

**REFERENCE:**

Entire Efficiency Plan Report

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba has significant data that required significant analysis throughout the report.

**QUESTION:**

Please provide all workpapers, including in those in the form of model electronic input and output files and all spreadsheets with formulas intact and in working order that allows the IEC to perform sensitivity analyses. Please provide and supporting reference materials to those workpapers.

**RATIONALE FOR QUESTION:**

As IEC Daymark must review the accuracy of the analyses.

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

**REFERENCE:**

Overview - Strategic Goals, PDF page 14

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba provides its organization's Strategic Goals in the Overview

**QUESTION:**

- a) Please describe in as much detail as available what metrics Efficiency Manitoba will use to measure that efficiency Manitoba is achieving excellence in programs and services.
- b) Please describe in as much detail as available what metrics Efficiency Manitoba will use to measure that Efficiency Manitoba is transforming attitudes toward energy efficiency

**RATIONALE FOR QUESTION:**

Within the IEC Scope of Work Daymark is required to assess whether there is a reasonable expectation that the efficiency plan will deliver the net savings specified in its goals.

**RESPONSE:**

- a) Efficiency Manitoba has engaged Dunsky Energy Consulting (DEC) to develop a "Demand Side Management Balanced Scorecard" to assess the attainment of strategic objectives including 'achieving excellence in programs and services'. Specific measures that will monitor progress towards this goal include; comprehensive stakeholder engagement, customer satisfaction, end to end program design, positive employee engagement, program equity, and leadership and culture. DEC has been contracted for this work recognizing their expertise in the area of demand side management and their work with agencies nationally and internationally. The scorecard will measure not only Efficiency Manitoba's performance relative to its stated goals but also, where applicable, measure performance relative to similar organizations. See DAY/EM I-2a – Attachment 1 for a copy of the DSM Balanced Scorecard.

- b) Efficiency Manitoba intends to conduct baseline market research early in the 2020/2021 fiscal period in order to measure Manitoban's existing attitudes related to the topic of energy efficiency. Efficiency Manitoba intends to include questions that measure Manitoban's awareness of and attitudes towards energy efficiency. Follow up surveys will be able to assess the impact of Efficiency Manitoba's presence in the market and work with Manitobans to become increasingly energy efficient.



Efficiency Manitoba

# DEMAND SIDE MANAGEMENT BALANCED SCORECARD



November 18, 2019



**Submitted to:**

**Efficiency Manitoba**

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Dunsky wishes to thank Efficiency Manitoba's Colleen Kuruluk and Michael Stocki, as well as Manitoba Hydro, for their fulsome collaboration and insights into this scorecard exercise. Dunsky is solely responsible for any errors or omissions.

**About Dunsky**

Dunsky provides strategic analysis and counsel in the areas of energy efficiency, renewable energy and clean mobility. We support our clients – governments, utilities and others across North America – by assessing opportunities (technical, economic, market); designing strategies (programs, plans, policies); and evaluating performance (with a view to continuous improvement).

**EXPERTISE**



Efficiency Renewables Mobility

**SERVICES**



Assess Opportunities Design Strategies Evaluate Performance

CLIENTS



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# 1 INTRODUCTION

Launched in 2019, Efficiency Manitoba (EM) is tasked, per its enabling legislation, with delivering energy savings to Manitobans.

With a view to ensuring strong performance, EM contracted Dunsky Energy Consulting to develop a Made-for-Manitoba Balanced Scorecard. The Balanced Scorecard is designed to define key indicators of success, both short and longer-term; to measure and track performance over time; and to benchmark performance against a select group of North American peers.

Since EM is not yet delivering programs, this initial Scorecard assesses its baseline – or “Year 0” – performance, i.e. that of its predecessor. **We find that performance to fall in the “Moderate” range**, with scores on Planning and Operations slightly outperforming Delivered Value. This is consistent with our benchmarking results: EM’s Year 0 baseline outperforms three peers and underperforms against three others.

As the baton is passed to EM, understanding past efforts will equip it with information needed to define objectives, prioritize actions to improve performance, and measure and assess progress. Ultimately, this Scorecard is designed to – and should be read as – a tool to strengthen Efficiency Manitoba’s ability to deliver on its promise.



# Introduction

## Purpose of the Scorecard

As it moves to take responsibility of Demand-Side Management (DSM) activities in the province, Efficiency Manitoba (EM) turned to Dunsky for its Balanced Scorecard. The Dunsky Scorecard, as adapted for EM, uses 15 success metrics across three categories that, ultimately, will define long-run success: Operations, Planning, and Delivered Value (see Figure 1).



Figure 1: DSM Balanced Scorecard Categories

This scorecard report offers EM a baseline of past DSM performance in Manitoba for the Fiscal Year 2018 (FY2018). Going forward, the Dunsky Scorecard will enable EM to track and monitor its progress over time (for electric and natural gas programs); identify where the organization is excelling or lagging; and support strategic planning to set a path towards improved performance and success against long-term goals. The Scorecard’s metrics allow for a total of 60 possible points.

Additionally, EM’s Year 0 (Baseline) score is benchmarked against six other leading North American jurisdictions. Because data is not universally available from benchmarked regions, that exercise is limited to a subset of 12 metrics; weights are then adjusted to arrive at the same maximum score of 60 points.

**What do we mean by “EM’s Year 0 (Baseline)” score?**

At the time of preparing this Scorecard, Efficiency Manitoba had not yet had a full year of operations behind it. As a result, we were tasked with scoring its predecessor’s performance, as a way of establishing a baseline year against which *future* EM scoring can be measured.



## Scorecard Approach

Each scorecard category consists of five metrics worth 20 points each. They are designed to represent achievable stretch targets for Canadian DSM program administrators.

**Operations** focuses on performance in areas that are critical to effective program delivery, such as stakeholder engagement, customer participation and satisfaction; end-to-end DSM design; employee satisfaction and positive engagement; and leadership and culture.

**Planning** focuses on DSM planning and future-oriented performance. We include metrics on program equity, data use and sharing, future energy savings targets, emerging programs and strategic planning.

**Delivered Value** focuses on quantitative performance metrics in the fiscal year 2018 (FY2018). In this category, we include metrics concerning depth of energy savings (annual incremental energy savings and lifetime energy savings), DSM investments, peak demand reduction, achievement of energy savings targets, and customer benefits.

Table 1 lists each metric in the three broad categories and their respective weights.

Table 1: All metrics and total achievable points

Categories	Metrics	Achievable Points	
<b>Operations</b>	Comprehensive Stakeholder Engagement	1.5	<b>20</b>
	End-to-End DSM Design	8.0	
	Customer Participation & Satisfaction	2.5	
	Employee Satisfaction & Positive Engagement	3.0	
	Leadership & Culture	5.0	
<b>Planning</b>	Program Equity	5.5	<b>20</b>
	Data Use & Sharing	2.0	
	Future Energy Savings	6.0	
	Emerging Programs	3.5	
	Strategic Planning	3.0	
<b>Delivered Value</b>	Depth of Energy Savings	6.0	<b>20</b>
	DSM Investment Level	5.0	
	Peak Demand Reduction	0.0	
	Achievement of Energy Savings Targets	6.0	
	Maximize Benefits for Manitobans	3.0	
<b>Total Achievable Points</b>		<b>60</b>	

The Scorecard's weights and metrics are customized to EM's specific context. For example, we note that Peak Demand Reduction is not included in the overall score (weighted at zero) because EM is not currently tasked with achieving peak savings. This – as other metrics and weights – can change in the future as needed to align with evolving EM objectives.

## Benchmarking Approach

EM's Year 0 (Baseline) performance was benchmarked against a set of six peers, including five Canadian Program Administrators (PAs) – meant to reflect a geographic cross-section from across the country – and one from the U.S., chosen because of its recognition as a leader in that country. For purposes of reporting, we have anonymized the PAs.

Benchmark scores are inherently imprecise, insofar as information from which to judge some metrics may not always be available or perfectly comparable. As such, we urge the reader to take a *broad strokes* approach to interpreting these findings.

# 2 SCORECARD RESULTS

EM's Year 0 (Baseline) score is based on Fiscal Year 2018 DSM activities in Manitoba. Overall, **EM's Year 0 (Baseline) score is 31.9 out of 60**, achieving 53% of all achievable points placing itself in the **Moderate Performer** range.

EM's Year 0 (Baseline) score is higher in Planning and Operations. This is a result of efforts in Program Equity, Leadership & Culture, Comprehensive Stakeholder Engagement and Strategic Planning.

Efficiency Manitoba has opportunity to improve in Future Energy Savings Targets, End-to-end DSM Design, and Depth of Energy Savings going forward.

# Scorecard Results

## Results Overview

EM's Year 0 (Baseline) score is 31.9 out of 60, achieving 53% of all achievable points placing itself in the Moderate Performer range, as indicated in Figure 2 below.

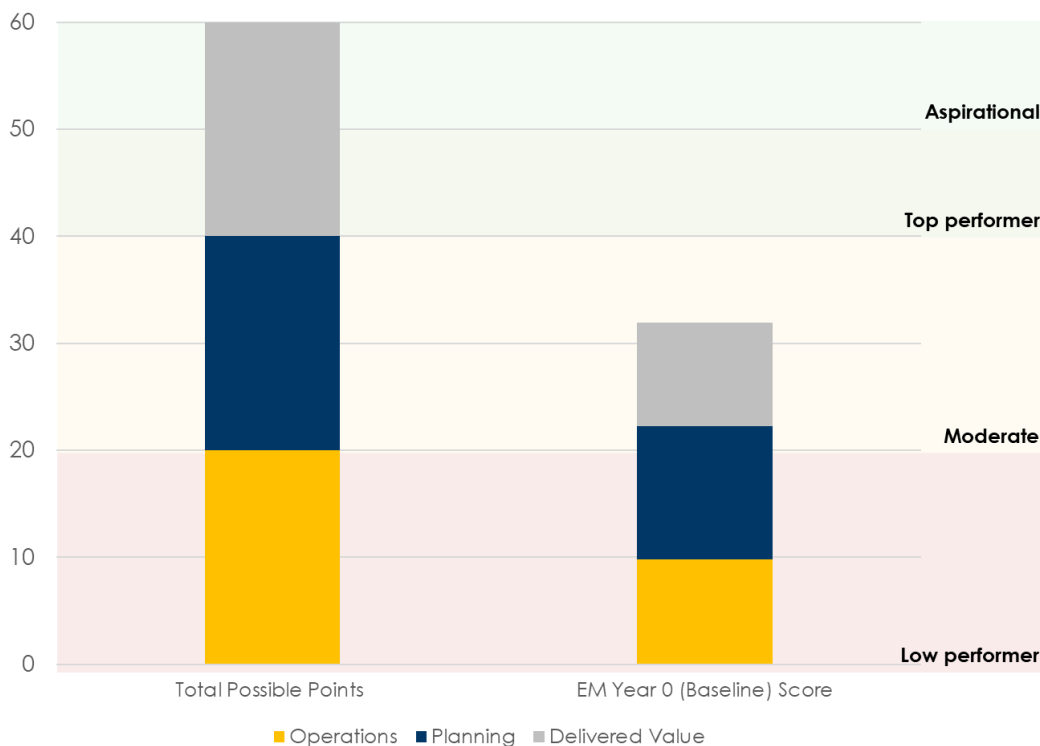


Figure 2: EM's Year 0 (Baseline) internal score compared to total possible points

Figure 3 offers another visual representation of these results, showing EM's Year 0 (Baseline) scores in relation to total achievable points in each category. We note that EM's Year 0 (Baseline) score is highest in the Planning category, while Operations and Delivered Value are roughly on par with each other.

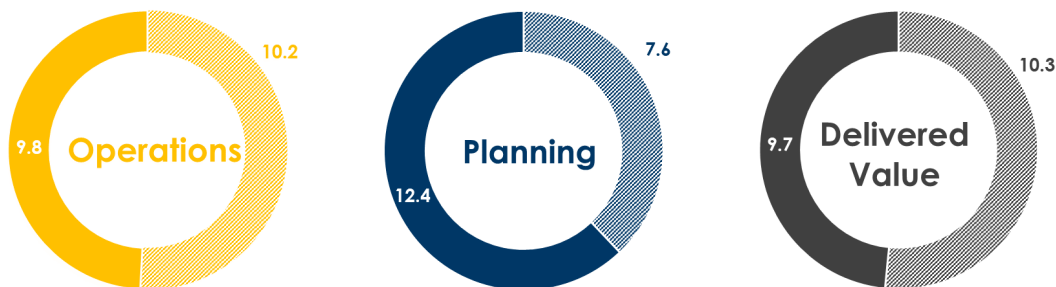


Figure 3: Overview of EM's Year 0 (Baseline) Score Total

## Methodology

We developed a scorecard that represent DSM best practice and reflect indicators important to Efficiency Manitoba underpinning strong DSM performance. We've gone beyond targets and spending, to include comprehensive stakeholder engagement, customer experience, internal processes and capacity, effective organizational leadership and culture, program reach and long-term planning. Moreover, this scorecard evaluates and scores electric energy and demand savings and natural gas programs. We note that all the ranges reflect the Canadian context<sup>1</sup> but we have included a top performing U.S. DSM program administrator for comparison.

Dunsky worked in collaboration with Efficiency Manitoba to determine the organization's priorities and refined the metrics, scores and weighting.

Data collected for this scorecard – both internal and external – was found via data submitted by Manitoba Hydro and a desk review of online and publicly available sources, such as program plans, annual reports, evaluation reports and relevant documents from rate case filings. If data was unavailable, we awarded a score of 0<sup>2</sup>.

