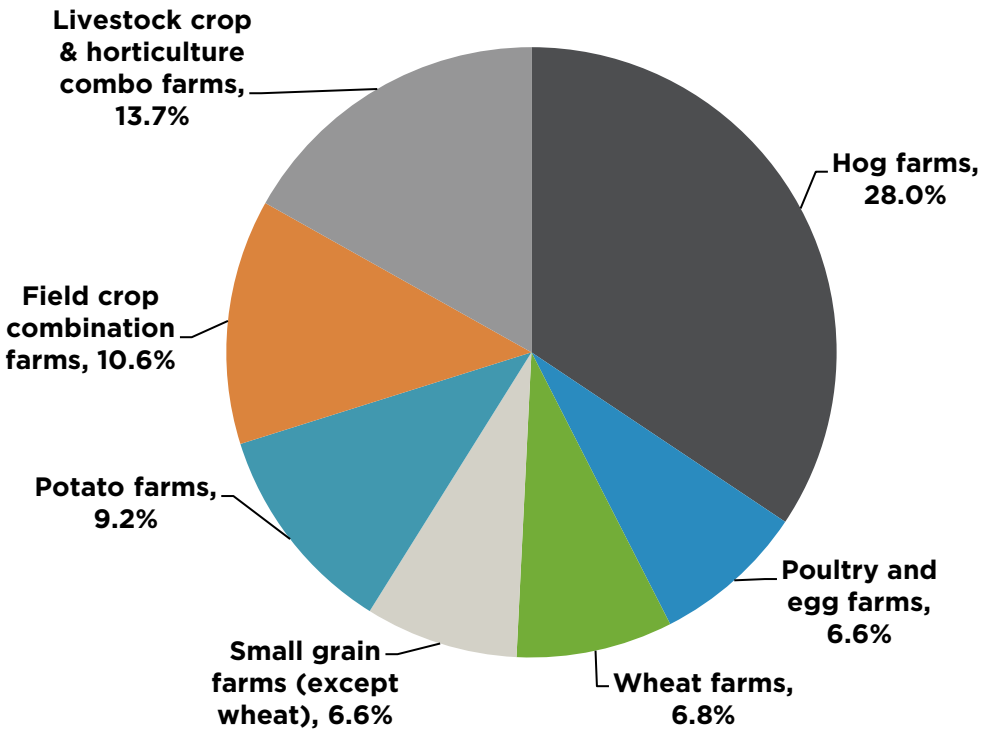
FIGURE A7.4 MANITOBA INDUSTRIAL MARKET – AVERAGE NATURAL GAS USE PER CUSTOMER



The agricultural market in Manitoba is comprised of approximately 4,050 customers with 649 (16 percent) being served with natural gas. The agricultural sector uses natural gas for space heating where natural gas is available; otherwise, propane and electricity are used for space heating.

The majority of the agricultural market (3,400 customers) can be defined further by sector using SIC codes. These 3,400 electrical customers have been summarized in Figure A7.5 below.

FIGURE A7.5 MANITOBA AGRICULTURAL MARKET



The agricultural market can be further segmented by average electrical energy and natural gas use by sub-sector. The average energy use of the Manitoba agricultural market has been summarized in Figures A7.6 and Figure A7.7 below.

FIGURE A7.6 MANITOBA AGRICULTURAL MARKET – AVERAGE ELECTRICITY USE

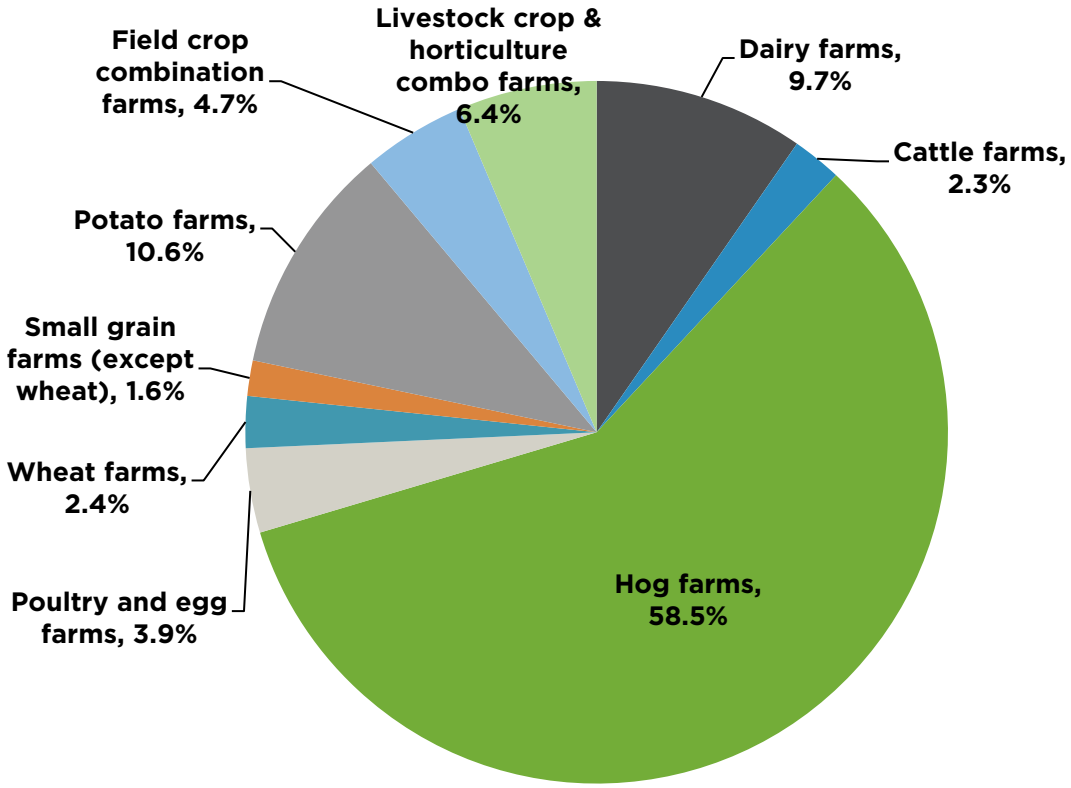
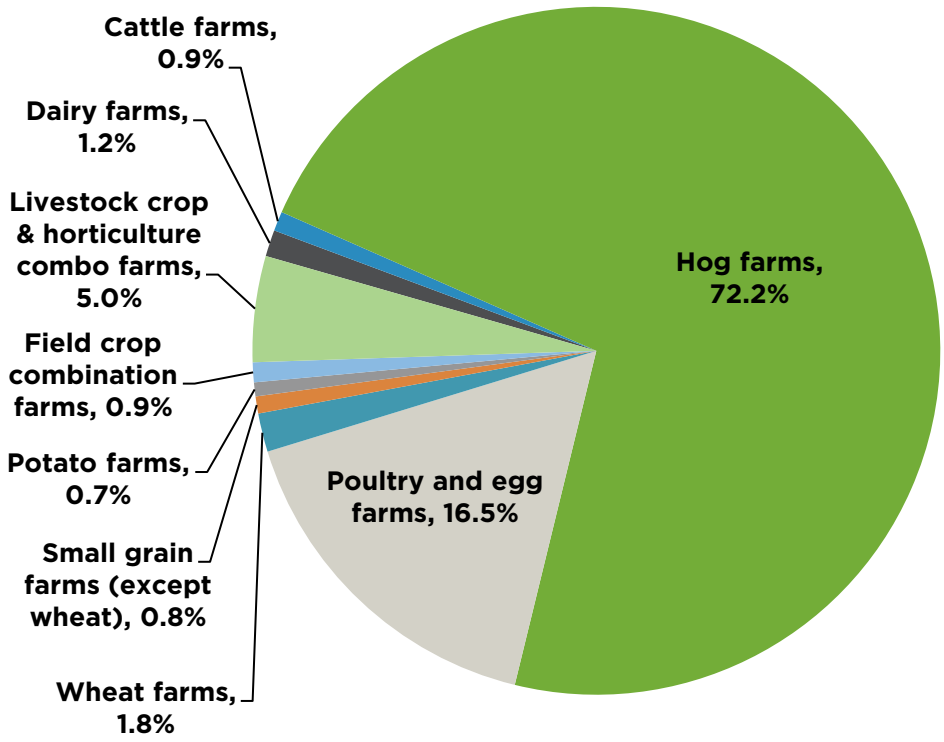


FIGURE A7.7 MANITOBA AGRICULTURAL MARKET – AVERAGE NATURAL GAS USE



While the number of customers above provides insight into the greatest number of opportunities for energy efficiency projects, the energy consumption of each sub-sector is an important consideration when scoping the market. In the case of both the industrial and agricultural sectors, the share of energy consumption is not aligned with the market size information illustrated above. Select sub-sectors are very energy-intensive by nature, therefore requiring a customer-specific approach when assessing and implementing energy efficiency improvements. Examples of energy-intensive industrial sub-sectors include chemicals and food/beverage in the industrial sector, and dairy and hog farms in the agricultural sector.

A7.2 COMMERCIAL, INDUSTRIAL & AGRICULTURAL MARKETING APPROACH

Establishing the marketing mix for commercial, industrial and agricultural programs and offers includes identifying:

- eligible energy-efficient technologies and practices;
- the value of the incentive or rebate;
- distribution channels for energy-efficient technologies and practices (where they may be available for purchase); and
- customer engagement strategies for the programs or offers.

Product eligibility is determined from various factors such as energy consumption and real-world product performance; building code requirements; and a variety of market factors such as awareness, availability, penetration levels, lead times, and presence of qualified installers.

Energy-efficient technologies and practices generally have a higher upfront cost compared to their inefficient counterparts. Incentives or rebates are designed to reduce the upfront cost of energy-efficient technologies and practices to encourage customers to choose the energy-efficient option rather than the energy inefficient alternative. Customer payback is also considered when setting the rebate amount.

There are multiple channels through which consumers may purchase energy-efficient technologies and practices, including trade allies such as:

- contracted third-party (private sector firms that have a contract with Efficiency Manitoba to implement energy-efficient technologies and practices);

- contractors;
- architects,
- consulting engineering firms; and
- product distributors, wholesalers, and retailers.

In addition to the trade allies noted above, Efficiency Manitoba will also be responsible for direct customer engagement within the commercial, industrial, and agricultural sectors. Efficiency Manitoba will target key customer decision makers and influencers and will work together to deliver customer-focused solutions that will meet customer buying criteria.

Efficiency Manitoba will focus on the continual cross-promotion of all offers when meeting with customers and will work with all trade allies to share knowledge and offer support on offer-related administrative needs. Efficiency Manitoba will leverage relationships with Manitoba Hydro's Customer Account Representatives, to obtain knowledge of the customer's operations, business priorities, and decision-making processes.

In addition, commercial, industrial, and agricultural programs and offers will leverage a variety of promotional channels to drive awareness and participation. These channels include point-of-purchase advertising; online advertising; paid and organic social media; traditional media (targeted print); direct mail; trade publications; newsletters; industry forums; customer and industry tradeshows; customer and industry training and capacity building workshops; community events; demonstration projects, case studies and testimonials; and customer recognition materials such as construction signage, commemorative plaques, and door/window decals. Securing a variety of

158 media opportunities in both urban and rural communities will ensure adequate reach
159 throughout the province.

A7.3 SMALL BUSINESS & APPLIANCE OFFERS

TABLE A7.2 SMALL BUSINESS & APPLIANCE OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of projects (electric)	900	900	1,000
Annual electric savings (GWh) (at generation)	14.82	15.21	15.63
Annual capacity savings (MW) (at generation)	2.32	2.37	2.42
No. of projects (natural gas)	1,400	1,400	1,400
Annual natural gas savings (million m^3)	0.32	0.32	0.32
Annual GHG emission reductions (tonnes CO_2e)	600	600	600

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.3 SMALL BUSINESS & APPLIANCE OFFERS COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$2,636,000	$2,698,000	$2,763,000
Annual natural gas budget ($)	$249,000	$254,000	$260,000
Total program budget	$2,885,000	$2,952,000	$3,023,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	3.61	1.75
	Net Present Value ($)	$7.68 M	$0.54 M
	Levelized Cost	1.43¢/kWh	10.06¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.3.1 OVERVIEW & OBJECTIVES

COMMERCIAL KITCHEN APPLIANCES

Commercial Kitchen Appliance Offers will encourage restaurants and food service establishments to reduce energy consumption by purchasing ENERGY STAR® certified kitchen appliances. The offers aim to transform the commercial kitchen appliance market by encouraging suppliers and distributors of commercial kitchen appliances to promote ENERGY STAR certified appliances to customers.

As it is common for commercial kitchen appliances to be replaced at the end-of-life, customers often do not have time to evaluate a variety of appliances before making a purchase decision. By equipping suppliers and distributors with information about energy-efficient models and providing them with incentives directly, it is anticipated that suppliers and distributors will influence purchase decisions when customers are faced with short decision cycles.

COMMERCIAL REFRIGERATION EQUIPMENT

Commercial Refrigeration Equipment Offers will promote 11 different product incentives for energy-efficient refrigeration upgrades. When qualifying energy-efficient measures are purchased and installed, customers will submit invoices to obtain rebates. Savings will be achieved by providing information about refrigeration maintenance, promoting energy-efficient refrigeration technologies, and optimizing the operation of new and existing refrigeration equipment.

SMALL BUSINESS PROGRAM

The small business market is a proven late adopter of energy-efficient technologies due to several unique barriers including budgetary restrictions, limited resources, and a lack of industry exposure. The program's aggressive incentives are intended to lessen upfront capital costs for the customer.

The Small Business Program will promote energy efficiency to the hard-to-reach small business market, which includes restaurants, convenience stores, small offices, salons, and garages. Energy-efficient products offered through the program will include water- and energy-saving devices, energy-efficient lighting, and smart thermostats. To qualify, the business must be 10,000 square feet or less in size.

The Small Business Program will consist of a three-part offering:

1) on-site direct installation of various free measures, such as bathroom and kitchen faucet aerators, pre-rinse spray valves, and A-line LED bulbs;
2) a free lighting assessment that identifies further opportunities to upgrade inefficient lighting; and
3) approximately 70 percent coverage of material and labour costs of qualifying lighting retrofits identified in the assessment.

A7.3.2 TECHNOLOGIES

COMMERCIAL KITCHEN APPLIANCES

The following ENERGY STAR certified appliances may qualify for rebates under this initiative:

- steamers;

- fryers;
- convection ovens;
- dishwashers;
- griddles; and
- hot food holding cabinets.

COMMERCIAL REFRIGERATION EQUIPMENT

The products listed below will be eligible for rebates under this initiative:

- new vertical display cases with standard doors;
- new vertical display cases with special (heat free) doors;
- anti-sweat heater (ASH) controls;
- night covers;
- high-efficiency compressors;
- electronically communicated motor (ECM) evaporator fan motors;
- strip curtains;
- automatic door closers;
- LED display cases and walk-in box lighting;
- door gaskets; and
- evaporator efficiency controllers.

SMALL BUSINESS PROGRAM

The products listed below will be provided free-of-charge or will be eligible for rebates under this initiative:

- kitchen aerators;

- bathroom aerators;
- pre-rinse spray valves;
- A-line LED bulbs;
- dimmer switches;
- T8 ballasts;
- LED T8 linear lamps;
- T8 energy-efficient lamps;
- T8 tandem fixtures;
- specialty LED lamps;
- exit signs;
- showerheads; and
- smart thermostats.

In addition to the items above, the program will cross-promote other Efficiency Manitoba initiatives, such as Renovation Offers and HVAC and Controls Offers.

A7.3.3 IMPLEMENTATION

COMMERCIAL KITCHEN APPLIANCES

Commercial Kitchen Appliance Offers will provide incentives to promote qualified ENERGY STAR certified appliances, which often have a higher upfront cost.

COMMERCIAL REFRIGERATION EQUIPMENT

Commercial Refrigeration Equipment Offers will provide customers with both pre-purchase incentives as well as post-purchase rebates. Many of the eligible upgrades are simple low-cost equipment purchases, and customers will receive rebates upon

submitting invoices or receipts after installing qualifying equipment. To ensure quality control for both the participant and Efficiency Manitoba, some larger and more elaborate upgrades will require business owners to submit application forms for approval prior to purchase and installation.

SMALL BUSINESS PROGRAM

The Small Business Program will be delivered through a contracted third-party service provider. The service provider will be responsible for door-to-door sales, installing the free energy saving measures, assessing the customer's current lighting systems, establishing lighting upgrade opportunities, and sourcing materials and installation.

In rural communities, Efficiency Manitoba will work with the third-party service provider and local business associations to target rural communities using a phased approach.

A7.4 IN-SUITE EFFICIENCY

TABLE A7.4 IN-SUITE EFFICIENCY OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of suites (electric)	800	1,200	1,600
Annual electric savings (GWh) (at generation)	0.67	1.01	1.34
Annual capacity savings (MW) (at generation)	0.20	0.30	0.39
No. of suites (natural gas)	1,200	1,800	2,400
Annual natural gas savings (million m^3)	0.08	0.12	0.15
Annual GHG emission reductions (tonnes CO_2e)	100	200	300

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.5 IN-SUITE EFFICIENCY OFFERS COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$204,000	$253,000	$303,000
Annual natural gas budget ($)	$38,000	$58,000	$79,000
Total program budget	$242,000	$311,000	$382,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	2.48	3.15
	Net Present Value ($)	$1.06 M	$0.35 M
	Levelized Cost	3.14¢/kWh	6.68¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.4.1 OVERVIEW & OBJECTIVES

Efficiency Manitoba will provide a full-service direct installation offer for property managers and owners of multi-unit residential buildings, including apartments, townhouses, and condominiums. The objective of the offer is to encourage the installation of energy-efficient devices in the suites of multi-unit residential buildings.

A7.4.2 TECHNOLOGIES

Energy-efficient upgrades installed at no charge will include:

- up to two energy-efficient showerheads (5.7 LPM);
- up to two energy-efficient bathroom aerators (5.7 LPM); and
- up to nine LED bulbs.

Energy-efficient upgrades eligible for incentives will include:

- heat recovery ventilator (HRV) controls; and
- thermostats.

A7.4.3 IMPLEMENTATION

257 In-Suite Efficiency Offers will be delivered by a contracted third-party who will be
258 responsible for administering the program, supplying energy-efficient upgrades, and
259 coordinating the installation of the devices.

A7.5 RENOVATION OFFERS

TABLE A7.6 RENOVATION OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of projects (electric)	1,800	1,700	1,600
Annual electric savings (GWh) (at generation)	110.73	103.06	95.51
Annual capacity savings (MW) (at generation)	33.06	31.10	28.94
No. of projects (natural gas)	160	170	180
Annual natural gas savings (million m^3)	1.00	1.13	1.25
Annual GHG emission reductions (tonnes CO_2e)	1,900	2,200	2,400

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.7 RENOVATION OFFERS COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$17,425,000	$16,710,000	$15,961,000
Annual natural gas budget ($)	$2,102,000	$2,151,000	$2,387,000
Total program budget	$19,527,000	$18,861,000	$18,348,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	4.97	1.60
	Net Present Value ($)	$187.96 M	$3.77 M
	Levelized Cost	1.67¢/kWh	11.85¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.5.1 OVERVIEW & OBJECTIVES

Renovation Offers can be divided into two broad categories:

- commercial lighting technologies and controls; and
- commercial building envelope technologies.

Efficiency Manitoba will provide financial incentives and education to customers with existing commercial, industrial, and agricultural buildings that conduct energy-efficient renovations to their building envelope and lighting. To take part, customers will engage with a contractor or consultant of their choosing, discuss energy-efficient options, determine the requirements for the program, and apply for financial incentives. Customers may choose to upgrade one or more technologies or single measures at a time.

The primary objective of Renovation Offers is to provide technical assistance and financial incentives to influence the adoption of energy-efficient technologies and practices by reducing the cost of renovations. The offer will further educate customers on the important features and benefits of choosing cost-effective options for improving their building energy performance.

Efficiency Manitoba will work with local and national industry associations and trade allies to drive awareness and stimulate successful long-term relationships. Trade allies will be involved with the Renovation Offers by promoting the offers, providing administrative support such as assisting customers with applications, and serving as leaders in energy-efficient building practices.

A7.5.2 TECHNOLOGIES

Financial incentives will be available for a variety of products that meet described energy efficiency requirements.

Lighting products:

- LED lamps (screw-in, T8, T5);
- LED specialty lamps (HID ballast, line voltage);
- LED fixtures; and
- backlit signage.

Lighting controls:

- occupancy sensors; and
- control systems.

Building envelope products and systems:

- surface and cavity insulation for roof, attic, wall, and foundation applications;
- window systems including punched, in-fill, curtain wall, and storefront; and
- glazed doors including overhead, single swinging, sliding, and garden doors.

Building envelope financial assistance:

- incidental and dedicated air sealing;
- blower door testing (for determining equivalent air leakage); and
- building component energy modelling for designing energy-efficient curtain wall and storefront systems.

In order to ensure the integrity of the products being considered under the above categories, Renovation Offers will require that technical specifications must be met:

- Lighting: Design Lighting Consortium, ENERGY STAR certified.
- Windows: National Fenestration Rating Council, ENERGY STAR certified, third-party approval.
- Insulation: Canadian Construction Materials Centre, third-party approval.
- Air sealing: American Society for Testing Materials.
- Energy model/testers: approved software, trained testers.

A7.5.3 IMPLEMENTATION

Industry sessions with trade allies and customer associations will be arranged to introduce the offer and present the process for submitting applications. The CRM/DSM system will be the primary method for receiving and processing customer applications. Customers will be able to submit applications directly or may prefer contractors support the application; therefore, all stakeholders will be trained on how to use the features of this system.

Efficiency Manitoba will be engaged in aligning the two broad categories' markets and procedures to create a seamless transition for Efficiency Manitoba's Renovation Offers. This will include marketing materials, advertising efforts, customer application processes, and internal processes.

A7.6 HVAC & CONTROLS OFFERS

TABLE A7.8 HVAC & CONTROLS OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of systems (electric)	770	770	780
Annual electric savings (GWh) (at generation)	3.31	3.47	3.53
Annual capacity savings (MW) (at generation)	0.63	0.65	0.67
No. of systems (natural gas)	200	210	220
Annual natural gas savings (million m^3)	0.79	0.76	0.72
Annual GHG emission reductions (tonnes CO_2e)	1,500	1,400	1,400

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.9 HVAC & CONTROLS OFFERS COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$1,006,000	$1,083,000	$1,142,000
Annual natural gas budget ($)	$797,000	$841,000	$886,000
Total program budget	$1,803,000	$1,924,000	$2,028,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	2.81	2.59
	Net Present Value ($)	$5.50 M	$3.77 M
	Levelized Cost	2.30¢/kWh	7.35¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.6.1 OVERVIEW & OBJECTIVES

HVAC & CONTROLS

318 HVAC and Controls Offers will provide financial incentives for the purchase and
319 installation of numerous higher efficiency technologies in various commercial,
320 industrial, and agricultural applications. HVAC systems can be large energy users in

commercial buildings and can make up a large portion of the energy consumption in many industrial and agricultural operations.

These offers aim to influence contractors, installers, building owners, consultants, and other decision-making parties to adopt more efficient technologies during retrofit decisions, resulting in electric and/or natural gas savings and bill savings for customers.

A7.6.2 TECHNOLOGIES

Technologies eligible under HVAC and Controls Offers include:

- condensing gas boilers;
- CO_2 sensors;
- HRVs / energy recovery ventilators;
- condensing gas water heaters;
- air cooled chillers;
- variable frequency drives;
- hotel occupancy sensors;
- hotel packaged terminal heat pumps (PTHPs);
- unit heaters;
- infrared heaters; and
- geothermal (ground-source heat pumps).

A7.6.3 IMPLEMENTATION

Industry sessions with trade allies and customer associations will be arranged to introduce the offers and application process.

Boiler incentives will be a mid-stream offer marketed directly to distributors of natural gas-fired condensing boilers. The remaining HVAC offers are prescriptive, and may depend on equipment size, efficiency, or type. Industry allies and customers will continue to apply for HVAC offers by formally applying and outlining the proposed application of qualifying equipment. Applications will be accompanied by product specifications, data sheets, and other technical requirements, and will be reviewed by Efficiency Manitoba staff for pre-approval before installation takes place.

A7.7 NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDINGS OFFERS

TABLE A7.10 NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDING OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of buildings (electric)	30	100	70
Annual electric savings (GWh) (at generation)	6.01	8.75	7.16
Annual capacity savings (MW) (at generation)	1.18	1.55	1.57
No. of buildings (natural gas)	30	100	70
Annual natural gas savings (million m^3)	0.61	0.96	0.71
Annual GHG emission reductions (tonnes CO_2e)	1,200	1,800	1,400

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.11 NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDING OFFERS COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$1,516,000	$1,875,000	$1,667,000
Annual natural gas budget ($)	$2,079,000	$2,570,000	$2,301,000
Total program budget	$3,595,000	$4,445,000	$3,968,000

		Electric	Natural Gas
	Ratio	2.95	0.59

		Electric	Natural Gas
Program Administrator Cost Test results	Net Present Value ($)	$9.31 M	($2.69 M)
	Levelized Cost	2.36¢/kWh	30.62¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.7.1 OVERVIEW & OBJECTIVES

The programs, incentives, and initiatives within New Construction and High-Performance Buildings Offers will take a whole-building approach that encourages energy efficiency in commercial, large multi-unit residential, and industrial facilities without prescribing specific equipment upgrades or individual technology enhancements. Due to the complex nature of these projects, internal technical support and project management will be provided to each participant from the initial application stage through to project completion.

NEW CONSTRUCTION

Technical assistance and financial incentives will be available for designing and constructing new energy-efficient buildings. Manitoba Hydro's New Buildings Program 2.1 uses the current Manitoba Energy Code for Buildings (MECB 2014) as its performance baseline and is expected to accept applications through 2020/21. Any commercial, multi-unit residential, or industrial facility will be eligible at Efficiency Manitoba, provided it is required to adhere to the MECB 2014. Incentives encourage energy modelling as a design tool during the earliest phases of new construction, along with a "Performance Path" incentive directed toward integrated design elements, building commissioning, and energy management systems.

Once a new energy code is adopted locally, an updated version (3.0) will be made available to encourage building designs that exceed even the most current energy efficiency legislation. Energy code updates are expected as early as 2020.

EXISTING BUILDINGS

Efficiency Manitoba will offer a limited number of energy scoping audits performed by both Efficiency Manitoba engineering staff and third-party engineering consultants, culminating with a written report that identifies a variety of energy-saving opportunities. The report will provide a high-level description of the current facility condition, mechanical and electrical systems, energy billing history, energy end uses, and a benchmark against similar facilities. Where applicable, the report will describe potentially relevant Efficiency Manitoba offers. Energy-saving opportunities will be prioritized based on estimated payback and relevance to the customer.

In addition to Efficiency Manitoba-conducted energy scoping audits, budget has been allocated to outsourcing consultants to conduct American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Level 1, 2, and 3 facility audits. These audits include more detailed energy saving and cost estimates for qualifying commercial and industrial customers.

This initiative is to be used as a vehicle to develop a relationship with the customer by helping them overcome typical barriers that limit the implementation of energy-efficient measures. The audit provides a starting point for understanding current energy usage within a building, energy efficiency planning, an introduction to relevant Efficiency Manitoba offers, and a high-level map for energy-efficient measure implementation.

Further to the initial energy saving opportunities, incentives will be available for existing building commissioning – a process that improves the operational efficiency of an existing building's equipment and systems without any significant capital or equipment upgrades. Provided through the Enhanced Building Operations Program, existing building commissioning typically addresses issues that have developed throughout the building's life as equipment has aged, or as building usage has changed. The Enhanced Building Operations Program prescribes a systemic evaluation of opportunities to improve energy-using systems in existing buildings that are not necessarily in need of new equipment or technologies.

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 will be analyzed using energy modelling, and energy-efficiency enhancements will then be designed specifically for that building to reduce its overall energy use by at least 50 percent upon completing the whole-building renovation. The building enhancements during a deep energy retrofit are wide-ranging, and the projects tend to be capital intensive; however, the efficiency upgrades are exhaustive and are expected to provide long-term results for building owners.

BEHAVIOURAL

More than seven million square feet of office space in Manitoba is currently engaged in Manitoba Race to Reduce. This is a four-year challenge aimed at reducing total energy use (both electricity and natural gas) by 10 percent by simply improving common workplace behaviours that contribute to wasteful energy use. The competition is free to join and simple to manage with resources and support provided

by a dedicated Manitoba Race to Reduce representative. Building performance updates are posted quarterly, and participants are rewarded at an annual awards event celebrating the successes of the highest performing participants. Upon completion of the existing four-year initiative, Manitoba Race to Reduce will start a new four-year competition cycle targeted at the school sector.

A7.7.2 TECHNOLOGIES

Efficiency Manitoba's New Construction and High-Performance Buildings Offers will include the following programs and initiatives for commercial building owners:

- the New Buildings Program;
- energy scoping audits;
- the Enhanced Building Operations Program;
- deep energy retrofits; and
- Manitoba Race to Reduce.

A7.7.3 IMPLEMENTATION

NEW BUILDINGS PROGRAM

The program's first phase (Energy Modelling Assistance Incentive) will provide up to $10,000 to eligible customers who submit a completed design energy modelling report during the project's design phase and then successfully complete the program's Performance Path. Design energy modelling reports will be reviewed for program compliance, and Efficiency Manitoba will collaborate with the project's energy modeller when possible to discuss potential energy efficiency opportunities.

The program's second phase (the Performance Path) will offer a financial incentive ranging between $0.50 per square foot to $2.00 per square foot of a building's eligible floor space as determined by the project's final energy model. Participants will qualify for financial incentives only if the final energy model demonstrates whole-building energy savings of at least five percent better than MECB 2014. A building can be formally designated as "Energy Efficient" if its whole-building energy savings are 10 percent or better.

The program will leverage an established network of industry professionals (for example, consulting engineers, architects, energy modellers, property developers, and government allies) to deliver the program to prospective commercial building owners and developers. Existing strategic partnerships and alliances with industry associations (for example, Canada Green Building Council, Winnipeg Construction Association, and Sustainable Building Manitoba) will continue to broaden the program's reach within the local industry. As such, Efficiency Manitoba will provide regular input and expertise through initiatives, projects, committees, and events that foster the development of the green building industry.

ENERGY SCOPING AUDITS

Interested building owners will complete an initial screening survey found on the Efficiency Manitoba website or provided by Efficiency Manitoba. Efficiency Manitoba will promote the program as an optional path to creating an overall energy efficiency plan for a facility. The outcome of the energy scoping audits will provide valuable information to customers who are unaware of Efficiency Manitoba's suite of programs

and those who are unsure of how to proceed with potential energy efficiency projects.

The program will be available on the Efficiency Manitoba website. Efficiency Manitoba may use this tool when approaching new or indecisive customers. Efficiency Manitoba will target facilities with high Energy Use Indexes as the program gains momentum.

Financial incentives will be available to cover some or all the costs of the energy scoping audit based on the number of measures implemented from the report.

ENHANCED BUILDING OPERATIONS PROGRAM

The program will use engineering and energy service companies to identify non-capital-intensive energy conservation opportunities with relatively short payback periods. Incentives will be offered to cover a portion of the cost for hiring the EBCx agent and implementation of the energy-efficient measures identified through an investigation process. The program's incentive targets reimbursing 50 percent the customer's cost of conducting a commissioning process in their existing building.

The program is divided into four phases, with incentive payments issued at the completion of each of the first three.

Phase 1 – opportunities investigation

The EBCx agent will lead this phase to:

- organize a project kickoff meeting to plan the project and review the current facility requirements;
- research the building's components and the needs of its occupants;
- compile a list of energy-saving opportunities;

- prepare for trend data collection to establish benchmarks and support for opportunities under consideration;
- complete a report to help the project team decide which opportunities should be considered; and
- hold a meeting with the project team to decide which preliminary energy conservation measures should be further investigated.

Phase 2 – measures investigation

The EBCx agent will continue to:

- collect benchmark and trend data for preliminary energy conservation measures;
- prepare and provide a measures report including complete project plans, simple payback values, and training plans for all preliminary energy conservation measures, along with a system manual for the building; and
- meet with the project team to review each preliminary measure in the measures report and finalize a list of selected energy conservation measures.

Phase 3 – implementation & validation

The building owner will implement the selected energy conservation measures using internal or external resources. When all selected measures are implemented, the EBCx agent will:

- validate the success of the installation and projected energy performance of each measure;

- develop the first ongoing efficiency report using trend data and other means identified in the measures report;
- organize measures training for the building owner and operators;
- prepare the implementation and validation report and provide it to the project team and Efficiency Manitoba;
- include documentation from this phase as a supplement in the system manual; and
- hold a meeting with the project team and Efficiency Manitoba to finalize this phase and address any outstanding issues.

Phase 4 – ongoing efficiency

The EBCx agent will resolve any remaining issues with the project. The building owner will provide ongoing efficiency reports at agreed upon intervals for 36 months after the measures have been implemented. In addition, as part of regular building maintenance, the building owner and operators will continue to introduce and implement measures to improve building performance and energy efficiency.

DEEP ENERGY RETROFITS

A call for proposals will be distributed through public tender within relevant industry networks (for example, trade associations) and will be directly targeted at building design/construction firms with a propensity for delivering innovative and sustainability focused projects.

Efficiency Manitoba will initiate the call for proposals to fund and support a limited number of deep energy retrofit projects for existing commercial buildings. The call will establish a specific timeframe for application eligibility, specify the level of funding

available, and provide criteria for which the proposals will be evaluated and deemed eligible.

The offer will be available for a limited time and is considered an incentive-based pilot program that could develop into a prescriptive offer once market data from the pilot projects has been assessed.

All technologies, equipment, and components of a commercial building are within the scope of the program in addition to building energy modelling, economic analysis tools, building automation systems, energy benchmarking, energy measurement and verification, and performance monitoring and reporting.

MANITOBA RACE TO REDUCE

Delivered through a contracted third-party, Manitoba Race to Reduce is a unique energy reduction challenge that involves collaboration between commercial building landlords and tenants to encourage smart energy use. Led by a local representative, the initiative encourages behavioural changes and positive team building amongst landlords, tenants, and their employees. Manitoba Race to Reduce provides a plan of action and tool kit of technical advice to help organizations:

- increase awareness of their building's energy use;
- measure and monitor energy use; and
- change the operation of equipment to reduce energy use and increase energy efficiency.

Initial participants were recruited through the program's Leadership Advisory Council (a collection of industry leaders who provide direction and insight into the program's

operations), while ongoing participation recruitment and program promotion is handled primarily by the Manitoba Race to Reduce representative.

A7.8 CUSTOM OFFERS

TABLE A7.12 CUSTOM OFFERS ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of projects (electric)	80	80	100
Annual electric savings (GWh) (at generation)	24.17	17.92	28.56
Annual capacity savings (MW) (at generation)	3.95	2.53	4.10
No. of projects (natural gas)	20	20	30
Annual natural gas savings (million m^3)	5.29	3.93	4.13
Annual GHG emission reductions (tonnes CO_2e)	10,100	7,500	7,800

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.13 CUSTOM OFFERS COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$3,021,000	$2,668,000	$3,749,000
Annual natural gas budget ($)	$1,959,000	$1,262,000	$1,702,000
Total program budget	$4,980,000	$3,930,000	$5,451,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	5.18	6.51
	Net Present Value ($)	$37.13 M	$25.68 M
	Levelized Cost	1.17¢/kWh	2.72¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.8.1 OVERVIEW & OBJECTIVES

Custom offers will provide technical support and financial incentives for feasibility studies, the Energy Manager Initiative, and the purchase and installation of numerous

high-efficiency technologies and systems for commercial, industrial, and agricultural applications.

These offers aim to achieve the following outcomes:

1) influence business owners, consultants, and other decision-making parties to select more energy-efficient technologies prior to facility retrofit and expansion opportunities, resulting in electric and/or natural gas savings and ultimately generating bill savings for customers; and
2) provide skilled resources and instill a culture of continuous improvement around energy management and increase organizational capacity to identify and implement energy conservation measures.

A7.8.2 TECHNOLOGIES

Efficiency Manitoba's custom offers will include the following technologies and systems for commercial, industrial, and agricultural applications:

- gas boilers (steam and hot water);
- compressed air equipment and systems;
- heat recovery equipment and systems;
- energy managers;
- strategic energy management;
- condensing and direct contact gas water heaters;
- pumps, fans, and blower equipment and systems;
- variable frequency drives (VFDs) for pumps and fans;
- process equipment and pipe insulation upgrades;
- heat pads for hog barns;

- VFDs, specifically on fans for vegetable storage facilities;
- industrial refrigeration equipment and systems;
- optimization of production processes that increase output while maintaining energy use;
- solar air and water heating systems;
- control strategies for building systems; and
- high-efficiency heating and cooling systems.

A7.8.3 IMPLEMENTATION

PERFORMANCE OPTIMIZATION PROGRAM

The Performance Optimization Program will promote energy efficiency through the optimization of electric motor-driven systems. Optimization can also result in process and production improvements that increase outputs while maintaining energy use at a facility, thus reducing a facility's energy intensity. Optimization can consist of technical support and financial incentives for large capital projects, as well as maintenance, sustainability, and waste diversion initiatives.