Data was normalized to account for the differences in how program administrators reported various values, as follows:

- **Sales Data:** All electricity and natural gas sales is domestic retail sales.
- **At Meter or at Generator:** DSM program administrators do not report savings consistently. Some report savings at the meter, others at generator while other report both. All savings included in this report are at meter level.
- **Gross or Net Reporting:** All program administrators, except for Manitoba, reported portfolio-level net-savings. If DSM program administrators report gross savings, a net-to-gross adjustment of 81.7%<sup>3</sup> is applied.

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<sup>1</sup> Similar US Scorecards developed by the American Council for an Energy Efficiency Economy (ACEEE) awards full marks to utilities with electricity savings at 3% and above their retail sales. The top two U.S. utilities significantly outperform other utilities. Because Canada does not have similar outliers, we set a stretch target for electric savings to be 2% of retail sales. Based on the benchmarking exercise and professional judgment, this was deemed a more appropriate and achievable target in Canada.

<sup>2</sup> It should be noted that because Efficiency Manitoba does not report data points for several metrics, they received a score of 0 where it is conceivable, they would not have if the data was available. We have kept these metrics in the scorecard to ensure that this work is holistic, representing best practices. We expect Efficiency Manitoba will collect and report on these in the future.

<sup>3</sup> This is the same adjustment used in ACEEE's Utility DSM Scorecard and is deemed an acceptable estimate for portfolio-wide average net-to-gross ratio.

## Operations Overview

Operations metrics pertain to DSM operations and organization-related activities. EM's Year 0 (Baseline) score achieved almost 50% of total possible points. Performance was best in Leadership & Culture, while achieving few points in Employee Satisfaction & Positive Engagement and End-to-end DSM Design (although this is due to a lack of data and not necessarily due to poor performance).

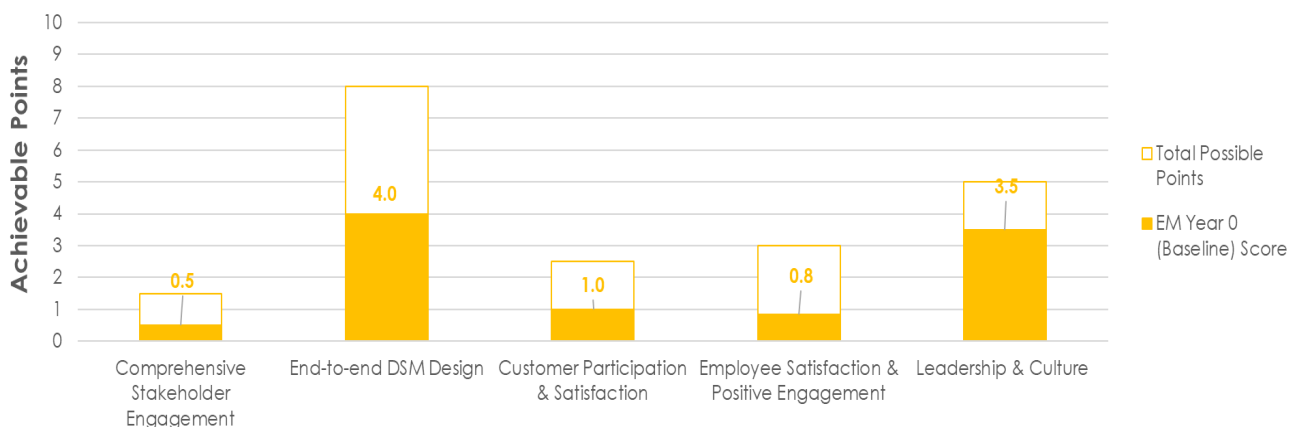
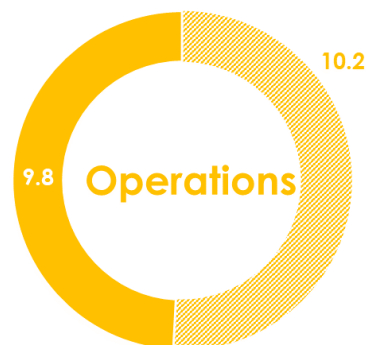


Figure 4: EM's Year 0 (Baseline) score compared to total achievable points in Operations

### Metric 1: Comprehensive Stakeholder Engagement

Actively soliciting information from a broad range of stakeholders through various activities provides for diverse opinions, perspectives and experiences to inform critical elements of DSM activities. This is particularly important when many customers are affected, and the success of the DSM programs relies on all market actors to be actively engaged.

Meaningful public engagement will lead to a better understanding of market readiness, help to answer key program design elements and decision-making, identify risks and opportunities, and build support. Moreover, effective outreach can influence perceptions of the DSM provider as a trusted resource, enhance program participant satisfaction, and increase program participation.

To score this metric, we have identified three key sub-metrics, outlined below.

Comprehensive Stakeholder Engagement Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
1.1.1	Evidence of stakeholder engagement strategy or policy, including Indigenous engagement	0.5	0.5
1.1.2	Demonstrated efforts incorporating results of engagement (process integrated into program plan)	0.5	0.0
1.1.3	Evidence of a non-binding advisory board including key stakeholders (outside of the regulatory process)	0.5	0.0
<b>TOTAL SCORE</b>		<b>1.5</b>	<b>0.5</b>

Full points were awarded for having a stakeholder engagement strategy or policy in FY2018. Stakeholder engagement is a continuous process that takes place at multiple levels including the individual program level, the sector level (Residential, Income Qualified, Indigenous, Commercial, Industrial), and overall portfolio level. Examples include meetings and presentations with program delivery agents, product manufacturers, distributors, wholesalers, retailers, contractors, architectural firms, consulting engineering firms, industry associations, and customer associations. In addition, an optional survey is presented to each program participant at the end of their project to collect feedback.

If a DSM program administrator demonstrated efforts to incorporate results of engagement into their DSM programming, we awarded 0.5 points. Demonstrated efforts include documenting how feedback was used in report backs to stakeholders or documenting results of engagement in program plans or reports. Past DSM activities did not document how stakeholder engagement informs program design thus no points were awarded.

There was no evidence of a non-binding advisory board outside of the regulatory process therefore no points were awarded for this sub-metric.

## Metric 2: End-to-end DSM Design

End-to-end DSM design refers to the notion that DSM is a core and continual process. This metric focusses on whether program design is informed by program logic and theory, ensures proper checks and balances are in place, that processes and procedures are being followed and innovation, optimization, and continual improvement are part of portfolio-wide and program-level evolution.

Below, we list the sub-metrics that are used to measure End-to-end DSM Design. All metrics were scored with a simple binary yes/no; if a program administrator demonstrated evidence of the metric, they received full points.

End-to-end Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
1.2.1	Fully documented program design (including program theory and logic model)	2.0	0.0
1.2.2	Program design is reviewed, and documentation is up to date (at least every 3 years)	1.0	1.0
1.2.3	Regular potential studies and market research and/or jurisdictional benchmarking (at least every three years)	1.0	1.0
1.2.4	Independent evaluation, measurement and verification (EM&V)	2.0	0.0
1.2.5	Estimate of net savings, including free-ridership, spillover, interactive effects and market effects	2.0	2.0
<b>TOTAL</b>		<b>8.0</b>	<b>4.0</b>

Manitoba Hydro has program plans (now transferred to Efficiency Manitoba), but they could be more comprehensive and lack a program theory and logic model (PTLM) therefore EM's Year 0 (Baseline) Score received a zero.

A PTLM provides clarity about the overall program objectives and maps activities to objectives and desired short, medium and long-term outcomes (e.g., more efficient housing and GHG reductions). It identifies processes and interconnected relationships critical to the program's performance. The PTLM will inform the program strategy, serve as a program evaluation roadmap and enable timely market pivots, changes or exits.

Past program plans were regularly updated, and we expect Efficiency Manitoba will continue this practice.

Full points were awarded for conducting regular market research. Several studies were conducted in the last three years, including:

- 2018 Residential Spillover Study
- 2015 Power Smart Residential Survey
- 2015 – 2018 Affordable Energy Program Omnibus Questions re: awareness, perceptions & barriers to participation. Fielded through MH's Customer Satisfaction Tracking Study (CSTS)
- 2016 and 2018 Community Energy Initiative Pre- and Post-Pilot Survey
- 2017 LED Omnibus Survey – LED awareness and adoption
- 2017 Home Insulation Program Free Ridership Survey
- 2017 Water & Energy Saver Participant Survey
- 2017 Residential End Use Study

No points were awarded for Independent EM&V. While ten DSM programs were evaluated by a third-party between 2016 and 2018, an evaluation process is deemed independent only when another layer of review/verification exists beyond the DSM staff or third-party evaluation contractor. This can include direct oversight of the evaluation process by an outside group such as a government agency, regulator or an evaluation advisory committee representing various stakeholder groups.



Full points were awarded because net savings (free-ridership, spillover, interactive effects and market effects) were included in past EM&V. Again, we expect Efficiency Manitoba to continue this practice.

### Metric 3: Customer Participation & Satisfaction

High participation and satisfaction indicate that customers view the DSM Program Administrator as a trusted DSM resource. Three sub-metrics are scored based on ranges.

Customer Participation & Satisfaction Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score <sup>4</sup>
1.3.1	Customer satisfaction levels	1.5 (≥ 95%)	0.8
1.3.2	Customer uptake as a % of target	0.5 (≥ 125%)	0.0
1.3.3	DSM penetration as a % of customers	0.5 (≥ 10%)	0.3
<b>TOTAL</b>		<b>2.5</b>	<b>1.0</b>

Recent DSM survey results showed that aided awareness levels were 86% and customer satisfaction levels were 7.67 out of 10. Taking an average of the two results in overall awareness and satisfaction level of 81% and a score of 0.8.

Manitoba Hydro's customer uptake as a percent of target was 47% overall. While Manitoba Hydro exceeded their target in the commercial sector (104%), the overall score was brought down by underperforming in the industrial sector (75%) and residential sector (45%). Low participation was largely driven by cancellation of the retail campaign and the advertising ban for most residential programs, particularly the Water and Energy Saver Program and Affordable Energy Program that rely on advertising to drive participation. Although the residential participation was 45% of the target, the electric energy savings were 77% of the target and the natural gas savings were 73% of the target.

In FY 2018 DSM activities reached 3% of customers thus EM's Year 0 (Baseline) score is 0.3 for this sub-metric.

### Metric 4: Employee Satisfaction & Positive Engagement

Employee satisfaction and positive engagement is deemed an important metric for several reasons. First, developing human capital demonstrates that the program administrator values high-performance. Second, satisfied employees are more likely to have positive attitudes, be more motivated, perform better and stay longer. And finally, skilled and credible staff build customer trust and loyalty leading to increased customer participation in DSM programs. For this reason, we have identified the sub-metrics below.

<sup>4</sup> Totals may not add up due to rounding

Employee Satisfaction & Positive Engagement Sub-metric		Maximum Score	EM's Year 0 (Baseline) Score
1.4.1	Building Capacity: Professional development plans	0.5	0.5
1.4.2	On-time hiring	0.5 (≤ 24.9 days)	0.0
1.4.3	Retention – one-year employee retention rates	0.5 (≥ 90% retention)	0.3
1.4.4	Employee satisfaction and engagement	1.5 (≥ 95% satisfaction)	0.0
<b>TOTAL</b>		<b>3.0</b>	<b>0.8</b>

EM's Year 0 (Baseline) score performed less successfully in this metric, mainly because data was not available. Scores were received for having employee professional development plans and Manitoba Hydro's employee retention rate is 82%.

All other metrics are not currently tracked and reported, rendering the score N/A and equal to 0.

This is a metric where it is conceivable that the baseline score would not be 0 if the data was available. We have purposely kept this metric within the scorecard to represent best practice and a future reporting goal that Efficiency Manitoba can strive towards.

For the purpose of this report, we referenced data gathered through the U.S. Bureau of Labour Statistics from January to July 2017. The report shows utilities average time to hire is 24.9 days (from official job opening to extending a job offer)<sup>5</sup>. Similarly, 90% is the average employee retention rate in North America<sup>6</sup>, so we have this as a tentative goal for Efficiency Manitoba.

Where Efficiency Manitoba has not yet established metrics, we suggest working with the Human Resources Department to establish appropriate industry standards for recruiting metrics such as on-time hiring targets and employee retention rates in the future. Particularly, considering time to hire by business function tends to be different for specialized roles. In the U.S. and Canada, the time to hire Engineers takes on average 60 days whereas an analyst/consultant can take 54 days and administrative/HR function takes on average 35 days<sup>7</sup>.

### Metric 5: Leadership & Culture

Leadership and culture are deemed an important metric because the integration of DSM as a core business practice is a critical component of DSM success helping it to become a part of the corporate

<sup>5</sup> <http://dhihiringindicators.com/wp-content/uploads/2017/09/2017-09-DHI-Hiring-Indicators-FINAL.pdf>

<sup>6</sup> <http://business.dailypay.com/blog/employee-retention-rate>

<sup>7</sup> <https://resources.workable.com/tutorial/time-to-hire-industry>

culture. This ensures DSM receives the same level of effort as other core business areas and may avoid other departments working towards goals that counter DSM goals. Moreover, efficiencies can be found by leveraging human and capital resources and building on existing relationships among staff and departments.