Providing no-cost access to energy efficiency screening studies is the first step in identifying energy reductions measures, which can lead to customers engaging industry for feasibility studies and technology implementation.

ENERGY MANAGER INITIATIVE

The Energy Manager Initiative will be a subset of the Performance Optimization Program. The Energy Manager Initiative will provide custom performance-based incentives, as well as funding for third party training and consulting services, for organizations to hire or appoint an embedded energy manager. Energy managers are

responsible for submitting regular reports, implementing energy conservation measures, and developing a strategic energy management plan.

STRATEGIC ENERGY MANAGEMENT COHORTS

The Strategic Energy Management Program will provide support and incentives to customers to implement the fundamentals of continuous improvement to their energy management programs. Customers will be grouped into cohorts and commit their staff part-time to energy management activities over a longer-term engagement (for example, 24 months). Services will be coordinated and delivered by a contracted third-party and will include energy coaching, energy map, treasure hunt, project register, energy management assessments (EMA), group workshops, training, webinars, energy modeling, technical assistance, building walkthroughs, energy audits, and networking. The Strategic Energy Management Program will allow smaller customers to engage in energy management. Through this initiative, Efficiency Manitoba will target outcomes such as increasing participation in existing programs, fostering closer relationships with customers, and capturing savings from operating and maintenance projects.

NATURAL GAS OPTIMIZATION PROGRAM

The Natural Gas Optimization Program is designed to promote energy efficiency through the optimization of natural gas fired systems such as boilers and process heating and drying systems. Optimization can also result in process and production improvements that increase outputs while maintaining energy use at a facility, thus reducing a facility's energy intensity. Optimization can consist of technical support

599 and financial incentives for traditional large capital projects, as well as maintenance,
600 sustainability, and waste diversion initiatives.

601 Providing no-cost access to energy efficiency screening studies will be the first step in
602 identifying energy reductions measures, which can lead to customers engaging
603 industry for feasibility studies and technology implementation.

COMMERCIAL CUSTOM MEASURES PROGRAM

604 The Commercial Custom Measures Program will address energy-efficient projects not
605 included in other commercial offers. Eligible measures will include those that increase
606 energy efficiency, recover energy, reduce energy consumption during low occupancy
607 periods, eliminate energy waste, and capture solar energy for heating air or water.
608 Typical technologies include heat recovery, high-efficiency equipment, VFDs, and
609 controls. The program will provide volume incentives for energy saved based on a
610 basic stream or enhanced stream for small and large projects

A7.9 LOAD DISPLACEMENT PROGRAM

TABLE A7.14 LOAD DISPLACEMENT ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of projects	< 10	< 10	< 10
Annual electric savings (GWh) (at generation)	99.00	120.52	110.45
Annual capacity savings (MW) (at generation)	13.75	16.34	15.33
Annual natural gas savings (million m^3)	-	-	-
Annual GHG emission reductions (tonnes CO_2e)	-	-	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A7.15 LOAD DISPLACEMENT COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$984,000	$5,693,000	$3,357,000
Annual natural gas budget ($)	-	-	-
Total program budget	$984,000	$5,693,000	$3,357,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	3.72	-
	Net Present Value ($)	$61.52 M	-
	Levelized Cost	1.50¢/kWh	-

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A7.9.1 OVERVIEW & OBJECTIVES

The Load Displacement Program focuses on developing economic customer-sited generation using readily available low-cost industrial waste and by-product streams or biomass resources as fuel for combined heat and power installations. Generation output is required to displace participating customer purchases of electric energy that would otherwise be serviced by Manitoba Hydro, allowing utility-owned generation, transmission, and distribution facilities to serve other domestic load or capture available export opportunities.

A7.9.2 TECHNOLOGIES

Technologies employed are all established and proven means of converting waste fuels or heat to usable energy. Existing projects employ micro-turbines burning solution gas in the Manitoba oil fields, and modifications to a waste biomass boiler to reduce fossil fuel consumption.

Under current Manitoba Hydro policy, power purchase agreements (PPAs) and interconnection agreements are required in cases where power is exported past the

generation site meter. An Efficiency Manitoba-proposed Load Displacement Transfer Credit is under discussion with Manitoba Hydro, which would enable a customer to transfer electricity to their other nearby customer-owned loads. This policy will be reviewed during ongoing strategic review processes.

A7.9.3 IMPLEMENTATION

CUSTOMER SITED LOAD DISPLACEMENT PROJECTS

The general project development approach will be as follows:

1) identify candidate projects;
2) deliver targeted presentations to decision makers;
3) conduct pre-feasibility, feasibility, and engineering design studies to confirm the project viability and enable project support and capital approvals;
4) seek a draft PPA from Manitoba Hydro (if power is exported or transferred to other locally owned loads);
5) negotiate capital and operating contributions as required to meet project economic approval thresholds;
6) procure and install the system (procurement may be public or private depending on the owner);
7) confirm installations and process payments; and
8) measure and verify savings over the life of the project.

Note that these types of projects can take over three years from inception to implementation.

A7.10 NON-ENERGY BENEFITS

Offers in the commercial, industrial, and agricultural sectors are designed to increase awareness of energy-efficient technologies and practices and provide customers with information and incentives to encourage facilities and operations to become more energy-efficient. In doing so, participating customers will reap numerous non-energy benefits, including but not limited to:

- the creation of "green collar" jobs at third-party service providers, including door-to-door technicians, office staff, warehouse workers, and sub-contracted electricians;
- lower customer operating and maintenance costs;
- increased physical comfort, indoor air quality, and productivity for guests, customers and employees;
- where applicable, reduced water use and associated water costs;
- reduced waste in landfills resulting from technologies with longer product lives compared to inefficient alternatives (LED lighting);
- reduced carbon emissions and the associated federal carbon charge
- increased property values;
- enhanced corporate image and reputation;
- facilitating local economic development;
- improved process productivity;
- increased customer competitiveness; and
- individual projects could have capacity savings valuable to Manitoba Hydro in the distribution area.

APPENDIX A – SECTION A8 EMERGING TECHNOLOGY PROGRAMS

2020/23 EFFICIENCY PLAN

TECHNOLOGIES
MARKETING APPROACH
IMPLEMENTATION
NON-ENERGY BENEFITS

EFFICIENCY MANITOBA

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APPENDIX A – SECTION A8

EMERGING TECHNOLOGY PROGRAMS

Emerging Technology Programs provide incentives across multiple customer segments. The offerings in this section currently include the following:

- the Solar Energy Program; and
- the Customer Sited Bioenergy Program.

Technologies that successfully clear the pilot project stage (*Appendix A – Section A9*) but are not yet ready for mainstream incentive programs may be further developed to overcome barriers not often found in market-ready technologies. Barriers often include but are not limited to:

- low awareness of the technology;
- high capital cost;
- resistance to change among the supply industry;
- hesitation to take on the pre-conceived risk associated with a newer technology;
- insufficient product availability; and
- shortage of local installers skilled in installing or servicing the product.

To assist customers in overcoming these barriers, Efficiency Manitoba will provide increased educational, technical, and economic support as customers consider their options.

Tables A8.1 to A8.3 outline the Emerging Technology Programs planned for customers and the corresponding savings and cost-effectiveness details.

TABLE A8.1 EMERGING TECHNOLOGY OFFER SUMMARY

BUNDLES	MEASURES	STATUS	DELIVERY
EMERGING TECHNOLOGY PROGRAMS	Solar Energy Program	New offer	Industry (studies, implementation and installation)
	Customer Sited Bioenergy	New offer	

TABLE A8.2 EMERGING TECHNOLOGY ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
Number of bioenergy projects	0	<10	<10
Number of solar PV projects	0	0	220
Annual electric savings (GWh) (at generation)	0.00	0.98	5.90
Annual capacity savings (MW) (at generation)	0.00	0.56	0.56
Annual natural gas savings (million m^3)	0.00	0.17	0.17
Annual GHG emission reductions (tonnes CO_2e)	0	300	300

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

TABLE A8.3 EMERGING TECHNOLOGY COST-EFFECTIVENESS SUMMARY

	2020/21	2021/22	2022/23
Annual electric budget ($)	$124,000	$317,000	$1,463,000
Annual natural gas budget ($)	$63,000	$139,000	$168,000
Total program budget	$187,000	$456,000	$1,631,000

		Electric	Natural gas
Program Administrator Cost Test results	Ratio	2.96	0.89
	Net Present Value ($)	$4.16 M	($0.10 M)
	Levelized Cost	2.11¢/kWh	21.40¢/m^3

Note. Refer to *Attachment 3 – Technical Tables* for additional program cost-effectiveness details.

A8.1 OVERVIEW & OBJECTIVES

SOLAR ENERGY PROGRAM

Beginning in the last fiscal year of Efficiency Manitoba's 2020/23 Efficiency Plan (the "Plan"), incentives will be available to customers who install an approved grid-connected solar photovoltaic (PV) system to an existing building or premise. Approved customers will receive a prescribed financial incentive based on the direct current (DC) rating of the system. The program enables customers to displace a portion of their electricity requirements with solar energy. Customers who install solar PV tend to have a desire for energy independence and gain a heightened awareness of their own energy consumption habits, which can lead to reduced energy usage through behavioural changes. Efficiency Manitoba will also encourage participants to reduce their on-site energy use by promoting other energy efficiency program offerings prior to investing in a generating system, as it is often more cost effective to reduce electricity costs by improving energy efficiency prior to considering a new generating source.

CUSTOMER SITED BIOENERGY

Efficiency Manitoba will provide financial and technical support for installed wood pellet and wood chip heating systems to grid-connected Manitoba Hydro customers. In addition to an upfront capital incentive, support will be provided on an annual basis to ensure standardized bulk wood pellet or chip fuel supply.

Commercial heating appliances and standardized fuel are available; however, the supply channels in Manitoba are not adequately developed. To date, the efforts placed on advancing biomass fuel adoption involve the standardization of the

biomass fuel supply in Manitoba. Through collaboration and partnership with agricultural, industrial, and commercial customers, Efficiency Manitoba will work to develop and encourage a high-quality, cost-effective, and reliable supply of biomass/wood pellet fuel.

Efficiency Manitoba staff will continue to work with existing demonstration projects to continually improve their knowledge of bioenergy systems. Measurement and verification plans will be fine-tuned as a result of monitoring these systems.

A8.2 TECHNOLOGIES

Technologies promoted through the emerging technology programs stream have had previous exposure to the market, either through a pilot project or research project. All equipment required to operate the emerging technology must meet applicable provincial, federal, and municipal licenses, permits, and approvals.

SOLAR ENERGY PROGRAM

- approved grid connected solar PV systems.

CUSTOMER SITED BIOENERGY

- wood pellet and wood chip heating systems.

A8.3 MARKETING APPROACH

SOLAR ENERGY PROGRAM

Financial incentives will help alleviate the cost barrier of purchasing and installing solar PV systems. The target market for this technology is existing grid-connected residential, small commercial, and agricultural customers who have a desire to displace a portion of their electricity requirements with their own on-site renewable

energy. Any policies or contracts for the potential purchase of excess energy generated by the customer will be at the discretion of Manitoba Hydro.

The solar PV incentive will be promoted through earned advertising and a combination of paid and organic social media that will drive interested customers to the Efficiency Manitoba website. The website will contain information about grid-connected solar to ensure customers can make informed decisions. It is anticipated that the solar industry (contractors, distributors, etc.) will also heavily promote the program.

Due to the highly technical aspect of this initiative, it is important that customers have a full understanding of solar PV and the application process. Participating contractors will serve as a fundamental promotion and distribution channel and will therefore receive training from Efficiency Manitoba staff to guide customers through the application and installation requirements.

CUSTOMER SITED BIOENERGY

Although available to all customers, the target market for the customer sited bioenergy offering includes schools, agricultural customers, and municipal buildings. Efficiency Manitoba will identify and work directly with decision makers and project managers within various sectors to capture all energy and non-energy benefits in their justifications for installing bioenergy, as many of these customers may have limited budgets with many competing priorities. Targeting customers with heating systems nearing end-of-life will be ideal since they will need to incur replacement costs for the heating system and the financial incentive will help cover the incremental costs associated with the bioenergy components.

A request for proposal (RFP) model may also be pursued for this offering, which would spark interest from the supply side of the industry and aid in finding suitable customers for this initiative.

The affordability of natural gas at the present time requires additional factors to make conversion appealing in the gas-supplied areas of the province. In the case of natural gas fueled buildings, these additional factors could include meeting sustainability mandates, disposing of a waste fuel, pursuing greenhouse gas emission reduction targets, educational purposes, promoting economic development and a green economy.

A8.4 IMPLEMENTATION

SOLAR ENERGY PROGRAM

Efficiency Manitoba will utilize the first two Plan years to research and coordinate with Manitoba Hydro, as a solar PV program will have significant impacts on Manitoba Hydro staff workloads as well as the distribution system. Coordination between the two organizations will be necessary to ensure a smooth, well-planned launch of the offer as well as ongoing support and customer service.

The offer will be delivered through participating solar contractors who will administer the technical application process. After obtaining interconnection approval from Manitoba Hydro, interested homeowners or business owners will submit their incentive application, along with a copy of the interconnection approval, via Efficiency Manitoba's online application system. Efficiency Manitoba will review the application for pre-approval and will follow-up with the customer to ensure awareness of other

opportunities to improve the site's energy efficiency in addition to generating their own electricity.

CUSTOMER SITED BIOENERGY

Efficiency Manitoba will work with key decision makers who will provide technical and economic details to support project approval. In addition, Efficiency Manitoba will provide technical expertise to on-site staff who use the equipment regularly while navigating the project, which will be essential to a successful project implementation. Having actual projects in operation will create a circle of interest and confidence with decision makers to expand the technology use to other properties.

The general project development approach is as follows:

- identify candidate buildings or facilities and interested owners;
- conduct presentations with decision makers, including outreach at industry events;
- conduct prefeasibility and feasibility studies to confirm the project viability, which will enable administrative support and project approvals;
- obtain capital and project approvals by both parties;
- customer procures and installs the system; and
- measure and verify savings over the life of the project.

Owners will pursue their own contracts for equipment design and installation, as well as for fuel supply. The timeframe to complete an installation can be up to two years from identifying a suitable candidate to implementation.

A8.5 NON-ENERGY BENEFITS

SOLAR ENERGY PROGRAM

Non-energy benefits of solar PV may include economic development opportunities through the creation of local employment for installers, electricians, project managers, and administrative staff. For interested buyers, solar PV may also add value when customers seek to sell their property. Manitoba Hydro may see benefits on the distribution system from solar PV systems installed in specific areas of the province, which may alleviate distribution system constraints.

CUSTOMER SITED BIOENERGY

Non-energy benefits of customer sited bioenergy include the creation and/or enhancement of local enterprises for fuel manufacturing and supply, which can increase economic development. Heating equipment installers and vendors may benefit from new and varied project work, as well as increased technical capacity due to equipment manufacturer's training and certification. Many agencies are beginning to set energy and emissions reductions targets, and the program could help them meet these targets; for example, the *Guide for Sustainable Schools in Manitoba* states "Sustainable schools aim to be the models of sustainable energy use." [1]

[1] International Institute for Sustainable Development and Manitoba Education (2016). *Guide for Sustainable Schools in Manitoba 2nd Edition.* Retrieved from https://www.edu.gov.mb.ca/k12/esd/pdfs/sustainable_guide.pdf p. 61

APPENDIX A – SECTION A9 ENABLING STRATEGIES

2020/23 EFFICIENCY PLAN

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APPENDIX A – SECTION A9

ENABLING STRATEGIES

A9.1 OVERVIEW & PURPOSE

Enabling strategies enhance programs and services offered by Efficiency Manitoba and support the strategic direction of the three-year plan and the organization. The enabling strategies of Efficiency Manitoba can be described in three categories:

- engagement initiatives;
- emerging technologies; and
- codes and standards.

Enabling strategies engage customers and promote the efficient use of energy in all customer sectors by supporting a well-rounded suite of offerings that are available to all Manitobans. Undertakings with emerging technologies help to ensure that new offerings will be developed to achieve longer-term energy savings. Participating in the development of codes and standards ensures permanent market transformation for a specific energy efficiency opportunity.

A9.2 ENGAGEMENT INITIATIVES

Engaging Manitobans and building long-term relationships with stakeholders from all market sectors forms the foundation for long-term energy savings. Through social media, online blogs, newsletter sign-ups, customer site visits, and industry magazines, Efficiency Manitoba is focused on engaging and empowering Manitobans and giving them the tools and knowledge to make changes about their energy use.

Engaging Manitobans involves multiple channels to ensure a broad reach, with strategies to capture attention of the diverse markets served. There are six categories that focus on engagement:

- branding;
- the customer relationship management and demand-side management (CRM/DSM) System;
- engaging private sector trade allies and associations;
- the Energy Efficiency Advisory Group (EEAG);
- engaging communities; and
- education.

A9.2.1 BRANDING

Efficiency Manitoba has established the following brand positioning statement:

> *"Efficiency Manitoba provides conservation incentives and expert advice to all Manitobans in a collaborative, customer-focused environment, with a credible voice – helping them feel supported and enabled while saving them money and helping them respect the environment."*

Efficiency Manitoba is focused on a customer-centric, data-driven approach, striving for collaboration and engagement with Manitobans to ensure programs and offers deliver value to customers. Branding and customer engagement initiatives will achieve several important objectives:

- Establish Efficiency Manitoba as a neutral source for energy information and advice.

- Differentiate Efficiency Manitoba from the former Power Smart brand and assure customers that Efficiency Manitoba is going to not only deliver on the aspects of Power Smart that customers had come to enjoy and expect, but also create new and innovative outreach, engagement, programs and initiatives.
- Empower Manitobans to make informed decisions about their energy use by providing the necessary tools and resources.
- Create social change through grassroots marketing efforts whereby energy conservation becomes the norm.

A9.2.2 CUSTOMER RELATIONSHIP MANAGEMENT & DEMAND-SIDE MANAGEMENT TRACKING SYSTEM

One important strategy to provide an exceptional customer experience at Efficiency Manitoba is to create a foundational and comprehensive Customer Relationship Management/Demand Side Management (CRM/DSM) system. The CRM/DSM system described in *Appendix A - Section A2* will be the system used to manage all of Efficiency Manitoba's relationships and interactions with existing and potential new customers. This system will also function as a combined database to track participation for all market sectors.

The CRM/DSM system will provide customers and contractors with an online portal to submit and track the status of applications via their desktop or mobile device, optimizing their experience with Efficiency Manitoba's programs. The system will also improve business processes and communication carried out by Efficiency Manitoba by organizing participant demographics, creating reports for analysis and decision making, and automating stakeholder communication. It will minimize costs, paper

waste, and red tape for customers seeking to engage with Efficiency Manitoba and will ultimately allow Efficiency Manitoba to use its resources to better and more cost effectively serve the energy conservation needs of Manitobans.

A9.2.3 ENGAGING TRADE ALLIES & ASSOCIATIONS

Collaboration with industry and stakeholders will deliver on Efficiency Manitoba's customer-focused commitment. Developing and maintaining strong relationships with industry will be an important factor to the success of the programs and offerings and in meeting the electricity and natural gas savings set out in The Efficiency Manitoba Act (the "Act") and corresponding Regulation.

An important factor in enhancing capacity and engaging the market is offering technology and system training to trade allies including contractors, suppliers and distributors. Many programs will have requirements that go beyond building codes and common installation practices; working with industry to understand what knowledge gaps may exist will help to build capacity and skills to achieve success.

Training contractors on energy efficiency systems ensures high-quality installations that are properly maintained, resulting in persisting energy savings. Contractor surveys, conversations with trade allies, and liaising at industry events are other ways Efficiency Manitoba will engage with stakeholders to ensure a collaborative partnership to continually enhance participating customer experience.

A9.2.4 ENERGY EFFICIENCY ADVISORY GROUP

As described in *Section 3*, fulfilling requirements under Section 27 of the Act, and based on the Efficiency Manitoba Stakeholder Engagement Model, the Energy Efficiency Advisory Group was developed and is comprised of 12 members. These

members provided opinions and advice to Efficiency Manitoba about the development and implementation of the first three-year plan including viewpoints from Indigenous, social, environmental, technical, and economic perspectives. Regularly scheduled and professionally facilitated meetings occurred with the opportunity for members to provide feedback focused on the customer or market they represented.

A9.2.5 ENGAGING COMMUNITIES

Engaging Manitobans through a community approach allows for community-led development and results in progress towards locally owned visions and goals. Partnering with municipalities and Indigenous communities to take a holistic approach to energy efficiency, aided by dedicated local energy advocates, creates a deeper sense of pride and ownership in the actions taken to create a sustainable culture in the community.

The objective of Efficiency Manitoba's community energy efficiency programs for municipalities and Indigenous customers is for communities to increase energy efficiency participation and reduce natural gas and electricity consumption by being engaged and active partners in energy-saving initiatives. A data-driven and collaborative approach will be used to aid in the creation of community energy plans, which will form the foundation of a community's long-term approach to conservation of energy and other resources. Efficiency Manitoba will work with communities to set participation and energy saving targets that assist in the formation of a broader community plan. Energy reduction will be a component of an overall sustainability

strategy as communities gain resiliency and start thinking long-term as they expand and develop policies.

Efficiency Manitoba will assist communities in supporting local energy advocates to raise awareness of, and participation in, energy efficiency programs and services, both through financial means and continual training. The program also aims to alleviate any administrative burdens by guiding the energy advocate through the participation requirements. The program and communities will be encouraged to work with additional third-party entities, such the Federal government (Natural Resources Canada and Indigenous Services Canada), Quality Urban Energy Systems of Tomorrow (QUEST), and Federation of Canadian Municipalities to leverage existing grants or funding that may be available to support community efforts.

While specific energy savings are not directly attributed to this enabling strategy, the program will provide educational opportunities for communities to learn about energy efficiency and help communities to use programs for energy efficiency upgrades. This will increase savings in other programs offered by Efficiency Manitoba where savings are directly attributable.

A9.2.6 EDUCATION

Educating customers and industry on their energy use and the technologies available to increase efficiency will build capacity and strengthen awareness of programs and offerings. Manitobans will be presented with educational materials to enable them to make informed choices in their daily energy use. Efficiency Manitoba's website will feature educational blog posts formed from customer feedback, while targeted social media ads will reach and educate customers in key markets.

Having energy efficiency built into appropriate curriculum development for early years, secondary, and post-secondary education will allow Efficiency Manitoba to capture the attention of the next generation and plant the seed of efficient energy usage within Manitoba. The youth of today will carry these habits into the future as home and business owners. Efficiency Manitoba post-secondary engagement may include participation on advisory boards, training through college/university partnerships, and supporting energy efficiency curriculum development (which would lead to increased participation).

Program-specific offerings, such as incentives for energy modeling in new buildings, create a signal to the market to train energy modellers and build capacity. Training programs that support the study of existing building energy use and building optimization would have long-term energy savings benefits and create job opportunities that align with program offerings, spurring economic development in the province.

A9.3 EMERGING TECHNOLOGIES

Emerging technologies form the foundation for the next stage of energy savings for Efficiency Manitoba. In the early stages of energy efficiency technology adoption, there are often barriers that impede mass market adoption. Efficiency Manitoba will seek out new technologies which are well-suited to reduce the energy consumption of Manitobans and will work with the local supply industry and consumers to reduce barriers to adoption. Barriers may include low awareness of the technology, high capital cost, resistance to change, hesitation to take on the perceived risk associated with a newer technology, insufficient product availability, and a shortage of local

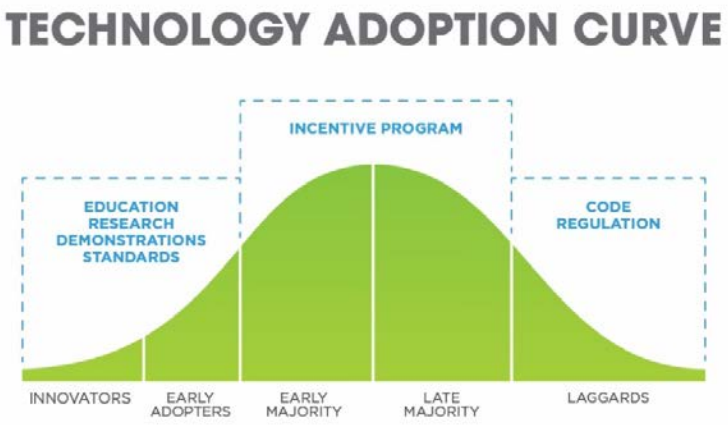
installers skilled in installing or servicing the technology. In the short term, emerging technologies can see more costs than savings as strategies to introduce and advance these new products in the market are deployed. Current emerging technologies that Efficiency Manitoba is proposing are listed in *Appendix A – Section A8*.

Conducting research to determine the most significant barriers and implementing strategies to mitigate these barriers is critical in advancing the adoption of emerging technologies. Advancing market adoption of emerging technologies is paramount to ensure Efficiency Manitoba continues to achieve its legislated long-term energy savings targets.

A9.3.1 TECHNOLOGY ADOPTION LIFECYCLE

Also called a market acceptance curve, the technology adoption lifecycle is based on the idea that certain individuals are more open to adopting new technology than others. This is an area of strategic focus for current and future energy savings. In the infancy stage of a technology, Efficiency Manitoba will research and support its entry to the market with financial, educational, and technical support through demonstrations and pilot projects as innovators look for the next opportunity for increased energy savings. These activities serve to address the early barriers common to emerging technologies thereby readying the technology to enter into the market majority stages of the adoption curve.

FIGURE A9.1 TECHNOLOGY ADOPTION CURVE



A9.3.2 MARKET RESEARCH & STUDIES

In addition to promoting the adoption of more established energy conservation technologies or strategies, Efficiency Manitoba will continually monitor the energy conservation landscape to keep abreast of new technologies, strategies, and trends. This will ensure Efficiency Manitoba is continually innovating with its overall portfolio of offerings.

Efficiency Manitoba will conduct primary research in the Manitoba context, and will leverage a vast array of secondary research that is available on the topic of energy efficiency through specialized organizations. Given Efficiency Manitoba's start- up status, understanding customer awareness of, and attitudes towards, energy efficiency at the onset will be critical to ensure customers are receiving the right messaging in a manner that engages and solicits action. Primary market research studies and methodologies can give sophisticated insight on demographic analytics and consumer behaviours, which can aid in focused, and therefore more cost-effective, advertising and marketing strategies. This research also establishes a key

baseline from which Efficiency Manitoba can measure the impact of brand awareness and consumer education efforts.

Secondary research is published by a variety of energy conservation organizations including:

- E Source: provides focused research and consulting for North American utilities and energy efficiency service organizations;
- Association of Energy Service Professionals (AESP): a member-based association dedicated to improving the delivery and implementation of energy efficiency and DSM programs;
- American Council for Energy Efficient Economy (ACEEE): acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviours;
- Consortium for Energy Efficiency (CEE): a North American membership-based group of efficiency program administrators that work to support shared interest within the energy efficiency landscape;
- ENERGY STAR Canada: a voluntary partnership between the Government of Canada and industry to make high efficiency products available and visible to Canadians;
- Natural Resources Canada (NRCan): seeks to enhance the responsible development and use of Canada's natural resources and the competitiveness of Canada's natural resource products;

- International Energy Agency (IEA): examines the full spectrum of energy issues including oil, gas, coal, renewable energy, electricity markets, energy efficiency, access to energy, and more;
- other utilities and energy efficiency service organizations;
- equipment manufacturers; and
- academia.

A9.3.3 TECHNICAL ASSESSMENT

A product that is promoted and adopted in other jurisdictions may not fall on the same technology adoption curve in the Manitoba market given the climate and energy rates. The energy expertise developed in Manitoba over the past several decades will continue to benefit Manitobans and protect their interests. This protection will be provided through Efficiency Manitoba by assessing the validity of energy savings claims made by equipment manufacturers and suppliers that have a vested interest in selling their products. Efficiency Manitoba will assess these technologies against the following criteria prior to promoting them to Manitobans:

1) Safety: determine the risk of potential safety issues and operational problems that could result from use of the product.
2) Science/engineering: determine the science and engineering principles involved with the product savings claims potential and assess the validity.
3) Performance testing documentation: assess the validity of the performance testing that the product has undergone and whether it is achievable in Manitoba's extreme climate conditions.

4) Savings and economics: determine the savings and economics of installing the product from the perspective of both Efficiency Manitoba and the customer.

A9.3.4 PILOT PROJECTS & PARTNERSHIPS

Pilot programs and research support the new technologies that will propel Efficiency Manitoba's savings in later years. Pilot projects are the building blocks to a more energy-efficient Manitoba; they can also fuel economic growth, create new jobs, and spark local industries. Partnering with academia will provide educational experience for students, while project co-funding provides the opportunity for more innovative ideas to reach their potential, all while studying energy use and planning for future pilot projects.

As discussed in *Section 7*, Efficiency Manitoba has budgeted for an innovation and research fund that will drive activity in pilot projects and partnerships in research. Strategies will be developed to best use this fund, which could include partnering with other funding agencies, submitting joint proposals for funding, putting out competitive bids for innovative projects in Manitoba, and seeking in-kind arrangements or tie-in with academic research initiatives. Efficiency Manitoba will also hire a service provider to complete a DSM market potential study. These studies are used to identify the technical, economic, and achievable energy savings potential within a jurisdiction.

Efficiency Manitoba will undertake pilot projects and partnerships to test ways to meet changing market conditions, reach underserved customers segments, demonstrate whether an approach is well-suited for Manitoba, reduce the customer's

risk by lower capital costs through rebates, and learn through the collection of field-monitored data. Examples of these initiatives include exploring:

1) net-zero (or near net-zero) options for new commercial buildings;
2) opportunities to help businesses manage and reduce energy and demand costs (for example, using sub-metering data to identify energy and demand reduction opportunities, and promoting building optimization software);
3) researching and testing service delivery approaches to encourage dynamic energy management and control at commercial building sites;
4) new service delivery approaches for homes and business (for example, a whole-home/business deep energy retrofit approach as opposed to a "program-by-program" approach); and
5) the savings potential of the growing home automation market.

In addition to projects that Efficiency Manitoba seeks out, new pilot program proposals that meet pre-determined technical assessment criteria, have the potential for energy savings, or reach an underserved market will be considered, and budgeted innovation funding will be used for this purpose when applicable.

Pilot projects and demonstrations will be put through a staging process that determines if a technology is ready to advance towards a larger market incentive program. Initially, programs would be moved to the Emerging Technology Programs offer to focus on the market and industry strength before moving to larger-scale offerings for Manitobans.

A9.4 CODES & STANDARDS

A9.4.1 OVERVIEW

As technologies mature and achieve higher adoption levels in the market, DSM program incentives and promotional activities to encourage the installation of these technologies will be decreased and eventually discontinued. In many markets, the most effective and permanent form of achieving market transformation for energy-efficient technologies and practices is the implementation of energy-efficient codes and standards. These regulations ensure that customers do not revert back to inefficient technologies and practices when the DSM program is discontinued.

A9.4.2 APPROACH

Efficiency Manitoba's approach to affect change in codes and standards involves being an active participant in several national energy efficiency building codes and performance standards committees. Standards are subsequently referenced in national and provincial regulations that mandate minimum energy performance levels for a variety of appliances, equipment, and other energy-consuming measures. Efficiency Manitoba's efforts on these committees is to represent the Manitoba climate and market to advance the progress of product efficiency improvements and building codes proposed by national and provincial regulators.

Given the coordinated process of developing energy efficiency codes and standards across all Canadian jurisdictions, this strategy is a cost-effective method of achieving permanent energy savings as Efficiency Manitoba is able to leverage funding and technical expertise from several utilities, services providers, and provincial governments that have similar goals and mandates.

A9.4.3 CODE, STANDARD & REGULATION DESCRIPTIONS

BUILDING ENERGY CODES

A building code is a set of rules that specify the minimum acceptable level of safety for constructed buildings. Historically building codes focused on health and safety; and in 2012, Energy Efficiency was added as an objective of building code.

Efficiency Manitoba will participate in the national code development process to provide input on energy efficiency in both residential and commercial new construction. This participation will be done at both the steering committee level and within several technical subcommittees.

In these forums, Efficiency Manitoba will be able to bring Manitoba's unique cold climate perspective to committees, which often tend to focus on eastern and coastal climate zones given the population distribution in Canada. Having a well-respected technical perspective will allow Efficiency Manitoba to bring forward requirements for higher performance in parts of the code that are particularly susceptible to climate issues, which will result in practical and economic solutions for reducing energy consumption in buildings.

ENERGY PERFORMANCE STANDARDS

A standard specification is an explicit set of requirements for an item, material, component, system or service. A standard test method describes a definitive procedure which produces a test result. National committees focus on advancing the progress of product efficiency improvements. This is accomplished through the development of standardized product test methodologies that facilitate the measurement and comparison of product performance. As well, minimum energy

performance levels are established for a variety of appliances, equipment and other energy consuming measures. These minimum levels reasonably represent performance improvements available from commercially viable product enhancements.

At a national level, Efficiency Manitoba will be an integral member of the Canadian Standards Association (CSA) Standing Committee for Performance, Energy Efficiency and Renewables (SCOPEER) by providing direct support, technical expertise, and leadership to the national effort. Efficiency Manitoba will have the ability to influence specifically which standards are being developed. Once a standard receives full funding commitment, a Technical Sub Committee (TSC) is formed to either create a standardized test methodology for evaluating energy performance or to develop Minimum Energy Performance Standards (MEPS) that can be referenced by regulations and DSM programs. TSCs are made up of manufacturers/distributors (that is, equipment and system vendors), end-users, regulators, and energy efficiency providers/utilities, with each individual participant being recognized as a technical expert. Efficiency Manitoba will actively participate on the TSCs, bringing Manitoba's perspective to the MEPS development.

ENERGY EFFICIENCY REGULATIONS

Energy using products imported into Canada or traded inter-provincially may be regulated by the Government of Canada under the Energy Efficiency Act. These regulations do not apply to products manufactured and sold in Manitoba.

Through the provision of technical support and market data, Efficiency Manitoba supports industry acceptance and government approval as it relates to energy

efficiency regulations. Efficiency Manitoba anticipates future consultation with the Province on the implementation of recommendations outlined in the discussion document; "a Framework for Minimum Energy Performance Standards in Manitoba" that will form the basis of the provincial strategy moving forward.

At the national level, Efficiency Manitoba's efforts will be focused on developing Energy Performance Standards and implementation of amendments to Canada's Energy Efficiency Act, covering energy-consuming products commonly used by the residential, commercial, and industrial sectors.

Efficiency Manitoba's support for this national effort addresses Manitoba's energy needs as they relate to the local climate and other energy drivers. For example, common white goods (large electrical goods used domestically such as refrigerators and washing machines) purchased by Manitoba consumers are imported into Canada by local wholesalers and retailers, who are subject to federal regulations at the point of entry into Canada. Federal regulations that include consideration of Manitoba's needs support the goals and objectives of Efficiency Manitoba's DSM strategy, and provide an important compliance mechanism to prevent underperforming products from entering the Manitoba market.

Manitoba's energy efficiency expertise and knowledge surrounding energy-consuming equipment and the drivers for the province's heating and cooling requirements are well respected across Canada, making Efficiency Manitoba's voice an important influence at the federal and provincial levels when changes to codes and standards are discussed. In providing this expertise, Efficiency Manitoba demonstrates Manitoba's proficiency in supporting energy efficiency within Canada.

A9.4.4. ATTRIBUTION

According to the Efficiency Manitoba Regulation Section 8(1)(c):

> *Net savings in the consumption of energy or natural gas count towards the respective savings target established in Section 7 of the Act if the net savings are reasonably attributable to a code, standard or regulation to which Efficiency Manitoba or Manitoba Hydro has made a material contribution to.*

As outlined in *Section 9* of this submission, Efficiency Manitoba will work closely at both the national and provincial levels to influence the development of codes, standards, and regulations. This participation enables Manitoba's cold climate perspective to be considered at the national level, and ensures that the developed codes, standards, and regulations deliver energy savings in Manitoba.

One issue with achieving savings from codes and standards relates to compliance. Once a code or standard is implemented, there may still be issues with the market complying with these new requirements. To manage this, Efficiency Manitoba will work closely with Provincial departments to support compliance activities in the market which assists in the implementation of codes and standards. Efficiency Manitoba's third-party evaluator will confirm attribution of savings resulting from codes and standards.

A9.4.5 NET ENERGY SAVINGS

Codes, standards, and regulations are an integral component of Efficiency Manitoba's overall energy savings strategy. Forecasted energy savings from codes and standards are based on the incremental savings between the energy consumption of the base

technology and the code or standard. When a code or standard is forecast in Manitoba, only the incremental savings between the technology promoted through the program and the code or standard is captured. This ensures that the overall portfolio energy savings are not overstated. Energy savings from codes and standards efforts are also adjusted for interactive heating and cooling effects. For example, any electric energy savings from lighting regulations in natural gas heated buildings will result in an increase in natural gas heating requirements for that building. This increase in natural gas consumption is netted against the natural gas energy savings from codes and standards.

Table A9.1 outlines the annual forecasted savings from Efficiency Manitoba's energy efficient codes and standards initiatives.