There is also a trend in DSM programming, particularly in evaluations to more uniformly produce reports that are transparent, concise, understandable, and actionable. Evaluation projects in jurisdictions like Massachusetts and California have produced reporting guidelines for EM&V activities. For example, in CA, the California Public Utilities Commission has produced a checklist for executive summaries that identifies content that should be included, style (e.g., avoid industry technical jargon, keep sentences short and concise), avoid complex words, format (length, titles, fonts and spacing).

We have identified six sub-metrics that indicate effective leadership and culture identified below.

Leadership & Culture Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
1.5.1	Senior staff performance tied to organization's performance goals	1.0	1.0
1.5.2	Organization is leading by example	0.5	0.5
1.5.3	Publication of strategic plan and annual reports on DSM activities	1.5	1.5
1.5.4	Presence of guideline to simplify EM&V	0.5	0.0
1.5.5	Results and evaluation reports are publicly accessible	1.0	0.0
1.5.6	Energize the culture: Evidence of workplace DSM activities/ education	0.5	0.5
<b>TOTAL</b>		<b>5.0</b>	<b>3.5</b>

EM's Year 0 (Baseline) score achieved full points for tying senior staff performance goals to the organizations, leading by example, publishing an annual report on DSM activities and energizing the culture.

In FY 2018, Manitoba Hydro led by example and energized the culture in several ways:

- DSM is incorporated in all corporate events.
- Manitoba Hydro is working to improve its smart energy practices by participating in Manitoba Race to Reduce<sup>8</sup>
- To complement Race to Reduce, Corporate Facilities has an ongoing partnership with the Internal Retrofit Demand Side Management Program to identify, scope, and implement energy efficiency capital projects across all Manitoba Hydro facilities.

<sup>8</sup> Race to Reduce is an energy reduction competition taking place between office buildings in the province.

- Educational sessions provided to various associations, including the Manitoba Environmental Industries Association, the architectural community, Manitoba Chapter of Construction Specifications Canada; and the Manitoba Chapter of the Canadian Manufacturers & Exporters Association (CME).
- Partnerships developed to deliver workshops targeted recreational facility operators (partnership with Manitoba Municipal Relations - Recreation & Regional Services Branch) and school maintenance professionals (partnership with the Manitoba Association of School Business Officials (MASBO)).

## Planning Overview

EM's Year 0 (Baseline) score was highest in this category achieving over 60% of total possible points. Scores were highest in Program Equity and Strategic Planning and lowest in Data Use Sharing, Emerging Programs and Future Energy Savings. See Figure 5.

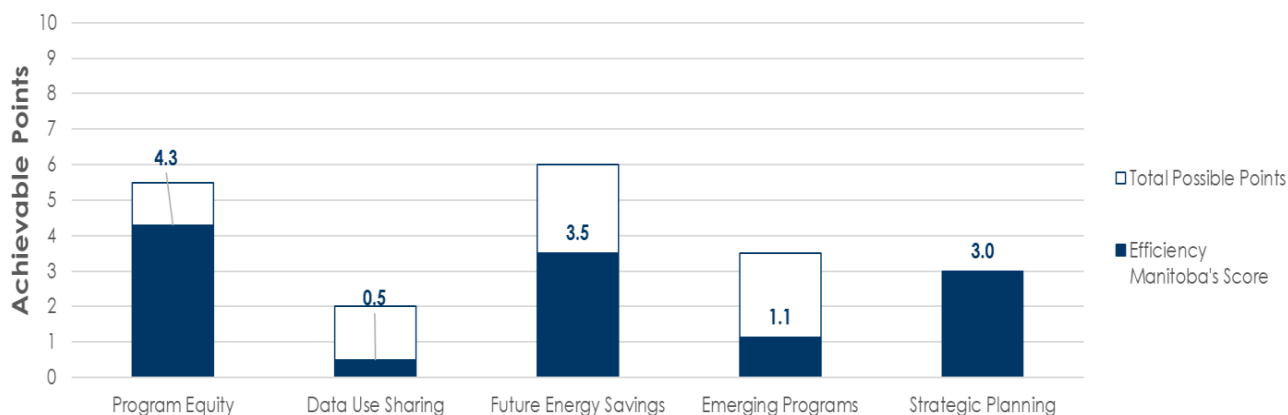
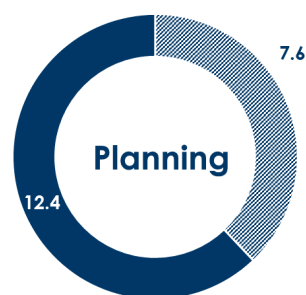


Figure 5: EM's Year 0 (Baseline) score compared to total achievable points in Planning

**Metric 1: Program Equity**

This metric aims to capture whether a program administrator has a long-term commitment that everyone has equal access to DSM programs and services, demonstrates leadership and a balanced portfolio.

Program Equity Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
2.1.1	Robustness of low-income (LI) program savings and spending	1.5 ≥10,000 kWh/LI customer & ≥ 6.5% of total budget invested in LI programs	1.1
2.1.2	Programs or strategies for other residential hard-to-reach sectors (remote, indigenous)	1.0	0.5
2.1.3	Programs or strategies for C&I hard-to-reach sectors (small business, MURBs, farms)	1.0	0.7
2.1.4	Enabling strategies (codes & standards, financing, HERD/BERD, capacity building)	2.0	2.0
<b>TOTAL</b>		<b>5.5</b>	<b>4.3</b>

To score program equity, we award points on whether program administrators have programs or strategies in place to reach hard-to-reach sectors. For low-income programs where data is more readily available than other hard-to-reach sectors, we scored based on the degree of savings programs achieved and how much was spent on the program's implementation. In FY 2018, there was a fairly robust low-income program, with savings of almost 6,000 kWh/customer and low-income program spending of 6% the total DSM budget.

We gave additional points if strategies were in place to reach other hard-to-reach sectors. In FY2018, there were programs and strategies for Indigenous communities, small-business and multi-unit residential buildings (MURBs). There is currently no strategy for remote locations or farms.

**Metric 2: Data Use & Sharing**

This metric consists of sub-metrics around improved data access and data sharing for program administrators and customers.

Data access is deemed important to highlight because customers with access to information regarding energy use are better able to manage consumption and engage in energy efficiency activities and programs. Program administrators that provide energy use information to residential households, owners and managers of large buildings, and communities help customers to better plan budgets, select and evaluate energy efficiency programs, and reduce overall energy consumption. Allowing customers to track their reduction in energy use and corresponding dollar savings demonstrates the value of energy efficiency and encourages further investments in it.

We've identified two sub-metrics for this category.

Data Use & Sharing Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
2.2.1	Data is integrated into program plans	1.0	0.0
2.2.2	Customer access to energy data and benchmarking	1.0	0.5
<b>TOTAL</b>		<b>2.0</b>	<b>0.5</b>

In FY2018, Manitoba Hydro used EnerTrend, an energy-profiling tool developed specifically for large industrial and commercial operations. Energy profiles show customers how and when they use energy to help them to proactively manage consumption, reduce peak demand, and lower costs. Advanced interval metering is installed at their sites to collect data on the energy consumption.

Manitoba Hydro also offered a free service that automatically uploads energy consumption data directly to commercial customers' ENERGY STAR® Portfolio Manager<sup>9</sup> accounts.

### Metric 3: Future Energy Savings Targets

Future energy savings are an important measure because they indicate a future-oriented, longer-term commitment to energy efficiency. To score this metric, we took the sum of three years' targets and divided by total FY2018 sales to normalize values across different program administrators.

Future Energy Savings Targets Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
2.3.1	Sum of future years (3 years) net incremental electric savings targets as % of retail sales	3.0 (≥ 4% of retail sales)	3.0
2.3.2	Sum of future years (3 years) net incremental gas savings targets as a % of retail sales	3.0 (≥ 3% of retail sales)	0.5
<b>TOTAL</b>		<b>6.0</b>	<b>3.5</b>

In FY2018, 5% of electric retail sales and 1% of natural gas retail sales were targeted, resulting in a baseline score of 3.5 out of a possible score of 6.0.

### Metric 4: Emerging Programs

Emerging programs and pilots are important as they position program administrators to effectively implement new measures or programs once they are cost-effective.

<sup>9</sup> ENERGY STAR® Portfolio Manager (ESPM) is a free, online energy benchmarking tool offered by Natural Resources Canada. ESPM tracks a building's historical and current energy use and allows comparisons with similar buildings across Canada.

Emerging programs are scored based on a list of 15 emerging program areas that are important to the future of energy efficiency in the DSM sector. These technologies and program areas are all commercially viable but may not be currently standard and widely implemented. Some of these technologies directly lead to greater energy and demand savings, while others make energy efficiency programs run more effectively. As more program administrators undertake such programs, they will begin to become standard across the industry. Currently, emerging measures include the following:

- Advanced space-heating heat pumps
- Commercial/ industrial geotargeting
- Electric vehicles
- Energy use feedback in real time
- Heat pump water heaters
- High-efficiency ceiling fans
- High-efficiency consumer electronics
- High-efficiency residential clothes dryer
- Midstream programs
- Upstream programs
- Quality HVAC
- Reduction of plug and miscellaneous loads
- Residential geotargeting
- Residential learning thermostats
- Zero net energy buildings

This list of programs should be updated regularly to include any new and emerging programs, as well as remove any that become mainstream. For example, building energy benchmarking and disclosure is a key initiative under the federal government’s Pan-Canadian Framework on Clean Growth and Climate Change and may become standard, among others.

Full points are awarded if the program administrator has at least eight of the 15 programs listed above and if four or more pilot programs have been implemented.

Emerging Programs Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
2.4.1	Inclusion of emerging measures or programs	2.5	0.6
2.4.2	Presence of innovative strategies and pilot programs	1.0	0.5
<b>TOTAL</b>		<b>3.5</b>	<b>1.1</b>

In FY2018, two emerging measures were included (residential air source heat pump and heat recovery ventilator control incentive) resulting in a score of 0.6.

An extra point was awarded if four or more pilots were implemented, receiving half points if 2-3 were offered. Pilots indicate that the program administrator is innovating and nurturing the development of a comprehensive portfolio on an ongoing basis. In FY2018, there were three active pilots – the community Energy Efficiency Pilot funding a local energy advocate in Dauphin and The Pas; a First Nation Initiative piloting enhancing Small Business projects in Peguis, OCN and Long Plain First Nations; and a biomass heating pilot with the University of Winnipeg and the Prairie Rose School Division.

### Metric 5: Strategic Planning

Strategic planning looks at a program administrator’s involvement with a utility’s long-term integrated resource planning and engagement with government energy policy.

Strategic Planning Sub-metrics		Maximum Score	EM’s Year 0 (Baseline) Score
2.5.1	Degree to which EE is considered as a supply side resource	1.5	1.5
2.5.2	EE is considered as a non-wire alternative in T&D planning	1.5	1.5
<b>TOTAL</b>		<b>3.0</b>	<b>3.0</b>

DSM Plans, savings forecast, budgets are provided (at least every 3 years) to feed into Manitoba Hydro’s load forecasting, resource planning, financial planning and possibly for rates/ regulatory purposes. Efficiency Manitoba is and will continue to be actively engaged with government energy policy.

### Delivered Value Overview

Below, is an overview of Efficiency Manitoba’s score for Delivered Value. EM’s Year 0 (Baseline) score is the lowest in this category, receiving 9.7 points out of 20. Performance was poorest in the Depth of Energy Savings and Achievement of Energy Savings Targets because of natural gas results. Additionally, no points were awarded for Maximizing Benefits for Manitobans simply because information could not be provided at the time of this report. The score is expected to be higher in this sub-metric once information is available.

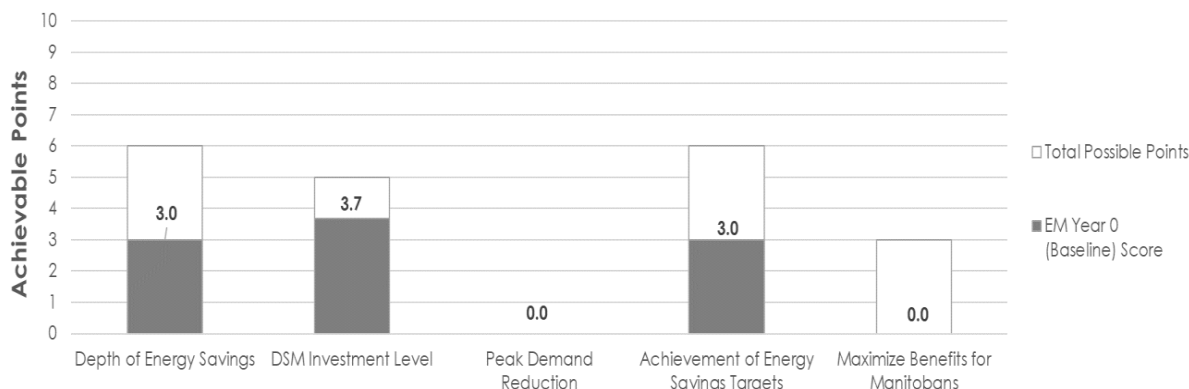
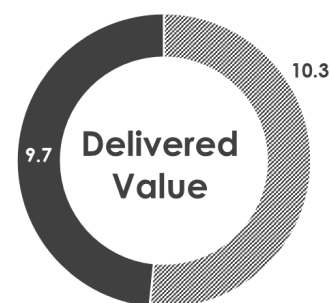


Figure 6: EM’s Year 0 (Baseline) Score compared to total achievable points for Delivered Value



### Metric 1: Depth of Energy Savings

Depth of energy savings offer insight into how much energy is saved through DSM programs. This can demonstrate whether programs are skimming the low-hanging fruit or stretching to achieve ever deeper savings.