TABLE A9.1 ANNUAL FORECASTED SAVINGS FROM CODES & STANDARDS INITIATIVES

	Electric savings						Natural gas savings		
	2020/21		2021/22		2022/23		2020/21	2021/22	2022/23
	MW	GWh	MW	GWh	MW	GWh	million m^3	million m^3	million m^3
Residential Building Code	4.2	16.1	3.8	14.8	3.5	13.6	4.1	4.1	4.0
Residential General Service Lighting Standards	7.2	17.1	11.0	26.1	13.1	31.1	(0.8)	(0.4)	(0.2)
Residential Appliance Standards	2.8	17.2	2.4	15.4	2.1	13.7	0.0	0.0	0.0
Other residential equipment standards	0.0	3.8	0.0	3.5	0.0	3.2	0.0	0.0	0.0
Commercial Building Code	5.6	18.7	8.3	28.1	9.5	31.8	0.5	0.8	0.9
Commercial General Service Lighting Standards	3.1	14.5	3.1	14.5	3.1	14.5	(0.3)	(0.3)	(0.3)
Other commercial equipment standards	0.0	0.6	0.0	0.6	0.0	0.5	0.0	0.0	0.0
Total	**22.9**	**88.0**	**28.8**	**102.9**	**31.3**	**108.4**	**3.5**	**4.1**	**4.4**

ATTACHMENT 1
GLOSSARY

2020/23 EFFICIENCY PLAN

GENERAL TERMS & DEFINITIONS
COST & SAVINGS TERMS & DEFINITIONS
ABBREVATIONS & ACRONYMS

EFFICIENCY MANITOBA

CONTENTS

ATTACHMENT 1

GLOSSARY

ATTACHMENT 1.1 GENERAL TERMS & DEFINITIONS

Affordable Energy Fund (AEF): Established through the Winter Heating Cost Control Act, S.M. 2006, c.5. The purpose of the fund at origin was to encourage energy efficiency and conservation for electricity and natural gas. The scope of the Affordable Energy Fund expanded with The Energy Savings Act, S.M. 2012, c. 26 (further expanded on below). As prescribed in Section 14 of the Efficiency Manitoba Regulation, Efficiency Manitoba must use the Affordable Energy Fund only to undertake initiatives to encourage and realize efficiency improvements and conservation in the use of home heating fuels other than electrical energy or natural gas, and not for any other purpose.

At generation: The measurement of electricity at the generating station. This measurement does not consider the losses in electricity that occur when the generated electricity is transmitted and distributed to the customer's meter. The measurement of electricity at generation is higher than the same electricity at meter due to the line losses that occur.

At meter: The measurement of electricity at the customer meter. This measurement considers the losses in electricity that occur when the generated electricity is transmitted from the generating station and distributed to the customer's meter. The measurement of electricity at meter is lower than the electricity at generation due to

the line losses that occur. Measurement at meter also reflects energy consumption and factors into customer billing.

Centra Gas ("Centra"): A wholly owned subsidiary of Manitoba Hydro. Represents the natural gas supply for the Province of Manitoba.

Carbon dioxide equivalent (CO_2e): CO_2e is a quantity that describes, for a given mixture and amount of a greenhouse gas, the amount of CO_2 that would have the same global warming potential when measured over a 100-year timescale.

Codes & standards: Building energy codes and product performance standards set minimum efficiency requirements for buildings and technologies. These provide an opportunity to achieve energy savings through efficient building design, technologies, and practices.

Cubic meter (m^3): see million cubic meter below.

Customer: Any person, homeowner, business, corporation, firm, or consumer who has or will apply for or participate in an energy-efficient offer, program, or other service provided by Efficiency Manitoba.

Delivery Partners: A contractor, installer, retailer, or service professional that implements energy efficiency in their regular course of business and who utilizes Efficiency Manitoba programs to promote their services.

Demand: The rate at which electricity is used, measured in kilowatts (kW) or kilo volt-ampere (kVA).

Electric Load Forecast: A document developed annually by Manitoba Hydro that forecasts Manitoba future electric load requirements.

Energy: The amount of electricity or natural gas used over a certain time period, measured in kilowatt hour (kWh) or cubic meter (m^3).

Energy Savings Act: Pending repeal recognizing the establishment of the Efficiency Manitoba Act. The Energy Savings Act (S.M. 2012, c.26) expanded the scope of the Affordable Energy Fund to include the support of home heating fuels other than electricity and natural gas, renewable energy sources, and social enterprises.

Fiscal year: The fiscal year of the corporation begins on April 1 and ends March 31.

Furnace Replacement Program (FRP): Established in accordance with Board Order 99/07 of the PUB to Centra Gas to assist with the furnace replacement for qualified low income customers and qualified fixed income seniors. The FRP account was established in accordance with Directive 20 of Board Order 99/07 of the PUB.

Gigawatt-hour (GWh): Electric energy consumption of 1,000,000 kilowatt-hours.

Greenhouse gas (GHG): A gas in the atmosphere that traps energy from the sun.

Greenhouse gas (GHG) emission factor: A common measure to quantify the global warming potential for each individual fossil fuel, measured in tonnes CO_2e per m^3. CO_2 emission factors for fossil fuel combustion depend primarily on fuel properties such as carbon content, density and heating value and, to a lesser extent, on the combustion technology.

Kilowatt-hour (kWh): The basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit steadily for one hour.

Million cubic meters (million m^3): The volume of natural gas which occupies one cubic meter when such gas is at a temperature of 15.56 degrees Celsius, and at a

pressure of 101.560 kilopascals absolute. Natural gas will be referenced as million m^3 unless otherwise stated.

Portfolio: Includes all electric or natural gas energy efficiency program bundles. May also be referred to as the electric portfolio or natural gas portfolio, respectively.

Power Smart®: British Columbia (BC) Hydro brand licensed to Manitoba Hydro and under which Manitoba Hydro ran its energy conservation programming from 1991 through to April 2019.

Program bundle: Technologies and measures have been organized into program groupings based on shared features, such as similar technologies and delivery strategies within a customer segment. Designed to improve and streamline the customer experience, internal processes, and lead to cost savings. May also be referred to as program offers or program bundle level.

Savings load shape: For electricity, the savings load shape refers to the distribution of energy savings into on-peak or off-peak and winter and summer. For natural gas, the savings load shape simply refers to the distribution between winter and summer. The load shape varies between programs and can be a function of the target market segment, the end-use for the program technology, or other unique characteristics of the program.

Seasonal residence: A residence that is not a primary residence and is used on an intermittent or casual basis.

Service provider: By way of a procured contract, an organization formally operating on behalf of Efficiency Manitoba to deliver an energy efficient offer, program, or other service available through Efficiency Manitoba. See also "Third-party."

System winter/summer on-peak savings (electricity only): This value is determined based on estimates and assumptions which consider coincidence of demand (capacity) and electric energy savings as they relate to the operational characteristics of each measure in relation to the timing of the hydroelectric system peak on an hourly and monthly basis for both seasonal periods.

Third-party: By way of a procured contract, an organization formally operating on behalf of Efficiency Manitoba to deliver an energy efficient offer, program, or other service available through Efficiency Manitoba. May be referred to as third-party contractor or third-party service provider. See also "Service provider."

Trade Allies: Categorized broadly as retailers, contractors, architects, consulting engineers, distributors, and wholesalers.

Weather-adjusted / normalized: Adjusted to remove the effect of deviations between annual average weather patterns.

Winter Heating Cost Control Act: This Act (S.M. 2006, c.5) established the Affordable Energy Fund to encourage energy efficiency and conservation for electricity and natural gas.

ATTACHMENT 1.2 COST & SAVINGS TERMS & DEFINITIONS

Cost-benefit analysis (CBA): A method of evaluation that compares the total costs of a program, program bundle or portfolio with its benefits to determine its cost-effectiveness.

Cost-effectiveness: An indicator of the relative performance or economic attractiveness of any investment or practice. In the energy efficiency field, the present value of the estimated stream of benefits produced by an energy efficiency measure or program is compared to the present value of the stream of costs of that measure or program.

Free driver: Customers who do not participate in a program but who are influenced by the program and install the energy efficiency measure or take the energy efficiency action anyway. Estimates of free driver energy savings and load reductions are included in the net savings. There are no costs to the program of these customers.

Free rider: Program participants who would have installed the energy efficiency measure or taken the energy efficiency action without the program. Energy savings estimates and load reductions from these participants are not included in net savings. However, the costs of these participants are included in the program costs.

Incentives: Financial benefit offered to encourage energy efficient behaviours and/or actions. The incentive can be offered to customers, contractors, suppliers, manufacturers, or other participants in the market that provide energy-efficient technologies or services.

Interactive effects: The impact of the installation of an energy-efficient measure on the heating and cooling requirements of the area where it is installed. For example, changing an incandescent bulb to an LED bulb reduces the electric energy used and reduces the waste heat produced by the light within the space. This may result in an increase in energy required to heat the space in the winter and a decrease in the energy required to cool the space in the summer.

Levelized PACT (¢/kWh or ¢/m^3): Used to provide an economic cost for the energy saved through an energy efficiency program. The levelized cost provides the total cost of the conserved energy based upon Efficiency Manitoba's financial contribution on behalf of the customer on a per-unit basis levelized over a fixed time period. The cost value allows for a comparison to other supply options and other energy efficiency programs occurring over different timeframes.

Persistence factor: The persistence factor relates to the percentage of energy-efficient measures that remain installed over the product lifetime. Some customers never install a technology even though they have purchased it, some technologies stop working, and some technologies are removed by customers prior to the end of their product life. The persistence factor affects the per-sale impacts and, in turn, the benefits of the program. The greater the factor is, the higher the benefits will be. However, the factor cannot be more than 100 percent.

Product mix: The total weighted average of the technology mix, factored by the persistence factor estimate that are used in the calculation of program savings.

Program Administrator Cost Test (PACT): Cost-effectiveness test from the perspective of the entity implementing the program. The electric and natural gas

benefits are Manitoba Hydro's electrical and natural gas marginal values, respectively. The costs are Efficiency Manitoba's program design, delivery, administration, and incentive costs. It can be presented as a ratio, a net present value (NPV) or a levelized cost.

Program Administrator Cost Test net present value ("PACT NPV"): Presents the PACT cost-effectiveness as a net present value, calculated as the NPV of the benefits less the NPV of the costs. It reveals if the economic value of the benefits that are associated with an energy efficiency program are greater than the costs. It applies the identical marginal benefit and cost streams as the PACT ratio.

Program Administrator Cost Test ratio ("PACT ratio"): Presents the PACT cost-effectiveness as a ratio. Calculated as the NPV of the annual benefits divided by the NPV of the annual of costs over the time horizon considered. It applies the identical marginal benefit and cost streams as the PACT NPV. A ratio of 1.0 or higher demonstrates a positive benefit.

Rebate: A type of financial incentive that provides customers a payment in return for purchasing certain energy-efficient products. Payment can be made in the form of an instant rebate during the original customer transaction or made following the original customer transaction upon customer applying for the rebate. A rebate is a form of financial incentive.

ATTACHMENT 1.3 ABBREVIATIONS & ACRONYMS

The Act: The Efficiency Manitoba Act

AEF: Affordable Energy Fund

AMM: Association of Manitoba Municipalities

CAC-MB: Consumers' Association of Manitoba

CIA: Commercial, Industrial, Agricultural

CCGAA: Crown Corporations Governance and Accountability Act

CRM/DSM system: Customer relationship management and demand-side management system

DSM: Demand-side management

EACCGP: Expert Advisory Council on the Climate and Green Plan

EEAG: Energy Efficiency Advisory Group

ECO Canada: Environmental Careers Organization Canada

FRP: Furnace Replacement Program

GAC: Green Action Centre

GHG: Greenhouse gas

IISD: International Institute of Sustainable Development

KAP: Keystone Agricultural Producers

LED: Light Emitting Diode

182 LICO: Low income cut-off rate

183 MH: Manitoba Hydro

184 MIPUG: Manitoba Industrial Power Users' Group

185 MKO: Manitoba Keewatinowi Okimakanak Inc.

186 MMF: Manitoba Metis Federation

187 MUSH: Municipalities, universities, schools, hospitals

188 The Plan: The Efficiency Manitoba 2020/23 Efficiency Plan

189 POP: Point-of-purchase

190 PUB: Public Utilities Board

191 PV: Photovoltaic

192 SCO: Southern Chiefs Organization

ATTACHMENT 2
ENGERY EFFICIENCY ADVISORY GROUP REPORTING

2020/23 EFFICIENCY PLAN

EEAG TERMS OF REFERENCE
EEAG MEETING RECORDS

EFFICIENCY MANITOBA

Efficiency Manitoba Advisory Group
Terms of Reference
May 2019 – September 2019

These Terms of Reference are intended to help the newly formed Efficiency Manitoba and its Advisory Group work together effectively. These were developed with input from Advisory members collected in Spring 2019 and are intended to guide the work of the Advisory Group during the Efficiency Manitoba 3-Year Plan Development Process. In future these Terms of Reference will be updated or added to as needed.

A. Background

- Efficiency Manitoba was created by *The Efficiency Manitoba Act* (the Act) which was proclaimed on January 17, 2018
- Efficiency Manitoba is a new crown corporation – a new entity with a new mandate, separate and distinct from Manitoba Hydro
- Efficiency Manitoba is currently working to become operational by April 2020
- Preliminary work has begun on Efficiency Manitoba's first 3-Year Plan

B. Intent, composition

- In 2019, the intent of the Advisory Group is to work with Efficiency Manitoba in advance of a Fall hearing to ensure that the inaugural Plan that is brought before the Public Utilities Board represents the optimal compilation of actions and strategies while also meeting the mandated savings targets in a cost-effective manner
- Efficiency Manitoba sees this as a foundational step to support strong, lasting relationships with experts, groups, organizations, government entities and stakeholders including those with perspectives and insight to share that may include:
    - Experience and expertise in energy efficiency
    - Knowledge of the Public Utilities Board (PUB)
    - Experience in previous interventions on the topic of demand side management
    - Experience acting for a customer group whose interest Efficiency Manitoba would like to ensure is represented in the crown corporation's plan
    - Other, as determined
- It should be noted that with respect to participation by individuals and/or organizations, governments and nations representing indigenous peoples, the Advisory Group process does not constitute consultation as defined under Section 35 of the Constitution Act.

C. Advisory Group commitment and responsibilities

- The initial engagement period for the Advisory Group will be April – September 2019, prior to the PUB hearing on the 3-year Plan. During that period, it is anticipated that up to approximately six meetings will be held, though attendance at meetings is not mandatory and other means of participation are supported and encouraged to suit the needs of the Advisory Group member including:
    - Video conferencing to meetings
    - Document review and feedback
    - Submitting briefs
    - Requesting and receiving presentations
    - Other means, as determined

- Advisory Group members are asked to help facilitate communication and engagement with your communities and/or networks

D. Group guidelines

- Ensure communication is two-way, and is proactive and responsive
- Diverse and divergent perspectives are expected, welcome and necessary
- Kindness, respect and listening to understand will guide interactions
- Some flexibility may be required to support participation; we will adjust as we go
- Objectives and opportunities to solicit advice and input from advisors will be assessed iteratively
- Participation as an advisor does not preclude applying for intervenor status for PUB hearings
- Potential conflicts of interest will be declared to the group

E. 3-Year Plan Schedule

May 2019	Kick Off • Friday May 31, 2019, 12:00 – 2:00p.m
June 2019	Customer segments, programs: Residential, Low Income and Indigenous Community Customers • Thursday June 13, 2019, 12:00 – 3:00p.m. Customer segments, programs: Commercial, Industrial, Agricultural: • Friday June 14, 2019, 12:00 – 3:00p.m. Enabling Strategies and Cost-benefit analysis • Thursday June 27, 2019, 12:00 – 3:00p.m.
July 2019	Input on draft portfolio of programs and 3-Year Plan outline • Document review with July 31, 2019 deadline for response • Option for small group or one-on-one meetings, presentations
August 2019	Interim update, report back • Mid-August 2019 Date TBD , 12:00 – 3:00p.m.
September 2019	Final pre-hearing plan update • Early/mid-September 2019 Date TBD, 12:00 – 3:00p.m.

F. Protocols and communications

- An independent meeting facilitator will facilitate Advisory Group meetings.
- Advisory Group correspondence and meeting RSVPs to be directed to: Carrie Werschler, Carrie.Werschler@efficiencymb.ca
- Meeting notes will be used to document Advisory Group activity and discussion as part of Efficiency Manitoba requirements in the Act.
- Notes, along with presentations and supporting materials referenced in Advisory Group meetings, will be provided electronically for use by participants, to share updates and information with their communities, members and/or stakeholders.
- in some cases foundational documents may be provided in hard copy for ease of reference, or upon request from participants.

Blueprint.

Efficiency Manitoba
Energy Efficiency Advisory Group (EEAG)
Meeting Report | May 31, 2019
Kick off

Blueprint.

A. Kick off meeting agenda

Purpose:

- Welcome and introductions, kick off advisory process
- Provide overview of Efficiency Manitoba and 3-year planning process
- Review Advisory Group process, Terms of Reference, schedule
- Understand Advisory Group members' hopes for this process, questions and concerns

Agenda:

12:00 p.m. (10 min) 1. Welcome, acknowledgements

12:10 p.m. (30 min) 2. Lunch and getting to know each other

12:45 p.m. (50 min) 3. Efficiency Manitoba overview, transition, 3-year plan process

1:35 p.m. (10 min) 4. Advisory Group schedule, Terms of Reference

1:45 p.m. (15 min) 5. Next steps: Customer segments

2:00 p.m. 6. Close

Blueprint.

B. Meeting Attendees

	Organization	**Name**
1	Association of Manitoba Municipalities (AMM)	Nick Krawetz
2	Blueprint Inc (facilitators)	Etoile Stewart
3	Blueprint Inc (facilitators)	Michelle Kuly
4	Consumers' Association of Manitoba (CAC-MB)	Gloria Desorcy
5	Efficiency Manitoba (EM)	Colleen Kuruluk
6	Efficiency Manitoba (EM)	Michael Stocki
7	Green Action Centre (GAC)	Peter Miller
8	Intergroup, on behalf of Manitoba Industrial Power Users' Group (MIPUG)	Patrick Bowman
9	International Institute of Sustainable Development (IISD)	Daniella Echeverría
10	Keystone Agricultural Producers (KAP)	Patty Rosher
11	Manitoba Keewatinowi Okimakanak Inc. (MKO)	Stewart Hill
12	Manitoba Metis Federation (MMF)	Marci Riel
13	Southern Chiefs Organization (SCO)	Coty Zachariah

Regrets:
Colleen Sklar, Expert Advisory Council on the Climate and Green Plan (EACCGP)

Blueprint.

C. Minutes

Agenda item	Minutes
1. Welcome, acknowledgements	Territorial acknowledgement Opening remarks from Efficiency Manitoba (EM) Review of housekeeping items and meeting materials (MK) Bill 19 provided as handout
2. Lunch and getting to know each other	Introductions (go around). Each member was asked to introduce themselves and briefly describe their hopes for the advisory process. • CAC-MB is happy this is happening; hope we won't just be responding but also bringing ideas forward. • MMF looking forward to moving forward on existing commitments to Metis communities and Indigenous communities at large. Hope to focus on implementation. • Hope to see programs that were jointly developed with AMM under the Power Smart program continue with EM. • GAC is interested in mandate re: savings but also interested in other mandates for EM such as emission reduction; EM could have a big role to play including around electric vehicle roll out for example; affordability should be a priority. • There are 26 communities represented by MKO; we see First Nations get left out of main actions and caught in a struggle between provincial and federal jurisdictions. Interest in seeing how First Nations get engaged in a meaningful, not token way. For example, for four isolated MKO communities reliant on diesel fuel - how will these communities be engaged to connect them to main grid? Here to advocate for aboriginal treaty rights. • SCO represents 32 First Nation communities in Manitoba; here to make sure interests are represented. • Sometimes policy doesn't reflect how it gets applied on the farm, farmers are paying the carbon tax on natural gas and there is interest in making those operations more efficient. Interested in looking at what comes out of this process, farmers react quickly, KAP wants to know that this is going to be an active and maintained group. • IISD would like to understand how this process will look at reduction of natural gas use and overall GHG emissions, sustainability, increase in understanding for consumers re: use; lots happening with federal government re: efficiency programs. • MIPUG is interested in talking about what happens "inside the building" for industrial users; being efficient is crucial to competiveness and how rates really matter; making the most of MB energy resources, optimizing electric etc.;

	concern that legislation is a 90s model about using less vs. efficiency. • EM is here to listen the different perspectives and see what changes we can make together. The group around the table is here to have input and feedback on the plan. Want a meaningful process; Want this group to function in way that people look to Manitoba as a leader in this sort of process. EM has separate mandate and targets from Hydro.
3. Efficiency Manitoba overview, transition, 3-year plan process	EM provided a PowerPoint presentation. Where questions had been raised by EEAG members in advance of the meeting, EM raised and responded to them in their remarks. Additional questions and comments were posed by the group; EM provided responses. Key topics discussed are described below. **Fuel switching versus savings targets** Question of whether EM would oppose electric vehicles (EVs) if the goal is to reduce electric use since an increase in EVs in Manitoba would result in more electric use. To have EVs in EM's mandate, a regulation would have to be made to include them. **Alternatives to hydro electricity and natural gas** Mandate allows EM to pursue renewable energy. Need to consider the energy that renewables displace versus what they generate. The generation component will always be a Manitoba Hydro consideration as it impacts the broader grid. Re: Low carbon economy fund - the Province of Manitoba has applied to assist with natural gas side. Whether EM can partner with communities to apply to low carbon fund is still open for interpretation. EM has recently been asked to sign letters of support for some applicants seeking Federal funding. Integrated resource planning is important to consider. **Power Smart/EM workforce** There is sensitivity in rural municipalities about whether local jobs will be lost/streamlined with this change due to the impact of more recent closure of MH district offices in several municipalities; EM will look at ways to engage local workers where possible. **3-Year Plan** EM clarified that they are creating a 3-year plan, that includes an annual review. EM will continue to project savings in a longer time horizon for MB Hydro's use in their Integrated Resource Planning process.

	Engagement Economic development and social, poverty perspectives will be important for a representative plan. EM provided an overview of who has been invited join the Advisory Group to date. Acknowledged that there was no representative from Economic Development groups at this point. EM is surveying channel partners and industry associations re: what they liked about Power Smart program to inform EM 3-year plan. Marginalized populations need to be engaged. Energy costs impact people living in poverty. Rural and northern communities have unique needs and specific challenges. It is important to engage with First Nations about unique challenges on- and off-reserve including quality of on-reserve housing and applying efficiency standards. Would it be useful to have sub-committees look at specific areas and report back to larger EEAG? **ACTION:** EM to review feedback on engagement participants and structure under consideration and respond by next meeting.
4. Advisory Group schedule, Terms of Reference	Terms of Reference were reviewed by the group. EM noted that an independent Demand Side Management (DSM) expert could attend meetings to support the work of the group if desired. It was noted that participation in this group does not preclude being an intervenor at the Public Utilities Board (PUB) hearing for the Efficiency Plan. It was further noted that the EEAG process is not to be considered consultation with First Nations and Indigenous people under section 35 of the Canadian Constitution. EM confirmed that participating in advisory group does not require 'signing off' on plan submitted for PUB consideration.

	ACTION: EEAG members to provide completed participant information form by June 7 to michelle@blueprintinc.ca **ACTION:** EEAG members to review Terms of Reference and provide feedback to michelle@blueprintinc.ca by June 7 **ACTION:** EEAG members to direct questions concerning meeting logistics to be directed to Carrie at EM as per Terms of Reference **ACTION:** MK to circulate exit survey for EEAG feedback
5. Next steps: Customer segments	The focus of the upcoming customer segment EEAG meetings in June was outlined, and EEAG members were asked for feedback on what information would be helpful to receive. **ACTION:** Request for a baseline forecast regarding energy production/use; would be helpful to make distinction between marketing expertise vs. what is grid doing etc. EM to provide at customer segment meetings. **ACTION:** EM to provide map/data for next meeting with energy use, electric/natural gas split, transmission distribution. Map from Manitoba Hydro was reference as an example. **ACTION:** EEAG members to provide feedback by June 7 to michelle@blueprintinc.ca on what information they would like to receive as part of upcoming customer segment meetings. **DECISION POINT:** Hydro representatives will be invited to attend certain meetings as subject matter experts. EM asked group to confirm that it is ok to invite these reps. to meeting. Group agreed with caveat that everyone understands that this EEAG process does not constitute consultation under section 35 per the Canadian Constitution.
6. Close	Meeting adjourned at 2:20 p.m.
General meeting notes	Room was a bit hard to find. EEAG is open to meeting in other locations.
Action item summary	**ACTION:** EM to review feedback on engagement participants and structure under consideration and respond by next meeting. **ACTION:** MIPUG to provide info on who they represent for clarity on overlap with other sectors like Agriculture. **ACTION:** EEAG members to provide completed participant information form by June 7 to michelle@blueprintinc.ca

	ACTION: EEAG members to review Terms of Reference and provide feedback to michelle@blueprintinc.ca by June 7 **ACTION:** EEAG members to direct questions concerning meeting logistic to be directed to Carrie at EM as per Terms of Reference **ACTION:** MK to circulate exit survey for EEAG feedback **ACTION:** Request for a baseline forecast regarding energy production/use would be helpful to make distinction between marketing expertise vs. what is grid doing etc. EM to provide at Customer segment meetings **ACTION:** EM to provide map/data for next meeting with energy use, electric/natural gas split, transmission distribution. Map from Manitoba Hydro was reference as an example. **ACTION:** EEAG members to provide feedback by June 7 to michelle@blueprintinc.ca on what information they would like to receive as part of upcoming customer segment meetings. **ACTION:** EEAG to get meeting notes (review for errors and omissions) within a week of meeting. **ACTION:** EM will create a shared folder and upload documents from meeting for EEAG access **ACTION:** EEAG emails to have standardized subject line **ACTION:** When emailing AMM please email both Nick and Denys
Key discussion points	- Need to look at specific areas and identify the issues. E.g. demand side management, fuel switching and regulatory considerations. - Caution against too much segmentation. Important to see whole energy resource picture since one thing impacts the other. - Need to consider how to engage rural, northern and Indigenous communities and provide opportunities to provide input in process.

Blueprint.

Efficiency Manitoba
Energy Efficiency Advisory Group (EEAG)
Meeting 2 Report | June 13, 2019
Customer Segments: Residential, Low income, Indigenous communities

Blueprint.

A. Meeting 2 agenda

Purpose:

- Share information on programs for customer segments
- Generate discussion on challenges/opportunities for programs to address
- Identify follow ups, other insights to help build out programs further

Agenda:

11:45 (15 min)	Arrival, lunch
12:00 (10 min)	1. Welcome, session overview, introductions
12:10p.m. (5 min)	2. EEAG matters arising
12:15p.m. (40 min)	3. Residential customers
12:55p.m. (40 min)	4. Low income customers
1:35p.m. (10 min)	5. Break
1:45p.m. (40 min)	6. Indigenous communities
2:25p.m. (5 min)	7. EEAG schedule & action item review
2:30p.m. (30 min)	8. Parking Lot review, assignment, next steps

Blueprint.

B. Meeting Attendees

	Organization	**Name**
1	Assembly of Manitoba Chiefs	Brian Campbell, Nicole Starr
2	Blueprint Inc (facilitators)	Etoile Stewart
3	Blueprint Inc (facilitators)	Michelle Kuly
4	Consumers' Association of Manitoba (CAC-MB)	Gloria Desorcy
5	Efficiency Manitoba (EM)	Colleen Kuruluk
6	Efficiency Manitoba (EM)	Michael Stocki
7	Efficiency Manitoba (EM)	Carrie Werschler
8	Green Action Centre (GAC)	Peter Miller
9	Intergroup, on behalf of Manitoba Industrial Power Users' Group (MIPUG)	Dale Friesen
10	International Institute of Sustainable Development (IISD)	Daniella Echeverría
11	Keystone Agricultural Producers (KAP)	Patty Rosher
12	Manitoba Hydro (presenter)	Amy Tuck
13	Manitoba Hydro (presenter)	Tracy Moroz
14	Manitoba Hydro (presenter)	Ashley Nichol
15	Manitoba Hydro (presenter)	Tracy Sterdan
16	Manitoba Metis Federation (MMF)	Marci Riel
17	Southern Chiefs Organization (SCO)	Tina Keeper

Regrets: Colleen Sklar - Expert Advisory Council for Climate and Green Plan, Denys Volkov - Association of Manitoba Municipalities

Blueprint.

C. Minutes

Agenda item	Minutes
1. Welcome, session overview, introductions	Territorial acknowledgement Review of housekeeping items and meeting materials (MK) Review of agenda (MK), time constraints It was agreed to move Indigenous community segment session earlier on the agenda to accommodate AMC time constraint. *Note: Meeting 1 recap/overview provided by EM to Dale Friesen (MIPUG), Janelle Love (KAP), Nicole Starr and Brian Campbell (AMC) before meeting start (11:30 briefing had been offered to EEAG members who were unable to attend Meeting 1).*
2. EEAG matters arising	Introductions and matters arising related to the EEAG (go around). SCO noted item arising from May 31, 2019 and desire to see EEAG Terms of Reference updated to reflect that the EEAG process is not consultation under Section 35. **ACTION:** MK to update TOR to reflect that the EEAG process is not consultation under Section 35. June 27th meeting – EM intent to look at enabling strategies and cost-benefit analysis presentation, how EM will quantify savings and costs etc. Will provide a first draft of the portfolio that group could review over July (no meeting) and reconvene in August. **ACTION:** MK to add integrated resources planning and discussion of longer term strategic objectives and benefits to agenda for June 27th meeting. Communications blackout June 12 – Sept 10 due to Provincial Election. EEAG committee is clear to keep working and presentations arranged by EEAG membership are okay as well. Consulting with public at large may be more difficult during this time. EEAG members are not barred from communicating with the public. EM noted that Regulation has been posted and is available for public comment now. **ACTION:** EEAG can review the Regulation here: https://reg.gov.mb.ca/detail/1871706

3. Residential customers	EEAG members were asked to record questions/ideas for each segment on a sticky note for review at the end of the presentation. EM provided a short PowerPoint presentation in advance of MB Hydro to acquaint EEAG with how energy consumption is divided by users/rate class in Manitoba as well as an overview of the idea generation process to create Efficiency Manitoba 3-year plan. Following the presentation EEAG members went around the table to ask questions and provide comments on what was presented (captured on stickie notes, saved in folder). All questions were answered by EM and MB Hydro representatives. **Transition** Questions arose as to who would be delivering the programs outlined in the presentation given that the presentation was done by MB Hydro. Similarly, clarification was requested as to who the 'we' is that presenters or EM meant when referring to future program delivery or policy setting. It was clarified that 'we' was intended to mean EM, however there is some overlap with MB Hydro staff currently as EM doesn't have infrastructure in place to accommodate all of the program development/delivery until the crown corporation is built. Once the plan is created and transition is completed, EM program delivery and staff will transfer over from MB Hydro to the new crown corporation. **Online Customer Portal** The new online portal features were reviewed including new tools to set up customer profile and to eventually monitor energy use. It was clarified that for those customers who are not interested or able to set up an on-line profile that EM is working on how to connect with those customers and support them in creating an on-line profile and/or continuing to provide in-person customer service. Acknowledged that connectivity in rural and northern areas is an issue. EM indicated that there will be many options for consumers to use technology or not. EM is working on how to use the data MB Hydro currently gathers into the EM customer portal. Billing will remain with MB Hydro. **Assessments** The new online portal will provide opportunity for residential customers to identify their customized energy savings opportunities. Currently MB Hydro offers no self-assessment or auditing services for residential customers outside of monthly billing information available

	through MyBill. EM clarified that they will provide a person to go to the home to assist residents with how set up self assessment in portal. Customers won't be able to see their use in real time but will be provided overall usage data annually so they can see how their changes are impacting use. Intent is to harness the data gathered to influence behavior on energy use. **Education and outreach** EEAG members asked about the different sub-segments of the residential customer segment and for assurance that EM will tailor outreach and education to each sub-segment (rural, urban, northern, seniors, on-reserve etc.) and that EM will be able to provide many kinds of tools to address access and barriers to uptake of programs. EM indicated that communication and marking efforts will be targeted as different audience segments will need specific materials. It was suggested that EM have representatives within municipalities and consider possibility of storefront locations where consumers could get in-person assistance. EM noted that they consult with the MB Homebuilders organization, MB Housing and the Residential Tenancies branch of the Province of Manitoba to address code issues, co-op and low-income housing issues as needed. **Construction and building code** EEAG cited need to address existing residential home stock and new builds for upgrades for efficiency. How do we link to climate objectives? Manitoba's cold climate impact is real. EM acknowledged that the construction of existing and new homes can pose a barrier to energy efficiency and that some codes and standards should be changed. EEAG asked if a conversation is happening with the City of Winnipeg or other jurisdictions to assist with this. For consumers in the North, or limited income, the buildings are an issue, it's a huge barrier.
4. Low income customers	EEAG members were asked to record questions/ideas for each segment on a sticky note for review at the end of the presentation. Following the presentation EEAG members went around the table to ask questions and provide comments. All questions were answered by EM and MB Hydro representatives.

Specific questions following presentation:

How much leverage do landlords have re: making changes to make rentals more efficient? EM: It's a challenge. There isn't incentive/motivation to do so.

Newcomers have so many pressures. How will EM work with this group? EM will need to reach community groups working with newcomers.

If customer is using gas furnace and supplementing with electricity would they would be categorized as a gas customer? EM: Yes. This is a key part of in-home assessment program.

Qualification
Qualification for the low-income program is calculated using a formula that takes into account both household income and the number of people in the home. EEAG asked about customers who are working and don't know they'd qualify. This will be addressed by EM communications strategy which will include wording to address 'income qualifying' in order to capture more customers.
The program and communication strategy be applied across Manitoba. EEAG cautioned EM about language (stigma re: 'low income') and that interaction with social agencies might be intimidating for some consumers.

Affordability
EEAG articulated that there is a difference between making cost cheaper vs. being affordable and that there are some customers who are challenged to pay any amount. EM communicates with community groups who identify customers who cannot pay anything. EEAG asked what came of the Bill Affordability work led by MB Hydro. EM indicated that this work was within the billing department of Hydro.

Cost effective vs. need
EM clarified that 'cost effective' has been defined in regulation; at this time 'equity' has not.

EEAG noted that often low-income programs are more expensive to run because some of it is given away for free. EM noted that this is a challenge to manage and EM has to deliver at the same or less cost as Hydro.

	EM noted that it is likely that larger customers may present less expensive (per unit energy) opportunities to offset the higher low-income program costs. As well, EM looking at technologies that offer biggest bang for the buck and noted that EM mandate is only for the energy use component. **Social Benefits** Will EM include social benefits quantifier in calculation? EM clarified that the recognition of portfolio benefits gets dealt with in regulation and is currently, for PUB filing purposes, limited to the benefits to Manitoba Hydro. EM is able to report on (where quantifiable) other benefits (including social), but this would not be the focus of the PUB. **ACTION:** CAC-MB will work with EM to connect to Winnipeg Harvest, Make Poverty History coalition, Social Planning Council regarding low-income customer segment.
5. Break	
6. Indigenous communities	EEAG members were asked to record questions/ideas for each segment on a sticky note for review at the end of the presentation. Following the presentation EEAG members went around the table to ask questions and provide comments on what was presented (captured on stickie notes, saved in folder). All questions were answered by EM and MB Hydro representatives. **Engagement** EEAG noted that many communities to do not currently access Manitoba Hydro Energy Efficiency programs. How will EM address this? EM stated that access is being worked on now during transition including pilots and working with communities to find out how to get them to participate and what they need to be engaged. Laying the foundation now. **Housing** EEAG noted issue of low-quality housing is a huge issue in some communities – is there a way to improve the buildings? EM confirmed work can be done to improve building envelopes and new builds. **Language and protocol** Following the presentation EEAG noted that the *Indigenous* strategy was not being communicated clearly in presentation nor discussion.

	In particular, a *First Nations* strategy as presented by MB Hydro is different than an *Indigenous* strategy. It was noted that EM was seeking guidance about the strategy. It was also noted by EEAG that over 100K people in Manitoba are Metis and that uptake in the program may improve if program addressed Metis specifically. Further, EM was cautioned not to characterize Indigenous and low-income segments as the same. A recommendation was made that EM coordinate an approach to leadership of Indigenous Nations (elected officials not communities) and that process will follow. There is a lot to be gained and that this is a significant opportunity for a new crown corporation. **Indigenous involvement in development and delivery of EM** The question was asked whether there is/will there be Indigenous representation in EM, or just partnering with communities. It was recommended that representation in the development and delivery of EM would be beneficial.
7. EEAG schedule & action items review	Consultation with respect to Sec. 35 Duty to Consult especially given the blackout. EM still doesn't have an answer on this. **ACTION:** MMF is requesting a response on position re: Section 35 Duty to Consult from EM.
8. Parking Lot review, assignment, next steps	EEAG reviewed outstanding questions (go-around) KAP asked if they bring farmers together can EM be available in July? EM: Yes. EEAG is one forum for input, we want to meet with people/others along the way. What is process for EEAG members to present items? **ACTION:** EEAG members who wish to present/provide information for the group can send info to Mike Michael.Stocki@efficiencymb.ca to be put in shared folder. Is there no plan to consult with consumers/public? EM clarified PUB process. It was recommended that EM ask PUB to maximize its own resources in this regard.