To score a program administrator’s depth of energy savings, we have identified two sub-metrics pertaining to net incremental and net lifetime energy savings (for both electric and natural gas). We evaluate the level of energy savings Manitoba Hydro achieved in FY2018 from energy efficiency programs and the total lifetime energy savings from the measures installed. Lifetime savings are an important indicator of the investment in long-term energy efficiency<sup>10</sup>. Both metrics are divided as a percentage of in-province retail sales to normalize data across different sizes and regions and facilitate comparison with other program administrators.

Depth of Energy Savings Sub-metrics		Maximum Score	EM’s Year 0 (Baseline) Score
3.1.1	Net incremental electric savings as a % of total electricity retail sales	1.5 (≥ 1.5% of retail sales)	1.3
3.1.3	Net lifetime electric savings from measures installed as % of total electricity retail sales	1.5 (≥ 20 % of retail sales)	1.1
3.1.2	Net incremental gas savings as a % of total natural gas retail sales	1.5 (≥ 0.75% of retail sales)	0.4
3.1.4	Net lifetime gas savings from measures installed as % of total natural gas retail sales	1.5 (≥ 15% of retail sales)	0.2
<b>TOTAL</b>		<b>6.0</b>	<b>3.0</b>

In FY2019, 293 net GWh of electricity was saved. The incremental electricity savings (net of interactive effects) were 1.3% of retail electricity sales, resulting in a score of 1.3. The lifetime electricity savings were 15.2% of total electricity retail sales resulting in a score of 1.1.

In that same period, 6,068,000 m3 of natural gas was saved. The incremental natural gas savings (net of interactive effects) were 0.3% of retail gas sales, resulting in a score of 0.4. The lifetime natural gas savings were 3.4% of total natural gas retail sales resulting in a score of 0.2.

### Metric 2: DSM Investment Level

Higher DSM spending is indicative of the magnitude and dedication to a DSM program. Total spending includes all direct spending on energy efficiency programs, which includes program administration, planning, delivery, evaluation, and education.

For the purpose of this scorecard, we divide the total DSM spending by revenue generated from retail sales to normalize data across different sizes and regions. Equal weight was given to electricity and natural gas.

<sup>10</sup> Manitoba Hydro did not provide information on actual useful life, therefore an average was used. To calculate lifetime savings, we multiplied incremental savings by an average useful life of 11.5 years.

DSM Investment Level Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
3.2.1	Total electricity efficiency and demand response spending as a % of revenue from retail sales	2.5 (≥ 5% of retail sales)	1.5
3.2.2	Total gas efficiency and demand response spending as a % of revenue from retail sales	2.5 (≥ 4% of retail sales)	2.2
<b>TOTAL</b>		<b>5.0</b>	<b>3.7</b>

Manitoba Hydro's electricity DSM investment level was 3.8% of revenue, resulting in a score of 1.5.

Manitoba Hydro's gas DSM investment level was 3.7% of revenue, resulting in a score of 2.2.

#### Metric 3: Peak Demand

Peak demand savings are important because they help avoid higher peak-period supply costs and can help defer or avoid costly new generation, transmission and distribution infrastructure that would otherwise be needed to meet future peak demand.

Peak Demand Sub-metric		Maximum Score	EM's Year 0 (Baseline) Score
3.3.1	% of total peak demand reduction from demand response and energy efficiency on annual peak	0.0 (≥ 1% peak reduction)	N/A*

*\* The score for this metric is currently set at zero to reflect that this is not a priority as it is not specifically listed in the mandate for Efficiency Manitoba, but that it may be something that they want to measure in the future*

#### Metric 4: Achievement of Energy Savings Targets

Energy efficiency targets are an effective tool for encouraging higher levels of energy savings by providing long-term market signals for DSM program administrators to invest in energy efficiency. Effectively forecasting and achieving targets also allows DSM program administrators to properly plan and manage budgets.

We calculated the % net incremental energy savings targets achieved. Equal weight is given to electricity and natural gas.

Achievement of Energy Savings Targets Sub-metric		Maximum Score	Efficiency Manitoba's Score
3.4.1	% of electricity savings targets achieved	3.0 (≥ 100% of targets)	1.8
3.4.2	% of gas savings targets achieved	3.0 (≥ 100% of targets)	1.2
<b>TOTAL</b>		<b>6.0</b>	<b>3.0</b>

Manitoba Hydro's achieved 82.5% of their electricity savings targets and 71.4% of their natural gas savings targets resulting in a total score of 3.6.

### Metric 5: Maximize Benefits to Manitobans

This metric represents lifetime savings delivered at lowest cost and offer the most net economic benefits for the jurisdiction it serves. The goal is to increase the benefit (in \$) that residents of Manitoba receive due to DSM.

This metric is calculated by taking the benefits net present value of the preferred cost-effectiveness test (e.g., Program Administrator Cost Test or Total Resource Cost Test), which represents total benefits generated by FY2018 DSM funds and dividing it by the population of Manitoba. We divide over total population, instead of total customers, because everyone benefits from DSM, even residents who are not directly Efficiency Manitoba customers.

To score this metric, we set a range based on a jurisdictional scan. PA #3 outperforms all program administrators studied with a total annual benefit value exceeding \$90/capita in FY2017. For this reason, we have set a target of \$100 in annual benefit per capita to achieve a top score for this metric.

Maximize Benefits for Manitobans Sub-metrics		Maximum Score	EM's Year 0 (Baseline) Score
3.5.1	Electricity NPV per capita reflecting the total annual benefits provided to Manitobans	3.0 (≥ \$100 per capita)	0.0
3.5.2	Natural Gas NPV per capita reflecting the total annual benefits provided to Manitobans	3.0 (≥ \$100 per capita)	0.0
<b>TOTAL</b>		<b>6.0</b>	<b>N/A*</b>

\*Information to calculate a score was unavailable for this report. We expect the baseline score to increase when the information becomes available. Results are expected in December 2019/January 2020.

# 3 BENCHMARK RESULTS

Efficiency Manitoba external baseline score is **33.9 points out of a possible 60**, placing it in the **Moderate range** compared to North American peers.

EM's Year 0 (Baseline) score outperforms most other jurisdictions studied in Planning. This is a result of strong Program Equity and Emerging Programs.

Efficiency Manitoba scores lower than average in Operations and Delivered Value. There are opportunities to improve in End-to-end DSM Design, Customer Participation & Satisfaction, and Achievement of Energy Savings Targets. We note, that other program administrator's scores are thought to be the lower bound. Scores are based on publicly available information and may simply reflect that program administrators are not reporting on some metrics publicly.

# Benchmark Results

## Methodology

An important goal of this work was to benchmark EM's Year 0 (Baseline) score against its peers. Our jurisdictional analysis includes five Canadian program administrators representing eastern, central and western Canada, as well as one high-performing U.S. program administrator. We have selected the program administrators because they are known to be leaders in DSM in Canada and the U.S. Where some program administrators are independent, non-profits (i.e. not a utility), we used provincial/state utility retail sales data when required. The program administrators benchmarked have been anonymized.

To conduct the jurisdictional analysis, we selected a sub-set of publicly available comparable metrics. The external scorecard awards 60 total possible points. Since many of the metrics identified above are difficult to benchmark and compare, we have removed the following metrics entirely for the purpose of the jurisdictional analysis:

- Employee satisfaction and positive engagement
- Peak Demand Reduction
- Maximizing Benefits for Customers

In addition, we have also removed the following sub-metrics from existing categories because they are often reported differently (or not at all) and are consequently, not easily comparable.

*Table 2: Sub-metrics removed from external scorecard*

Metric	Removed Sub-metric
<b>Comprehensive Stakeholder Engagement</b>	Demonstrated efforts of incorporating results of engagement process into program plans
	Non-binding advisory board including key stakeholders
<b>End-to-end DSM Design</b>	Fully documented program design (including program theory logic model)
	Program design is reviewed, and documentation is up to date (at least every 3 years)
	Regular potential studies, market research and/or jurisdictional benchmarking (at least every 3 years)
<b>Leadership &amp; Culture</b>	Senior staff performance tied to organization's performance
	Organization is leading by example
	Energize the culture: workplace DSM activities/education
<b>Data Use &amp; Sharing</b>	Data integrated into program plans (tied to integrated DSM design)
<b>Strategic Planning</b>	Organization is involved in long-term integrated resource planning

**Benchmarking Overview**

Below, we offer a visual representation, followed by program administrator’s scores for all metrics considered in this analysis.

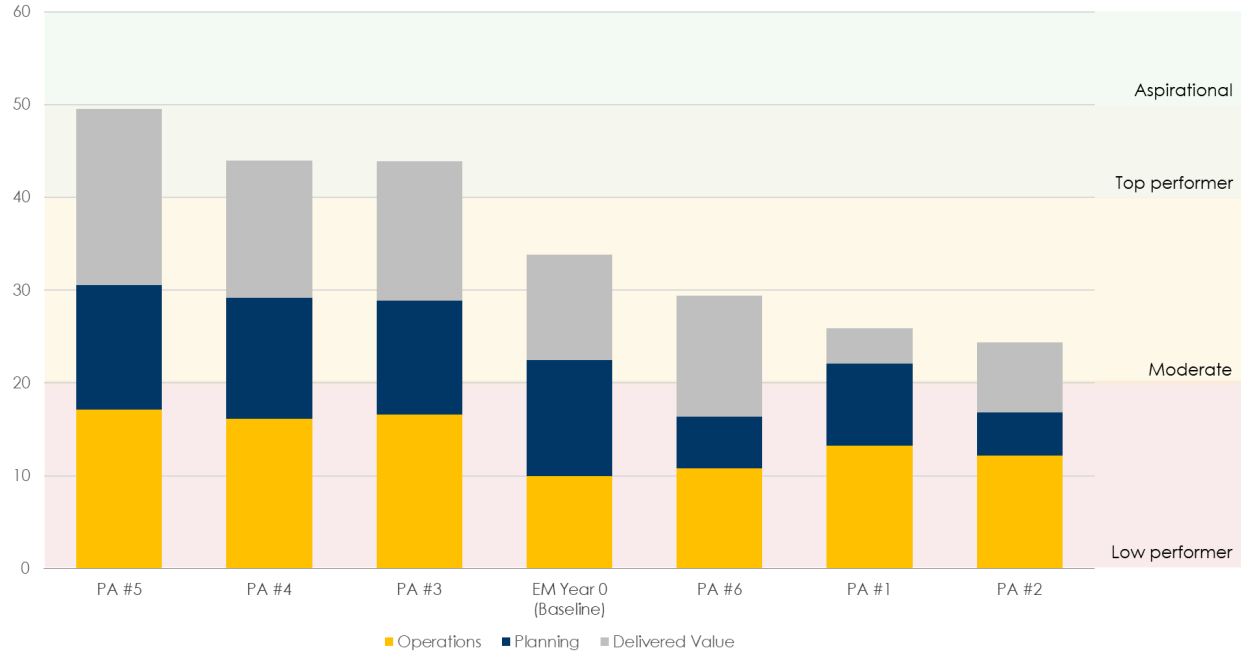


Figure 7: Graphical Representation of External Scorecard Results

Efficiency Manitoba’s Year 0 (Baseline) score is 33.9 points out of a possible 60<sup>11</sup> – slightly below the average. The top three program administrators scored the highest overall, achieving 49.5, 44.0, and 43.9 respectively.

Figure 7 illustrates that EM’s Year 0 (Baseline) score is in line with higher performing program administrators in Planning but achieved generally low scores in Operations and Delivered Value.

**Operations**

In Operations, EM’s Year 0 (Baseline) score was the lowest of all program administrators benchmarked, achieving 10.0 out of 20. Like most program administrators studied, EM’s Year 0 (Baseline) score was awarded points for Manitoba Hydro having a stakeholder engagement strategy, publishing an annual DSM report, estimating net-savings, and incorporating DSM in corporate policies.

<sup>11</sup> Not all metrics are publicly available and/or comparable. Each category (Operations, Planning and Results) maintained 20 total possible points, but because the number of metrics and scores are different in each, the adjustment factor is not the same, thus the external score differs slightly than the internal score.

Where the top three program administrators differ:

- One received points for having guidelines to simplify the EM&V process
- Three have an independent third-party EM&V reviewer
- One has particularly strong end-to-end DSM design, achieving full points across all sub-metrics

We note that program administrator's scores in this category are thought to be the lower bound. It is likely that they are performing better in this category and scores may simply reflect that they are not reporting on some metrics publicly.

We believe Efficiency Manitoba can improve on the Year 0 (Baseline) score going forward by enhancing end-to-end DSM design by including PTLM in program design and developing guidelines to simplify evaluation reports. Simplifying reports will improve comprehension by those not directly involved in DSM and will increase transparency and build public trust in Efficiency Manitoba. Additionally, by involving an independent, third-party reviewer in the EM&V processes, Efficiency Manitoba will increase accountability in their results.

Operations results are visually represented in the figure below.

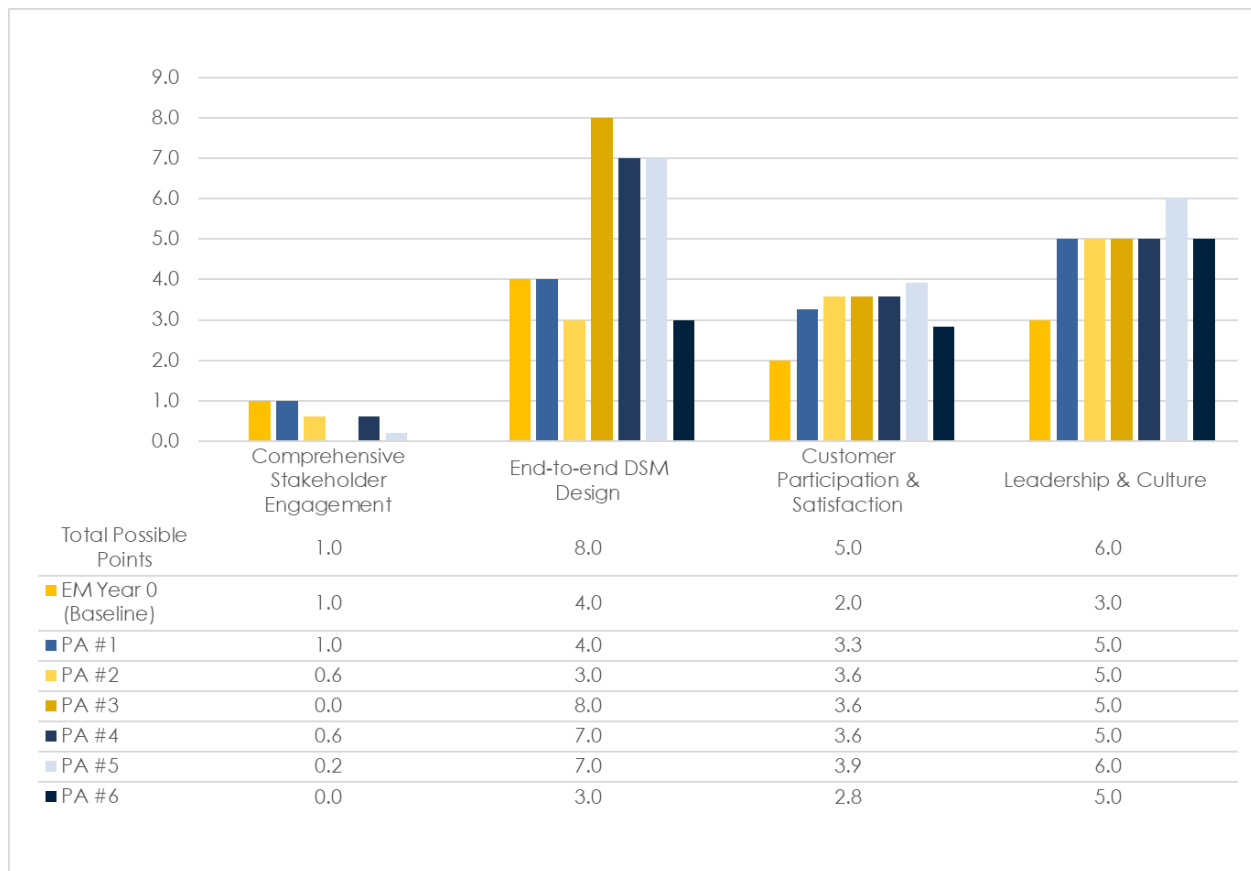


Figure 8: Operations Jurisdictional Comparison

## Planning

In Planning, EM's Year 0 (Baseline) score was among the higher performing scores with 12.5 points out of a possible 20 placing it just below PA #5 and PA #4 in this category.

EM's Year 0 (Baseline) score exceeded peers in Program Equity and Emerging Programs. Efficiency Manitoba is on par with its peers for strategic planning but lags in Data Use & Sharing and Future Energy Savings.

Where other program administrators differ:

- PA #4 received top score of 6.9 for Future Energy Savings, followed closely by PA #3 and PA #5 (6.0 and 5.7 respectively), indicating that EM's Year 0 (Baseline) Score can improve in this area.
- In terms of data use sharing, many program administrators have either rolled out smart meters across their service territories or have implemented data access services, such as benchmarking and Green Button. One PA has done both.



Note, where programs are delivered by other entities, we awarded an average score to those program administrators. For example, one PA received an average score of other program administrators studied for the robustness of its low-income program, because while it delivers some low-income programs, other low-income programs are delivered and funded by other entities - a decision outside the control of the program administrator.

Planning results are visually represented in the figure below.

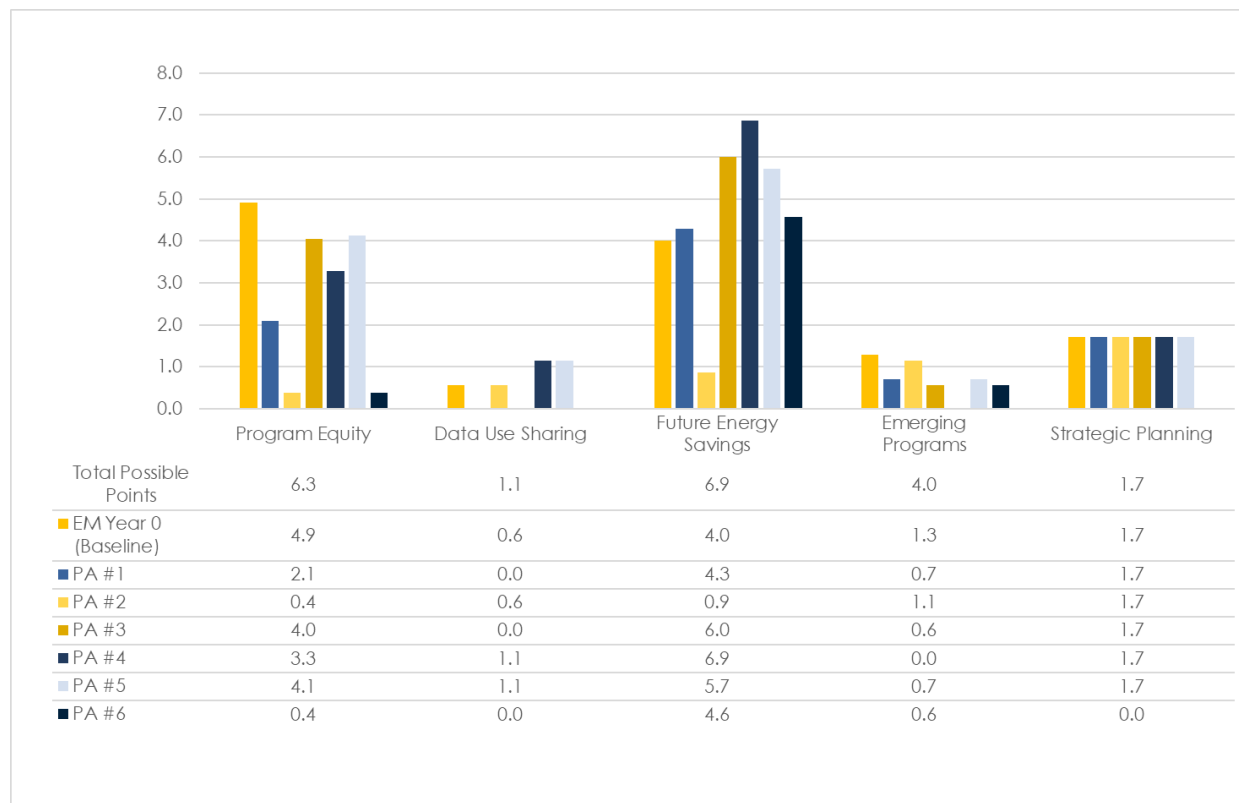


Figure 9: Planning Jurisdictional Comparison

### Delivered Value

In Delivered Value, EM's Year 0 (Baseline) score was lower than the average program administrator included in this report. Although EM's Year 0 (Baseline) score was better than most in DSM Investment level, the Depth of Energy Savings and Achievement of Energy Savings Goals are lower. This is largely due to natural gas savings results, which were significantly lower than the other program administrators compared.

Delivered Value results compared across program administrators are visually represented in the figure below.

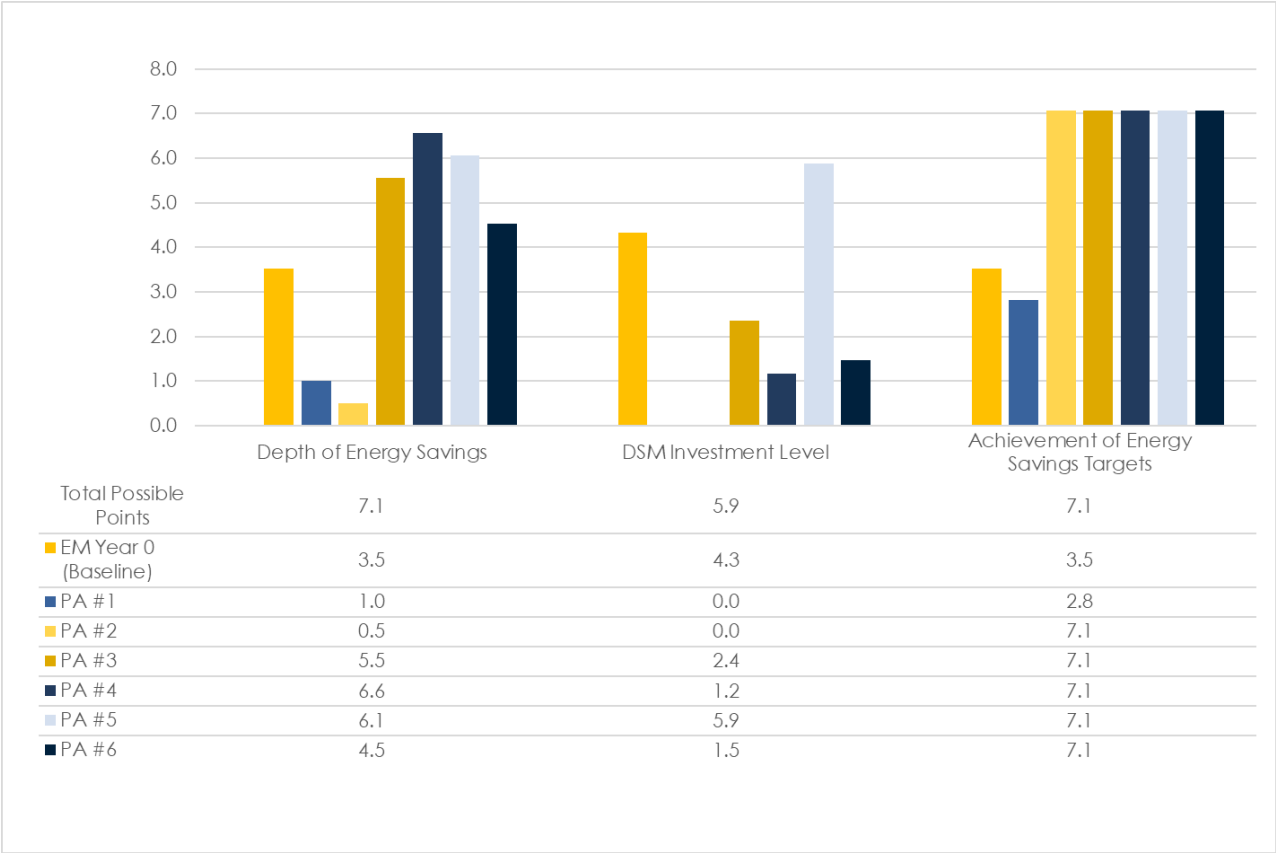


Figure 10: Delivered Value Jurisdictional Comparison

# 4 CONCLUSIONS & NEXT STEPS

Efficiency Manitoba has inherited a moderately strong base of DSM planning, operations and results. It can improve that performance significantly in the coming years, through improved tracking, a single-minded focus on achieving its legislated targets, and the independence (and certainty) needed toward that end.

## Conclusions & Next Steps

Within each category, Efficiency Manitoba has opportunities to both maintain the strengths it inherited, and to improve on its Year 0 (Baseline) performance:

**Operations.** EM's Year 0 (Baseline) score in operations was strong in Leadership & Culture for lead by example efforts and Senior Staff commitment to the organization's performance goals, and Comprehensive Stakeholder Engagement. Scores were lower in Employee Satisfaction & Positive Engagement and End-to-end DSM Design. Low scores were not necessarily due to poor performance, but rather to metrics not being tracked. **In the future, Efficiency Manitoba's Scores are likely to be higher once there is a mechanism to track performance in these areas.**

**Planning.** EM's Year 0 (Baseline) score received higher scores for Program Equity and Strategic Planning. This is a result of having programs for low-income and hard-to-reach sectors, including indigenous, small business and multi-unit residential buildings; deploying enabling strategies (codes & standards, financing and capacity building); and involvement in long-term integrated resource planning and government energy policy. **Going forward, EM's enabling legislation can be expected to result in improved scores, thanks to higher Future Energy Savings Targets. EM can further improve its score by investing in Emerging Programs and targeting other hard-to-reach sectors such as remote communities and farms.**

**Delivered Value.** While overall scores were low in this category, this was largely due to low scores in Depth of Energy Savings and Achievement of Energy Savings Targets, which together account for 60% of total possible points in this category.<sup>12</sup> EM's Year 0 (Baseline) score was strong on electricity savings but had much lower scores for natural gas savings. **Going forward, EM can achieve higher scores by achieving its current targets. Its emergence from the transitional phase it was in over the past two years, coupled with greater independence and regulatory/organizational certainty, will be essential to this end.**

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<sup>12</sup> Moreover, EM's Year 0 (Baseline) score is 0 for Metric 5: Maximizing Benefits for Manitobans. This is not because Manitobans are not benefiting from DSM, but rather because the FY 2018 NPV information required to calculate a score was not available at the time the scorecard was finalized.