	Are there regulatory solutions that could assist - i.e. code requirement, innovations? EM: Both are part of EE mandate. EM has tools to look at what other jurisdictions are doing. If there are regulatory tools EM should be looking at, EEAG members are encouraged to bring forward for consideration.
General meeting notes	N/A
Action item summary	**ACTION:** MK to update TOR to reflect that the EEAG process is not consultation under Section 35. **ACTION:** MK to add integrated resources planning and discussion of longer term strategic objectives and benefits to agenda for June 27th meeting. **ACTION:** EEAG can review the Regulation here: https://reg.gov.mb.ca/detail/1871706 **ACTION:** CAC-MB will work with EM to connect to Winnipeg Harvest, Make Poverty History coalition, Social Planning Council regarding low-income customer segment. **ACTION:** MMF is requesting a response on position re: Section 35 Duty to Consult from EM. **ACTION:** EEAG members who wish to present/provide information for the group can send info to Mike Michael.Stocki@efficiencymb.ca to be put in shared folder.

Blueprint.

Efficiency Manitoba
Energy Efficiency Advisory Group (EEAG)
Meeting 3 Report | June 14, 2019
Customer Segments: Commercial, Industrial and Agricultural Customers

Blueprint.

A. Meeting 3 agenda

Purpose:

- Share information on programs for customer segments
- Generate discussion on challenges/opportunities for programs to address
- Identify follow ups, other insights to help build out programs further

Agenda:

11:45 (15 min)	Arrival, lunch
12:00 (10 min)	1. Welcome, session overview, introductions
12:10p.m. (5 min)	2. EEAG matters arising
12:15p.m. (40 min)	3. Commercial customers
12:55p.m. (40 min)	4. Industrial customers
1:35p.m. (10 min)	5. Break
1:45p.m. (40 min)	6. Agricultural customers
2:25p.m. (5 min)	7. EEAG schedule & action item review
2:30p.m. (30 min)	8. Parking Lot review, assignment, next steps

Blueprint.

B. Meeting Attendees

	Organization	Name
	Association of Manitoba Municipalities (AMM)	Denys Volkov
	Blueprint Inc (facilitators)	Etoile Stewart
	Blueprint Inc (facilitators)	Michelle Kuly
	Consumers' Association of Manitoba (CAC-MB)	Gloria Desorcy
	Efficiency Manitoba (EM)	Colleen Kuruluk
	Efficiency Manitoba (EM)	Michael Stocki
	Efficiency Manitoba (EM)	Carrie Werschler
	Green Action Centre (GAC)	Peter Miller
	Intergroup, on behalf of Manitoba Industrial Power Users' Group (MIPUG)	Dale Friesen
	International Institute of Sustainable Development (IISD)	Daniella Echeverría
	Keystone Agricultural Producers (KAP)	Janelle Love
	Manitoba Hydro	Craig Perrett
	Manitoba Hydro	Roberto Montanino
	Southern Chiefs Organization (SCO)	Tina Keeper

Regrets: Colleen Sklar - Expert Advisory Council for Climate and Green Plan

C. Minutes

1. Welcome, session overview, introductions	Territorial acknowledgement Review of housekeeping items and meeting materials (MK) Review of agenda (MK), time constraints
2. EEAG matters arising	Introductions and matters arising related to the EEAG (go around). Communications blackout June 12 – Sept 10 due to Provincial Election. EEAG committee is clear to keep working and presentations arranged by EEAG membership are okay as well. Consulting with public at large may be more difficult during this time. EEAG members are not barred from communicating with the public. EM noted that Regulation has been posted and is available for public comment now. **ACTION:** EEAG can review the Regulation here: https://reg.gov.mb.ca/detail/1871706 GAC noted interest in discussing efficiency and affordability measures. AMM wants to ensure that MB Hydro's Power Smart program elements are maintained for rural municipalities. CAC noted interest in looking at overall energy resource planning opportunities in Manitoba.
3. Commercial customers	EEAG members asked to hold question to the end of the presentation. High level overview of how energy consumption is divided by users/rate class in Manitoba was provided. High-level overview of process to create EM plan; direction provided to Hydro staff for this presentation is to focus on the new opportunities; ideas to be put forward in three - year plan. EM noted distinctions in rate class, i.e. a house (residential) on a farm (industrial) would be categorized separately. **Education and outreach** New portal and changes to online format (paper will still be available) were described. Intent is to enhance customer service and improve

	administrative efficiency. EM is working on simplified and integrated bundling of programs for all customer segments. **Audit and Assessment** Onsite support for customers will be available to assist with audits. Desire to promote energy efficiency to commercial, industrial and agricultural segments which will necessitate customer focused marketing that allows for different levels of engagement. EEAG members were asked to reflect on the challenges and opportunities for commercial sector, what resonated (go-around). In response to query about electrical vehicle charging stations in rural Manitoba as well as questions about how benefits of owning an electric vehicle may be realized, EM clarified that electric vehicles are not included in their mandate as per the Act at this time. **Bundling programs** EEAG concurred that the bundling categories for commercial segment as presented make sense. **Accessibility** Noted that many new investments in infrastructure are being made especially in rural Manitoba. How will EM promote/facilitate access to programs? EM will continue account management with municipalities, and continue to work with Community Places, Federation of Canadian Municipalities and recreation organizations, etc. EEAG suggested sector-specific marketing strategies to ensure that EM is more aggressive in targeting segments and to make it easier for customer segments to access. There are barriers to rural members knowing about EM programs given that rural municipal councils, staff and volunteers are already doing all the work to raise money for their communities and simply don't have time, expertise and resources to know about all potential programs and supports. Need to ensure that all information is accessible. Architect and Engineers hired on capital projects are often the advisors and influence how much energy is used in the building, however most often are focused on capital costs, not lifecycle costs (efficiency), which is a barrier for EM. Suggested that EM to do workshops with tribal councils etc. and develop a process to promote eco-fit programs available and increase

	uptake with First Nations. MH has had great results partnering and EM would like to do more with First Nations. **Incentives** Are there financial incentives if customers bundle certain products – similar to home Internet/TV/Phone services? On residential side yes, commercial program hasn't determined this yet and EM would like to explore possibility. EM can drive change via incentives/tools but needs feedback about what is needed from commercial segment. **Skills and certification** With regards to skills and certification upgrading, how can EM encourage more commercial tradespeople to take specialized programming to increase knowledge of efficiency-related technology, installation, maintenance? Building Envelope Centre at RRC is doing interesting work on retrofits. Overall commercial segments need access to skills training and for EM to support the change when it needs to happen/when opportunity arises. Lots of organizations want to do the right thing like Purpose Construction which is a social enterprise and is working with old churches – this is a potential customer group to be considered. MH currently gathering data to evaluate performance of cold weather heat pumps, via pilot project and beyond. **Building labelling** Question was raised about energy rating labels e.g. LEED, ENERGY STAR, etc. Noted that these labels are a clear way to highlight the energy performance of a building however does it mean anything if it isn't reassessed? Unclear how/if standards are applied over time. EEAG noted limits of verifying savings as a result of energy efficiency if there is no requirement in building codes to do so. Need to determine how to measure the savings over the lifecycle of the building and make the savings quantifiable.
4. Industrial/ Agricultural Customers	Presentation on Industrial and Agricultural segments was given. Request that members hold question to the end of the presentation. Breakdown of Industrial market is based on metered accounts, lots of large customers really spread out over the province.

	EM noted importance of engaging with customers at multiple levels in the large organizations as many good ideas come from the people operating the equipment. EM does not claim savings until project lifecycle is near complete. If EM is going to claim savings in first three years need to start lining up projects now with large industrial customers. EM advocates for system approach overview – consider four elements (the whole system) to focus on root causes. E.g. new equipment does not mean efficiency unless it can be controlled properly. **Agriculture sector** Agriculture segment often qualifies for the industrial programs but in the past, is hasn't been clear that these are available to agricultural customers. EM to make it more transparent and get them qualified to benefit. **Biomass/other fuel sources** Can biomass be considered as an alternative source for heat for the barns in MB? EM is currently looking at broader ramp up for rural schools using simple biomass tools; there are challenges re: consistency but it is on the radar. There are renewable sources of energy that can be used by industry such as methane capture to offset natural gas consumption. EM will go after this segment more. **Farmers** EEAG suggested that it is beneficial to keep farmers informed of new pilots and programs. KAP could facilitate asking questions on behalf of EM about potential tools on weekly survey to membership. It would be great to have input from dairy, pork, etc. **Economic development** EEAG recommended that MB Hydro and EM align communication so that information received by AMM and other organizations is consistent. Opportunities to realize savings from energy efficiency is a lever for economic development/competitive advantage. Energy is critical however customers are driven by cost reduction, are "efficiency" etc. If EM can support incremental changes for industry there are big savings to be had. Big incentives for big customers but have to find a way to work together on operational incentives vs. up front incentives. Industry customers are rate sensitive and want to

	know what impact EM will have on rates – especially given recent Hydro and Centra Gas rate increases. EM asked EEAG members if other groups should be consulted, e.g. Healthcare sector? EEAG suggested that rural colonies represent big industrial and agricultural segments and could be a target group.
5. Break	
6. EEAG schedule & action items review	**ACTION:** EEAG requested creation of 'parking lot' document on the shared drive to put up ideas for discussion at upcoming meetings. EEAG discussed electrical use and opportunities related to climate change targets. **ACTION:** Update re: Expert Advisory Council on the Climate and Green Plan vis a vis EM to be added to upcoming EEAG meeting agenda.
7. Parking Lot review, assignment, next steps	**ACTION:** EM to send/resend Doodle poll link to be EEAG for August and September meeting dates. Meeting adjourned at 2:30 p.m.
General meeting notes	N/A
Action item summary	**ACTION:** EEAG can review the Regulation here: https://reg.gov.mb.ca/detail/1871706 **ACTION:** EEAG requested creation of 'parking lot' document on the shared drive to put up ideas for discussion at upcoming meetings. **ACTION:** Update re: Expert Advisory Council on the Climate and Green Plan vis a vis EM to be added to upcoming EEAG meeting agenda. **ACTION:** EM to send/resend Doodle poll link to be EEAG for August and September meeting dates.

Blueprint.

Efficiency Manitoba
Energy Efficiency Advisory Group (EEAG)
Meeting Report | June 27, 2019
Enabling Strategies, Measuring Cost-Effectiveness of Programs and Integrated Resource Planning Perspectives

Blueprint.

A. Meeting 4 agenda

Purpose:

- Generate discussion on strategies to enable energy efficiency, and innovative technologies in particular
- Share information on targeted electricity savings, how other benefits are accounted for, and how EM will be measured as per the legislation
- Generate discussion on non-energy benefits that could be delivered or highlighted as part of EM programs
- Discuss long-term planning and EM's role in integrated resource planning

Agenda:

12:00 p.m. (15 min) 1. Welcome, acknowledgements, intros and EEAG matters arising

12:15 p.m. (60 min) 2. Enabling Strategies

1:15 p.m. (10 min) 3. Break

1:25 p.m. (30 min) 4. Cost Effectiveness

1:55 p.m. (30 min) 5. Integrated resource planning and long-term planning

2:25 p.m. (10min) 6. Review: EEAG schedule, parking lot, action items, next steps

2:35p.m. (25 min) 7. Individual follow ups/summer scheduling

Blueprint.

B. Meeting Attendees

	Organization	**Name**
1	Association of Manitoba Municipalities (AMM)	Nick Krawetz
2	Blueprint Inc (facilitators)	Michelle Kuly
3	Blueprint Inc (facilitators)	Joanna Nickerson
4	Consumers' Association of Manitoba (CAC-MB)	Gloria Desorcy
5	Consumers' Association of Manitoba - Consultant	Bill Harper
6	Efficiency Manitoba (EM)	Michael Stocki
7	Efficiency Manitoba (EM)	Colleen Kuruluk
8	Efficiency Manitoba (EM)	Carrie Werschler
9	Green Action Centre (GAC)	Peter Miller
10	Manitoba Hydro	Jana Brunel
11	Manitoba Hydro	Cheryl Pilek
12	Manitoba Industrial Power Users' Group (MIPUG)	Dale Friesen
13	International Institute of Sustainable Development (IISD)	Daniella Echeverría
14	Keystone Agricultural Producers (KAP)	Patty Rosher
15	Manitoba Keewatinowi Okimakanak Inc. (MKO)	Stewart Hill
16	Manitoba Metis Federation (MMF)	Morrissa Boerchers
17	Southern Chiefs Organization (SCO)	Tina Keeper

Regrets:
Colleen Sklar, Expert Advisory Council on the Climate and Green Plan (EACCGP)

C. Minutes

1. Welcome, session overview, introductions	Territorial acknowledgement. Review of housekeeping items and meeting materials. Review of agenda, time constraints.
2. EEAG matters arising	Introductions and matters arising related to the EEAG (go around). EM confirming involvement in advisory group; sheet circulated to confirm individual participants. MKO and MIPUG noted interest in discussing the role of EM in Manitoba's long-term energy strategy. IISD noted interested in discussing the role of EM with regards to Manitoba's Carbon Savings Account.
3. Enabling Strategies	EEAG members asked to hold questions until the end of the presentation. High level overview of three pillars for EM's enabling strategies was provided: *Education and Engagement, Emerging Technology*, *Codes and Standards.* EEAG members were asked to discuss some of the strategies that can be used to encourage innovation / innovative technologies and a change of consumer behaviour. **Barriers for new technology** EEAG members noted that concerns exist around installation and maintenance with new technologies. There is a need to ensure that the programs/technologies are accessible and take into account a variety of factors (where customers live, technical capacity in their communities, etc). Rural and remote communities may have different barriers to EM programs/technology. Other barriers noted were the condition of a residence, which may require upgrades / repairs prior to implementing new technology/programs and the occupants may not have the financial means to do so - EM should consider how to meet the needs of those customers as well. **Engagement and education opportunities**

	Comment raised in regards to engaging post-secondary students, not just K-12; this could be the "pipeline" to build capacity in rural areas. EM needs to consider how to increase capacity in new and existing tradespersons. **Efficiency versus Displacement.** EEAG members noted it would be useful for EM to articulate how it will be addressing efficiency-based vs displacement-based savings. CAC noted there is a segment of the market that is interested in clean energy and 'off-the-grid' energy despite the large upfront costs. Solar panels provide that option. CAC believes EM should consider this when reducing consumption strategy. MIPUG is not in favour of incentives to build resources that will be MORE costly than the existing ones (e.g. Solar). MIPUG noted that industrial customers may increase efficiency which saves energy on a per unit basis but is then able to increase production which can drive up overall energy use. EEAG urges transparency in tracking performance, specifically around cost per unit basis. **Codes and Standards** It was noted that performance claims for new technology are often overstated or simply inaccurate. It was also noted that Manitoba is a leader in standards development, though this isn't widely known. This can be leveraged as EM looks at innovative technologies (e.g. provincial whitepaper available on codes and standards). With regards to building codes and inspections - KAP noted there is no end of complaints regarding lack of capacity with the Office of the Fire Commissioner; noted addressing potential bottlenecks like this will be important. **Relationship building & engagement** MKO raised the question of community engagement, specifically on reservations across Manitoba. Relationship building must be a key consideration when engaging First Nations along with an understanding of the current barriers. EM is encouraged to invest in engaging with these communities and consider the social impact of any program and/or technologies while keeping them financially accessible.

	AMM noted municipalities outside of Winnipeg are often grouped together as "rural municipalities"; in reality this is a combination of rural and urban municipalities; recommended simply "municipalities" as appropriate language. Also noted success stories should feature and promote positive stories in communities such as Selkirk and Dauphin. EEAG agrees that it is important for EM to engage with residents who are not participating in their programs and collect data from other sources beyond program participants. **Agricultural Lens** KAP suggested that for farmers it is the impact on their bottom line that drives decision making. Noted that for upcoming meeting with EM and KAP, it will be helpful to have a trusted agricultural engineer there to inform the strategy to better serve agriculture. EM noted they currently don't have an agricultural engineer/expert on staff. **Efficiency, coordination** AMM noted that programs need to be run efficiently and timely. Currently, many incentive programs available to municipalities (not just energy saving programs) are too bogged down in red tape, onerous and not intuitive. The group suggests EM needs programs that streamlined, easy to understand and access. Decisions have to be made in a timely way or else opportunities are missed.
4. Break	
5. Cost Effectiveness	EEAG members asked to hold questions until the end of the presentation. High level overview was provided of how cost-effectiveness is evaluated. EM is required to evaluate using the program administration PACT (program administrator cost test). The consumer PC (participating customer test) and all Manitobans TRC (total resource cost test) are the other evaluation perspectives EM will also consider in analysis. EEAG members were asked what non-energy benefits (social, economic, environmental) of energy efficiency could be quantified or highlighted.

	Electrical marginal values MIPUG noted that Manitoba Hydro's Winnipeg distribution system is summer constrained not winter like the remainder of the Province Is there any opportunity for customers to leverage regional or local marginal values? MIPUG reiterated that rate impact is of primary concern for industrial customers. MKO noted concern that important regional details – including the voice of First Nations on-reserve customers may be lost in assessment of impact, savings if assessment of savings is only province-wide. **Standard of Living** On non-energy benefits of energy efficiency, MKO described positive impacts that increase the standard of living on reserves are extremely important as reserves fall below national and provincial averages on standard of living index. **Agriculture and public trust** KAP identified connection between biomass and farm waste as an opportunity to explore. Also noted that farmers want to be seen as good stewards of the environment, taking care to ensure animal welfare and are interested in emerging technology. The agricultural industry would be very interested in promoting any non-energy benefits of efficiency programs as part of a public trust initiative they are working on. Furthermore, agriculture is known for being a big greenhouse gas emitter and has a keen interest in industry wide indicators and measures. **Recreational facilities** In many municipalities, and particularly in rural communities, sensitivity to rate increases is most keenly felt in the operation of recreational infrastructure and buildings - community centres are closing because of rate changes. This should be taken into consideration by EM.
5. Integrated resource planning and long-term planning	EEAG members asked to hold questions until the end of the presentations provided by EM and Peter Miller (GAC). EM explained that an integrated resource plan considers both supply and demand side options to enable a utility to satisfy future energy needs.

	EM's near-term role: - strive for cost effective programming - providing energy savings to MH - collaborate on and explore possible demand response programs and geographically targeted offerings for Manitoba Hydro **Electric Vehicles** GAC presented rationale for inclusion of electric vehicles as part of EM regulation, noting MB could be a leader (or at least keep pace) in this area. GAC argues there are clear economic benefits for the province of Manitoba and is calling on EM use to advocacy and leadership to convene on this. **ACTION:** Peter Miller's presentation slides to be uploaded to shared drive. EEAG discussed the idea of "beneficial electrification". Some North American utilities have found that efficiency is far more effective than anyone thought at reducing electric loads, and some utilities are now looking to grow their electric loads efficiently. EEAG were asked their thoughts on long-term planning and EM's role in integrated resource planning. EEAG agreed on the importance of integrated resources planning and see it as a cornerstone of a new clean energy plan in Manitoba. **Convening and integrated resource plan options** CAC-MB asked how can EM take a leadership role in convening the diverse stakeholders to share both costs and planning. How might EM convene the right people (in government, etc.) and encourage a structured beneficial integrated resource plan for the future. CAC-MB also suggested EM explore a variety of options and presents options as part of the 3-year plan. EM noted that Manitoba Hydro Power Smart used to do this many years ago. **Build relationships** SCO noted that EM has an opportunity to build bridges with indigenous communities by collaborating and a commitment to transparency, particularly now that EM is separate from Hydro. EM now has an opportunity to engage with these communities and work together for a greater impact. EM is interested in taking the

	programs that were successful and moving forward but is looking to distinguish from MH. Collaborative relationships with indigenous peoples is an EM priority. EEAG considers the impact of hydro development on the North. EM should explore these impacts and build relationships directly affected by this development. **Long term planning** IISD noted that climate shifts may change projections or experience with seasonal energy demands. **Funding, economics and coordination** IISD raises the question about diversification of funds to broaden EM's impact – asked for clarification if EM is solely dependent on Hydro funding. EM stated it is not precluded from getting funds from other sources. AMM would like to see EM deliver programs as part of the 3-year plan in a coordinated manner with economic development groups and the provincial government. MIPUG noted that, for industrial customers, energy efficiency must have economic efficiency or it holds no value; there would be huge social implications if it didn't (loss of jobs, industry in Manitoba). MIPUG encourages EM to focus on economic outcome - bill side and the rate side.
6. Review: EEAG schedule, parking lot, action items, next steps	**ACTION**: EEAG to review June 13, 14 and 27 meeting notes for errors/omissions by July 5th. **ACTION**: EM to upload a document package with outline of plan filing and accompanying presentation slides by July 5 for EEAG review over the summer. EEAG asked to provide written feedback by July 31 if possible and to reach out to EM if they would like to meet or consult further. **ACTION:** EM to add IISD alternates to shared drive and email circulation list. Next meeting has been set for August 20, 2019 (11:45-3pm).

	ACTION: Items in parking lot to be moved to August meeting agenda: ● How is EM preparing to administer/coordinate programs efficiently? (i.e.: actually issue decisions and incentive funds on a timely basis). ● EM's role - Carbon Savings Account ● MB long term energy strategy - how does that fit in with EM? **ACTION ITEM:** EM to confirm September meeting date and send calendar invitation. EM reiterated desire to hear from/connect with each of the EEAG members over the summer for further program design input. Meeting adjourned at 3:05 p.m.
General meeting notes	N/A
Action item summary	**ACTION:** Peter Miller's presentation slides to be uploaded to shared drive. **ACTION**: EEAG to review June 13, 14 and 27 meeting notes for errors/omissions by July 5th. **ACTION**: EM to upload a document package with outline of plan filing and accompanying presentation slides by July 5 for EEAG review over the summer. EEAG asked to provide written feedback by July 31 if possible and to reach out to EM if they would like to meet or consult further. **ACTION:** EM to add IISD alternates to shared drive and email circulation list. Next meeting has been set for August 20, 2019 (11:45-3pm). **ACTION:** Items in parking lot to be moved to August meeting agenda: ● How is EM preparing to administer/coordinate programs efficiently? (i.e. issue decisions and incentive funds on a timely basis).

	• EM's role - Carbon Savings Account • MB long term energy strategy - how does that fit in with EM? **ACTION ITEM:** EM to confirm September meeting date and send calendar invitation. **ACTION ITEMS CARRIED FORWARD FROM JUNE 13:** **ACTION:** EEAG can review the Regulation here: https://reg.gov.mb.ca/detail/1871706 **ACTION:** MK to update TOR to reflect that the EEAG process is not consultation under Section 35. **ACTION:** CAC-MB will work with EM to connect to Winnipeg Harvest, Make Poverty History coalition, Social Planning Council regarding low-income customer segment. **ACTION:** MMF is requesting a response on position re: Section 35 Duty to Consult from EM. **ACTION ITEMS CARRIED FORWARD FROM JUNE 14:** **ACTION:** Update re: Expert Advisory Council on the Climate and Green Plan vis a vis EM to be added to upcoming EEAG meeting agenda. (August)

Blueprint.

Efficiency Manitoba
Energy Efficiency Advisory Group (EEAG)
Meeting 5 Report | August 20, 2019
Integrating Energy Efficiency Advisory Group (EEAG) input into 3-Year Plan

Blueprint.

A. Meeting 5 agenda

Purpose:

- Share summary of feedback received from EEAG members, review to ensure characterization of input is accurate, and note how input is being considered in 3-year plan.

- Respond to Advisory Group requests for information, specifically the Expert Advisory Council for Climate and Green Plan

- Share work and findings related to 3-year Efficiency Manitoba (EM) plan since the last Advisory Group meeting (June 27, 2019)

Agenda:

11:45 (15 min)	Arrival, lunch
12:00 (15 min)	1. Welcome, agenda review, introductions and matters arising
12:15p.m. (90 min)	2. What we heard so far: EEAG feedback
1:45p.m. (15 min)	3. Break
2:00p.m. (15 min)	4. Expert Advisory Council for Climate and Green Plan – plan update (C. Sklar)
2:15p.m. (30 min)	5. 3-year plan update
2:45p.m. (15 min)	6. Review: EEAG schedule, parking lot, action items, next steps

Blueprint.

B. Meeting Attendees

	Organization	**Name**
	Association of Manitoba Municipalities (AMM)	Nick Krawetz
	Blueprint Inc (facilitators)	Etoile Stewart
	Blueprint Inc (facilitators)	Michelle Kuly
	Consumers' Association of Manitoba (CAC-MB)	Gloria Desorcy
	Efficiency Manitoba (EM)	Colleen Kuruluk
	Efficiency Manitoba (EM)	Michael Stocki
	Expert Advisory Council on the Climate and Green Plan (EACCGP)	Colleen Sklar Kate Rich
	Green Action Centre (GAC)	Peter Miller
	Intergroup, on behalf of Manitoba Industrial Power Users' Group (MIPUG)	Dale Friesen
	International Institute of Sustainable Development (IISD)	Daniella Echeverría
	Keystone Agricultural Producers (KAP)	Patty Rosher
	Manitoba Keewatinowi Okimakanak Inc. (MKO)	Stewart Hill

C. Minutes

1. Welcome, session overview, introductions, matters arising	Territorial acknowledgement. Review of housekeeping items and meeting materials. Review of agenda, time constraints. Intros and Matters arising related to EEAG (go-around): Switched agenda item #2 with #4 due to EACCGP time constraints.
2. Expert Advisory Council for Climate and Green Plan – plan update	(moved to 12:15 p.m.) Presentation by Kate Rich and Colleen Sklar provided on Expert Advisory Council for Climate and Green Plan. Questions posed by EEAG throughout the presentation answered by EACCGP. Noted that Climate and Green Plan includes EM targets as part of its Carbon Savings Account targets. EM and EACCGP noted that they are working together re: coordinated annual reporting dates. **ACTION:** EACCGP presentation slides to be uploaded, shared with EEAG members.
3. EEAG feedback: What we heard so far	EM shared presentation with a summary of feedback received from EEAG members in response to plan documents provided over the summer and note how input is being considered in 3-year plan. EEAG members were asked to review summary to ensure characterization of input was accurate. Where clarifications or additional comments were noted, they have been captured in the following notes. AMM – Summary was good, accurate. Also noted AMM members want one central place to apply for programs. Supportive of single window portal model. CAC – Summary was good, accurate. Noted remaining concerns: 1) lack of alternative portfolios to position EM for a move to a more integrated resource planning process and that there has been no public engagement on this matter; 2) there will be

	confusion about overlap between Hydro and EM, would be good to clarify who is responsible for what in an infographic or chart. EACCGP – Noted that process is on-going to figure out working relationship with EM. GAC – Noted additional points should be added to the summary: 1) it is costly *not* to proceed with electric vehicle market transformation, there are lost opportunities in terms of climate mitigation and economics. There is positive business case for MB Hydro and provincial treasury to accelerate electrification. 2) Would also like to see delivery paths for respective components (agency overlap). **ACTION:** EM to provide more information about delivery paths for respective programs e.g. what agency will deliver what? IISD – Summary was good, accurate. Additional notes: Diversify funds beyond MB Hydro and streamline reporting. KAP – Summary was good, accurate. Additional notes: there is lot of interest looking at new technology, need to balance this with quality control. There is a biological component to agriculture industry (animals, plants) to be considered and KAP can hopefully help, e.g. agriculture industry is moving towards enriched (larger) housing for animals so new considerations about heating, etc. Lots of interest in bio-mass and innovation opportunities. MIPUG – Summary was good, accurate. Additional notes: Challenge for industry re: proposed regulation as written only looks at prior year load and will not to take into account that efficient load growth may have occurred. Locational marginal value is different than everyone having access to all of the same programs. Some measures have greater value depending on where they are in the system. How does this get addressed in a fair and equitable way? Noted that MIPUG has provided written comments to the Province and have shared them with EM. EM – Noted that regarding the draft regulation, noted that header and footer in document contains information that may be confusing. Reached out to Province to confirm that this is intentional.

	MKO – In addition to items in summary, noted: jurisdiction is always an issue and historical exclusion is always an issue. Meaningful consultation is important. A lot of energy comes out of MKO territory, lots of dams that generate power at an environmental price and energy gets taken out of territory and sent south. In what way do you give special rates to on-reserve peoples given the sacrifice the land is making, directly tied to our way of life and impacted irreversibly? EM asked how to communicate the value of efficiency to First Nations it represents. Group discussion ensued, suggestions focused on communicating cumulative assessment (impacts/benefits), delay of new dam construction, and the disruption/impact it creates through energy efficiency and savings. There is so much happening in MKO region. Woodland Caribou are a species at risk at well as Sturgeon. Environmental considerations, people have been asked to sacrifice quite a bit. How to account for this kind of valuation in overview in MKO region and the little communities within? EM noted recent joint meeting with MKO and SCO on Monday August 19, 2019. Community gatherings were suggested to tackle some of these questions. MMF – (member not at meeting) SCO – member not at meeting, but EM noted a meeting was held with SCO on Monday August 19, 2019 and included Grand Chief Daniels. Possibilities around partner agreements were discussed.
4. Break	
5. 3-year plan update	EM provided a presentation with overview of follow up done by EM re: outstanding EEAG action items and other updates related to the 3-year plan. EEAG posed the following questions: Q: Where is EM in CRM process? A: RFP will be issued this fall for CRM software.

	Q: Further to CRM/data discussion, First Nations have little control over projects overseen by Indian Affairs, and Indian Affairs has detailed information about First Nations. How will EM interact with Indian Affairs? A: Noted this for further consideration in planning. A final round robin with opportunity for questions or comments was held. GAC – Where are start-up costs coming from? A: Manitoba Hydro. GAC – Does mandate include other fuels, and how does it factor into accounting? A: Only those under 'affordable energy'. **ACTION:** EM to provide breakdown of fuels included in affordable energy category and how these will be factored into accounting. AMM – With election and upcoming filing, some of our members are asking why you are doing this and understand that for EM the plan is to be more efficient and to offer better programs. Will there be a public communications rollout when the filing is made? A: Yes. MIPUG – Is the regulation going to be final if passed? A: The current regulation has been passed. Act allows for additions to regulation if/as needed. MIPUG – Requested information re: breakdown of savings per customer group, aggregate level of TRC to PAC comparison. **ACTION:** EM to provide information on breakdown of savings per customer group. MKO – Affirmed comment re: important role of federal government with respect to information about First Nations - the CAIS profile, every First Nations community has one of these profiles in Indian Affairs. Not sure how EM can get this information but would need this information to understand First Nations 'segment'.

	CAC – Is it stipulated anywhere that the regulations will be reviewed on a regular basis? E.g. Every 3 years? A: It isn't written into the Act but is within the procedures for the regulations. EM – EM is working with PUB on process to do an advance notice of filing prior to filing the actual full submission to provide additional time to register intervenors while final document is prepared. EM is still confirming with the PUB about doing this in which case EEAG will be notified. **ACTION:** EM to update EEAG re: review period procedure for regulations related to Act. **ACTION:** EM to report back on annual reporting/updating process once submission is finalized.
6. EEAG schedule & action items, parking lot, review, next steps	The following items were noted for discussion at the September 5 2019 meeting of the EEAG: • Role of Manitoba Hydro at hearing process • How plan will be evaluated and when? • Feedback on overall EEAG process • Request for detail/additional analysis re: questions raised, e.g. delivery paths for respective program components, what agency does what? etc.
General meeting notes	IISD hosted meeting
Action item summary	**ACTION:** EACCGP presentation slides to be uploaded, shared with EEAG members. **ACTION:** EM to provide more information about delivery paths for respective programs e.g. what agency will deliver what? **ACTION:** EM to provide breakdown of fuels included in affordable energy category and how these will be factored into accounting. **ACTION:** EM to provide information re: breakdown of savings per customer group. **ACTION:** EM to update EEAG re: review procedure for new regulations related to Act. **ACTION:** EM to report back on annual reporting/updating process once submission is finalized.

Blueprint.

Efficiency Manitoba
Energy Efficiency Advisory Group (EEAG)
Meeting 6 Report | September 5, 2019
Action Items, EEAG Next Steps and PUB Hearing Process

Blueprint.

A. Meeting 6 agenda

Purpose:

- Respond to questions, queries raised at August 20, 2019 meeting
- Provide update on upcoming PUB hearing process
- Discuss how the Advisory Group and Efficiency Manitoba will work together moving forward including:
    - Key milestones for the coming year
    - How EM's 3-year plan will be evaluated and the role of Advisory Group
    - Ongoing engagement
- Gather feedback on the EEAG process and results to-date

Agenda:

11:45a.m. (15 min) Arrival, lunch

12:00 (15 min) 1. Welcome, agenda review, introductions and matters arising

12:15p.m. (45 min) 2. Update on 3-year plan development activities, response to action items

1:00p.m. (30 min) 3. Fall hearing process

1:30p.m. (15 min) 4. Break

1:45p.m. (30 min) 5. Working together moving forward
- Evaluation plan
- 2019-2020 milestones and ongoing engagement

2:15p.m. (20 min) 6. Feedback on the EEAG process and results to-date

2:35p.m. (25 min) 7. Thank you, parking lot, next steps

Blueprint.

B. Meeting Attendees

	Organization	**Name**
	Association of Manitoba Municipalities (AMM)	Denys Volkov
	Blueprint Inc (facilitators)	Etoile Stewart
	Blueprint Inc (facilitators)	Michelle Kuly
	Efficiency Manitoba (EM)	Colleen Kuruluk
	Efficiency Manitoba (EM)	Carrie Werschler
	Efficiency Manitoba (EM)	Michael Stocki
	Green Action Centre (GAC)	Peter Miller
	Intergroup, on behalf of Manitoba Industrial Power Users' Group (MIPUG)	Dale Friesen
	International Institute of Sustainable Development (IISD)	Daniella Echeverría
	Keystone Agricultural Producers (KAP)	Janelle Love
	Manitoba Keewatinowi Okimakanak Inc. (MKO)	Stewart Hill
	Southern Chiefs Organization	Tina Keeper
	Manitoba Metis Federation	Morissa Boerchers

Regrets:
Colleen Sklar, Expert Advisory Council on the Climate and Green Plan (EACCGP); Gloria Desorcy, Consumers' Association of Manitoba (CAC-MB)

C. Minutes

1. Welcome, session overview, introductions, matters arising	Territorial acknowledgement. Review of housekeeping items and meeting materials. Review of agenda, time constraints. Introductions and matters arising related to EEAG (go-around). **ACTION:** September 17th is deadline to have responses to Meeting 5 and 6 notes from EEAG. EM flagged recent election promise in media. Noted for 'parking lot' discussion later in meeting.
2. Update on 3-year plan development activities, response to action items	Presentation by Efficiency Manitoba on updated 3-year plan. EEAG posed the following questions: MIPUG: Will there be DSM engagement of the industrial segment via Hydro or EM moving forward? Will Hydro be retaining any DSM technical services? A: EM will be focused on DSM engagement with Hydro providing other electric / gas customer services. Specific DSM technical services provided by EM with non-DSM technical services to be determined by Hydro. GAC: If there is an Electric Vehicle (EV) incentive who will deliver it? A: EM would be open to that if it is written into EM regulations. Understanding is that EV is not included in EM regulation, and amendment to regulations would be required to include in EM mandate. Additional discussion re: EV added to 'parking lot' for discussion later in meeting. GAC: Is this a complete repurposing of the Affordable Energy Fund because there is money in the fund? A: Yes, to draw down that amount. Is there any ability to add money to the fund? A: The Fund is continued on the EM Act so the provisions to add to it stayed the same. Given the narrow definition of fund, there isn't a large demand for dollars. GAC: Do propane and diesel reductions count against fuel reductions? A: Yes. Only home heating fuel(s) are within the scope of the Affordable Energy Fund but they do count towards natural gas savings target.

	MMF: Re: Indigenous customer segment and residential savings, is this currently just tracked on reserve? A: Yes. However, EM is looking at ways to track urban residential Metis citizens, working with MMF. MIPUG: Noted the differences in cost per kilowatt hour depending on customer segment re: electric investment summary. MMF: Noted absence of Indigenous customer segment in the natural gas portfolio within this version of the 3-year plan? A: Updated version of the 3-year plan will include Indigenous Customer segment within the natural gas portfolio, EM is still working on how to include Metis communities and urban Metis residents. AMM: Will municipalities be mentioned in the submission? A: Yes. AMM concerns will be included in 3 or 4 different sections concerning programming etc. <u>Parking Lot Items</u> EM noted recent election promise made by PC party to spend $25M on natural gas retrofits delivered by EM. EM clarified that they were not consulted on the campaign promise details. Promise may present some challenges since current plan does not include $25M in spending on the Natural Gas portfolio within the plan. EM follow up with elected government post-election may be required. GAC: Review of regulation for Electric Vehicles – the language is permissive in the Act, so if Hydro asked EM to look after transportation could EM do so without amending the regulation? A: EM not sure and has been told that transportation was taken out of EM purview. Perhaps GAC (and other groups) could draft regulation for an amendment to the EM Act at a future date . MKO: What about diesel communities facing end of life diesel generating facilities (operated by Manitoba Hydro) - a group has been established to meet and look at how to address this. Is there a way for EM to assist with the process? MKO noted that there is a lot of bickering about what government has jurisdiction.