**REFERENCE:**

Overview, PDF page 18

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba has established a plan that has a focus on customer segmented programming. The plan describes “customer segments have been selected to be inclusive of all Manitobans and to capture their unique characteristics and energy consumption patterns”. This makes us want to understand the level of knowledge that Efficiency Manitoba has regarding the behavioral characteristics of and the energy consumption patterns of each segment. We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba

**QUESTION:**

- a) Please provide any additional information and data available to Efficiency Manitoba regarding these segments’ behaviors and energy usage beyond the description in Section 3 PDF pages 79 through 81. Please reference the sources of the information.
- b) Please provide analysis and supporting documents if Efficiency Manitoba relied on customer segmentation analysis in developing its proposed 2020/23 plan.

**RATIONALE FOR QUESTION:**

Within the IEC Scope of Work, Daymark is required to assess whether there is a reasonable expectation that the efficiency plan will deliver the net savings specified in its goals.

**RESPONSE:**

- a) Additional information on these segments’ behaviours and energy use trends is found throughout Appendix A of the 2020/23 Efficiency Plan (“Plan”) including the following Appendices: Section A2.1 (p. 207 of 591), Section A4.1 (p. 280 of 591), Section A5.1 (p. 314 of 591), Section A6.1 (p. 334 of 591), and Section A7.1 (p. 363 of 591). Customer segment write-ups and graphs are provided for residential, commercial, industrial and

agricultural sectors while the residential income qualified and Indigenous sectors are discussed in detailed text. Efficiency Manitoba utilized Manitoba Hydro's Customer Information Database and the 2017 Manitoba Hydro Residential Energy Use Survey (see response to PUB-EM I-8) to determine quantitative energy use trends for four (4) defined customer segments; residential, residential income qualified, Indigenous, and commercial/industrial/agricultural. This data provides insight into the number of customers in each segment, the way they use both electricity and natural gas, and the energy savings opportunity that resides within each segment.

- b) In addition to the above mentioned quantitative data analysis, engagement with the Energy Efficiency Advisory Group, see the Section 3.3 of the Plan (p. 19 of 591), and analyzing feedback from customers, contractors and other stakeholders who previously participated in energy efficiency programs through Manitoba Hydro, allowed for qualitative analysis to determine the energy efficiency interests of Manitobans. A specific and targeted customer segmentation study was not undertaken.



**REFERENCE:**

Overview, Program Bundles on PDF page 19

**PREAMBLE TO IR (IF ANY):**

In several sections of the Plan Efficiency Manitoba compares its plan to the budget and performance of efficiency programs that were managed by Manitoba Hydro.

**QUESTION:**

Please provide information showing which of the programs or bundles were similarly offered by Manitoba Hydro, were not offered by Manitoba Hydro and list any programs or bundles that Manitoba Hydro offered that are not part of the Efficiency Manitoba Three-year plan 2020-2022.

**RATIONALE FOR QUESTION:**

In evaluating the potential for the Efficiency Manitoba programs to achieve net savings goals and budget it is helpful for Daymark to understand how different the Efficiency Manitoba programs are from those of Manitoba Hydro in the past.

**RESPONSE:**

The 'status' column in the table provided in PUB-EM I-33b shows which of the program bundles offered by Efficiency Manitoba were similarly offered by Manitoba Hydro but now have enhancements and also identifies those which are new to Efficiency Manitoba. The information is segmented by residential, income qualified, Indigenous, commercial, industrial, agricultural, and emerging technologies.

The only initiatives that are currently offered by Manitoba Hydro and are not moving forward to Efficiency Manitoba are the Residential Pay-As-You-Save (PAYS) financing program, the Network Energy Manager program, Curtailable Rates and the LED Roadway Lighting Program.

The Residential Pay-As-You-Save (PAYS) financing program allows homeowners to use the estimated annual utility savings from making an energy efficiency upgrade, to pay for the upgrade (or a part thereof). Annual savings are averaged out over 12 months and used to calculate the monthly payment, which is added to the energy bill. Although on page 16 of the Efficiency Manitoba Act it states that Efficiency Manitoba may offer an on-meter efficiency program, for this initial Plan Efficiency Manitoba will not be continuing this offer based on a high administrative burden due to the time associated with approving financing, and the costs required to register a Notice on the property at the Land Titles Office. Historical participation has been very low and all technologies eligible for financing through PAYS are also eligible for financing through the Home Energy Efficiency Loan.

The Network Energy Management program offers commercial customers a rebate to install network management software to reduce unnecessary personal computers (PCs) energy use. The software program shut down PCs when they are inactive and allows network administrators to perform regular maintenance tasks, such as IT upgrades and installations. Efficiency Manitoba will not be continuing this offer based on observed changes in the enterprise computing market, as evidenced by greatly slowing program participation over time. Market leading enterprise operating systems, including but not limited to, Windows and iOS, now include hibernation features effectively rendering network management software obsolete.

The Curtailable Rate Program only offers electric capacity savings, which are not a part of Efficiency Manitoba's mandated electrical energy savings targets (2020/23 Efficiency Plan, Section 5.7, page 147 of 591) and will continue to be administered by Manitoba Hydro. The LED Roadway Lighting Conversion Program is not included as it will be completed by Manitoba Hydro within the 2019/20 fiscal year (2020/23 Efficiency Plan, Section 5.7, page 152 of 591).

**REFERENCE:**

Overview, Comprehensive Stakeholder Process PDF pages 19-20

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba formed the Energy Efficiency Advisory Group “EEAG” and they referred to key outcomes that influenced the Plan by focusing efforts on ensuring continuity of programs for customers, developing strategies and tools.

**QUESTION:**

Please provide meeting minutes, presentations, memos and any other correspondence or written material associated with the EEAG.

**RATIONALE FOR QUESTION:**

The success of the Plan grows from the understanding of customers and groups of customers and their perspectives. The EEAG influenced the Plan, Daymark needs to understand the what extent the EEAG interaction contributed to the Plan.

**RESPONSE:**

The EEAG meeting minutes and agenda have been included within Attachment 2 of the 2020/23 Efficiency Plan (“Plan”). These documents are found in the Plan beginning at p. 448 of 591. Other materials shared with and by EEAG members are attached as DAY/EM I-5-Attachment 1.



MATERIAL WITHIN CURRENT AS OF MAY  
31, 2019. MORE RECENT VERSIONS  
SUPERSEDE DATA / ANALYSIS  
CONTAINED WITHIN

Energy Efficiency Advisory Group  
Meeting #1

# OUTLINE

## I. Introduction to Efficiency Manitoba

## II. Engagement Model

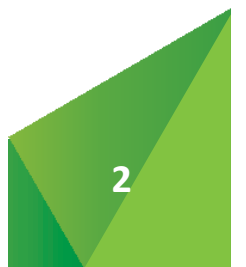
MATERIAL WITHIN CURRENT AS OF MAY 31, 2019.

MORE RECENT VERSIONS SUPERSEDE DATA /

ANALYSIS CONTAINED WITHIN

## III. 3-Year Efficiency Plan Process

## IV. Timelines



# I. EFFICIENCY MANITOBA

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MATERIAL WITHIN CURRENT AS OF MAY  
31, 2019. MORE RECENT VERSIONS  
SUPERSEDE DATA / ANALYSIS  
CONTAINED WITHIN

# BILL 19 – THE EFFICIENCY MANITOBA ACT

Bill 19	Government Bill	Projet de loi 19	Projet de loi du gouvernement
	2 <sup>nd</sup> Session, 41 <sup>st</sup> Legislature, Manitoba, 66 Elizabeth II, 2017	2 <sup>e</sup> session, 41 <sup>e</sup> législature, Manitoba, 66 Elizabeth II, 2017	
<b>BILL 19</b>		<b>PROJET DE LOI 19</b>	
<b>THE EFFICIENCY MANITOBA ACT</b>		<b>LOI SUR LA SOCIÉTÉ POUR L'EFFICACITÉ ÉNERGÉTIQUE AU MANITOBA</b>	
Honourable Mr. Schuler		M. le ministre Schuler	
_____		_____	
First Reading / Première lecture : _____		_____	
Second Reading / Deuxième lecture : _____		_____	
Committee / Comité : _____		_____	
Consentance and Third Reading / Approbation et troisième lecture : _____		_____	
Royal Assent / Date de sanction : _____		_____	

- ▶ PUB recommendation as part of Manitoba Hydro's "Need for and Alternatives To" (NFAT) review in 2014
- ▶ Proclaimed January 2018
- ▶ Board appointed May 2018
- ▶ CEO appointed January 2019

MATERIAL WITHIN CURRENT AS OF MAY 31, 2019. MORE RECENT VERSIONS SUPERSEDE DATA / ANALYSIS CONTAINED WITHIN



## MANDATE

### 4 (1) The mandate of Efficiency Manitoba is to

(a) implement and support demand-side management initiatives to meet the savings targets and achieve any **resulting reductions** in greenhouse gas emissions in Manitoba.

MATERIAL WITHIN CURRENT AS OF MAY  
31, 2019. MORE RECENT VERSIONS  
SUPERSEDE DATA / ANALYSIS  
CONTAINED WITHIN





## SAVINGS TARGETS

7 (1) ...annual savings targets for the 15-year period following the commencement date:

Electricity - **1.5%** of the consumption of electrical energy in the immediately preceding year.

Natural gas - **0.75%** of the consumption of natural gas in the immediately preceding year.

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## EFFICIENCY PLANS

9 For the three-year period following the commencement date, and for each three-year period after that, Efficiency Manitoba must prepare an efficiency plan...

10 Subject to the regulations, Efficiency Manitoba must submit each of its efficiency plans to the PUB ...

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## ROLE OF MANITOBA HYDRO

18 (2) In recognition of the **benefits received** from Efficiency Manitoba, Manitoba Hydro must provide Efficiency Manitoba with all amounts necessary for it to implement an **approved** efficiency plan and carry out its responsibilities under this Act, less any funds Efficiency Manitoba has available from other sources.

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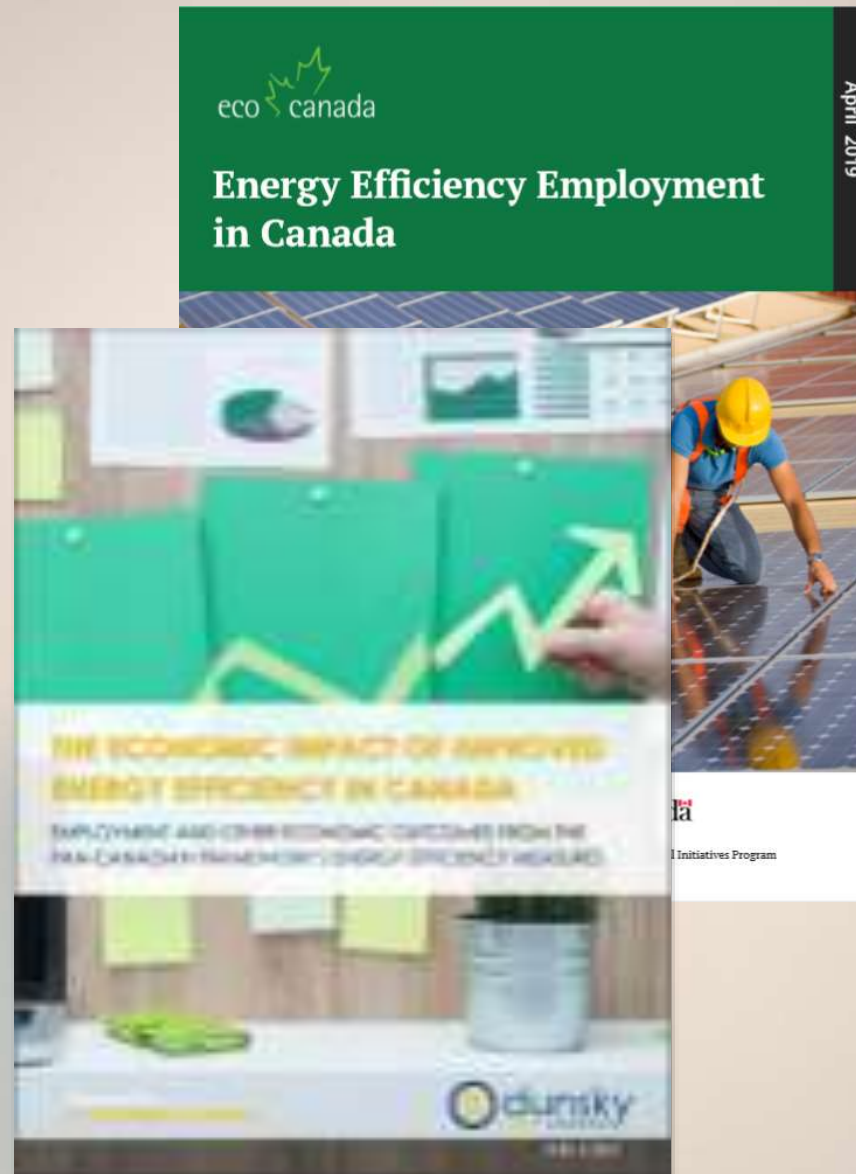
# BENEFITTING ALL MANITOBBANS

- ▶ Reduce customers' energy bills.
- ▶ Help businesses be more competitive.
- ▶ Grow the energy efficiency industry.
- ▶ Delay requirements for investing in large new electric generation and transmission projects.
- ▶ Assist Manitoba in meeting its GHG reduction targets from the Climate and Green Plan.

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# HOW WILL EFFICIENCY MANITOBA BE DIFFERENT



- ▶ Efficiency Manitoba will be a nimble organization with a focused mandate
- ▶ Promote energy efficiency as the lowest cost energy resource
- ▶ Leverage the social, economic and environmental benefits of energy efficiency

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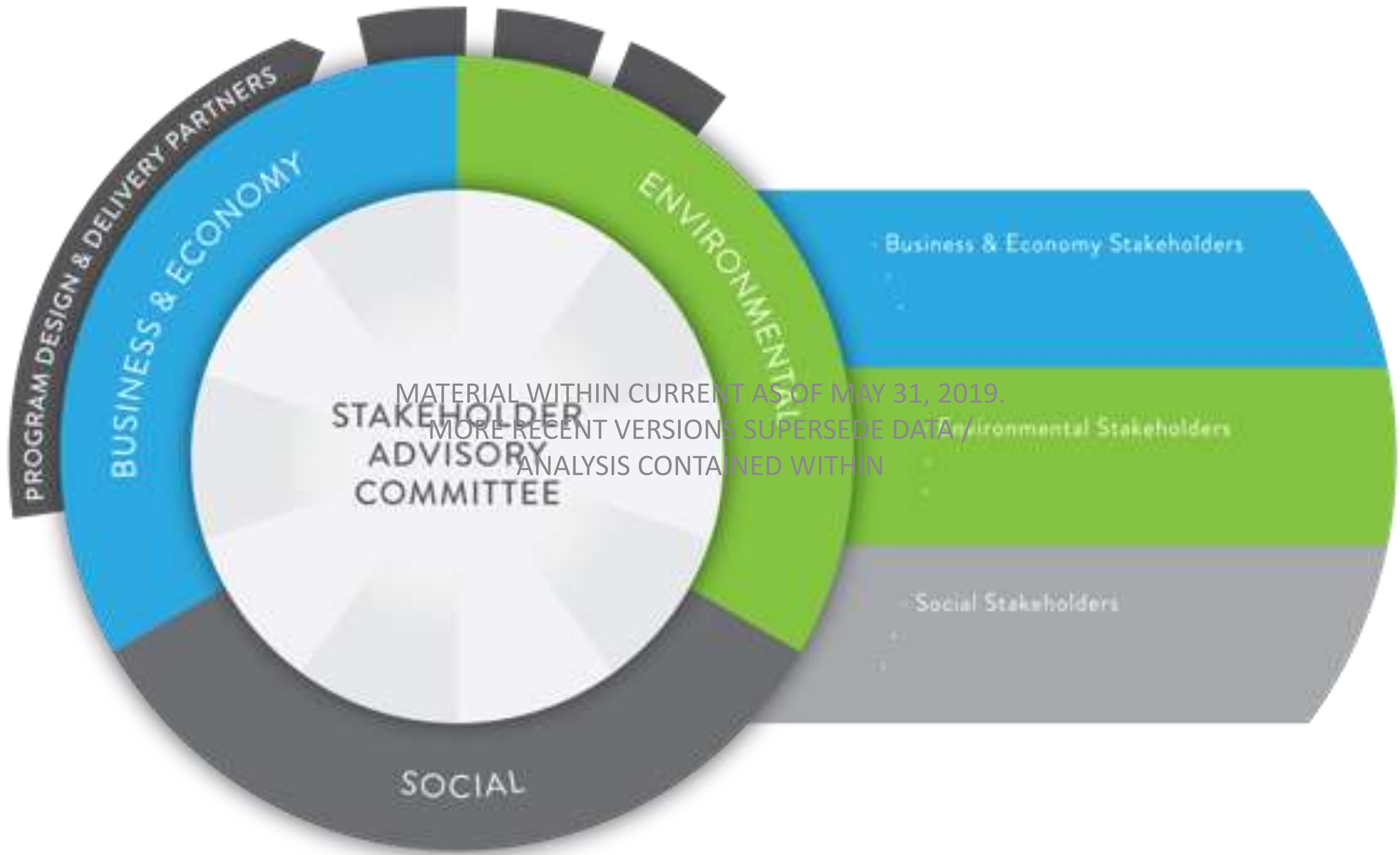
Full engagement and independent review process



## II. ENGAGEMENT MODEL



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## ENERGY EFFICIENCY ADVISORY GROUP

- ▶ Provide independent opinions and advice to Efficiency Manitoba about the development and implementation of our first 3-Year Efficiency Plan
- ▶ Provide independent opinions and advice to Efficiency Manitoba about future programing, evaluations and activities

...



# ENERGY EFFICIENCY ADVISORY GROUP INVITEES

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



## STAKEHOLDER COMMITTEE

- ▶ Stakeholder Advisory Committee (Defined in The Efficiency Manitoba Act) may exist separate from the EEAG
- ▶ Still to be determined through collaboration with Efficiency Manitoba Board and EEAG

membership

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# III. 3-YEAR PLAN PROCESS



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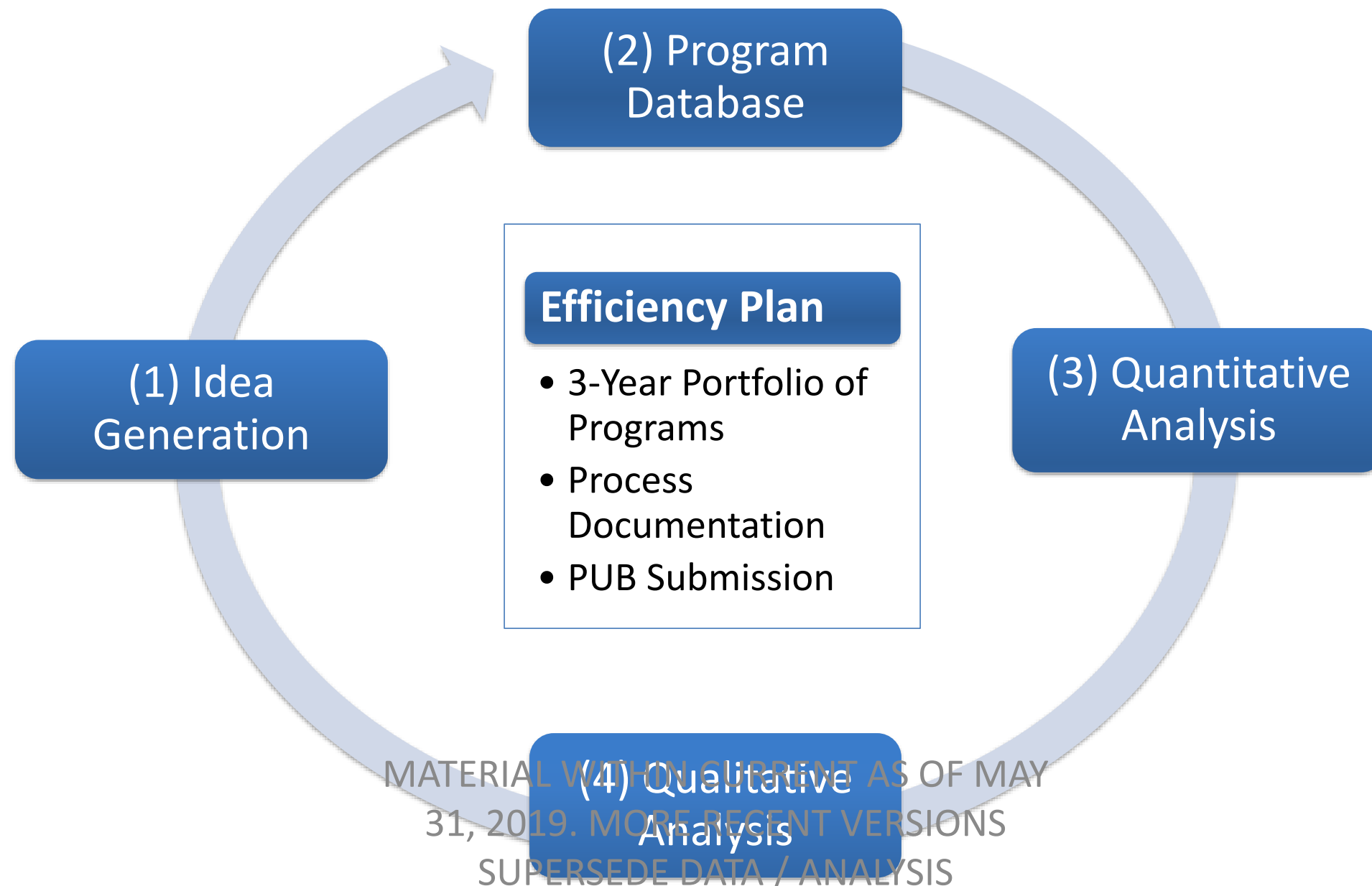
## 3-YEAR EFFICIENCY PLAN - STRATEGY

### DEVELOP AND DELIVER A 3-YEAR PLAN THAT...

- ▶ Satisfies The Efficiency Manitoba Act and accompanying regulation Public Utilities Board submission requirements
- ▶ Is directionally consistent with the Efficiency Manitoba strategic plan
- ▶ Leverages the strengths of Manitoba Hydro legacy DSM programming
- ▶ Provides robust quantitative plan analysis
- ▶ Reflects Energy Efficiency Advisory Group engagement
- ▶ Sets realistic expectations that recognize the transitional requirements of Efficiency Manitoba.



# EFFICIENCY PLAN – PROCESS OVERVIEW



► Iterative Process will be followed to develop 3-Year Portfolio of Programs



# EFFICIENCY PLAN – QUALITATIVE ANALYSIS

(4) Qualitative Analysis

Energy Efficiency Advisory Group

Representation from  
Indigenous, Social,  
Environmental,  
Technical and  
Economic Perspectives

Advice / Perspectives  
Provided on Process /  
Programs / Analysis /  
Priorities

Facilitation,  
Participation &  
Reporting



# IV. TRANSITION AND TIMELINES



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## BRANDING & CUSTOMER ENGAGEMENT

### MODERN AND INNOVATIVE

- ▶ Customer-centric approach
- ▶ Blog-style web content
- ▶ Energy Team

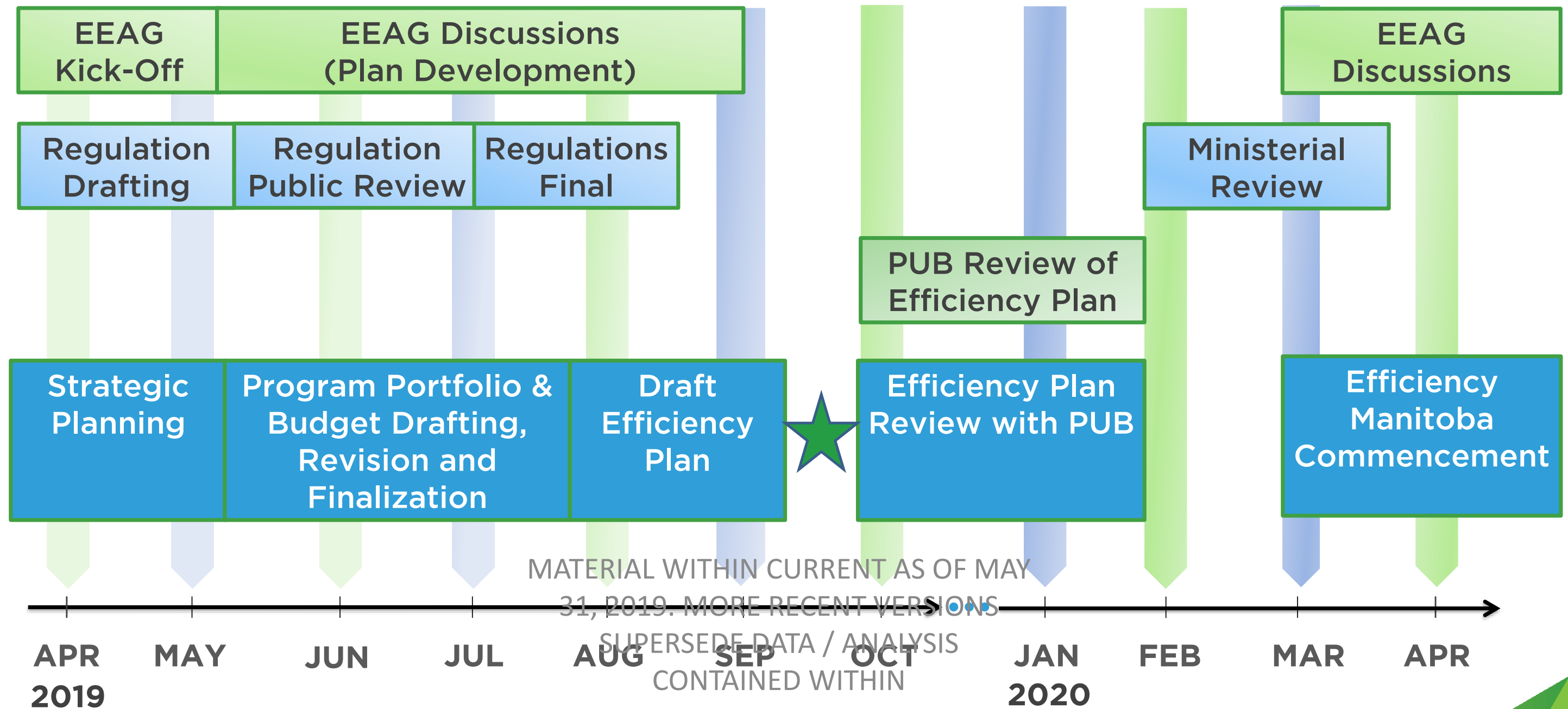
- ▶ Friendly

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Informal



# EFFICIENCY PLAN – REVIEW OF MILESTONES



# NEAR-TERM PRIORITY ACTIVITIES

## ▶ ENERGY EFFICIENCY ADVISORY GROUP

- **May 2019**
  - Welcome meeting – Overview & Begin Dialogue
- **June 2019**
  - 3-Year Efficiency Plan development and discussion
    - Customer Segments & Innovation
  - Develop EEAG Terms of Reference
- **July & August 2019**
  - Review and provide feedback of Draft 3-Year Efficiency Plan Portfolio / Savings / Budget
- **Future**
  - Participate in ongoing Efficiency Manitoba discussions related to Portfolio performance, evaluation and future efficiency plan development

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From Patrick Bowman, MIPUG  
Monday June 3, 2019  
RE: ACTION ITEM MAY 31

I was asked to complete a to-do item to identify who the members of MIPUG were. As I noted they do change from time to time, but the latest list I have is as follows:

- Amsted Rail - Griffin Wheel Company;
- Canada Kraft Paper Industries Ltd.;
- Chemtrade Logistics Inc.;
- Enbridge Pipelines Inc.;
- ERCO Worldwide;
- Gerdau Long Steel North America – Manitoba Mill;
- Hylife Foods
- Integra Castings;
- Koch Fertilizer Canada ULC;
- Maple Leaf Foods;
- TransCanada Keystone Pipeline; and
- Winkpak Ltd.