	A: EM may be able to help with demand side for residential segment through programming, to reduce the capacity of energy required to be generated. **ACTION:** MKO will follow up with EM about assisting with next steps regarding on-reserve diesel facilities. MIPUG: Will EM have access to billing data? A: Hydro knows that EM needs customer energy consumption data and a working group has been struck to deal with this.
3. Fall hearing process	Presentation by EM with overview of PUB hearing process. At the outset, EEAG was polled to see how many members are familiar with the PUB with most of the EEAG members indicating they are quite familiar with PUB process. EEAG posed the following questions: MIPUG: How will MB Hydro participate in the hearing? How will Hydro treat their financial contribution to EM? This will be relevant to the hearing. A: EM has a meeting with Hydro prior to the hearing to discuss were there are issues that may be of interest to Hydro. GAC and MIPUG offered overview of process to apply for Intervenor Status and what/who may or may not be accepted or funded to participate. MIPUG: When is PUB expected to respond to EM submission given April deadline? A: Ideally, February, so that Minister's office has time to review. AMM: Oct 1 2019 coincides with AMM board meeting. Can AMM get sections from EM submission so that AMM can brief members? A: Yes. **ACTION:** EM to provide relevant sections of PUB submission to AMM.
4. Break	
5. Working together moving forward - Evaluation plan	Presentation by EM with overview of the next steps in the planning process and the desire for EM to continue working

- 2019-2020 milestones and ongoing engagement	with the EEAG going forward. EM asked the for suggested topics to be considered when the EEAG reconvenes once the PUB process has concluded. EEAG posed the following questions: AMM: In terms of engagement of EEAG, how often will meetings occur? A: Perhaps quarterly (most likely) or as needed, once EM is up and running. Engagement might increase in years when EM plan is being updated. MIPUG: Will Econoler evaluation plan be part of EM filing? A: Yes. MIPUG: Pace and prioritization of spending will be important for MIPUG client base to understand and how it will impact programming.
6. Feedback on the EEAG process and results to-date	EEAG asked to reflect on process/continued engagement going forward and to share any feedback with EM for improvement and whether continued participation on the EEAG is desirable. A questionnaire on the engagement and facilitation process for the EEAG was provided to the group to fill out and collected at end of meeting. SCO: There will continue to be questions about consultation and roles coming from First Nations' rights holders. **ACTION:** SCO has information from Minister Mayer to share with EM. KAP: Will follow up and share feedback about EEAG process with EM post-meeting. GAC: EM work should be more integrated with Climate Action Plan planning regarding GhG reduction strategies and targets. A group like EEAG can put forward ideas for EM staff consideration and would recommend more meetings with particular customer segments or focused on particular issues (e.g. working group on climate plan). A strategic working group would want to consider

	other things to compliment how EM develops/implements solutions. MMF: Can and want to support EM outreach to Metis communities and populations. Noted that it was helpful to meet with EM one on one. IISD: Want to help EM and provide support to meet targets, continuous improvement and adaptive policy where possible. Interested to see what barriers and successes EM encounters along the way. MKO: Community will determine if this process is relevant/beneficial to First Nations communities. MKO will take it back to community to discuss the benefits of continued to engagement. Noted that communities are not all the same and there is a huge range in capacity (social economic conditions) to participate. Specifically noted that EM is mandated to spend 5% of budget reaching hard to reach communities. MKO can assist EM with this and can recommend on-going participation to community. If community agrees, MKO will continue to participate. The following topics were flagged for additional engagement with EEAG moving forward: EM Innovation Fund; EM continuous improvement; Customer segments. MKO: If EEAG is going to proceed it would help to have a formal request to participate to forward to MKO to consider. MIPUG: Commended EM for being open to suggestions given timelines and noted that responses from EM have been excellent. Demonstrates good faith and goodwill. More technical detail could be helpful at times, in some cases it is bit awkward not having Hydro at the table to assist with this. Might be very specific to MIPUG and concern with rates and savings expectations put on this segment. SCO: Acknowledged how excellent the facilitation and tone of meetings have been, it is very welcomed. SCO is excited about opportunity to move forward and engage other governments if needed. Congratulated EM on the work as it is significant. Would

	be helpful to have bios of each organization on the EEAG sharepoint site or in materials so the group can see each other. KAP: Very enthusiastic to be at the table. EM: EM are completely open to EEAG suggestions for improvement. Expressed appreciation for participation, openness of group. Helpful to have EEAG members direct the agenda of each meeting. Separate meetings with other groups were very valuable as well. The mix going forward will be important. There will be venues for meetings with Hydro outside of EEAG. **ACTION:** Blueprint to issue request feedback from CAC-MB (sent regrets), AMM (had to leave early) and KAP (main representative) after meeting. **ACTION:** Blueprint to summarize survey feedback and provide back to EM. **ACTION**: Terms of Reference for EEAG are intended to be evergreen. EM will archive original TOR and meeting minutes for future reference. Updating the Terms of Reference can be one of the first items to address when EEAG reconvenes. Intent was that meeting reports/minutes to date will be appended to EM's submission to the PUB. EM would like to send out formal appointment letters to EEAG members if it is appropriate. EEAG members agreed that having formal invitation is needed for each organization to agree to be appointed to EEAG going forward. **ACTION:** EM will send out invitation/appointment letters to all members organizations of EEAG.
7. Parking lot, next steps	September 17th is deadline for feedback on Meeting 5 and Meeting 6 notes. EEAG may reach out to EM during PUB process if desired. EM thanked the members of the EEAG. EM acknowledged that the EEAG process exceeded expectations and appreciated the

	comment on tone. EM wants to be a model of how to do advisory engagement and have accomplished that. Many kudos re: meeting prep and facilitation.
General meeting notes	Shared EEAG folder will remain active, with files accessible to EEAG members. Please note that information included in meeting presentation files may become outdated as refinements continue to be integrated into EM's 3-year plan prior to filing.
Action item summary	**ACTION:** September 17th is deadline to have responses on errors/omissions to Meeting 5 and 6 notes from EEAG. **ACTION:** MKO will follow up with EM about assisting with next steps regarding on-reserve diesel facilities. **ACTION:** EM to provide relevant sections of PUB submission to AMM. **ACTION:** SCO has information from Minister Mayer to share with EM. **ACTION:** Blueprint to issue request feedback from CAC-MB (sent regrets), AMM (had to leave early) and KAP (main representative) after meeting. **ACTION:** Blueprint to summarize survey feedback and provide back to EM. **ACTION:** EM will send out invitation/appointment letters to all members of EEAG.

ATTACHMENT 3
TECHNICAL TABLES

2020/23 EFFICIENCY PLAN

ELECTRIC PORTFOLIO TECHNICAL TABLES

NATURAL GAS PORTFOLIO TECHNICAL TABLES

EFFICIENCY MANITOBA

Annual Natural Gas Energy Savings (million m^3)

		2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install		0.10	0.17	0.23
Product Rebates		0.55	0.47	0.19
Home Renovation		0.33	1.15	1.25
New Homes & Major Renovation		0.07	0.16	0.17
Home Energy Efficiency Kits & Education		0.03	0.06	0.06
	Subtotal	1.08	2.01	1.90
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		1.08	1.07	1.09
	Subtotal	1.08	1.07	1.09
INDIGENOUS PROGRAMS				
Metis Income Qualified		0.05	0.05	0.05
	Subtotal	0.05	0.05	0.05
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		0.32	0.32	0.32
In-Suite Efficiency		0.08	0.12	0.15
Renovation		1.00	1.13	1.25
HVAC & Controls		0.79	0.76	0.72
New Construction & High-Performance Buildings		0.61	0.96	0.71
Custom		5.29	3.93	4.13
	Subtotal	8.10	7.22	7.29
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		-	0.17	0.17
	Subtotal	-	0.17	0.17
Interactive Effects		(2.12)	(1.85)	(1.62)
Program Impact Totals		8.19	8.66	8.87
Codes, Standards & Regulations		3.51	4.09	4.36
Total Annual Energy Savings (million m^3)		**11.70**	**12.75**	**13.23**

Note: May not add up due to rounding.

Annual Natural Gas Costs (000's $)

		2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install		$199	$264	$327
Product Rebates		$890	$813	$272
Home Renovation		$933	$3,066	$3,839
New Homes & Major Renovation		$371	$742	$769
Home Energy Efficiency Kits & Education		$135	$149	$152
	Subtotal	$2,528	$5,033	$5,360
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		$5,934	$5,992	$6,606
	Subtotal	$5,934	$5,992	$6,606
INDIGENOUS PROGRAMS				
Metis Income Qualified		$292	$330	$362
	Subtotal	$292	$330	$362
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		$249	$254	$260
In-Suite Efficiency		$38	$58	$79
Renovation		$2,102	$2,151	$2,387
HVAC & Controls		$797	$841	$886
New Construction & High-Performance Buildings		$2,079	$2,570	$2,301
Custom		$1,959	$1,262	$1,702
	Subtotal	$7,224	$7,136	$7,615
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		$63	$139	$168
	Subtotal	$63	$139	$168
Program Totals		$16,041	$18,631	$20,110
Enabling Strategies: Program Support and Education		$353	$341	$355
Enabling Strategies: Innovation, Codes & Standards and Evaluation		$1,632	$1,689	$1,618
Corporate Overhead		$615	$614	$963
Total Natural Gas Costs (000's $)		**$18,641**	**$21,275**	**$23,047**

Note: May not add up due to rounding.

Annual Natural Gas GHG Savings (tonnes CO2eq)

		2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install		200	300	400
Product Rebates		1,000	900	400
Home Renovation		600	2,200	2,400
New Homes & Major Renovation		100	300	300
Home Energy Efficiency Kits & Education		100	100	100
	Subtotal	2,000	3,800	3,600
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		2,000	2,000	2,100
	Subtotal	2,000	2,000	2,100
INDIGENOUS PROGRAMS				
Metis Income Qualified		100	100	100
	Subtotal	100	100	100
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		600	600	600
In-Suite Efficiency		100	200	300
Renovation		1,900	2,200	2,400
HVAC & Controls		1,500	1,400	1,400
New Construction & High-Performance Buildings		1,200	1,800	1,400
Custom		10,100	7,500	7,800
	Subtotal	15,400	13,700	13,900
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		-	300	300
	Subtotal	-	300	300
Interactive Effects		(4,000)	(3,500)	(3,100)
Program Impact Totals		15,500	16,400	16,900
Codes, Standards & Regulations		6,700	7,800	8,300
Total Annual GHG Savings (tonnes CO2eq)		**22,200**	**24,200**	**25,200**

Note: May not add up due to rounding.

Annual Bill Reduction Per Program Bundle
(All Participants)

		2020/23 Average Natural Gas	2020/23 Average Carbon Charge	2020/23 Average Total
RESIDENTIAL PROGRAMS				
Direct Install		$39,000	$13,000	$52,000
Product Rebates		$95,000	$28,000	$123,000
Home Renovation		$244,000	$75,000	$319,000
New Homes & Major Renovation		$36,000	$11,000	$47,000
Home Energy Efficiency Kits & Education		$12,000	$4,000	$16,000
	Subtotal	$426,000	$131,000	$557,000
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		$287,000	$82,000	$369,000
	Subtotal	$287,000	$82,000	$369,000
INDIGENOUS PROGRAMS				
Metis Income Qualified		$14,000	$4,000	$18,000
	Subtotal	$14,000	$4,000	$18,000
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		$79,000	$24,000	$103,000
In-Suite Efficiency		$28,000	$9,000	$37,000
Renovation		$244,000	$87,000	$331,000
HVAC & Controls		$160,000	$57,000	$217,000
New Construction & High-Performance Buildings		$151,000	$59,000	$210,000
Custom		$790,000	$331,000	$1,121,000
	Subtotal	$1,452,000	$567,000	$2,019,000
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		$23,000	$9,000	$32,000
	Subtotal	$23,000	$9,000	$32,000
Total Customer Bill Savings		**$2,202,000**	**$793,000**	**$2,995,000**

Note: May not add up due to rounding.

Natural Gas Program Cost-Effectiveness Metrics

	PACT		
	Ratio	NPV (000's $)	Levelized Cost (cents/m³)
RESIDENTIAL PROGRAMS			
Direct Install	0.78	($166)	23.19
Product Rebates	0.79	($402)	22.68
Home Renovation	1.20	$1,482	16.82
New Homes & Major Renovation	0.72	($492)	28.07
Home Energy Efficiency Kits & Education	0.41	($243)	43.90
Subtotal	1.01	$179	19.49
INCOME QUALIFIED PROGRAMS			
Income Qualified Offers	0.49	($8,888)	40.29
Subtotal	0.49	($8,888)	40.29
INDIGENOUS PROGRAMS			
Metis Income Qualified	0.44	($519)	44.94
Subtotal	0.44	($519)	44.94
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS			
Small Business & Appliances	1.75	$541	10.06
In-Suite Efficiency	3.15	$351	5.68
Renovation	1.60	$3,774	11.85
HVAC & Controls	2.59	$3,773	7.35
New Construction & High-Performance Buildings	0.59	($2,693)	30.62
Custom	6.51	$25,684	2.72
Subtotal	2.52	$31,429	7.19
EMERGING TECHNOLOGY PROGRAMS			
Emerging Technology	0.89	($104)	21.40
Subtotal	0.89	($104)	21.40
Program Impact Totals	1.42	$22,097	13.03
Program Support, Enabling Strategies & Corporate Overhead		($7,707)	
Interactive Effects		($15,146)	
Overall Portfolio Metrics	**0.99**	**($756)**	**18.69**

Note: May not add up due to rounding.

Annual Natural Gas Participation

	UNITS	2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install	No. of houses	1,200	1,800	2,400
Product Rebates	No. of products	39,000	34,000	23,000
Home Renovation	No. of projects	1,200	9,400	9,000
New Homes & Major Renovation	No. of houses	300	300	300
Home Energy Efficiency Kits & Education	No. of kits	700	1,100	1,100
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers	No. of retrofits	3,600	2,500	2,400
INDIGENOUS PROGRAMS				
Metis Income Qualified	No. of retrofits	200	100	100
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances	No. of appliances	1,400	1,400	1,400
In-Suite Efficiency	No. of suites	1,200	1,800	2,400
Renovation	No. of projects	200	200	200
HVAC & Controls	No. of units	200	200	200
New Construction & High-Performance Buildings	No. of buildings	30	100	100
Custom	No. of projects	20	20	30
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology	No. of customers	< 10	< 10	< 10

Annual Electric Energy Savings (GW.h)

		2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install		1.2	1.9	2.6
Product Rebates		14.3	11.7	8.7
Home Renovation		3.0	6.2	6.1
New Homes & Major Renovation		3.3	3.6	3.7
Home Energy Efficiency Kits & Education		0.6	1.0	1.0
	Subtotal	22.4	24.5	21.9
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		2.5	2.7	2.7
	Subtotal	2.5	2.7	2.7
INDIGENOUS PROGRAMS				
Insulation and Direct Install		0.2	0.3	0.3
Small Business		0.4	0.4	0.4
Community Geothermal		0.8	1.2	1.2
Metis Income Qualified		0.2	0.2	0.2
	Subtotal	1.5	2.1	2.2
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		14.8	15.2	15.6
In-Suite Efficiency		0.7	1.0	1.3
Renovation		110.7	103.1	95.5
HVAC & Controls		3.3	3.5	3.5
New Construction & High-Performance Buildings		6.0	8.8	7.2
Custom		24.2	17.9	28.6
Load Displacement		99.0	120.5	110.5
	Subtotal	258.7	269.9	262.2
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		-	1.0	5.9
	Subtotal	-	1.0	5.9
Program Impact Totals		285	300	295
Codes, Standards & Regulations		88	103	108
Total Energy Savings (GW.h) at Generation		**373**	**403**	**403**

Note: May not add up due to rounding.

Annual Electric Capacity Savings (MW)

		2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install		0.3	0.4	0.5
Product Rebates		2.8	2.1	1.2
Home Renovation		1.1	2.3	2.3
New Homes & Major Renovation		1.7	1.8	1.8
Home Energy Efficiency Kits & Education		0.0	0.1	0.1
	Subtotal	5.8	6.7	5.9
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		0.9	0.9	0.9
	Subtotal	0.9	0.9	0.9
INDIGENOUS PROGRAMS				
Insulation and Direct Install		0.1	0.1	0.1
Small Business		0.1	0.1	0.1
Community Geothermal		0.4	0.6	0.6
Metis Income Qualified		0.1	0.1	0.1
	Subtotal	0.6	0.9	0.9
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		2.3	2.4	2.4
In-Suite Efficiency		0.2	0.3	0.4
Renovation		33.1	31.1	28.9
HVAC & Controls		0.6	0.6	0.7
New Construction & High-Performance Buildings		1.2	1.6	1.6
Custom		4.0	2.5	4.1
Load Displacement		13.8	16.3	15.3
	Subtotal	55.1	54.8	53.4
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		-	0.6	0.6
	Subtotal	-	0.6	0.6
Program Impact Totals		62	64	62
Codes, Standards & Regulations		23	29	31
Total Capacity Savings (MW) at Generation		**85**	**93**	**93**

Note: May not add up due to rounding.

Annual Electric Costs (000's $)

		2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install		$406	$578	$753
Product Rebates		$4,033	$3,638	$3,120
Home Renovation		$1,971	$3,107	$3,169
New Homes & Major Renovation		$913	$1,149	$1,168
Home Energy Efficiency Kits & Education		$158	$230	$234
	Subtotal	$7,482	$8,701	$8,445
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers		$1,188	$1,660	$1,637
	Subtotal	$1,188	$1,660	$1,637
INDIGENOUS PROGRAMS				
Insulation and Direct Install		$196	$256	$272
Small Business		$313	$370	$472
Community Geothermal		$323	$505	$515
Metis Income Qualified		$97	$141	$140
	Subtotal	$929	$1,272	$1,398
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances		$2,636	$2,698	$2,763
In-Suite Efficiency		$204	$253	$303
Renovation		$17,425	$16,710	$15,961
HVAC & Controls		$1,006	$1,083	$1,142
New Construction & High-Performance Buildings		$1,516	$1,875	$1,667
Custom		$3,021	$2,668	$3,749
Load Displacement		$984	$5,693	$3,357
	Subtotal	$26,793	$30,980	$28,942
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology		$124	$317	$1,463
	Subtotal	$124	$317	$1,463
Program Totals		$36,515	$42,930	$41,885
Enabling Strategies: Program Support and Education		$1,289	$1,312	$1,355
Enabling Strategies: Innovation, Codes & Standards and Evaluation		$4,897	$5,068	$4,854
Corporate Overhead		$1,844	$1,841	$2,889
Total Electric Costs (000's $)		**$44,545**	**$51,151**	**$50,983**

Note: May not add up due to rounding.

Electric Program Cost-Effectiveness Metrics

	PACT		
	Ratio	NPV (000's $)	Levelized Cost (cents/kWh)
RESIDENTIAL PROGRAMS			
Direct Install	1.53	$861	4.15
Product Rebates	1.74	$7,533	3.49
Home Renovation	2.90	$14,705	3.67
New Homes & Major Renovation	6.56	$16,885	1.84
Home Energy Efficiency Kits & Education	1.61	$353	3.05
Subtotal	2.74	$40,338	3.19
INCOME QUALIFIED PROGRAMS			
Income Qualified Offers	2.80	$7,576	3.70
Subtotal	2.80	$7,576	3.70
INDIGENOUS PROGRAMS			
Insulation and Direct Install	1.90	$613	5.88
Small Business	1.31	$1,803	5.31
Community Geothermal	4.03	$3,816	2.86
Metis Income Qualified	2.58	$559	4.23
Subtotal	1.84	$6,792	4.67
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS			
Small Business & Appliances	3.61	$7,680	1.43
In-Suite Efficiency	2.48	$1,055	3.14
Renovation	4.97	$187,957	1.67
HVAC & Controls	2.81	$5,501	2.30
New Construction & High-Performance Buildings	2.95	$9,311	2.36
Custom	5.18	$37,133	1.17
Load Displacement	3.72	$61,521	1.50
Subtotal	4.43	$310,159	1.59
EMERGING TECHNOLOGY PROGRAMS			
Emerging Technology	2.96	$4,156	2.11
Subtotal	2.96	$4,156	2.11
Program Impact Totals	3.88	$369,021	1.89
Program Support, Enabling Strategies & Corporate Overhead		($23,883)	
Overall Portfolio Metrics	**3.27**	**$345,138**	**2.24**

Note: May not add up due to rounding.

Annual Bill Reduction Per Program Bundle
(All Participants)

		2020/23 Average
RESIDENTIAL PROGRAMS		
Direct Install		$ 139,000
Product Rebates		$ 895,000
Home Renovation		$ 396,000
New Homes & Major Renovation		$ 275,000
Home Energy Efficiency Kits & Education		$ 64,000
	Subtotal	$ 1,769,000
INCOME QUALIFIED PROGRAMS		
Income Qualified Offers		$ 203,000
	Subtotal	$ 203,000
INDIGENOUS PROGRAMS		
Insulation and Direct Install		$ 20,000
Small Business		$ 29,000
Community Geothermal		$ 84,000
Metis Income Qualified		$ 14,000
	Subtotal	$ 147,000
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS		
Small Business & Appliances		$ 947,000
In-Suite Efficiency		$ 74,000
Renovation		$ 7,689,000
HVAC & Controls		$ 189,000
New Construction & High-Performance Buildings		$ 440,000
Custom		$ 1,245,000
Load Displacement		$ 1,983,000
	Subtotal	$ 12,567,000
EMERGING TECHNOLOGY PROGRAMS		
Emerging Technology		$ 171,000
	Subtotal	$ 171,000
Total Customer Bill Savings		**$14,857,000**

Note: May not add up due to rounding.

Annual Electric Participation

	UNITS	2020/21	2021/22	2022/23
RESIDENTIAL PROGRAMS				
Direct Install	No. of houses	800	1,200	1,600
Product Rebates	No. of products / appliances	354,000	275,000	195,000
Home Renovation	No. of projects	800	4,700	3,900
New Homes & Major Renovation	No. of houses	400	400	400
Home Energy Efficiency Kits & Education	No. of kits	2,300	2,600	2,600
INCOME QUALIFIED PROGRAMS				
Income Qualified Offers	No. of retrofits	3,400	3,200	3,200
INDIGENOUS PROGRAMS				
Insulation and Direct Install	No. of houses	100	150	180
Small Business	No. of businesses	30	30	40
Community Geothermal	No. of systems	50	90	90
Metis Income Qualified	No. of retrofits	200	200	300
COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROGRAMS				
Small Business & Appliances	No. of applications	900	900	1,000
In-Suite Efficiency	No. of suites	800	1,200	1,600
Renovation	No. of projects	1,800	1,700	1,600
HVAC & Controls	No. of units	800	800	800
New Construction & High-Performance Buildings	No. of buildings	30	100	70
Custom	No. of projects	80	80	100
Load Displacement	No. of projects	< 10	< 10	< 10
EMERGING TECHNOLOGY PROGRAMS				
Emerging Technology	No. of customers	0	< 10	230

ATTACHMENT 4
CONSULTANT MEMOS

2020/23 EFFICIENCY PLAN

CONSULTANT MEMOS

EFFICIENCY MANITOBA

dunsky

Efficiency | Renewables | Mobility

To: Colleen Kuruluk, CEO, Efficiency Manitoba
From: Julie-Ann Vincent
cc: Philippe Dunsky, Raegan Bond
Date: 2019-09-25
Re: **Program Administrator Budget Definitions**

Context

Efficiency Manitoba (EM) has requested that Dunsky conduct a review and provide a summary of how other Program Administrators define and categorize their budgets, with particular consideration for the following:

- Incentives
- Program Delivery
- Program Administration
- Innovation (Development and Research)
- Overhead
- Other Categories (as applicable)

The scope of our research was based on publicly available information from regulatory filings and other reports. Because financial and budget information tends to be reported in less detail than other components of energy efficiency filings (aside from financial statements, which do not categorize information in this way), **the jurisdictions were primarily selected based on availability of data**. A secondary consideration was to provide information for leaders in the field of regulated energy efficiency program administration, as ones with rigorous processes and regulatory compliance goals.

As such, our team reviewed the following jurisdictions:

- **Massachusetts:** selected because it is considered a leader in energy efficiency, ranked #1 in the 2018 American Council for an Energy-Efficient Economy (ACEEE) State Energy Efficiency Scorecard.
- **Oregon:** selected because it is consistently in the top ten of the ACEEE Scorecard (ranked 7th in 2018).
- **Nova Scotia:** selected because it is a leading jurisdiction in Canada.

We note that comparability of jurisdictional size, type of administrator, climate, programs for different fuel sources, etc. is relevant when analyzing energy savings, investment, and similar questions; however, these considerations are not as relevant for understanding budget categorization practices.

Summary of Findings

Program administrators do not tend to release detailed financial data unless explicitly required to by regulators. And while financial statements provide some indication of overall budgets, standardized financial reports do not break down expenditures in the same way they are allocated between program and non-program costs, resulting in the following considerations when attempting to compare jurisdictions:

- **There is no standard practice to allocating costs between program costs and other expenditures**. Rather, budget categories are a matter of definition with no "right" or "wrong" way to define what costs should fit into which categories (including incentives).
- **Cost-sharing between programs and overhead costs vary by jurisdiction.** Some jurisdictions allocate all costs such as office space to administration, while others share these costs with programs.
- **Available information varies significantly by jurisdiction.** For example, British Columbia (an early potential comparator) only reports high-level information, whereas Massachusetts reports detailed information about program cost categories, definitions, and spending allocations by sector and program.
- **Among jurisdictions that report cost allocation details, many do not report line-by-line breakdowns of categories**, for example, within non-incentive program costs or administrative costs.

Because of the significant variability between the data available in different jurisdictions, and between the ways in which these jurisdictions categorize and allocate their costs, we note that a **reasonable, apples-to-apples comparison of percentage of overall budget costs between jurisdictions is not possible**. This memo therefore focuses on contextualizing these differences and drawing overall conclusions about how this information and context can be used by Efficiency Manitoba.

Budget Definitions

In this section, we outline budget definitions of the three jurisdictions reviewed (Massachusetts, Oregon, and Nova Scotia) to demonstrate the wide variability between program administrators' cost categorization.

Massachusetts

All program administrators in Massachusetts use standard energy efficiency budget categories because programs are run statewide, and energy efficiency plans are co-filed. However, even within this alignment, differences exist:

> *The Program Administrators have developed consistent definitions and methods of assigning costs. The Program Administrators developed common definitions to assign budget costs across all five program implementation cost categories. With respect to*

salaries and overhead, each Program Administrator has developed a method to allocate these costs to appropriate cost categories.[1]

The five program implementation cost categories include:

- **Program Planning and Administration:** Developing program plans, non-evaluation or market-research-related R&D, program administration (labour, benefits, expenses, materials, supplies, overhead, regulatory costs, database, consultants, administrative staff)
- **Marketing and Advertising:** Advertising (including development), staff salaries for employee functions related to marketing and advertising.
- **Participant Incentives:** Funds paid to or on behalf of customers or trade allies, costs that directly benefit customers (e.g. permit fees, pre-weatherization expenses, repairs, interest buy-down, etc.).
- **Sales, Technical Assistance and Training:** Administration, technical assistance, and training costs related to motivating the purchase and installation of energy efficiency products and services, including customers, retailers, trade professionals, manufacturers, and demonstration vendors; costs not directly tied to achieving energy savings, such as residential assessments, technical assistance studies, contractor fees and performance bonuses, vendor cost of money and fees; internal salaries for employees involved in customer sales and technical assistance.
- **Evaluation and Market Research:** Cost-effectiveness evaluation costs, market research, evaluation costs, tracking and reporting costs, funding studies, eTRM costs, etc.; internal salaries for employee functions relating to program evaluation.

The breakout of these costs are provided in Table 1 below.

Table 1. Massachusetts Budget Categories with Allocated Percentages

Electric Program Budgets		
	2016-2018	2019-2021
Program Planning and Administration	5%	5%
Marketing and Advertising	3%	3%
Participant Incentives	76%	73%
Sales, Technical Assistance and Training	14%	17%
Evaluation and Market Research	3%	3%
Natural Gas Program Budgets		
Program Planning and Administration	5%	5%
Marketing and Advertising	4%	3%
Participant Incentives	71%	69%
Sales, Technical Assistance and Training	19%	22%
Evaluation and Market Research	3%	2%

[1] *Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan (2019-2021)*. Filed with the Department of Public Utilities October 31, 2018. http://ma-eeac.org/wordpress/wp-content/uploads/Exh.-1-Final-Plan-10-31-18-With-Appendices-no-bulk.pdf. p. 151.

Energy Trust of Oregon

In Oregon, programs are administered by the Energy Trust of Oregon (ETO), a third-party administrator that collaborates with the state's utilities, non-profits and government agencies to offer energy efficiency programs. The organization is regulated by the state's Public Utilities Commission (PUC) and operates under the state's non-profit requirements.

ETO allocates costs across three categories, defined in coordination with the PUC for the purposes of enabling "comparison with other recipients of public purpose funding"[2]:

- **Direct Program Costs:** Costs that "can be directly linked to and reflect a causal relationship to one individual program/project; or can easily be allocated to two or more programs based upon usage, cause, or benefit."[3]
- **Administrative and Program Support Costs:** All non-direct program costs, including:
    - ***Management and General:*** Finance, legal, human resources, office and Board of Directors' administration costs;
    - ***General Communications and Outreach:*** Communications, reporting, public and stakeholder relations, website, general outreach and marketing;
    - ***Shared Office Space and Equipment:*** Rent, furniture, maintenance, etc.;
    - ***Information Technology:*** Development and maintenance costs for IT software systems and hardware;
    - ***Program Support:*** Travel, meetings, conferences, dues, and general program materials; unless noted as a direct program cost: program management, program delivery, program incentives, program payroll and related expenses, outsourced services, planning and evaluation services, customer service management, and trade ally network management.

Of note is that in 2017, the PUC set a cap of 8% of revenue for ETO's program support and administration costs, which has resulted in ETO changing its budgeting and reporting. The organization's 2019 budget reports Program Support and Administrative costs together, whereas in prior years Program Delivery and Program Support were reported together.

2018 Actual and 2019 budgeted cost by percentage in these categories (with a breakout for incentives) is provided in Table 2 below.

[2] Public Utility Commission of Oregon. *2018 Performance Measure Recommendations for Energy Trust of Oregon [Order].* Appendix A. Order No. 18-076, February 27, 2018. https://www.energytrust.org/wp-content/uploads/2018/05/2018_OPUC_Performance_Measures.pdf. p. 6.
[3] Energy Trust of Oregon. 019 Annual Budget and 2019-2020 Action Plan. Final Proposed. December 14, 2018. https://www.energytrust.org/wp-content/uploads/2018/12/2019-2020_Final_Proposed_Budget_Binder.pdf. p. 3.

Table 2. Energy Trust of Oregon Budget Categories with Allocated Percentages

Budget Category	2018 Budget	2019 Budget
Direct Program Costs	**93.5%**	**93.3%**
Incentives	46.8%	54.1%
Administrative and Program Support	**7.0%***	**7.4%***

*Percentage of annual revenue not including performance measure, which is why percentages do not sum to 100%.

EfficiencyOne/Efficiency Nova Scotia

As the holder of the franchise to administer electric and non-electric energy efficiency programs in Nova Scotia, EfficiencyOne operates under the Efficiency Nova Scotia brand. Efficiency Nova Scotia is regulated by the province's Utility and Review Board and is an energy efficiency utility under the province's *Public Utilities Act*.

EfficiencyOne organizes its budget into a greater number of categories than the other jurisdictions reviewed:

- Incentives
- Evaluation and verification
- Program support
- Information technology
- Marketing, outreach, education and research
- Meetings and travel
- Office and insurance
- Professional fees and consulting
- Rent
- Salaries and benefits
- Training and development

Definitions are not provided in EfficiencyOne's filings, but the categories are relatively self-explanatory. 2020 budget percentages for each of these categories are provided in Table 3 below; prior years are not included because EfficiencyOne's annual reports contain different (non-regulatory) categories that do not allow for comparison.

Table 3. EfficiencyOne Budget Categories and Allocated Percentages

EfficiencyOne 2020 Budget[4]	
Incentives	60.1%
Evaluation and verification	3.3%
Program support	4.0%
Information technology	2.2%
Marketing, outreach, education and research	7.2%

[4] EfficiencyOne. "Responses to Synapse Information Requests." *EfficiencyOne Application for approval of a Supply Agreement for Electricity and Conservation Activities between E1 and Nova Scotia Power Inc. (DSM 2020-2022).* Matter 09096. May 13, 2019. IR-14, p. 2.

Meetings and travel	0.4%
Office and insurance	0.6%
Professional fees and consulting	1.9%
Rent	1.6%
Salaries and benefits	18.2%
Training and development	0.5%

*Include incentives and "direct program spending"

Of note, EfficiencyOne used to categorize its costs into Direct Program, Program Support, and Administrative Costs, but it no longer appears to do so.

Conclusion

As this review has shown, program administrator definitions of budget categories vary widely in terms of how costs are allocated, the level of detail at which each category is defined, and how costs are shared among categories. **As such, it is not possible to provide a fair comparison between jurisdictions.** At most, a comparison of the percentage of budget devoted to direct participant incentives can be provided, and even that produces **widely varying results between jurisdictions, across different years within jurisdictions, and across different program types within years.**

Thus, we find that there is no industry best practice against which to benchmark Efficiency Manitoba's approach to categorizing its budget. Nevertheless, EM's stakeholders will be expecting the agency to provide cost-efficient delivery of energy efficiency programs in order to maximize value for ratepayers (and society).

Based on the results of our scan, **we recommend that EM:**

1. **Define intuitive, transparent categories that make sense within the context in which the agency is working**,
2. **Clearly define each category and its inclusions, and**
3. **Provide guidelines for any cost-sharing between categories.**

To further address potential concerns, EM can should

4. **Track its performance over time and report on variances and changes**.

While exogenous factors could push costs up or down, this would help EM understand and identify reasons for particular changes, and allow you to explain those changes to third parties.

To: **Collee Kuruluk** and **Michael Stocki (Efficiency Manitoba)**
From: Raegan Bond
cc: Philippe Dunsky; Lauren McNutt
Date: 2019-09-30
Re: **Comparing Efficiency Manitoba's Cost of Savings**

Introduction

Efficiency Manitoba (EM) asked Dunsky to provide an outline of key considerations when comparing the cost efficiency of DSM delivery across program administrators. Additionally, EM requested that Dunsky identify first-year resource acquisition cost comparators for 3-5 other Program Administrators' DSM plans, which EM can then use to benchmark against its own inaugural three-year plan.

Benchmarking Issues & Considerations

Approach

Dunsky conducts benchmarking on a regular basis. If done appropriately, benchmarking can be a powerful tool to help DSM program administrators compare themselves to others and assess whether changes in their DSM approach may be warranted. Where benchmarking is intended as an analytical tool from which to draw conclusions and inform action, we strive to meet four criteria to ensure the exercise is valid:

1. Choose ***relevant metrics***
2. Choose ***relevant regions*** (and explain those choices)
3. Ensure that data is ***comparable*** and ***accurate***

When benchmarking is conducted without regard for these criteria, it can inversely produce inaccurate results and misleading conclusions that, in turn, do not support good decision making and effective management. Each criterion is discussed in greater detail below.

1. Relevant metrics

There is a myriad of potential metrics upon which DSM Program Administrators can be compared, from planning (e.g. targets and budgets) through to performance (e.g. % target achieved, cost effectiveness). These metrics can be assessed at different levels of granularity (e.g. portfolio vs program vs customer segment) as well as over different time periods (e.g. annual vs multi-year).

For forward-looking plans, no single metric provides a perfect indicator of effectiveness. Over time, however, two have emerged in the DSM industry as most common for benchmarking purposes:

Focus	Key Metrics	Analogy	Caveats
Savings	**Savings over Sales** (%)	Analogous to a firm's market share: it relates DSM savings – planned or achieved – to the size of the overall market	Can introduce bias where a given region's sales are uniquely disproportionate to others (e.g. a region with particularly energy-intensive industrial loads, or one with uniquely high electric space heating)
Cost	**First-year Acquisition Cost** ($/kWh or $/GJ)	Analogous to a firm's per-unit cost of sales	Does not account for the difference between longer- and shorter-lived DSM measures. A preferred benchmark – the levelized unit cost of energy (LUEC) – corrects that, but data is typically more difficult to come by.

It is also noteworthy that cost-benefit tests commonly applied to the DSM industry are not typically retained for benchmarking purposes, for a number of reasons, including (a) because while known as "standard" tests, they can be applied in vastly different ways across jurisdictions, including accounting for different *types* of benefits, and (b) because most benefits are unique to each region (e.g. avoided costs), and are largely outside of each PA's control. For this reason, it is preferable to use the metrics noted above when comparing with other regions.

2. Relevant regions

The effectiveness of a Program Administrator's planned DSM portfolio, whether measured as energy savings achieved, acquisition cost or any other metric, may be a function of the plan itself – its chosen measures, program strategies and assumptions – *or* be a function of exogenous factors (e.g. varying climates, energy rates and other factors).

While no benchmarking exercise is perfect, we believe an appropriate and balanced choice of cohorts should include:

a) Regions with similar levels of planned savings (as a % of sales);
b) Regions which, *taken as a whole*, share similar underlying conditions (e.g. geography/climate, regulatory/policy structure) to those of the benchmarked region (Manitoba); and
c) Regions for which data is both available and deemed reliable.

3. Comparable data

As with all benchmarking exercises, DSM benchmarking faces the challenge of ensuring that data are both accurate *and comparable*. In the context of DSM energy savings and cost data, the following issues arise:

Issue	Description
Savings metric	DSM energy savings targets are expressed using a range of metrics (incremental annual, cumulative annual, cumulative) and these terms themselves are not always defined consistently across jurisdictions.
Net vs Gross	In some jurisdictions, DSM targets and results are expressed as "gross" savings which account for all program participants. In other jurisdictions, gross savings are adjusted for actual program influence and expressed as net savings. Net-to-Gross adjustments can vary across jurisdictions, both with regards to adjustment categories and methodologies used to calculate adjustments. Free ridership is the most common NTG adjustment; however some regions may also account for spillover and/or other effects.[1]
Generator vs Meter	Meter-level savings represent the energy savings by the end-use customer, whereas generator-level savings also account for avoided transmission and distribution losses, and therefore reflect savings for the utility system.
Time period	Energy efficiency markets are continually transforming, with new technologies emerging, incremental costs of a given measure typically declining, and codes and standards increasing over time. In some cases, the transformation (e.g. LEDs) can be rapid enough that comparing data just a few years apart may not be prudent.
Evaluation status	Energy savings are always estimated. Throughout the program lifecycle, there are different phases or 'statuses' of energy savings estimates. Forecasted savings are used during planning and program design. Reported savings are based on actual (but unverified) program participation data. Verified savings are established though an evaluation, measurement and verification process. Depending on program type and the maturity of the DSM program/technology/administrator, there can be significant variation between forecasted, reported and verified savings.
Eligible savings	Specific activities, measures and interventions which are eligible to be counted as DSM savings vary by jurisdiction. In addition to traditional energy efficiency measures, the following may or may not be counted towards an administrator's energy savings goals: codes & standards, rate design, fuel switching, behind-the-meter generation and demand management.
Included costs	With the wide range of approaches taken to categorizing and reporting DSM related expenditures, care should be taken when comparing energy saving acquisition costs of programs or portfolio. For example, some utilities may include the costs of enabling strategies (e.g. training) in their program acquisition costs, while others may not.
Cost-effectiveness	Some benchmarking exercises aim to compare cost-effectiveness test results. Yet while the DSM industry uses five "standard" cost effectiveness tests; in practice, these tests are *not* applied in a standard fashion, and at times use wildly different methods. In addition, benefits vary by region based on factors largely outside of program administrator control.
Currencies	When comparing DSM expenditures across countries, it is important to adjust for cross-currency exchange rates.
Inflation	When comparing DSM expenditures in different years, it is important to adjust for the money value of time.

Securing perfectly comparable data from all jurisdictions is unrealistic, so we seek to recognize differences and understand their implications.

Benchmarking Efficiency Manitoba

In this section, we summarize our benchmarking approach and findings related to the cost of energy savings expected from Efficiency Manitoba's first DSM plan.

Methodology

In line with the general benchmarking considerations outlined above, we agree with Efficiency Manitoba's suggestion to use first-year resource acquisition costs as a relevant high-level benchmarking metric. While there are some drawbacks with only looking at first year energy savings, data availability, reliability and comparability is far superior than for levelized unit energy cost, which requires information on the assumed useful lives of specific measures and programs, as well as on discount rates.

To identify a cohort of relevant regions for comparison, we looked for program administrators that have:

- **Goals:** annual energy savings goals that are reasonably comparable to Efficiency Manitoba's (0.75% for natural gas; 1.5% for electricity);
- **Policy:** similar policy environments insofar as they influence baseline energy efficiency (appliance and lighting regulations, federal incentives and carbon regulations, etc.);
- **Climate:** climates that are reasonably similar (while few climates are quite as cold as Manitoba's, we chose northern regions with heating degree days above 4,000); and
- **Data:** reliable, readily available and reasonably comparable data.

While somewhat dissimilar, we also made a point of including the Massachusetts Program Administrators (who work collaboratively under the banner Mass Saves), given their delivery of both gas and electricity programs, their widely recognized status as leaders in energy efficiency, and their northern climate. In all cases, data is for the 2018 program year. Program spending for Massachusetts PA's was converted into Canadian dollars.

The cohort of comparators is summarized in the table below.

[1] Participant spillover occurs where additional energy efficiency measures/actions are influenced by a program and undertaken by a program participant without receiving program incentives. Non-participant spillover occurs where individuals are influenced by a DSM program to undertake energy efficiency measures/actions but they do not participate in the program and, as a result, savings are not tracked and costs are not incurred.

				Rationale for inclusion			
Region	Entity	Fuel	Goals	Policy Context	Climate	Data	Other
BC	BC Hydro		■	■	■	■	Canadian
NS	Efficiency NS		■	■	■	■	Canadian
QC	Énergir		■	■	■	■	Canadian
QC	Hydro Quebec			■	■	■	Canadian
MA	Massachusetts		◣*		■	■	Dual fuel; leader
NB	NB Power			■	■	■	Canadian

* Massachusetts' gas goals resemble EM's; it's electricity goals do not.

Summary Findings

Figure 1 below compares the per-unit acquisition cost for electricity and gas savings against each program administrator's DSM target (as a percent of sales).

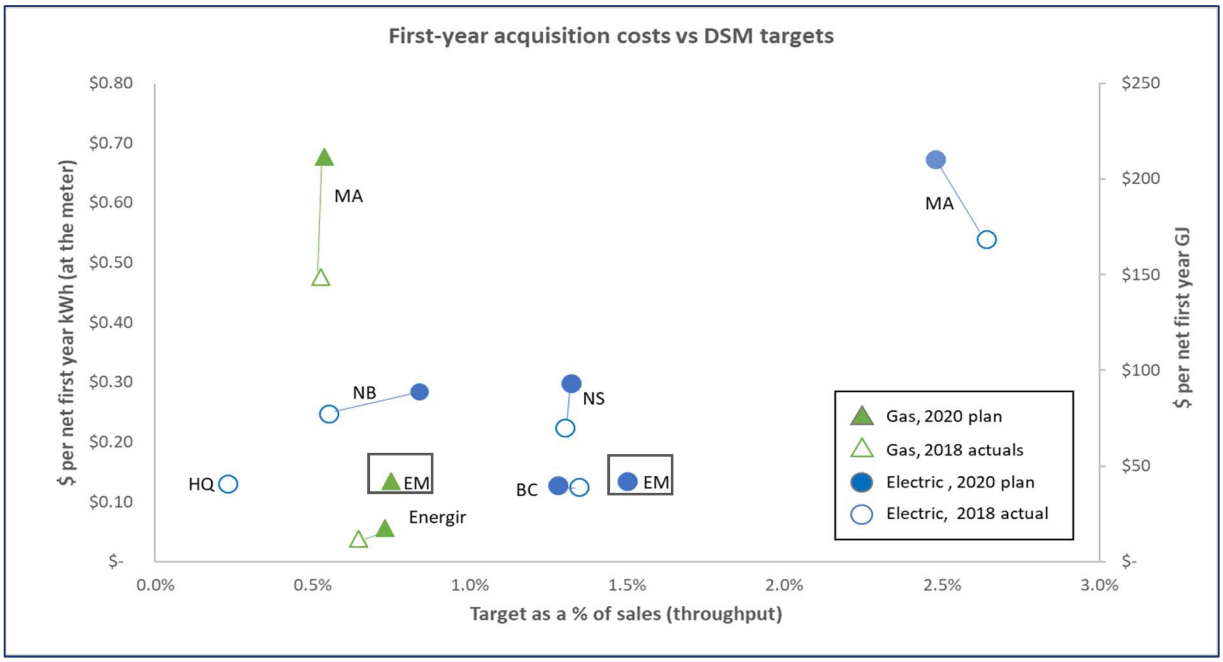


Figure 1: First-year acquisition costs vs DSM targets

Notes: Values for both 2018 actuals and 2020 planned savings are shown where available. While Efficiency Manitoba's targets and savings are measured at the generator (i.e. inclusive of avoided transmission and distribution losses), resource acquisition costs are shown here "at the meter" in order to compare with other program administrators (PA). Targets were calculated using 2018 actual sales for both 2018 and 2020.

On the gas side, we find a wide range of acquisition costs despite all three PA's having reasonably similar savings targets (approx. 0.5%-0.75%). Similarly, we do not see a direct correlation between savings targets and acquisition costs on the electric side, either. Several considerations should be taken into account when comparing these acquisition costs:

- Both BC Hydro and Efficiency Manitoba include savings from codes & standards in their targets, while others do not. The acquisition costs for Efficiency Manitoba's energy efficiency program on their own are likely higher.
- The acquisition cost for the Massachusetts Program Administrators have been converted from $US to $CDN based on an exchange of 1.32 ($CDN/$US).
- Results for Hydro Quebec (HQ) does not include any energy savings or program costs from DSM programs administered by the provincial agency *Transition Énergetique Quebec* (TEQ).
- Results for Énergir do not account for Québec's unusually-low market share of gas in the residential sector, where gas savings tend to be far more costly.

We urge caution in deriving hard conclusions as to the efficacy of Efficiency Manitoba's plan based on these data points alone. However, we do note that on this basis, EM's plan does suggest savings on the lower end of the cost spectrum.

Additional comparators

Given the limited number of comparators, for additional context we provide below a broader array of data points from the U.S., based on the 2018 American Council for an Energy Efficient Economy (ACEEE) State Scorecard. Efficiency Manitoba's planned 2020/21 acquisition costs (converted into $USD) and targeted savings (0.75% gas, 1.5% electric) were used to add EM to Figures 2 through 5 (shown in yellow).

Figures 2 and 3 both reinforce the finding described above - that there is no strong correlation between savings (or target) levels and acquisition costs. This is largely consistent with previous benchmarking work we have conducted.

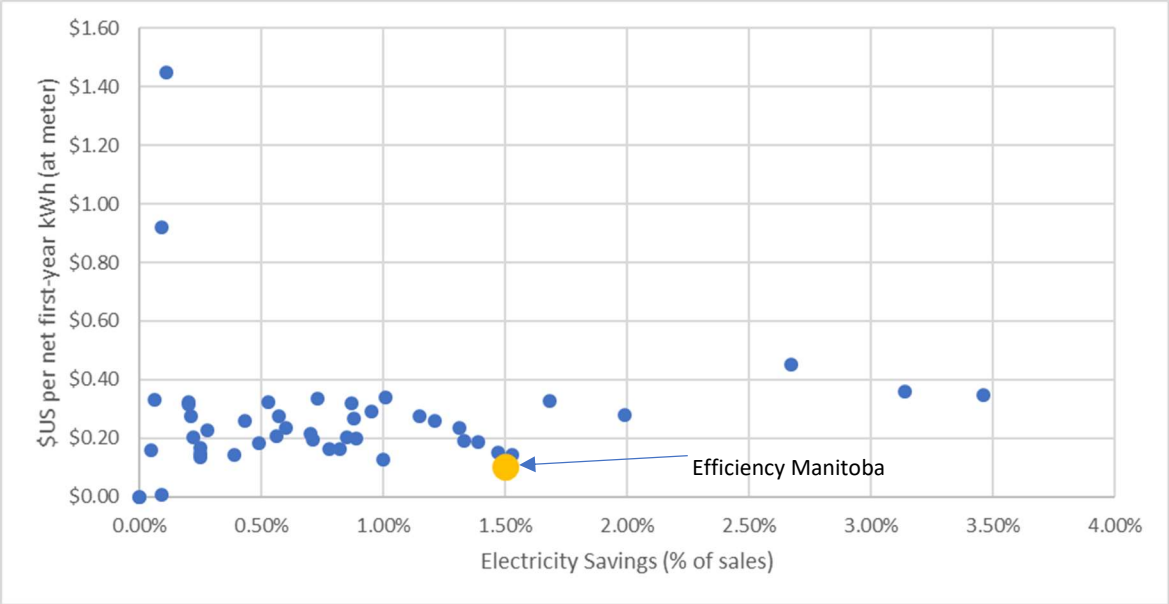


Figure 2 Electricity program savings vs acquisition costs for US States and Efficiency Manitoba (US data source: ACEEE 2018 State Efficiency Scorecard)

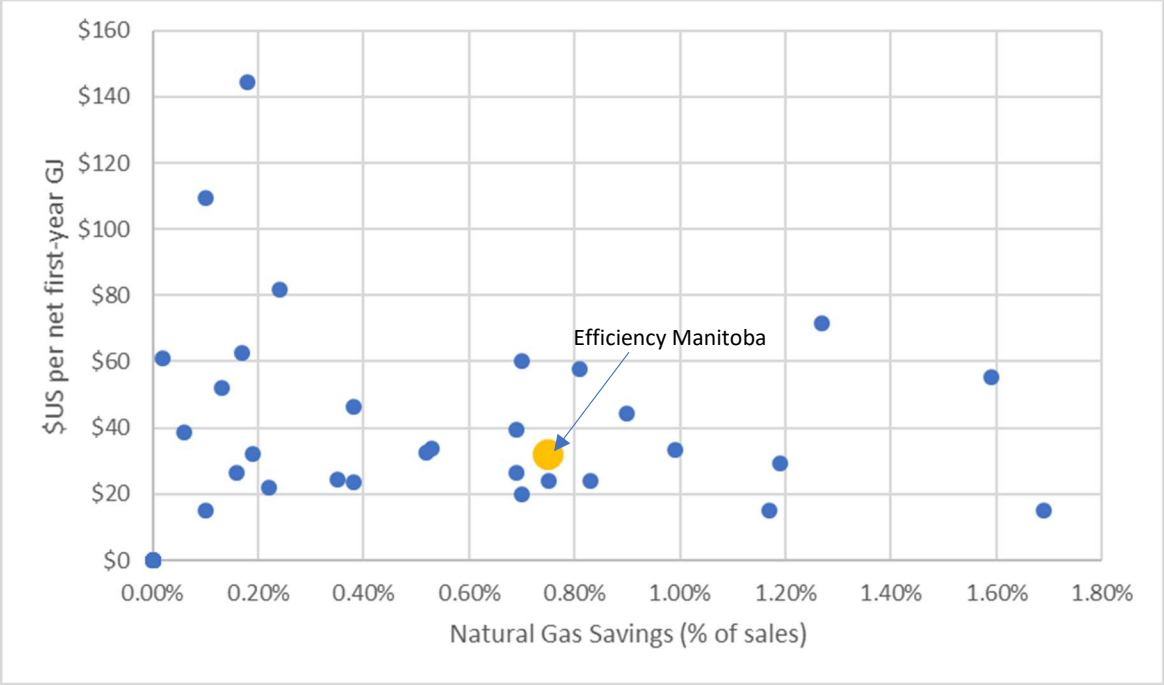


Figure 3 Natural gas program savings vs acquisition costs for US States and Efficiency Manitoba (US data source: ACEEE 2018 State Efficiency Scorecard)

Finally, figures 4 and 5 show the distribution of acquisition costs by state as well as an average across all states (in $US). At $42 CDN ($32 USD) per first-year net GJ, Efficiency Manitoba's projected natural gas savings acquisition costs (for 2020/21) are slightly below the U.S. average in 2017 (actuals). On the electric side, EM's projected acquisition costs of $0.13(CDN) per first-year net kWh ($0.10 USD/kWh) are at the very low end of costs observed in U.S. jurisdictions.

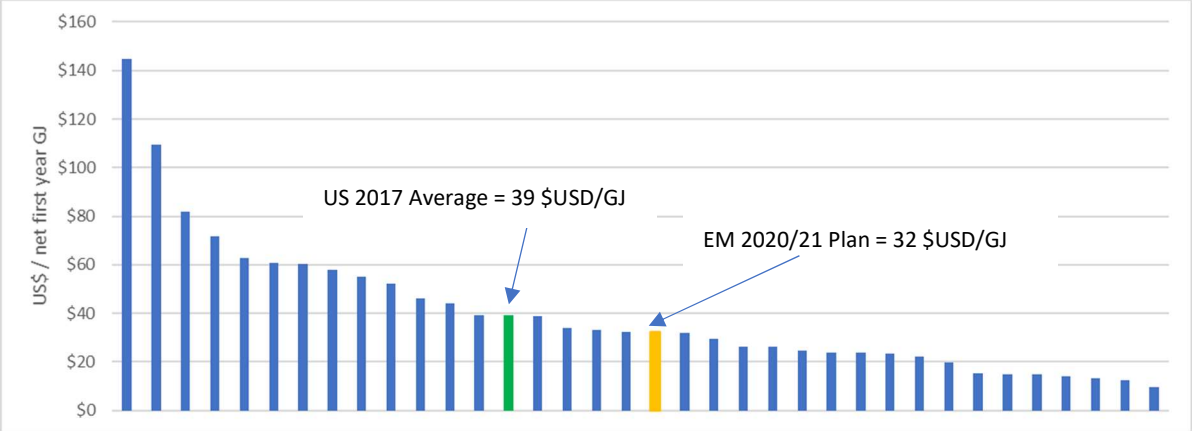


Figure 4 Gas program savings acquisition costs, by US State (data source: ACEEE 2018 State Energy Efficiency Scorecard)

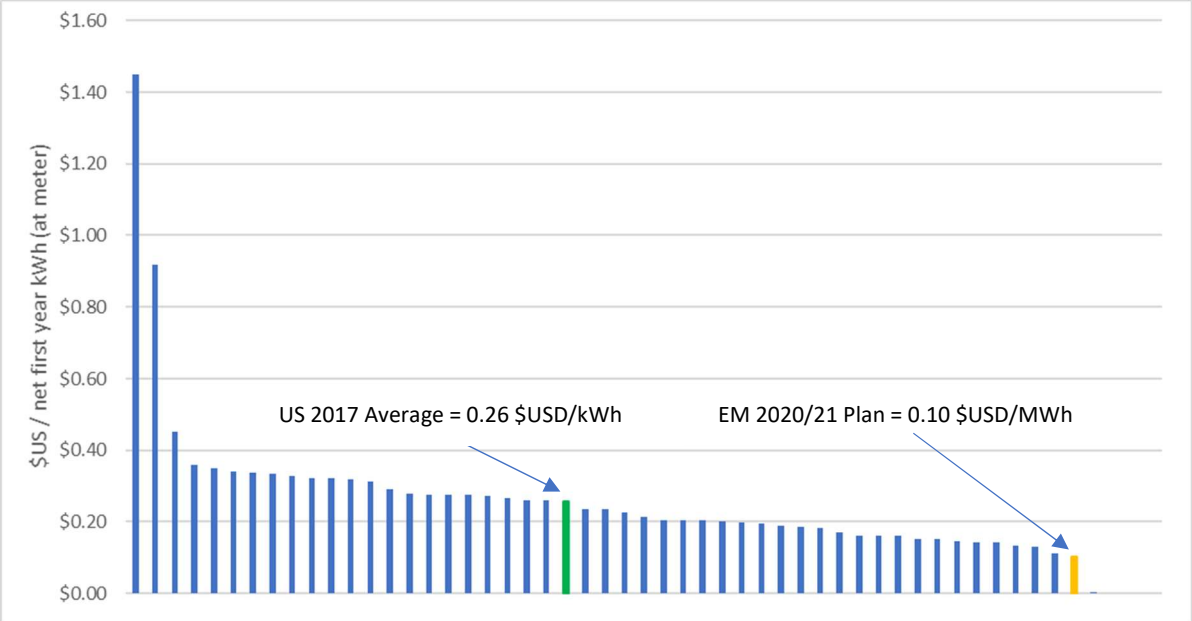


Figure 5 Electricity program savings acquisition costs, by US State (data source: ACEEE 2018 State Energy Efficiency Scorecard)

As noted earlier, the above comparisons with U.S. regions are only provided for additional context, and should be read with caution given the comparability issues discussed previously.

To: **Colleen Kuruluk**, Chief Executive Officer, Efficiency Manitoba
From: Philippe Dunsky, Raegan Bond, Valérie Provost
cc: Michael Stocki, VP Efficiency Programs, Efficiency Manitoba
Date: 2019-09-25
Re: **Cost Allocation Methods for Fuel Switching Programs**

CONTEXT

New Legislation

Efficiency Manitoba's enabling legislation allows for measures that result in fuel switching within the definition of DSM initiatives so long as they do not increase greenhouse gas (GHG) emissions in Manitoba. This can include programs that support fuel switching either indirectly (e.g. new construction programs with incentives for heat pumps, which may inadvertently reduce recourse to natural gas) or directly (e.g. programs designed for the sole purpose of moving customers from natural gas to electricity). The legislation and Efficiency Manitoba Regulation are silent, however, on how the costs for such fuel-switching measures should be recovered between gas and electric ratepayers. As a result, Efficiency Manitoba asked us to examine options and recommend a path forward.

Efficiency Manitoba's Inaugural Plan

Efficiency Manitoba's inaugural three-year demand side management (DSM) Plan, which will be filed by October 1, 2019, includes indirect fuel-switching measures: a residential ground source heat pump (GSHP) and a commercial/agricultural GSHP program. In both programs, customers that currently heat with either electric or natural gas systems will be eligible for the GSHP incentive.

Research Considerations

At its very core, the allocation of costs is about fairness: within reason, it seeks to ensure that those who benefit from a service pay for that service. In practice, good cost allocation also seeks a reasonable degree of simplicity – thus the grouping of customers within rate classes, and some simplification of how certain benefits, *especially those that accrue to broader society,* are distributed.

In Efficiency Manitoba's case, we need to account for four critical considerations:

1. First, under the proposed programs, multiple baselines are possible: participating customers' initial heating system, prior to the program's effects, could be electricity (baseboard, furnace or air source heat pump), natural gas, propane or, in the case of new construction, undefined.
2. Second, although the energy savings from switching toward electricity may count toward the gas target, gas ratepayers – at least those who remain on gas – largely do not benefit from the program (most remaining gas ratepayers will, by definition, be non-participants).
3. Third, while developing a cost allocation methodology, it is important to ensure that it will properly address not only today's needs, but those that may appear in the future as well,

including more direct fuel switching measures, especially insofar as electrification efforts grow in response to emission reduction goals.

4. And fourth, the method has to be consistent with Efficiency Manitoba's legislation which includes distinct targets for electricity and natural gas, as well as allowances for savings of unregulated fuels to count toward gas savings targets.

Prior Method under Manitoba Hydro

The cost of dual fuel programs where the cost-effectiveness for natural gas measures was marginal and where, even in the absence of natural gas incentives, electric incentives would be offered were distributed as follows: **administrative costs were allocated to electric ratepayers (fixed costs of delivering the program), while each group of ratepayers funded the cost of incentives (variable costs) offered to their respective customers.**

JURISDICTIONAL REVIEW

Introduction

With growing commitments to reduce carbon emissions and a rapidly decarbonizing power sector, we see a surge of interest in programs designed to deliberately encourage fuel switching toward electricity across the U.S. and Canada. But because interest is so recent, most regions are at about the same stage as Manitoba – considering their options – with few having completed the process of defining critical policies, including as they pertain to cost allocation.

One exception is California, which implement a mechanism – the "Three-Prong Test for Fuel Substitution" – to enable fuel-switching within DSM in 1992. In practice, the mechanism proved overly complex, with approval thresholds that were deemed too burdensome. Indeed, to our knowledge, no regulated utilities applied for the approval of fuel-switching measures under the Three-Prong Test in its more than 25-year history. Earlier this month, after a two-year review process, the California Public Utilities Commission (CPUC) issued a proposed decision to significantly modify the Three-Prong Test (described further below).

In addition to California, we identified several jurisdictions that have adopted or are moving toward a fuel-neutral / all-fuel approach with energy efficiency programs and policies that enable fuel-switching: Illinois, New York, Massachusetts and Vermont. In some cases (e.g. New York, Massachusetts), new frameworks are still in their infancy, such that the specific rules regarding eligibility and cost allocation either are yet to be determined, or cannot be judged.

Our key findings based on a review of these five jurisdictions are:

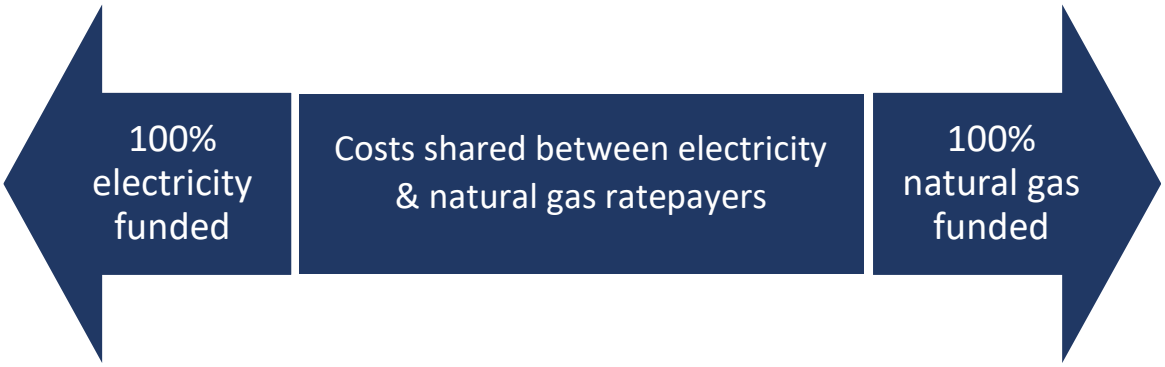
1. **Ratepayer funded fuel-switching DSM programs are rare**, and it is too early to point to a "common" practice for allocating costs of these programs between gas and electric ratepayers.
2. **Several jurisdictions are moving toward an all-fuels or beneficial electrification approach** to energy efficiency which could enable and support fuel-switching, but these policies and approaches are still nascent.
3. **DSM cost allocation is typically closely tied to allocation of energy savings credits**, which themselves can be addressed in different ways in the case of fuel switching measures.

Appendix A briefly describes the energy efficiency policies supporting or enabling fuel-switching in each of those five jurisdictions.

OPTIONS FOR MANITOBA

Review of Possible Methods

Going forward, we have identified a spectrum of options to distribute the costs of a fuel-switching program from natural gas to electricity (see Figure below).



At either end of the spectrum lie simplicity: full allocation of costs to either the original fuel (natural gas) ratepayers or the substituting fuel (electricity) ratepayers. Between these two extremes are different methods for splitting the costs between the ratepayers of each fuel. We have identified three potential allocation methods, in addition to the previous Manitoba Hydro approach:

0. Status Quo: Manitoba Hydro's prior method for indirect fuel-switching (administrative costs funded by electric ratepayers; incentive costs based on participant's original fuel)
1. **All-Electric**: Share of combined annual sales revenues
2. **Sales Revenue**: Share of combined annual sales revenues
3. **DSM Budget**: Share of combined annual DSM Budget
4. **Savings Breakdown**: Breakdown of total energy savings from fuel-switching (current fuel technology to new fuel baseline) versus efficiency upgrade (new fuel baseline to new fuel high efficiency) - i.e. the Illinois approach
5. **All-Gas**: Share of combined annual sales revenues

Factors to Consider

To help Efficiency Manitoba select a preferred allocation methodology, we defined key factors for consideration:

- **Simplicity.** Would the allocation factor be easy to calculate and apply?
- **Alignment.** Would costs align reasonably fairly with benefits?
  - *Ratepayer Financial Benefits*. Does the allocation factor avoid/limit potential equity issues among or between ratepayer groups? Will the ratepayers funding the measure see financial benefits through the reduction of their bills?
  - *Efficiency Manitoba Performance Target*. Does the cost allocation method align with how energy savings from fuel-switching programs will count against electricity and natural gas DSM targets?
- **Future-Proof.** Can this methodology apply to potential *direct* fuel switching measures (e.g. programs to switch heating, process and/or transportation end-uses to electricity)?

Table 1 provides our assessment of the six allocation options against these criteria. In addition, we provide estimates of how costs would likely be allocated under each method. For this purpose, note that we account for Efficiency Manitoba's currently-proposed programs *as well as*, in the case of the Savings Breakdown method, hypothetical future programs.[1,2]

As we can see, each method involves trade-offs.

[1] The savings breakdown allocation ratios are presented has a range. This residential range is based on approximate calculations for a ductless heat pump measure and a ground source heat pump measure. The commercial ratio is based on approximate calculations for a ground source heat pump measure.

[2] The indirect fuel-switching allocation ratios are derived from the break down of participation forecasts for Efficiency Manitoba's proposed geothermal programs for 2021/22 by originating fuel type

Table 1 – Summary of Options

	Method	POTENTIAL RESULTS (illustrative values) Residential Gas	Residential Elec	Non-Residential Gas	Non-Residential Elec	VALUE PROPOSITION (against key criteria) Simplicity	Alignment: Ratepayer benefits[3]	Alignment: EM fuel targets	Future Proofed?
	0. Status Quo	1%	99%	22%	78%	●	◕	◔	no
		The allocation values shown here are based on participation forecasts for Efficiency Manitoba's proposed geothermal programs for 2021/22. This method has the advantage of being currently used by Manitoba Hydro and thus already known and accepted. By allocating administrative costs to electric ratepayers only, much of the advantage of the all-electric is captured by this method. However, this method is not aligned with the allocation of savings to fuels and, critically, is limited in its ability to address future, *direct* fuel switching measures insofar as they are targeted primarily at unregulated fuels.							
all-electric	**1. All Electric**	0%	100%	0%	100%	●	◑	○	yes
		The all electric method has the advantage of simplicity. It is effectively the choice that California made earlier this month, and appears to be favoured by other early adopters as well. It has the benefit of applying to unregulated fuels. The main concern with this method is misalignment between the fuel credited with associated energy savings (i.e. natural gas) and the fuel being asked to pay (i.e. electric). Additionally, this method ignores any potential benefits to natural gas ratepayers from reduced peak gas demand.							
Cost shared	**2. Sales Revenue**	23%	77%	16%	84%	●	◕	◔	yes
		This method is similar in simplicity to Options 1 and 5, but is a compromise that accounts for the fact that, in practice, customers on both sides may benefit. Given that electric ratepayers would fund a larger share of the cost, this option remains notionally more aligned with the likely distribution of benefits, but not with allocation of savings credits. This method provides for allocating costs from unregulated fuel savings, albeit imperfectly.							
	3. DSM Budget	43%	57%	22%	78%	●	◑	◔	partial
		This method has the advantage of being aligned with the overall DSM budget, which means that cost allocation is proportional to the overall investment in demand-side management for each fuel. It is partially fair for both the electricity and the gas ratepayers which makes it an acceptable compromise given the complexity of fuel-switching programs. It is also a simple method to implement. On the other hand, it is not informed by actual measures or programs, and as a result, may suffer a future-proofing weakness and lose fairness as measures change.							
	4. Savings Breakdown	7-13%	87-93%	14%	86%	◑	●	◔	yes
		This method provides an option that may come closest to a fair distribution of costs and, importantly, is more future-proofed than others insofar as it adjusts to future changes in EM's measures and programs. However, it suffers on simplicity: partly because it is more complex to calculate, and partly because it requires adopting a different methodology to calculate energy savings *for cost allocation purposes* than for *allocating energy savings*, which would lead to confusion (note that if the savings method can change, this option would be more attractive). Finally, the methodology can evolve to more properly account for benefits as more information becomes available.							
all-gas	**5. All Gas**	100%	0%	100%	0%	●	◔	●	no
		The all gas method is very simple and perfectly aligned with the current allocation of energy savings credit in Manitoba. However, it is unreasonable to require natural gas ratepayers to fund a program for which customers will see little benefit. Since many participants will either no longer pay gas bills, or see gas bills reduced dramatically, most costs would be shifted to non-participants. Furthermore, it would be unreasonable to expect gas ratepayers to pay for future fuel switching that may occur between two unrelated fuels (e.g. electricity and oil).							

[3] In the absence of a quantitative analysis of the relative benefits of fuel switching measures to each fuel source, we assume that benefits will break 75-25 electric-gas. Approaches that reasonably reflect this assumption were provided 3 of 4 quarters, with an additional quarter available for methodologies that allow allocations to evolve alongside the evolution of specific measures and programs. To the extent that benefits are distributed differently, scoring should be adjusted.

CONCLUSIONS & RECOMMENDATIONS

As indicated in the previous table, all options have strengths and weaknesses. To help Efficiency Manitoba choose among options, we propose a **hierarchy of values**:

- **Alignment with ratepayer benefits and Future-proofing should be top priorities.** Indeed, the former is arguably the most important principle for cost allocation, while the latter is critical to ensure that Efficiency Manitoba's policies can withstand the test of time and plausible (if not assured) changes on the near-term horizon.
- **Where possible, avoid options that fail entirely on any one criterion.** While no option can fulfill all criteria, it is generally preferable and more prudent, all else being equal, to meet all criteria partially than to fully meet some and fail entirely at others.

All other criteria should be subject to reasonable tradeoffs.

Based on these values, we conclude that the "*Sales Revenue*" and "*Savings Breakdown*" methods are preferable to all others: both score high on ratepayer alignment; both are to a considerable extent future-proofed; and neither fails abjectly at any of the criteria.

The tradeoff between these two options is relatively straightforward: the Sales Revenue method is simpler but arguably less aligned with the measures themselves, while the Savings Breakdown method is more complex – both to calculate and communicate – but provides for greater alignment with the fuel switching measures themselves (and can be adjusted over time).

We recommend Efficiency Manitoba consider these two options as reasonable approaches for Manitoba's context going forward. Consultations with key players, including Manitoba Hydro, would be helpful in making a final determination.

Appendix A: Jurisdictional Review

Dunsky conducted a review of current approaches to cost allocation applied specifically to fuel switching measures. This appendix briefly describes the energy efficiency policies supporting or enabling fuel-switching in California, Illinois, Massachusetts, New York and Vermont. **Error! Reference source not found.** then summarizes their key components: eligibility criteria, funding sources and cost allocation, and energy savings credit allocation.

Note that while we were not asked explicitly to investigate the allocation of energy savings from fuel-switching programs, the methodologies and/or principles used for allocating costs are often linked to energy savings credit allocation and thus provide important context when comparing approaches across jurisdictions.

California

Over 25 years after the creation of the "three-prong test for fuel substitution", a joint motion[4] was filed by the Sierra Club, the Natural Resources Defense Council and the California Efficiency and Demand Management Council (CEDMC) to request a review of the test. After over 2 years of review, the CPUC issued a proposed decision[5] on August 1, 2019 with modifications to the Test. Most significantly, one of the prongs (requirement for measure-level cost-effectiveness) will be removed to put fuel-switching measures on an equal footing with other energy efficiency measures wherein cost effectiveness is assessed at the portfolio level. Note that this is largely consistent with Efficiency Manitoba's legislation. The other two prongs – that measures must reduce energy use and must not negatively impact the environment - will remain in the Test, but now include clearer direction on how these impacts should be calculated.

Most importantly in the context of this memo, the decision states the fuel-substitution activities should be funded entirely by the new-fuel ratepayers, i.e. electricity in the case of electrification measures. It also states that the energy-saving benefits should be credited to the savings goals for the fuel source funding the measure, i.e. electricity goals, and that inversely, the energy savings goals for the substituted fuel should be reduced accordingly, to ensure targets remain realistic.

For example, a utility that administers a fuel-substitution program to convert natural gas heating to air source heat pumps would fund the program from their ratepayer-funded electricity DSM budget and would receive an energy savings credit against their electricity DSM target by converting the reduced BTU from the measure into equivalent kWh. The natural gas utility would receive a reduction in their gas DSM target (in Therms) by an amount equivalent to the total BTU reduced (gas savings minus electricity growth) from the fuel-switching measure.

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[4] Motion of the Natural Resources Defense Council (NRDC), Sierra Club, and the California Energy Efficiency Industry Council (the council) seeking review and modification of the three-prong fuel substitution test, Rulemaking 13-11-005. http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M191/K912/191912103.PDF

[5] Decision modifying the energy efficiency three-prong test related to fuel substitution, Rulemaking 13-11-005, http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M310/K053/310053527.PDF

Illinois

Since 2013, the statutory definition of energy efficiency in Illinois has included fuel-switching between electricity and natural gas, provided that there is a total reduction in BTUs for the same output[6]. After the commission's approval to include Combined Heat and Power (CHP) measures in their energy efficiency portfolio in 2014, ComEd started to offer fuel-switching programs including geothermal heat pumps, ductless heat pumps and CHP. For each of these measures, a detailed methodology to calculate the energy savings from fuel-switching has been developed and is available in the Illinois Technical Reference Manual[7].

Specifically, savings are calculated for the substituted fuel by measuring the difference in the energy consumption of the installed equipment (e.g. gas furnace) compared to the energy consumption of a baseline technology in the new-fuel (e.g. electric baseboards). Then the electricity savings are calculated as the difference between the energy consumption of the baseline new-fuel technology and the actual new-fuel technology that was installed (e.g. ASHP). The cost of the program can be recovered by the electric utility.

Massachusetts

On July 31, 2018, Massachusetts passed the Act to Advance Clean Energy which expanded the definition of qualifying efficiency and load management programs to include strategic electrification. DSM Program Administrators may now include programs that (1) provide energy and demand savings through strategic electrification that result in cost-effective reductions in GHG emissions and minimize ratepayer costs, and (2) result in customers switching to renewable energy sources or other clean energy technologies[8].

As part of their 2019-2021 Statewide DSM Plan, the electric utilities are offering air source heat pump incentives for residential homes currently heated with oil and propane. The measures are funded by the ratepayer as well as by the RGGI cap-and-trade revenue. However, the exact cost allocation rules are still unclear.

New York

Like the method used in Massachusetts, the State of New York is moving to an all-fuel approach for which the process to review and approve the utility energy efficiency plans is in progress. One main objective for this new approach is to reduce NY GHG emissions as per the Reforming the Energy Vision (REV) mandate. The decision published in December 2018 to use this all-fuel approach was

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[6] http://mn.gov/commerce-stat/pdfs/card-electrified-frontier.pdf (p.21)

[7] IL Statewide Technical Reference Manual, Version 7.0. http://ilsagfiles.org/SAG_files/Technical_Reference_Manual/Version_7/Final_9-28-18/IL-TRM_Effective_010119_v7.0_Vol_1-4_Compiled_092818_Final.pdf

[8] https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/10317061

based on recommendations made by NYSERDA in their *New Efficiency: New York* report that also promoted that fuel neutral programs would better support fuel-switching and beneficial electrification.

In parallel, NYSERDA has created the Clean Energy Fund (CEF)[9]. This fund has a larger focus than solely energy efficiency and aims specifically at reducing GHG emissions and increasing renewable energy generation in addition to increasing energy efficiency. In order to achieve this objective, a completely fuel-neutral approach is used. All programs are eligible given that they promote clean energy, and the CEF will have no specific energy efficiency targets. The CEF will be entirely funded by the electric ratepayers through a surcharge on all customers electricity bill. Since all New York citizens have electricity, this option was deemed the fairest for the ratepayers because everyone will be financially contributing to a clean energy future.

Vermont

Vermont established a multi-tier Renewable Energy Standard that electric distribution utilities are required to meet. The utilities can meet Tier III through "Energy Transformation" projects that reduce customers' fossil fuel consumption and associated GHG emissions, primarily through electrification. To be eligible for Tier III, an electrification program must meet three criteria:

- Result in a net reduction of fossil fuel consumed;
- Have the lowest present value life cycle cost including analysis of options that do not increase electricity consumption;
- Cost the utility less per MWh than applicable alternative compliance payment rate.

In addition to the electric utilities' programs, Efficiency Vermont and Burlington Electric Department also offer some fuel-switching programs which are focused on unregulated fuels, such as heating oil and propane. The Energy Efficiency Utilities programs are regulated under chapter 5 of the Vermont public statutes and are required to meet different criteria from the ones listed above, including:

- Benefits electric ratepayers as a whole;
- Results in cost-effective energy savings to end-user and state;
- Reduces GHG emissions;
- Promoted in conjunction with demand management;
- Uses most efficient available model of technology available;
- Must be part of an approved comprehensive energy efficiency and conservation program.
- All programs are funded by electricity rates.

[9] https://www.nyserda.ny.gov/About/Funding/Clean-Energy-Fund

Table 2 – Summary of energy efficiency policies supporting fuel-switching per jurisdiction

Jurisdiction & Structure	Governing Framework or Policy	Eligibility Criteria	Funding and Cost Allocation	Allocation of Energy Savings
California DSM administered by single & dual-fuel utilities	Fuel Substitution Test *Only for substitution of CPUC regulated fuels (i.e. natural gas to electricity)*	1. Measure must not increase source BTU consumption 2. Measure must not increase GHG emissions	Funded by ratepayers of the new fuel	Sponsoring Utility (new fuel) receives energy savings credit toward their DSM target equivalent to BTU reduction Utility whose fuel was substituted, receives reduction in their DSM savings goal equivalent to BTU reduction
Illinois DSM administered by single & dual-fuel utilities	Illinois Power Agency Act[10] definition of Energy Efficiency includes "measures that reduce the total BTUs of electricity, natural gas, and other fuels needed to meet the end use or uses". Illinois Public Utilities Act[11]	Currently there are three fuel-switching measures in the approved Technical Reference Manual – geothermal heat pumps, ductless heat pumps and combined heat and power (CHP).	An electric utility offering a gas energy efficiency measure can recover its cost.[12]	If the measure is supported by both the gas and electric utilities, the gas utility gets the credit for fuel-switching away from their fuel to a baseline unit, and the electric utility gets credit for incremental efficiency above a baseline unit. Methodology detailed in IL TRM v7.0

[10] http://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5; Section 1-10

[11] http://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+VIII&ActID=1277&ChapterID=23&SeqStart=9900000&SeqEnd=14800000

[12] http://ilga.gov/legislation/ilcs/ilcs5.asp?ActID=1277&ChapterID=23 (Subsection b-25)

Jurisdiction & Structure	Governing Framework or Policy	Eligibility Criteria	Funding and Cost Allocation	Allocation of Energy Savings
Massachusetts DSM administered by single and dual-fuel utilities	The Act to Advance Clean Energy[13], passed on July 31, 2018, expanded the definition of qualifying efficiency and load management programs to include strategic electrification.	Strategic electrification programs may be included in DSM Plans if they[14]: a) provide energy and demand savings through strategic electrification that result in cost-effective reductions in GHG emissions and minimize ratepayer costs; and b) result in customers switching to renewable energy sources or other clean energy technologies	Ratepayer funds as well as RGGI cap-and-trade revenue.	Calculated in Net lifetime all-fuel savings (MMBtu) Excluded from Net lifetime electric savings and Net lifetime gas savings
New York DSM administered by single and dual-fuel utilities Clean Energy Fund (CEF) Portfolio administered by NYSERDA	Public Service Commission adopted in December 2018 an order on Accelerated Energy Efficiency Targets[15]. This order is in line with NYSERDA's white paper New Efficiency: New York. The NYSDPS is currently studying the matter of a Comprehensive Energy Efficiency Initiative[16] to determine the policy changes required for fuel-switching programs. In 2016, an order authorized the CEF framework that supports a fuel-neutral approach. [17]	*In progress* --- CEF portfolio investments will need to respect the definition of "clean energy" (i.e. reducing energy sector greenhouse gas emissions, increasing renewable energy generation capacity, or increasing energy efficiency)	*Currently being defined* --- The funding of the fuel-neutral Clean Energy Fund (CEF) will be supported by only electric ratepayer surcharge collections.	*Currently being defined*

[13] https://malegislature.gov/Bills/190/H4857

[14] https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/10317061 page 149

[15] http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B330F932-3BB9-46FA-9223-0E8A408C1928}

[16] http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=18-m-0084&submit=Search

[17] http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bB23BE6D8-412E-4C82-BC58-9888D496D216%7d (p.56)

Jurisdiction & Structure	Governing Framework or Policy	Eligibility Criteria	Funding and Cost Allocation	Allocation of Energy Savings
Vermont Distinct electrification efforts implemented by electric utilities and by DSM administered by Efficiency Utilities	Renewable Energy Standard (RES) – Tier III[18] (applies to electric distribution utilities) Vermont public statutes (30 V.S.A. § 209(d) allow the Commission to authorize Energy Efficiency Utilities (i.e. Efficiency Vermont, Burlington Electric Department and Vermont Gas Systems) to use electricity efficiency funding for fuel-switching (electrification) that meet specific criteria.	RES Tier III criteria (electric distribution utilities): 1. Result in a net reduction of fossil fuel consumed 2. Have the lowest present value life cycle cost including analysis of options that do not increase electricity consumption 3. Cost the utility less per MWh than applicable alternative compliance payment rate. For Energy Efficiency Utilities, fuel-switching program may be permitted if several criteria are met, such as (but not limited to): • Benefits electric ratepayers as a whole • Results in cost-effective energy savings to end-user and state • Reduces GHG emissions • Promoted in conjunction with demand management • Uses most efficient available model of technology available	Funded by electricity rates (both) [19]	Allocated toward utilities' renewable energy standard Tier III requirements. If the transformation project is funded by multiple regulated utilities, the fossil fuel reductions will be distributed proportionally between them by the commission. The Energy Efficiency Utilities have their own targets to meet. The energy savings gained from their programs are allocated to their targets. *Note: Currently, natural gas customers (i.e. Vermont Gas Systems customers) are not eligible to the fuel-switching programs offered by Efficiency Vermont and Burlington Electric Department. Vermont Gas Systems offer their own programs to their customers which does not include fuel-switching programs.*

[18] https://puc.vermont.gov/electric/renewable-energy-standard

[19] "Funding for the Energy Efficiency Utility (EEU) Program is derived from three separate sources: the Energy Efficiency Charge (EEC), revenues from Vermont's participation in the ISO New England Forward Capacity Market, and revenues from Vermont's participation in the Regional Greenhouse Gas Initiative (RGGI)." (https://puc.vermont.gov/energy-efficiency-utility-program/eeu-budgets-performance-goals-and-annual-plans)

References

[1] ACEEE, "Beneficial Electrification in the District of Columbia," 19 February 2019. [Online]. Available: https://aceee.org/sites/default/files/electrification-dc.pdf. [Accessed 08 August 2019].

[2] Minnesota Department of Commerce, Division of Energy Resources (Prepared by : Micheals Energy), "The Electrified Frontier - Exploring Stakeholder Views on the Emerging Intersection of Electrification, Efficiency, and De-carbonization," 16 October 2018. [Online]. Available: http://mn.gov/commerce-stat/pdfs/card-electrified-frontier.pdf. [Accessed 8 August 2019].

[3] ACEEE, "Successful Practices in Combined Gas and Electric Utility Energy Efficiency Programs," August 2014. [Online]. Available: https://aceee.org/sites/default/files/publications/researchreports/u1406.pdf. [Accessed 8 August 2019].

[4] NEEP, "Policy Outreach and Analysis," 2019. [Online]. Available: https://neep.org/initiatives/public-policies/. [Accessed 8 August 2019].

[5] ACEEE, "State and Local Policy Database," 2019. [Online]. Available: https://database.aceee.org/. [Accessed 8 August 2019].

[6] ACEEE, "State Energy Efficiency Resource Standard (EERS) Activity," 13 May 2019. [Online]. Available: https://aceee.org/policy-brief/state-energy-efficiency-resource-standard-activity. [Accessed 8 August 2019].

[7] RAP, "Beneficial Electrification - Ensuring Electrification in the Public Interest," June 2018. [Online]. Available: https://www.raponline.org/wp-content/uploads/2018/06/6-19-2018-RAP-BE-Principles2.pdf. [Accessed 8 August 2019].

ATTACHMENT 5
EVALUATION FRAMEWORK & PLANNING REPORT

2020/23 EFFICIENCY PLAN

EVALUATION FRAMEWORK
PLANNING REPORT

EFFICIENCY MANITOBA

2020/2023 EVALUATION, MEASUREMENT AND VERIFICATION FRAMEWORK AND PLAN

EFFICIENCY MANITOBA

Final Report

September 19, 2019

ECONOLER

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ACRONYMS

DSM	Demand-side management
EEAG	Energy Efficiency Advisory Group
EEUL	Equivalent effective useful life
EM&V	Evaluation, measurement and verification
GHG	Greenhouse gas
HVAC	Heating, cooling and air conditioning
LED	Light-emitting diode
MURBs	Multi-unit residential buildings
M&V	Measurement and verification
PAC	Program Administrator Cost (test)
PUB	Public Utilities Board
PV	Photovoltaic
TRC	Total Resource Cost (test)
UMP	Uniform Methods Project

PURPOSE

This document is intended for Efficiency Manitoba, the Manitoba Public Utilities Board, the Energy Efficiency Advisory Group, future external evaluators and other interested parties. Its overall purpose is to provide guidance for Efficiency Manitoba's three-year Energy Efficiency Plan evaluation planning and implementation. It also accomplishes the following goals:

- To provide a common understanding of evaluation, measurement and verification (EM&V) best practices and terminology regarding EM&V methods and activities;
- To lay the groundwork for a transparent and rigorous evaluation process throughout the three years of the Plan.

This document includes:

- (1) an EM&V Framework, which provides evaluation guidelines and introduces industry-accepted evaluation definitions and best practices, and
- (2) a Portfolio Evaluation Plan for Efficiency Manitoba's three program years (i.e., 2020/2021, 2021/2022 and 2022/2023). Based on the guidelines provided in the EM&V Framework, the Portfolio Evaluation Plan outlines the programs to be evaluated, the types of evaluations to be conducted, and when and why those evaluations should be carried out. This plan also discusses some key evaluation-related considerations.

The EM&V Framework is designed to remain valid longer than the three-year Energy Efficiency Plan, as it provides guidelines to overall evaluation planning. The Portfolio Evaluation Plan should be updated every three years to incorporate the evaluation findings and recommendations and reflect any changes or adjustments made to the program strategy or design.

1 EM&V FRAMEWORK

1.1 Efficiency Manitoba's Mandate

Efficiency Manitoba is a Crown corporation constituted under the Efficiency Manitoba Act.[1] Efficiency Manitoba's mandate is to help Manitobans reduce their utility bills, save energy and reduce greenhouse gas (GHG) emissions using a variety of tools, such as education and awareness, training and financial incentives. The Efficiency Manitoba Act outlines specific electricity and natural gas savings targets to be achieved by the corporation. To fulfill the mandate, Efficiency Manitoba intends to implement the following initiatives:

- Demand-side management (DSM) offers, such as financial incentives and other support (e.g., funding for energy audits and feasibility studies)
- Research and development
- Emerging technology support
- Codes and standards support
- Engagement through education and awareness initiatives.

Efficiency Manitoba's initiatives will be grouped in program bundles[2] to target the following customer sectors:

- Residential
- Income-qualified
- Indigenous
- Commercial
- Industrial
- Agricultural

The Act requires that Efficiency Manitoba conduct an independent evaluation of its activities, including cost-effectiveness, and provide the resulting assessment to the Public Utilities Board (PUB) in subsequent Efficiency Plans. The Act also requires the establishment of an advisory committee. An advisory committee comprised of customer segment representatives and stakeholders, the Energy Efficiency Advisory Group (EEAG), has been established to serve as an advisory body to Efficiency Manitoba and will provide advice on the terms of reference for evaluation, among other topics. The EEAG engagement with Efficiency Manitoba will continue beyond the creation of the 2020/2023 Energy Efficiency Plan.

[1] https://web2.gov.mb.ca/bills/41-2/b019e.php
[2] For additional details on DSM bundles and programs, see the Portfolio Evaluation Plan.

1.2 Key Performance Metrics

Efficiency Manitoba has identified a set of key performance metrics to be tracked and monitored, as listed in the table below. Evaluation activities are expected to help track and verify these metrics. Key performance metrics should be reported for each program, bundle and sector.

These metrics will enable Efficiency Manitoba to track progress against the energy savings targets and cost-effectiveness criteria set out in the Efficiency Manitoba Act and the Efficiency Manitoba Regulation. The definitions and acceptable methodologies for evaluating those metrics are discussed in Section 1.5.

Table 1: Key Performance Metrics

Metric	Measure	Remarks
Annual Gross Savings	› Electrical energy savings (GWh) › Electrical peak savings (MW) › Natural gas savings (million m^3)	Peak savings is a secondary metric.
Annual Net Savings	› Electrical savings (GWh) › Electrical peak savings (MW) › Natural gas savings (million m3)	› Peak savings is a secondary metric. › The savings targets established by the Efficiency Manitoba Act are of net energy savings.
Net Annual GHG Impacts	Equivalent CO_2 emissions avoided (tonnes)	
Effective Useful Life	The number of years over which savings will persist.	This metric should be adjusted to account for potential increases in the baseline over the lifetime of the measure so that when multiplied by the first-year savings, it results in lifetime savings.
Costs	› Incremental measure cost ($) › Incentive cost ($) › Non-incentive costs ($)	The incremental measure cost is calculated for the entire lifetime of the measure and includes operation and maintenance costs.
Non-energy benefits	› Monetized benefit ($) › Water savings (liters)	

In addition to the key performance metrics listed in Table 2, other performance indicators may be identified based on the following portfolio-specific or program-specific requirements:

- Market characterization attributes, such as prices, product availability, market saturation and compliance with relevant codes and standards.
- Participant information, such as the number of participants, customer satisfaction levels, brand awareness, and energy efficiency awareness.
- Other information useful for program planning and management (e.g., lost opportunities).

1.3 Evaluation Framework Objectives and Principles

1.3.1 Evaluation Objectives

Evaluation is the process of determining the impacts of energy efficiency and renewable energy initiatives and identifying opportunities for improvement.

Evaluation is meant to achieve the following three key objectives:[3]

1 To estimate the impacts of a program and determine whether the program (or a portfolio of programs) has met its goals.
2 To provide information and analyses to identify ways to improve current and future programs.
3 To support energy demand forecasting and resource planning by understanding the effects of energy efficiency in comparison to other supply-side resources.

Evaluation results are applied to cost-effectiveness analysis as an extension of evaluation activities. As discussed below in Section 1.3.2, evaluation should be viewed as an integral part of the continuous process of program planning and implementation.

1.3.2 Guiding Principles

Evaluation should be carried out according to the following five guiding principles of evaluation:

1 Results-focused: Evaluation should be an integral part of the continual process of program design, implementation and management. Over time, the evaluation results should be used to improve program offerings and delivery.
2 Independent: Evaluation should provide independent, non-biased results.
3 Transparent: Key assumptions, methodologies and calculations used in the evaluation should be clearly and thoroughly documented to ensure the transparency of the results and findings.
4 Appropriately rigorous: The evaluation activities should apply an appropriate level of rigour based on best practices and evaluation priorities.
5 Efficient: The evaluation activities should be carefully planned and prioritized to maximize the value for money.

Each of these principles is discussed in greater detail below.

Principle 1: Evaluation is integral to the DSM planning cycle

As illustrated in Figure 1 below, evaluation is an essential part of the continuous improvement of a DSM program offerings and delivery.

[3] Energy Efficiency Program Impact Evaluation Guide, SEE Action, December 2012, https://www4.eere.energy.gov/seeaction/system/files/documents/emv_ee_program_impact_guide_0.pdf

At the DSM program design stage, the necessary baseline data is collected to inform the design and establish the baseline against which future evaluations are performed. Also, evaluation planning should be part of the DSM program planning process to ensure that feedback for program planning and management is collected and processed in a timely manner. The evaluation results and recommendations should then be used to modify program implementation in a cycle of continuous improvement.

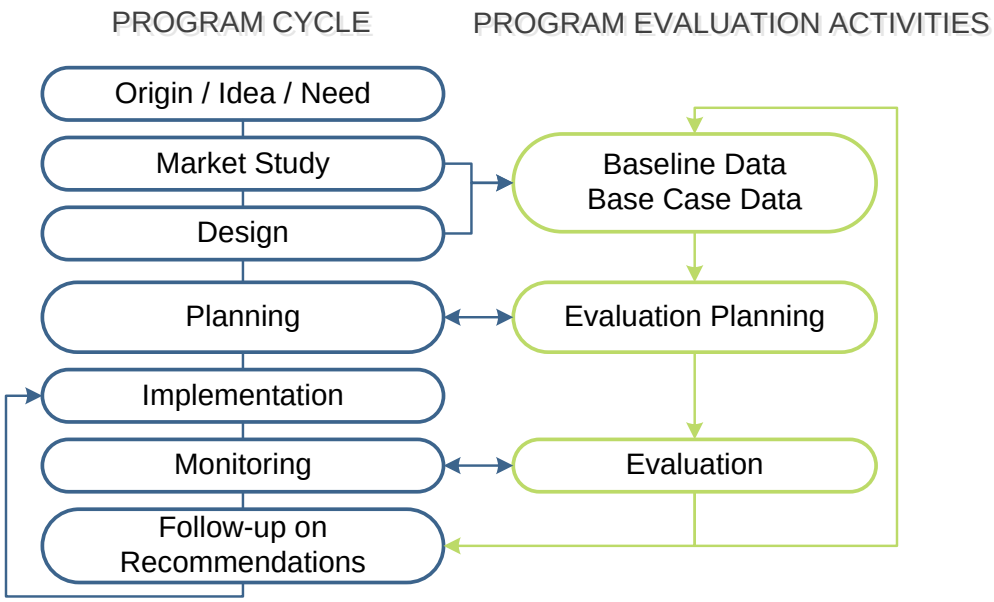

Figure 1: The DSM Program Planning Cycle

Principle 2: Evaluation should provide independent, non-biased results

The evaluator should be non-biased and not have any stake or personal interest linked to the evaluation outcomes. Section 16(1) of the Efficiency Manitoba Act requires appointing an independent evaluator to assess and report on Efficiency Manitoba's results and cost-effectiveness and other matters prescribed by the Regulation.

Principle 3: Key assumptions, methodologies and reports should be transparently documented

Although evaluations typically involve using confidential information and presenting aggregate data, the evaluation results and calculations should be clearly presented and documented so that any questions about them can be easily and reliably answered. Transparent evaluation reporting should:

- Describe the approaches and methodologies used and their intended outcomes;
- Present the results using a structure that enables the reader to easily match the approaches and methodologies used with the analyses done and the results obtained;
- Identify key variables and assumptions used to calculate the savings values;
- Mention any uncertainty about the results, confidence levels and margins of error.

Principle 4: The evaluation activities should apply an appropriate level of rigour

Evaluation should be conducted with levels of rigour consistent with professional standards and best practices such as the California and Uniform Methods Project (UMP) protocols. Also, the evaluation of a specific program or initiative should be conducted with an appropriate level of effort based on a balance of several factors, such as savings targets and the level of uncertainty regarding savings calculations.

Principle 5: Evaluation activities should be carefully planned to maximize the value for money

An adequate budget and enough resources should be provided and used to ensure that an evaluation's scope and objectives are properly covered as planned. Nevertheless, to maximize the value for money, evaluation planning and implementation should aim to achieve the highest cost-effectiveness, where possible, by doing the following:

- Optimizing the use of resources based on the evaluation priorities established to obtain the most value for the budget;
- Looking for relevant secondary research literature, data and findings where appropriate and possible;
- Grouping evaluation activities to optimize the use of resources;
- Making the best use of the data-collection activities to simultaneously achieve multiple research objectives.

1.4 Evaluation Priorities, Cycle, Roles and Responsibilities

1.4.1 Evaluation Priorities

Efficiency Manitoba should prioritize evaluation resources based on the following factors:

- The level of program savings compared to portfolio savings: More resources should be allocated to a program that accounts for a relatively large portion of a portfolio's total savings.
- Uncertainty regarding the expected savings: Those initiatives with lower uncertainty regarding their results should be made a lower evaluation priority. Similarly, evaluation efforts should prioritize those program characteristics or assumptions associated with a higher level of uncertainty (e.g., uncertainty about the hours of use).
- Timely feedback in the program life cycle: Information valuable to the planning of a new initiative (e.g., a pilot) or improving an ongoing program should be prioritized. Process evaluations should be scheduled to obtain early feedback to help ensure that a program is on track to meeting its goals.
- Regulatory impacts: The information needed to improve the regulatory processes and oversight should receive a higher priority than the information not needed for that purpose.

- Evaluation scheduling: The scheduling of evaluations should be carefully thought out to optimize the robustness and usefulness of evaluation results (e.g., the need to evaluate a program after changes were made to the program offerings; the length of the interval between two consecutive evaluations of a program).
- Cost: The use of evaluation costs should be optimized. Alternative approaches should be considered when the value of better-quality data and information is worth the cost of procuring such data and information.

1.4.2 Evaluation Cycle

Each year, Efficiency Manitoba will evaluate a number of selected programs so that all the programs are appropriately covered over the three years of the Energy Efficiency Plan. The following list summarizes the key documents needed and used in the evaluation cycle:

- The Evaluation Framework. This document is designed to remain valid beyond the three-year Energy Efficiency Plan and guide future evaluation activities. It may be updated based on new or revised regulatory requirements or other modifications.
- The Portfolio Evaluation Plan. This plan outlines the key evaluation activities and schedule over the three-year Energy Efficiency Plan. This plan may be updated during the three-year cycle based on new information or priorities.
- Program Evaluation Plans. Such plans are to be created for each program included in an annual evaluation cycle. These plans should outline the specific methodologies, research activities, baselines, sample designs and budgets associated with program-level evaluation.
- Program Evaluation Reports. These reports describe the evaluation methodology and presents the results of the program impact, process and/or market evaluations as well as cost-effectiveness results and recommendations.
- The Portfolio Evaluation Report. This report summarizes key evaluation results for the overall portfolio by sector and bundle. It will be filed with the PUB as per Section 16 of the Efficiency Manitoba Act.

Table 2 below provides a summary of the evaluation planning cycle and related documents.

Table 2: Key Evaluation Planning Documents

Document	Schedule	Reviewed by EEAG
The EM&V Framework	To be kept in use indefinitely and may be updated as needed	Yes
The Portfolio Evaluation Plan	Prepared at the same time as the three-year Energy Efficiency Plan and may be updated as needed	Yes
Program Evaluation Plans	Prepared each year for each annual evaluation	No
Program Evaluation Reports	Prepared for each program evaluation according to the Portfolio Evaluation Plan in Section 2	Yes
The Portfolio Evaluation Report	At end of the three-year plan	Yes

1.4.3 Roles and Responsibilities

Efficiency Manitoba, with the advice of the EEAG, will select one or multiple third-party evaluators to undertake evaluation activities. The independent third-party evaluator or evaluators are responsible for coordinating and supervising all evaluation activities, including planning the specific evaluation activities. Some of the evaluation activities (e.g., interviews, surveys, and on-site visits) can be directly performed by the evaluator or by one or more subcontractors. The evaluator is also responsible for following up with Efficiency Manitoba and preparing evaluation reports.

In addition to hiring the evaluator, Efficiency Manitoba is responsible for administrating the energy efficiency programs and ensuring that necessary data is collected to allow for tracking DSM activities and calculating savings at the program, bundle and sector levels. Efficiency Manitoba is also responsible for coordinating with the PUB and EEAG, as well as providing feedback to third-party implementers and evaluators about program implementation and evaluation plans and results. Efficiency Manitoba should also seek and collect useful feedback from all these parties involved in its DSM initiatives planning, implementation and evaluation.

What follows is a list of typical documents to be provided by Efficiency Manitoba to the evaluator for DSM program evaluation purposes:

- Program databases
- Program manuals or guidelines
- Communication and marketing strategies
- Program logic models and theories
- Partner, participant and program process flowcharts
- Past evaluation reports, if available

In addition, Efficiency Manitoba will be requested to provide other information useful for the evaluation, such as rate information and avoided costs needed for the cost-effectiveness analysis.

1.5 Methods and Key Assumptions

A DSM program evaluation involves carrying out various assessments, studies and activities to determine a program's effects. There are three broad categories of evaluations: the impact evaluation, the process evaluation, and the market evaluation. The cost-effectiveness analysis is an extension of the evaluation because such an analysis relies on the evaluation results.

This section provides a more detailed description of these three types of evaluations and the cost-effectiveness analysis and discusses some key considerations that Efficiency Manitoba should take into account when planning specific evaluations.

1.5.1 Impact Evaluation

The objective of an impact evaluation is to reliably establish the energy savings, peak demand savings and non-energy benefits that result from a program. This section describes the metrics and types of results included in impact evaluations and the acceptable methodologies to obtain them.

A DSM program's savings results are reported in both gross savings and net savings. The following definitions are taken from the UMP.[4]

- **Gross savings:** The difference in energy consumption with the energy-efficiency measures promoted by the program in place versus what consumption would have been without those measures in place.
- **Net savings**: The difference in energy consumption with the program in place versus what consumption would have been without the program in place.

In other words, the gross savings are calculated without considering program influence, whereas the net savings are the portion of the gross savings realized due to program influence.

Interactive effects are applied to both gross and net energy savings to consider the implemented energy-efficiency measures' impact on other energy-consuming systems used in the same building. To establish the net savings of a program, effects such as **free-ridership**, **spillover** and **market effects** are taken into consideration, where applicable and appropriate.

[4] Violette, Daniel M. and Rathbun, Pamela. (2017). *Chapter 21: Estimating Net Savings – Common Practices: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68578. http://www.nrel.gov/docs/fy17osti/68578.pdf

- Free-ridership is the percentage of gross savings attributable to those participants who would have implemented the same or similar energy efficiency measures with no change in timing in the absence of the program.
- Spillover is the percentage of gross savings attributable to those participants who, encouraged by their previous participation in a program, implement additional energy efficiency measures without receiving any additional incentive from the program.
- Market effects represent a program's impact on the market (such as increased product availability and awareness of energy efficiency) that extends beyond changing the program participants' behaviours. This includes spillover among non-participants.

A program's savings are primarily reported in terms of **first-year savings**. Where applicable, savings are normalized to represent a typical year over the lifetime of a measure; for instance, by using the normalized heating-degree days value, a heating system's savings can be established for a normal year rather than the savings of the specific year when this system was installed.

Peak demand savings are determined for a specific measure based on its effect on the reduction of power consumption over the peak period in Manitoba, which occurs during winter months (December, January or February) on the coldest weekdays between 6 am and 12 pm or between 4 pm and 10 pm.

Lifetime energy savings are calculated by taking into consideration both a measure's life (the period of time over which this measure is expected to persist) and any increase in the baseline energy consumption over this measure's life. The **equivalent effective useful life** (EEUL) is used to express the persistence of a measure's or a program's savings; the EEUL is obtained by dividing the lifetime energy savings value by the first-year energy savings value.

GHG emission reductions are established by calculating the energy savings of each energy source (such as electricity, natural gas, propane, oil and biomass) and by applying the appropriate emission conversion factor (in kg of CO_2 eq per GJ) applicable to each energy source.

Non-energy benefits may include water savings, as well as environmental, health, economic development and energy security benefits, such as improved indoor air quality, higher property value and better lighting quality. The evaluator defines the non-energy benefits to be considered in each evaluation based on the likelihood for those non-energy benefits to occur as a result of the implemented program being evaluated. Some benefits, such as energy security, may be difficult and costly to quantify. To account for these benefits, the Evaluator may choose to apply a non-energy benefit adder. This adder is usually a percentage of the monetary value of a program's total benefits and this percentage is determined based on literature review findings.

Impact Evaluation Methodologies

The Portfolio Evaluation Plan proposes conducting one of two types of impact assessments of every program each year, as explained below.

- **Full impact evaluation**: A full impact evaluation involves reviewing the following four key elements: (1) the baseline definition, (2) the savings calculation methodology, (3) the values of the parameters used to calculate the savings and (4) the net-to-gross ratio. The specific activities to be carried out to conduct this review for each program are to be defined by the Evaluator selected by Efficiency Manitoba. These activities may include surveys, desk reviews, site visits, measurement and verification, literature reviews, etc. A full impact evaluation yields **evaluated savings results**.
- **Savings verification**: The Evaluator conducts the savings verification to determine (1) that a program's savings have been correctly and consistently compiled and calculated by applying all the necessary parameters and (2) that the savings calculation parameters recommended by a previous impact evaluation, or, if the program has not yet been evaluated, the documented savings methodology have been properly applied. A savings verification provides **verified savings results**.

The Portfolio Evaluation Plan includes at least one full program evaluation for each program over the three-year period of the Energy Efficiency Plan to ensure that savings calculation methodologies respect evaluation best practices and that the impacts created by the programs are accurately captured. For those cases where a full impact evaluation is not conducted in the first year of the three-year plan, a retroactive adjustment should be applied to previously verified savings so that results are consistent with the parameters obtained from the full impact evaluation.

A full impact evaluation's activities sometimes involve sampling to achieve statistically significant results while remaining cost-effective. The Evaluator should aim to obtain reliable results through sampling and achieve a program-level margin of error of no more than 10% at a confidence level of 90%. For all the results obtained through sampling, their margins of error will be calculated and presented in the evaluation reports. The sampling methods must be carefully selected according to the program population's characteristics and these characteristics' expected impacts on the evaluation results. The sampling methods will follow best practices for evaluation. More detailed guidance on this topic is provided in Chapter 11 of the UMP evaluation protocol.[5]

[5] Khawaja, M.S., Rushton, J. and Keeling, J. (2017). "Chapter 11: Sample Design Cross-Cutting Protocol", *The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/ SR-7A40-68567. http://www.nrel.gov/docs/fy17osti/68567.pdf

Evaluation of Codes and Standards

The Efficiency Manitoba Regulation states that a code, standard or regulation to which Efficiency Manitoba or Manitoba Hydro has made a material contribution may be included in Efficiency Manitoba's savings targets. The focus of a codes and standards evaluation is to estimate the impact in terms of energy savings brought by the changes made to the codes and standards targeting energy efficiency measures and practices in Manitoba. An impact evaluation of relevant codes and standards should focus on first developing a baseline, then estimating the achievable level of compliance with the regulations (the codes and standards) and finally estimating the net energy savings that result from the enforcement of the energy efficiency codes and standards. A qualitative assessment of Efficiency Manitoba's or Manitoba Hydro's contributions should also be part of the codes and standards evaluation.

1.5.2 Process Evaluation

A process evaluation assesses a program's effectiveness in achieving its objectives and whether its implementation is proceeding as planned. Therefore, such an evaluation assesses the performance of the program activities and internal and external processes, and identifies those areas of the program that have not achieved the desired outcomes and should thus be improved. A process evaluation also usually looks at a program's ability to reach the right customers, participation levels and satisfaction among the participants and partners.

A process evaluation is not required for every year of a program. It should be considered for new programs or after major program changes have been made, or for programs with high savings, known issues, extensive or complex participation processes, or identified risks.

Typical process evaluation activities include:

- A program documentation review that involves reviewing documents such as the program logic model and theory, the program forms, guides and manuals, the marketing materials, and the program database to understand the program processes and components, inform data collection activities and identify improvement opportunities.
- A jurisdictional scan or a benchmarking study to collect information about similar ongoing successful programs, the lessons learned from other utilities, best practices, etc.
- Surveys, in-depth interviews or focus groups to collect information about participants', partners', stakeholders' and program staff's perspectives and feedback about the program.
- On-site assessments of the program delivery processes: for example, conducting mystery shopper visits to evaluate an in-store instant rebates program or ride-along visits to evaluate delivery agents' on-site work for a home energy assessment program.

1.5.3 Market Evaluation

A market evaluation assesses a program's influence on a market or sector by examining the market evolution of energy efficiency products and supply chains. More specifically, market evaluations involve assessing and monitoring market transformation indicators, such as product market shares and prices, program participant and non-participant behaviours, trade ally capacity and knowledge of energy efficiency, and barriers to product implementation and uptake, to understand the impacts of the program on the market.

As illustrated in Figure 1 on Page 5, a market evaluation can also be carried out before a program is launched to understand the market before any program actions are taken and to inform the program design. The market evaluation data can also be used to contribute to the impact evaluation efforts, for example, by providing data about the baseline.

A market evaluation is not required for every year of a program. It should be conducted to inform program design, or for programs that involve using fast-evolving technologies or that are likely to have a quick uptake, for example.

Market evaluation activities include:

- A potential study or penetration study to collect data about technology uptake and implementation.
- General population surveys and trade ally in-depth interviews or focus groups to collect information about energy efficiency behaviours, market trends and trade ally capacity.
- Secondary research data to gather information about product sales, shipments and market shares.
- Technology diffusion curves that illustrate product market adoption phases.

1.5.4 Cost-effectiveness Analysis

A cost-effectiveness analysis examines the relationship between the value created by a portfolio's benefits (or a project's, a measure's, a program's, or a bundle's) and the costs incurred to achieve those benefits. The analysis findings can help determine whether to retain, revise, or eliminate program elements and provide feedback on whether energy efficiency is an effective investment compared with the energy supply options. The various tests involved in a cost-effectiveness analysis may help answer the following questions:

- Is the initiative effective overall?
- Are some costs or incentives too high or too low?
- What is the effect on energy rates?
- What adjustments need to be made to improve the cost-benefit ratio?

Efficiency Manitoba's cost-effectiveness calculations will follow best practices, such as those described in EPA's cost-effectiveness guide[6] and the National Standard Practice Manual[7].

As per the Efficiency Manitoba Regulation, the primary cost-effectiveness metric for Efficiency Manitoba is the portfolio-levelized program administrator cost for electrical energy net savings and natural gas savings compared to the marginal costs of supply for electricity and gas respectively. The levelized portfolio cost does not capture all the benefits of the initiatives (e.g., peak savings). Therefore, the Program Administrator Cost (PAC) test and net present value of the initiatives will also be analyzed.

A secondary cost-effectiveness analysis will involve the Total Resource Cost (TRC) test. The Rate Impact Measure test may also be calculated and analyzed for information purposes.

The PAC test is the ratio of the utility benefits of the initiative in terms of the value of energy and demand saved divided by the net program costs (the incentive and non-incentive costs) of the portfolio. The TRC test is the ratio of the value of energy and demand plus non-energy benefits divided by the total costs of the initiative, including the incremental measure cost and the program administrator non-incentive costs. Costs and benefits should be calculated over the evaluated effective useful life of the measures. The following table summarizes the components of the TRC and PAC tests.

Table 3: Components of the TRC and PAC Tests

	TRC	PAC
Avoided Costs (Electric and Natural Gas)	X	X
Non-energy Benefits	X	
Non-incentive Costs	X	X
Incentive Costs		X
Customer Costs	X	

The utility benefits, as per the Efficiency Manitoba Regulation, should be the marginal value to Manitoba Hydro of the net savings based on a methodology consistent with its resource planning process, taking into account the timing and duration of the savings. Best practice requires accounting for the costs of generation, transmission and distribution resources in estimating the avoided energy costs.

As for non-energy benefits, all quantifiable non-energy benefits (e.g., water savings) should be included. Those non-energy benefits that are difficult to quantify (e.g., improved comfort and health of the income-qualified participants) may be included with an adder.[8]

[6] Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods and Emerging Issues for Policy Makers, 2008. https://www.epa.gov/sites/production/files/2015-08/documents/cost-effectiveness.pdf
[7] National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources. National Efficiency Screening Project. Spring, 2017. https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf
[8] Recent research conducted by Econoler found that among the six Canadian utilities covered by that research, four accounted for non-energy benefits by applying an adder ranging from 12.5% to 15%.

The non-incentive costs include all the costs related to program design, implementation, marketing, evaluation and administration of a DSM initiative, including any overhead costs.

Customer costs are the incremental capital and operations and maintenance costs incurred by a participant in a DSM initiative. Whether the incremental cost or the full installed cost of a product is applied as the customer cost should be established based on the definition of the baseline (e.g., early replacement); this baseline must therefore be consistent between the energy savings calculations and the customer cost calculation.

The methodologies for determining the costs and benefits applied in the tests should be consistent between the costs and the benefits and estimated over the lifetime of energy savings by applying the effective measure life value.

In addition to the portfolio-level analysis, for information purposes, the evaluation results should also support the cost-effectiveness analysis at the bundle and program levels.

1.5.5 Considerations for Evaluating Specific Program or Initiative Categories

Several categories of initiatives have unique evaluation criteria that should be taken into account in Efficiency Manitoba's evaluation planning:

- **Pilot programs.** Process and impact analyses may be prioritized for pilot activities, given the need to determine whether these programs should be modified, expanded, or cancelled.
- **Income-qualified programs.** In addition to energy savings, energy efficiency programs have the potential to provide participants with non-energy benefits that can improve their health and comfort. Additional evaluation of the non-energy benefits may be prioritized to capture these important benefits of income-qualified programs.
- **Hard-to-reach market programs**. These programs are targeted at market segments that have historically had low penetration of efficiency measures (remote, Indigenous or small businesses as examples). So, the evaluation could focus on process and market analyses to assess which techniques are or are not increasing market penetration.
- **New technology programs**. These programs are targeted at technologies that might not be widely available or that might still be evolving (e.g., advanced lighting controls, and heat pump water heaters) So, an evaluation may focus on consumer acceptance, performance reliability, and cost trends, in addition to estimated savings.
- **Behaviour-based programs.** Given the nature of these programs and the relatively limited (although increasing) experience with their implementation, more rigorous impact evaluations (such as randomized-control trials) could be required.

2 PORTFOLIO EVALUATION PLAN

The Portfolio Evaluation Plan first provides an overview of the Efficiency Manitoba Energy Efficiency Plan and how it has been divided for evaluation planning purposes. Then, it provides the recommended evaluation schedule for the three-year period of the Plan, along with key program-specific evaluation considerations and estimated costs.

2.1 Overview of Energy Efficiency Plan

The Efficiency Manitoba Energy Efficiency Plan provides program offerings to the following sectors: residential, income-qualified, Indigenous communities, commercial, industrial and agricultural. The sectors are made up of bundles that include various types of incentives, support services and other activities. Econoler has grouped these offerings based on their similarities to make their evaluation as efficient and cost-effective as possible. The following elements have been considered to determine the programs:

- The types of products, measures or services;
- The targeted customers;
- The delivery models or incentive structures;
- The methods required to calculate savings.

Appendices I and II show tables listing the bundles to be included in the Energy Efficiency Plan, the specific programs they each include and their respective program elements. Programs highlighted in grey are enabling activities with which no savings are associated, and are therefore not included in the Portfolio Evaluation Plan. Appendix I lists the programs and bundles covering the residential, income-qualified and Indigenous community sectors. Appendix II lists the bundles and programs covering the commercial, industrial and agricultural sectors.

The following figures provide an overview of the bundles and programs included in the Portfolio Evaluation Plan.

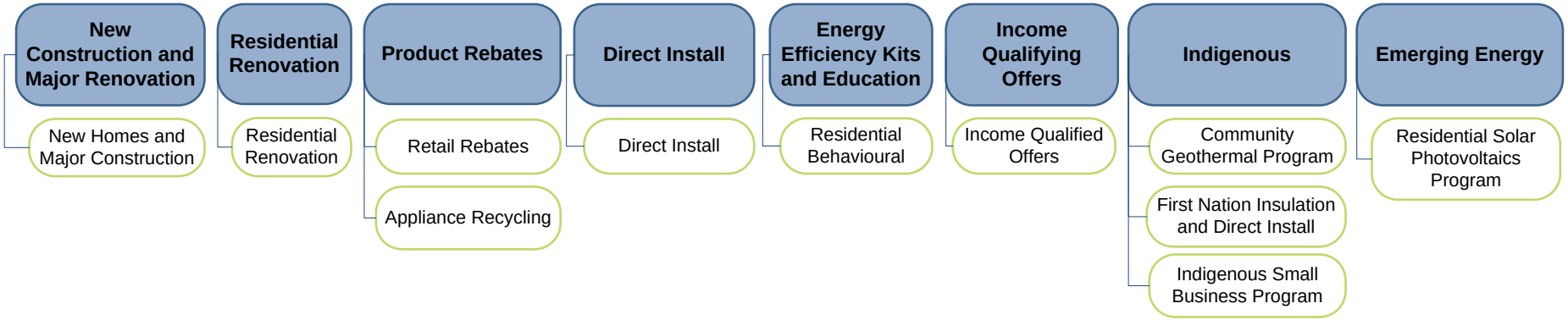

Figure 2: Overview of the Programs and Bundles Offered to the Residential, Income-qualified and Indigenous Sectors

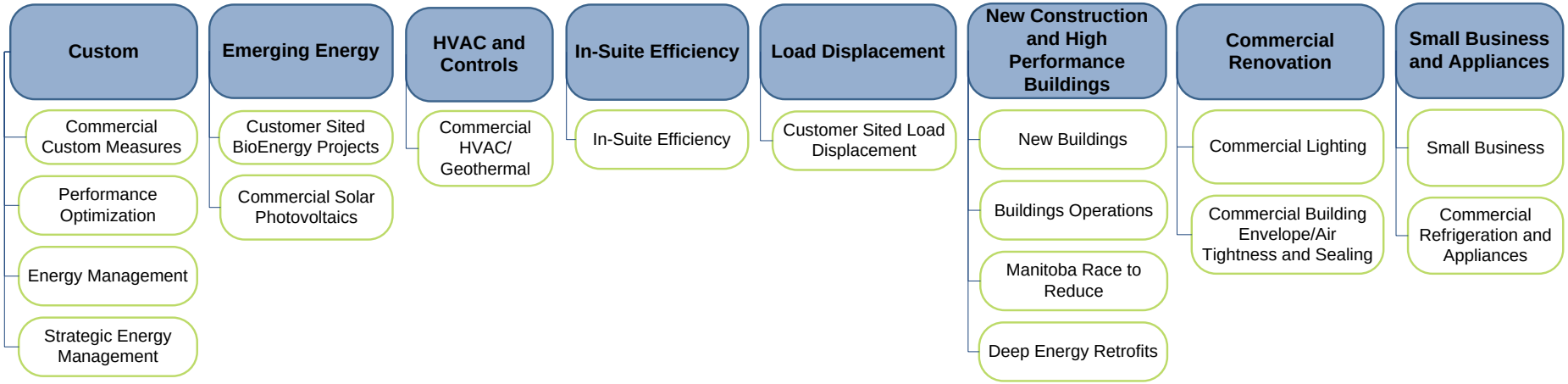

Figure 3: Overview of the Programs and Bundles Offered to the Commercial, Industrial and Agricultural Sectors

The three-year Energy Efficiency Plan will start on April 1, 2020 and end on March 31, 2023. Its overall goals are to generate annual net electrical energy savings by 1.5% against the preceding year's consumption and annual net natural gas savings by 0.75% against the preceding year's consumption.

The following programs are those with the highest electrical energy or natural gas three-year targets of all the residential, income-qualified and Indigenous sector programs. Their electrical energy or natural gas savings targets each account for at least 5% and up to 40% of the overall residential, income-qualified and Indigenous sector savings targets.

- Retail Rebates
- Residential Renovation
- Appliance Recycling
- New Homes and Major Construction
- Income-qualified Offers
- Direct Install

These programs are also those with the highest three-year budget for electrical savings. In terms of the natural gas savings budget, the Income-qualified Offers program has the highest budget, followed by Residential Renovation.

When looking at the commercial, industrial and agricultural sectors, the Customer Sited Load Displacement program has the biggest electrical savings targets, followed by the Commercial Lighting program and the Performance Optimization program. Together, these three programs account for almost 90% of the targeted electrical savings. Although much smaller, the Small Business, New Buildings and Commercial Refrigeration and Appliances programs have sizeable electrical savings targets. These six programs are also among those with the largest budgets. In terms of natural gas savings targets, the Performance Optimization program is the one with the highest targets with no other program having comparable targets. It also holds one of the two highest natural gas savings budgets, the other being the New Buildings program.

The Energy Efficiency Plan also includes codes and standards, which have significant electrical and natural gas savings targets in both the residential and commercial sectors. The following table shows a preliminary list of the codes and standards that should be considered for evaluation.

Table 4: List of Codes and Standards

Codes and Standards
Codes and Standards with High Savings Potential
Residential Building Code
Residential General Service Lighting
Residential Appliances
Commercial Building Code
Commercial Fluorescent Lamp Ballasts
Codes and Standards with Small Savings Potential
Commercial General Service Lighting
Other Commercial Equipment

2.2 Evaluation Schedules

This section describes the bundles and programs to be included in the three-year evaluation plan, and presents Econoler's recommendations about the types of assessment they should undergo (process, market and/or impact evaluations and cost-effectiveness analysis), when and why.

The following are key guidelines that were followed to determine the evaluation schedules:

- Each year, conduct at least a savings verification of every program.
- Conduct a full impact evaluation of every program at least once during the three-year plan to ensure that the savings calculation methodologies, key savings parameters, baseline and net-to-gross ratio are evaluated (refer to Framework for more details). A full impact evaluation involves a savings verification; so, a savings verification is not required in addition to the full impact evaluation.
- A full impact evaluation should cover only completed projects. Any required adjustments to ongoing project savings must be made once these projects are completed.
- Conduct the full impact evaluation during the first year of the Plan as much as possible to ensure that the evaluated results are used during the rest of the Plan and therefore allow for more precise forecasting of the program impact results.
- Consider conducting more than one full impact evaluation of the same program, combined with a market evaluation when needed, in the following situations: (1) higher uncertainty levels about the savings assumptions for certain programs or technologies, (2) complex or custom savings calculation methodologies that are more likely to result in errors, and (3) rapidly evolving markets that could change the baseline definition.

- Consider conducting market evaluations of programs that include technologies in fast-evolving markets or that are likely to have a quick uptake. Market evaluations are not required for every program or for every year of a program.
- Prioritize programs that have high savings or budget targets, known issues (e.g., low participation rates), or identified risks (e.g., hard-to-reach markets, multiple parties involved) for process evaluations. Process evaluations are not required for every program or for every year of a program.
- As much as possible, perform needed process and market evaluation work at the same time as full impact evaluation work to be as efficient and cost-effective as possible with data collection and evaluation activities.
- Conduct a cost-effectiveness analysis for every program every year using the evaluated or verified savings.
- Assess high-savings codes and standards for those markets that are susceptible to change over time (e.g., lighting and new buildings) more frequently. The official list of codes and standards to be evaluated should be determined with Efficiency Manitoba prior to each evaluation cycle.

It should be noted that this evaluation schedule does not account for additional evaluation needs that may stem from issues identified during the first or second-year evaluations and that would benefit from further investigation. Such required adjustments or additions to the evaluation scope of work should be discussed between Efficiency Manitoba and the selected evaluator prior to each evaluation cycle. Similarly, Econoler understands that some of the programs have few expected participants or will undergo changes, making it difficult to predict when the level of participation will be high enough to justify the need to perform an evaluation. The following evaluation schedules have been developed to ensure that the programs are adequately evaluated in Years 1 and 2 as much as possible, Still, Econoler recommends reviewing these evaluation schedules at the beginning of each evaluation cycle to ensure that they align with each program's cycle and needs.

2.2.1 Residential, Income-qualified and Indigenous Sectors

The following table presents the evaluation schedule related to the residential, income-qualified and Indigenous bundles and programs, followed by key program-specific evaluation considerations.

Table 5: The Residential, Income-qualified and Indigenous Sectors Evaluation Schedule

Bundles and Programs	Fiscal Year 2020/2021			Fiscal Year 2021/2022			Fiscal Year 2022/2023		
	Process	Market	Impact*	Process	Market	Impact*	Process	Market	Impact*
New Construction and Major Renovation									
New Homes and Major Construction	X	X	F			V			V
Residential Renovation									
Residential Renovation			V	X		F			V
Product Rebates									
Retail Rebates	X	X	F			V		X	F
Appliance Recycling			F			V			V
Direct Install									
Direct Install			V	X		F			V
Energy Efficiency Kits and Education									
Energy Efficiency Kits			V			F			V
Income Qualifying Offers									
Income-qualified Offers	X		F			V			V
Indigenous									
Community Geothermal Program			V	X		F			V
First Nation Insulation and Direct Install			V	X		F			V
Indigenous Small Business	*See Commercial, Industrial and Agricultural Evaluation Schedule*								
Emerging Energy									
Residential Solar PV							X	X	F
*F=Full impact evaluation, V=Savings verification									

Key Program-specific Evaluation Considerations

New Homes and Major Construction:

- A process evaluation is recommended because this program is expected to be one of the main contributors to the residential portfolio savings. Additionally, such programs often have participation challenges, such as low overall participation and the full savings potential of new builds not being achieved due to the same types of upgrades always being implemented. It is recommended that the process evaluation be conducted for Year 1 at the same time as the full impact and market evaluations to optimize data collection and costs and allow for any program improvements to be implemented early in the three-year plan.
- A full impact evaluation is recommended for Year 1 to ensure that program savings are calculated using the appropriate baseline.
- The market evaluation would be used, among other things, to collect data to contribute to the impact evaluation baseline study.

Residential Renovation:

- A process evaluation is recommended because this program is expected to be one of the main contributors to the residential portfolio savings. The process evaluation was planned for Year 2 because the program is expected to include new components in Year 2 (i.e., addition of a bundling bonus and window and door incentives).
- For the same reason, the full impact evaluation has also been included for Year 2 to ensure that all savings parameters and methodologies are assessed at once.

Retail Rebates:

- A process evaluation is recommended because this program is expected to be the main contributor to the residential sector savings and requires retailer collaboration to be successful. It is recommended that this process evaluation be conducted at the same time as the first full impact and market evaluations to optimize data collection and costs.
- The market evaluation should allow for assessing market effects and analyzing and monitoring key market indicators about Manitoba's residential lighting market such as market shares of lighting technologies, LED prices and market barriers.
- Since the instant rebates offerings of this program include lighting, a product category that generates significant savings in a rapidly evolving market, it is recommended that a full impact evaluation of this program be conducted for Year 1 and again for Year 3, with a focus on lighting technologies for Year 3.

Appliance Recycling:

- Although this program is expected to be one of the main contributors to the residential portfolio savings, Econoler does not recommend conducting a process evaluation because this program is mature and has a fairly standard delivery model.
- A full impact evaluation is recommended for Year 1 because it is likely to include a metering activity of retired appliances; this activity could yield results that vary significantly from the tracked savings.

Direct Install:

- A process evaluation of this program is recommended in part to assess the effectiveness of the online assessment tool at screening customers for a home check-up or directing them to other relevant and eligible Efficiency Manitoba offers. This evaluation is recommended for Year 2 because the program will not be fully implemented until Year 2.
- The full impact evaluation is recommended for Year 2 as well to provide revised savings parameters, including product installation rates.

Energy Efficiency Kits:

- The full impact evaluation of this program should also assess key savings parameters such as product installation rates. It was included for Year 2 to be conducted at the same time as the Direct Install full impact evaluation, because it is expected that the two programs will have similar products and unitary savings values.

Income-qualified Offers:

- A process evaluation is recommended for Year 1 to quickly assess, among other things, known issues about the program related to participant and contractor satisfaction, challenges with the participation process, including program process steps, requirements and paperwork, as well as barriers to completing upgrades that fall outside the basic measure direct-install service and ways to encourage customer installation of those upgrades.
- An impact evaluation is recommended for Year 1 to evaluate the savings calculations and methodologies early on in the three-year plan.
  - It should be noted that for this type of program, free-ridership and spillover are typically assumed to be nil.
  - However, the assessment of non-energy benefits is especially relevant for this program. Elements such as increased comfort levels and awareness of energy efficiency benefits should be included in the evaluation.

Community Geothermal Program:

- A process evaluation is recommended because this program targets hard-to-reach customers. It is recommended for Year 2 as well so that data collection and costs are optimized.
- An impact evaluation is recommended for Year 2 rather than Year 1 to ensure that enough data about the program, its participants and its savings assumptions is available for a full impact evaluation.
  - It should be noted that for this type of program, free-ridership and spillover are typically assumed to be nil.
  - However, the assessment of non-energy benefits is especially relevant for this program. Elements such as increased comfort levels and awareness of energy efficiency benefits should be included in the evaluation.

First Nation Insulation and Direct Install:

- A process evaluation is recommended because this program targets hard-to-reach customers. It is recommended for Year 2, at the same time as the impact evaluation, so that data collection and costs are optimized.
- The full impact evaluation of this program should assess key savings parameters, such as product installation rates. It has been included for Year 2 to be conducted at the same time as the other Indigenous program evaluations.
  - It should be noted that for this type of program, free-ridership and spillover are typically assumed to be nil.
  - However, the assessment of non-energy benefits is especially relevant for this program. Elements such as increased comfort levels and awareness of energy efficiency benefits should be included in the evaluation.

Residential Solar PV:

- An evaluation of the program is only planned for Year 3 because the program will not be launched until then.
- A process evaluation is recommended because this type of program involves multiple parties (i.e., participants, installers, the program administrator and the utility for net-metering), which can lead to participant burden and challenges with understanding program requirements.
- The market evaluation should allow for identifying, analyzing and monitoring key market indicators about Manitoba's residential solar market, such as trade ally capacity, the number of solar systems installed, solar system prices and customer interest in solar systems. This type of evaluation is recommended because the program is new and uptake of solar technology likely to be high.
- An impact evaluation is recommended for Year 3 as well to evaluate the savings calculation methodologies and calculation parameters as well as the quality of system installations.

2.2.2 Commercial, Industrial and Agricultural Sectors

The following table presents the evaluation schedule related to the commercial, industrial and agricultural sectors bundles and programs, followed by key program-specific evaluation considerations.

Table 6: The Commercial, Industrial and Agricultural Sectors Evaluation Schedule

Bundles and Programs	Fiscal Year 2020/2021			Fiscal Year 2021/2022			Fiscal Year 2022/2023		
	Process	Market	Impact*	Process	Market	Impact*	Process	Market	Impact*
Custom									
Commercial Custom Measures and Deep Energy Retrofits			F			V			F
Performance Optimization	X		F			F			F
Energy Management			V	X		F			F
Strategic Energy Management			V	X		F			F
Emerging Energy									
Customer Sited BioEnergy Projects						F			F
Commercial Solar Photovoltaics							X	X	F
HVAC and Controls									
Commercial HVAC/Geothermal			V	X		F			V
In-Suite Efficiency									
In-Suite Efficiency			V			F			V
Load Displacement									
Customer Sited Load Displacement			F			F			F

Bundles and Programs	Fiscal Year 2020/2021			Fiscal Year 2021/2022			Fiscal Year 2022/2023		
	Process	Market	Impact*	Process	Market	Impact*	Process	Market	Impact*
New Construction and High Performance Buildings									
New Buildings	X	X	F			V			F
Buildings Operations			F			F			F
Manitoba Race to Reduce			F			V			F
Commercial Renovation									
Commercial Lighting	X	X	F			V		X	F
Commercial Building Envelope/Air Tightness and Sealing			F			V			V
Small Business and Appliances									
Small Business/First Nation Small Business			V	X		F			V
Commercial Refrigeration and Appliances			V	X		F			V
*F=Full impact evaluation, V=Savings verification									

Key Program-specific Evaluation Considerations

Commercial Custom Measures and Deep Energy Retrofits:

- A full impact evaluation of the Commercial Custom Measures program is recommended for Years 1 and 3 since savings calculations are custom and project scopes are likely to vary. The impact evaluation should validate savings calculation methodologies and baseline definitions using a representative sample of projects and establish an overall adjustment ratio. Year 2 projects could be included in the year 3 evaluation to reduce costs.
- The Deep Energy Retrofits program is scheduled to be evaluated at the same time as the Commercial Custom Measures program because their program components and elements to be assessed in the impact evaluations are similar. Because the Deep Energy Retrofits program is planned to be launched in Year 2, it is unlikely that many projects will be completed in that year. Therefore, a full impact evaluation should be planned for Year 3.

Performance Optimization:

- A process evaluation is recommended because this program is expected to be one of the main contributors to the sector portfolio savings. It is recommended for Year 1 so as to allow for any program improvements to be implemented early in the three-year plan.
- Because savings targets are significant for this program and because savings calculations are custom, a full impact evaluation is recommended for every year.

Energy Management and Strategic Energy Management:

- A process evaluation is recommended, given the importance of effective delivery and implementation in providing successful projects for such programs.
- Because these types of programs typically do not generate much savings in their first year, Econoler recommends conducting savings verification for Year 1 to ensure that adequate information about the facilities has been collected to enable proper evaluation. A full impact evaluation is recommended for Years 2 and 3 for both programs.

Customer Sited BioEnergy Projects:

- A full impact evaluation of this program is recommended for Years 2 and 3 since savings calculations are custom and project scopes are likely to vary. Program activity is not expected to start until Year 2. So, an evaluation for Year 1 has not been included. The impact evaluation should validate savings calculation methodologies and baseline definitions using a representative sample of projects and establish an overall adjustment ratio.

Commercial Solar Photovoltaics:

- An evaluation of the program is only planned for Year 3 since the program will not be launched until then.
- A process evaluation is recommended because this type of program involves multiple parties (i.e., participants, installers, the program administrator and the utility for net-metering), which can lead to participant burden and challenges with understanding program requirements.
- The market evaluation should allow for identifying, analyzing and monitoring key market indicators about Manitoba's commercial solar market, such as trade ally capacity, the number of solar system installations, solar system prices and customer interest in solar systems. This type of evaluation is recommended because the program is new and uptake of solar technology likely to be high.
- An impact evaluation is recommended for Year 3 as well to evaluate the savings calculation methodologies and calculation parameters as well as the quality of system installations.

Commercial HVAC/Geothermal:

- A process evaluation is recommended for Year 2 since the program includes many new measures and to ensure that these new measures are well integrated into the portfolio.
- A full impact evaluation is recommended for Year 2 as well to give the program enough time to ramp up since it includes new eligible systems. The impact evaluation should verify the savings calculation methodologies, including general parameters and baseline definitions. A sample of projects should also be reviewed to verify project-specific parameters.

In-Suite Efficiency:

- The full impact evaluation of this program should assess the key savings parameters, such as product installation rates. It is recommended for Year 2 to give the program enough time to ramp up since it includes new eligible products.

Customer Sited Load Displacement:

- Because project development is unique to each site and there are very few participants, Econoler has not included a process evaluation for this program.
- This program is expected to be the largest one in the commercial, industrial and agricultural portfolio in terms of savings. For this reason, a full impact evaluation is recommended every year. Additionally, because each site is unique with its own M&V, savings adjustments cannot be extrapolated to all the participant sites.

New Buildings:

- A process evaluation is recommended since this program is expected to be one of the main contributors to the sector savings and similar to the residential program, participation issues are often observed. This process evaluation is recommended for Year 1 to be conducted at the same time as the first full impact and market evaluations to optimize data collection and costs and allow for any program improvements to be implemented early in the three-year plan.
- A full impact evaluation of this program is recommended for Years 1 and 3: for Year 1, to ensure that program savings are calculated using the appropriate baseline; for Year 3, to monitor any issues in savings calculations because of projects' unique characteristics. Year 2 projects could be included in the Year 3 evaluation to reduce costs.
- The market evaluation would be used to collect data to contribute to the impact evaluation baseline study, among other things.

Buildings Operations:

- A full impact evaluation is recommended every year because projects completed under this type of program are typically unique, complex and small in number.

Manitoba Race to Reduce:

- Since this program's savings calculations rely on M&V, a full impact evaluation is recommended for Year 1 to ensure that all relevant participant data, such as any changes in building use, is collected for savings calculations. A full impact evaluation would then be conducted again for Year 3 to assess the complete savings for the three-year plan.

Commercial Lighting:

- A process evaluation is recommended since this program is expected to generate significant savings. This process evaluation is recommended to be conducted at the same time as the first full impact and market evaluations to optimize data collection and costs.
- The market evaluation should allow for assessing market effects as well as analyzing and monitoring key market indicators about Manitoba's commercial lighting market, such as market shares of lighting technologies, LED prices and market barriers.
- Since this program is the second largest in terms of savings targets and it operates in a market that moves fast, it is recommended that a full impact evaluation be conducted for Year 1 and again for Year 3.

Commercial Building Envelope/Air Tightness and Sealing:

- A full impact evaluation of this program is recommended for Year 1 to quickly provide revised savings parameters so that any issues in savings calculations can be addressed early in the 3-year plan.

Small Business/First Nation Small Business:

- A process evaluation of each program is recommended for Year 2 as well since the Small Business Program has sizeable savings, and the First Nation Small Business Program targets hard-to-reach customers.
- A full impact evaluation of these two programs should assess key savings parameters, such as product installation rates. Such an evaluation is recommended for Year 2 to give the program enough time to ramp up since they include new offerings.

Commercial Refrigeration and Appliances:

- A process evaluation is recommended to be conducted at the same time as the full impact evaluation, given the expected savings for this program and the inclusion of new eligible measures.
- A full impact evaluation is recommended for Year 2 to give the program enough time to ramp up since it includes new eligible measures. This program has quite high savings targets, but savings calculations are mostly prescriptive; so, one full impact evaluation during the three-year cycle should be sufficient.

2.3 Recommendations for Additional Studies

The following are recommendations for additional EM&V studies to collect data about program portfolio results, ensure continued improvements of programs, bundles and the overall Efficiency Manitoba portfolio, and further address some of the requirements in the Efficiency Manitoba Act and Regulation.

- Regular-interval surveys to be conducted among program participants in every sector to assess qualitative performance indicators, such as satisfaction levels and any other indicator deemed relevant.
- Assessment of the general population's attitudes toward energy efficiency and awareness of Efficiency Manitoba's offerings and brand. This data collection could also be used to collect data on product potential, penetration and barriers. As an alternative to the option of performing a stand-alone survey for this data collection, this assessment could be conducted using an Omnibus survey data collection approach. Omnibus surveys involve covering multiple research topics in a single survey questionnaire. Each participant is typically allowed a limited number of questions. Omnibus surveys are often conducted on a regular basis and with large sample sizes of the general population. They are a simple and cost-effective option to collect targeted data at a regular interval and at a lower cost than other customized data collection options.

› A socio-economic study to assess non-energy program impacts. The study could consist of two main components: (1) estimating the economic impacts, such as job creations attributable to Efficiency Manitoba's programs, initiatives and activities overall; and (2) determining the social-economic benefits of Efficiency Manitoba's programs, initiatives and activities, such as reducing operation and maintenance costs, conserving resources, or improving workplace safety, comfort and productivity. This study would be conducted once during the three-year plan and consider all of Efficiency Manitoba's activities.

› A jurisdictional scan to collect data on appropriate non-energy benefits adder for cost-effectiveness analysis. This analysis would involve collecting data, either online or directly from utility staff, about the non-energy benefits adder they use for cost-effectiveness calculations, how they use it and how it was determined. This study would be conducted once during the three-year plan.

2.4 Estimated Costs of Evaluation Activities

EM&V best practices suggest spending between 3% and 5% of a DSM plan's total expenditure on EM&V activities, including evaluations as well as other studies, such as the ones recommended in Section 2.3 of Econoler's Portfolio Evaluation Plan. Evaluation typically accounts for 1% to 2% of the DSM budget. Based on the evaluation schedules provided in this plan, Econoler has estimated the evaluation costs for each fiscal year of the Efficiency Manitoba three-year Energy Efficiency Plan. The following table lists these estimated evaluation costs in relation to Efficiency Manitoba's total expected DSM expenditure, excluding those estimated costs for the recommended additional studies.

Table 7: Estimated Evaluation Costs

	Fiscal Year 2020/2021	Fiscal Year 2021/2022	Fiscal Year 2022/2023
Approximate Efficiency Manitoba DSM Expenditure	63.1 M$	72.6 M$	74.5 M$
Estimated Evaluation Costs	1.15 M$	1.25 M$	1.10 M$
Percentage of Estimated Evaluation Cost of DSM Expenditure	1.8%	1.7%	1.5%

APPENDIX I
THE RESIDENTIAL, INCOME-QUALIFIED AND INDIGENOUS SECTORS BUNDLES AND PROGRAMS

Table 8: Residential, Income-qualified and Indigenous Sectors Bundles and Programs

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
New Construction and Major Renovation				
New Homes and Major Construction	Design assistance and financial incentives for whole home construction	New homeowners Builders	Performance-based and prescriptive incentives	Energy modelling
Residential Renovation				
Residential Renovation	Energy audit service and financial incentives for space and water heating systems, windows and doors, appliances, as well as insulation and air sealing upgrades	Existing homes	Prescriptive incentives and financing	Prescriptive savings
Product Rebates				
Retail Rebates	In-store and online rebates on products such as LED bulbs and fixtures, controls, smart power strips, weatherstripping, smart thermostats and appliances	All residential customers	Prescriptive incentives	Prescriptive savings
Appliance Recycling	Incentives for the retirement of old appliances, combined with a pick-up and recycling service	All residential customers	Prescriptive incentives	Prescriptive savings
Home Check-Up				
Home Check-Up	Online assessment and/or home check-up services to identify energy efficiency opportunities, combined with free-of-charge direct installation of products, such as low-flow showerheads, faucet aerators, LED bulbs and smart thermostats	Existing homes	Free-of-charge direct installation	Prescriptive savings

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
Energy Efficiency Kits and Education[9]				
Community Initiatives	Community events to increase awareness of energy efficiency **Enabling activity with no associated savings*	All residential customers	No incentives	No savings
Energy Efficiency Kits	Energy efficiency kits containing products such as low-flow showerheads, faucet aerators and LED bulbs offered to school students based on their own assessment of their homes	School students (and incidentally existing homeowners)	Products are provided free-of-charge	Prescriptive savings
Income Qualifying Offers				
Income-qualified Offers	Home check-up service to identify energy efficiency opportunities, combined with free-of-charge direct installation of products such as low-flow showerheads, faucet aerators, LED bulbs and smart thermostats. Other possible upgrades identified through the check-up, including furnaces, insulation, air sealing, smart thermostats and front-load clothes washers, are fully incentivized by Efficiency Manitoba but have to be installed by program-approved contractors selected by participants.	Income-qualified tenants and homeowners	Free-of-charge installation	Prescriptive savings

[9] This bundle is planned to include a behaviour program, but it will not be launched during the three years of this Energy Efficiency Plan. So, it was not included in the evaluation plan.

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
Indigenous				
Community Geothermal Program	Community Geothermal project to train local businesses on how to install and maintain geothermal systems and provide homeowners with such systems	Indigenous communities and existing homes	Free-of-charge installation and system	Semi-prescriptive savings
First Nation Insulation and Direct Install	Free-of-charge direct installation of insulation, lighting and water-saving products in existing homes	Indigenous existing homes	Free-of-charge direct installation	Prescriptive savings
Indigenous Small Business Program	Free-of-charge direct installation of insulation, lighting and water-saving products in small businesses	Indigenous small business owners	Free-of-charge direct installation	Prescriptive savings
First Nation Community Energy Plan	Community Energy Plan project to identify community ambassadors to promote energy efficiency and other Efficiency Manitoba services **Enabling activity with no associated savings*	Indigenous communities	No incentives	No savings
First Nation Education Initiative	Education Initiative with the collaboration of local organizations to increase the level of literacy about energy efficiency in schools and communities **Enabling activity with no associated savings*	Indigenous communities	No incentives	No savings
Rural Community				
Community Energy Plan	Community Energy Plan project to identify local ambassadors to promote energy efficiency and other Efficiency Manitoba services **Enabling activity with no associated savings*	Residential customers in rural areas	No incentives	No savings
Emerging Energy				
Residential Solar Photovoltaics (PV) Program	Financial incentives for the installation of solar PV panels **This program only starts in year 3 of the plan*	Existing homes	Custom incentives per kWh output	Semi-prescriptive savings

APPENDIX II
THE COMMERCIAL, INDUSTRIAL AND AGRICULTURAL SECTORS BUNDLES AND PROGRAMS

Table 9: Commercial, Industrial and Agricultural Sectors Bundles and Programs

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
Custom				
Commercial Custom Measures	Technical support and financial incentives for custom commercial upgrades	Existing commercial facilities	Custom incentives	Engineering calculations or M&V
Performance Optimization	Incentives for upgrades such as compressed air, pumps, refrigeration, boilers, heat recovery and heat pads	Commercial, industrial and agricultural customers (existing and new facilities)	Custom incentives	Engineering calculations
Energy Management	Energy Manager Initiative to assign energy managers to facilities and help them identify energy efficiency opportunities and direct them to eligible programs	Commercial, industrial and agricultural customers	Incentives to appoint or hire an energy manager. Incentives for capital-intensive measures are available through other programs.	M&V (should savings related to non-incentivized measures be observed)
Strategic Energy Management	Strategic Energy Management program in the form of cohorts	Commercial, industrial and agricultural customers	Technical support	M&V
Economic/Development Projects	Economic and project development assistance to enable energy efficiency in large expansions and new buildings **Enabling activity with no associated savings*	Commercial, industrial and agricultural customers	No incentives	No savings

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
Emerging Energy				
Customer Sited BioEnergy Projects	Technical support and financial incentives for customer sited bioenergy projects such as biomass **This program only starts in year 2 of the plan*	Commercial, industrial and agricultural customers	Custom rebates	Engineering calculations
Commercial Solar Photovoltaics	Financial incentives for the installation of solar PV panels **This program only starts in year 3 of the plan*	Commercial, industrial and agricultural customers	Custom incentives per kWh output	Semi-prescriptive savings
HVAC and Controls				
Commercial HVAC/Geothermal	Financial incentives for equipment such as geothermal, boilers, hot water heaters, heat recovery ventilators, variable frequency dives, and natural gas unit heaters and infrared heaters	Commercial, industrial and agricultural customers	Prescriptive incentives	Semi-prescriptive savings
In-Suite Efficiency				
In-Suite Efficiency	Free-of-charge direct installation of LED bulbs and low-flow showerheads and faucet aerators in commercial facilities	Multi-unit residential buildings (MURBs)	Free-of-charge direct installation	Prescriptive savings
	Financial incentives for heat recovery ventilators, smart thermostats, pitched roofs and additional lighting	MURBs	Prescriptive rebates	Prescriptive savings
Load Displacement				
Customer Sited Load Displacement	Technical support and incentives for the implementation of large emerging energy projects including solar PV, biomass and combined heat and power	Industrial and agricultural customers	Performance-based custom rebates	Engineering calculations

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
New Construction and High Performance Buildings				
New Buildings	Design assistance and financial incentives for whole building construction	New commercial, industrial and agricultural facility owners Builders	Performance-based custom incentives	Energy modelling
Buildings Operations	Incentive for hiring a consultant to optimize building operations (recommissioning)	Commercial customers	Prescriptive incentive for hiring a consultant. Incentives for capital-intensive measures are available through other programs.	Engineering calculations
ASHRAE Level 1, 2 and 3	Energy audits to identify energy-saving opportunities and direct customers to eligible programs **Enabling activity with no associated savings*	Commercial customers	Currently complimentary	No savings
Manitoba Race to Reduce	Office sector participants set goals to reduce their energy consumption over the course of four years **Ongoing—started in 2017*	Commercial customers	No incentives	M&V
	Participant schools set goals to reduce their energy consumption over the course of four years **The school component will start in Year 1 of the plan.*	Schools	No incentives	M&V
Deep Energy Retrofits	Technical assistance and financial incentives for deep energy retrofits	Commercial customers	Performance-based incentives (reduction of whole-building energy consumption by no less than 50%)	Energy modelling

	Types of Products, Measures or Services	Target Customers or Segments	Delivery Model or Type(s) of Incentives	Savings Calculation Method
Commercial Renovation				
Commercial Lighting	Financial incentives for lighting upgrades	Existing commercial facilities	Prescriptive rebates	Semi-prescriptive savings
Commercial Building Envelope/Air Tightness and Sealing	Financial incentives for insulation, windows and doors, and air tightness and sealing upgrades	Existing commercial facilities	Prescriptive rebates	Semi-prescriptive savings (with custom savings for a few measures including curtain walls and storefront windows)
Small Business and Appliances				
Small Business	Walk-through assessment to identify energy efficiency upgrade opportunities such as heat recovery ventilation, thermostats and lighting, combined with free-of-charge direct installation of products such as low-flow showerheads and faucet aerators	Small businesses	Prescriptive rebates for upgrades, combined with a free-of-charge direct installation of low-cost products	Semi-prescriptive savings
Commercial Refrigeration and Appliances	Financial incentives for equipment and appliances such as food streamers, dishwashers, griddles and deep fryers	Small businesses	Prescriptive rebates	Semi-prescriptive savings

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