Also as I noted, there is another operating company in the agriculture business that has indicated they would likely be joining, and Roquette participates with MIPUG in planning sessions and the like, but is not at the moment a formal member as they are not in operation. We have also made an effort to coordinate with the Mining Association, but they have scaled back so far that there is barely an organization there at all anymore.



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# 3-YEAR EFFICIENCY PLAN

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CONTAINED WITHIN

**RESIDENTIAL AND  
INDIGENOUS COMMUNITY  
CUSTOMER MARKET  
SEGMENTS**

# OUTLINE

## I. Context

## II. Residential Customers

## III. Income Qualifying Customers

## IV. Indigenous Communities

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I CONTEXT  
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# EFFICIENCY PLAN – PROCESS REMINDER

## (1) Idea Generation

Customer  
Market  
Segments

- Residential (Income Qualified / Rural / Remote)
- Indigenous Communities
- Commercial / Industrial / Agricultural

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Efficiency  
Technologies

- Market Adoption Curve
- Emerging
- R&D / Pilot Programs

...

(1) Idea  
Generation

# INNOVATION

## A comprehensive view to innovation:

- ▶ New ways of engaging with customers
  - ▶ Customer relationship management & portal
- ▶ New approaches to deliver programs
  - ▶ Market segment grouping
  - ▶ Program bundling
  - ▶ Partnerships and communities
- ▶ Program enhancements
- ▶ New technologies

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CONTAINED WITHIN

*For consideration and evaluation within 3-Year Plan*



# CUSTOMER RELATIONSHIP MANAGEMENT + PORTAL



## Improved Customer Relationship Management System (CRM)

- ▶ One combined database for all market sectors: residential, commercial, industrial
- ▶ Online applications to ease customer and contractor experience
- ▶ Access portals for customers and contractors to track history and status
- ▶ Mobile tools for internal Sales Representatives to gain efficiency and offer exceptional customer service



# CUSTOMER RELATIONSHIP MANAGEMENT + PORTAL



## Benefits of new CRM

- ▶ Improved customer experience
- ▶ Personalized product offers
- ▶ Shorter application cycles
- ▶ Organize contact data
- ▶ Segment market with increased detail
- ▶ Enhanced marketing opportunities
- ▶ Create reports more efficiently
- ▶ Business process and communication automation
- ▶ Increased participation conversion ratio
- ▶ Increase brand loyalty and engagement
- ▶ More cost effectiveness
- ▶ Improved team collaboration



# BUNDLING OFFERS

- ▶ Customer focused delivery strategy for Manitobans
- ▶ Bundling offers to fit specific market segment will enhance customer experience and drive participation
- ▶ Benefits include:
  - ▶ Simplified marketing and communications
  - ▶ Increased cross-promotion of additional offers
  - ▶ Increase efficiencies with streamlined internal processes
  - ▶ Cost-effective strategy to include measures which require support



## II. RESIDENTIAL CUSTOMERS

MATERIAL WITHIN CURRENT AS OF  
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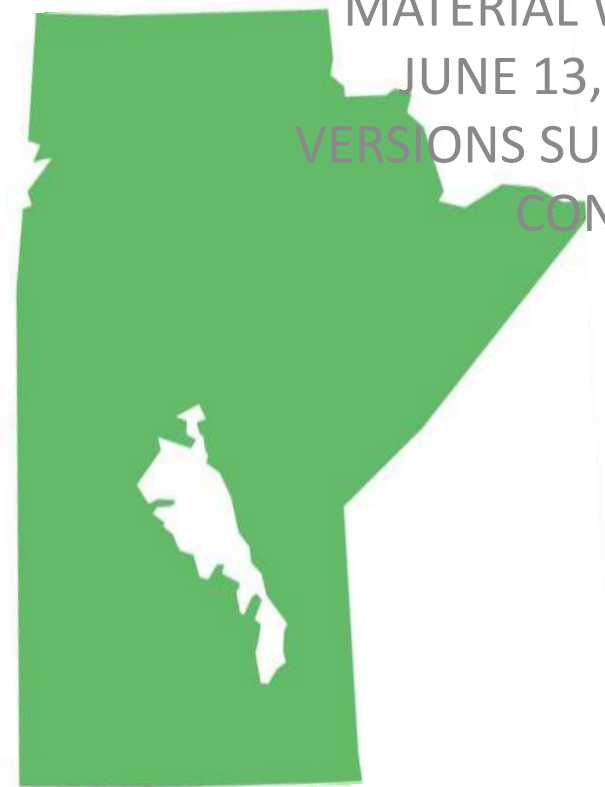
# RESIDENTIAL MARKET

Total Residential Customers - 472,000

*Electric Heat*



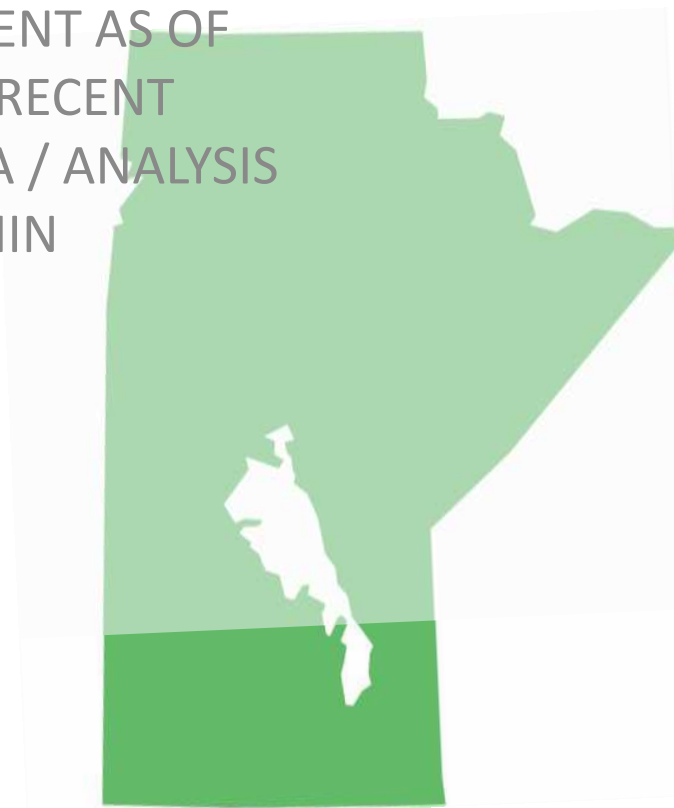
196,000



*Natural Gas Heat*



253,000



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# RESIDENTIAL MARKET



Single detached 81%



Multifamily 9%

(Duplex/triplex/townhouse)



Apartment/condo 8%

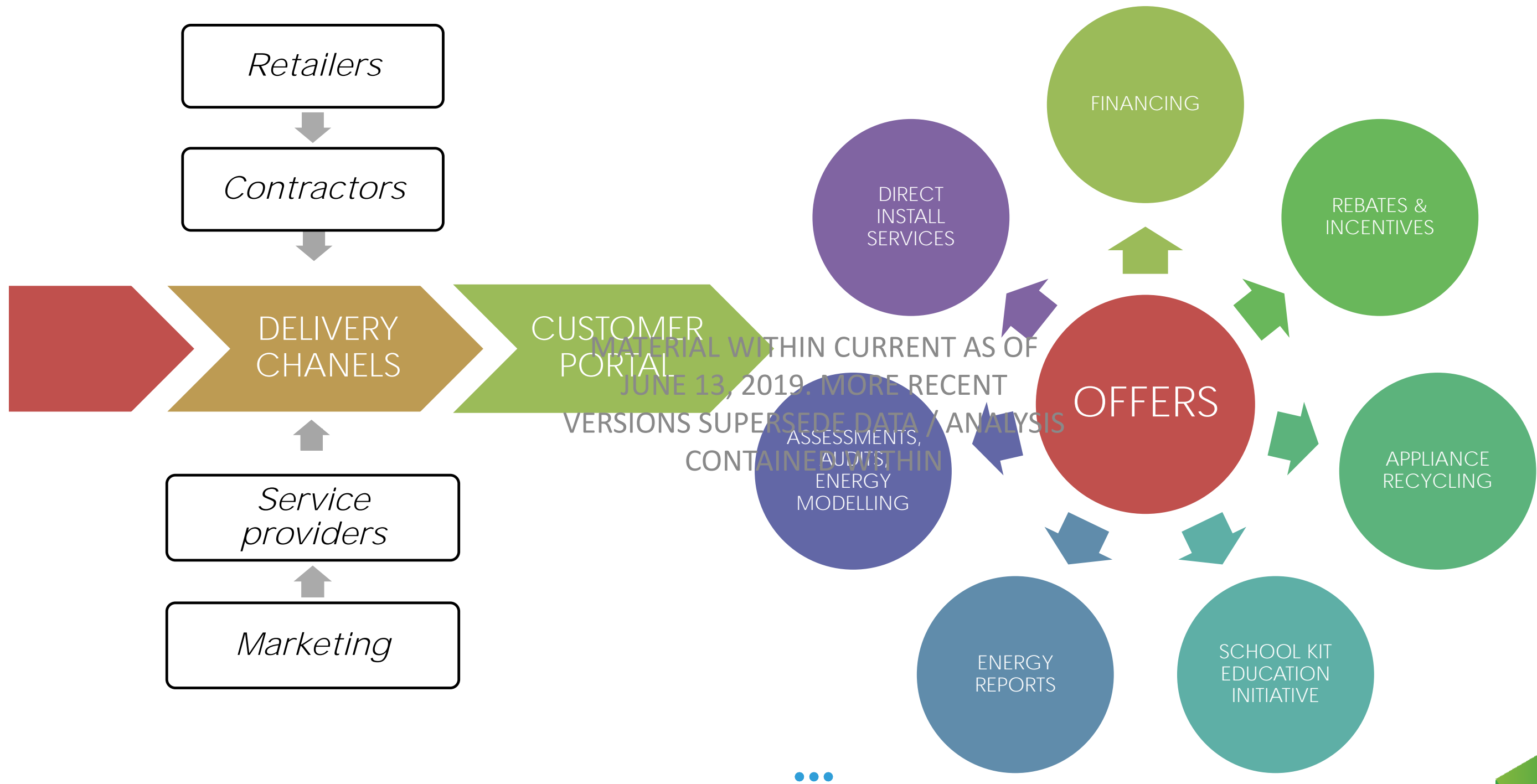


Mobile home 2%



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# RESIDENTIAL STRATEGY



# BUNDLING OFFERS - RESIDENTIAL

<i>Home Renovation</i>		<i>Product Rebates</i>	<i>Direct Install</i>	<i>New Homes + Major Renovation</i>
<i>Geothermal</i>	<i>Attic insulation</i>	<i>Lighting &amp; controls</i>	<i>Smart thermostats</i>	<i>Energy modeling</i>
<i>Air source heat pumps</i>	<i>Wall insulation</i>	<i>Smart home products</i>	<i>Showerheads</i>	<i>Design assistance</i>
<i>High efficiency gas HWT</i>	<i>Foundation insulation</i>	<i>HRV controls</i>	<i>Faucet aerators</i>	<i>Performance-based incentives</i>
<i>Solar thermal water heating</i>	<i>Windows</i>	<i>Fridges</i>	<i>Smart power bars</i>	<i>Prescriptive incentives</i>
<i>Solar thermal pool heater</i>	<i>Doors</i>	<i>Dishwashers</i>	<i>Outdoor timers</i>	
<i>Solar PV</i>	<i>Weatherstripping</i>	<i>Clothes washers</i>	<i>Weather-stripping</i>	
<i>Drain water heat recovery</i>	<i>Window kits</i>	<i>Clothes dryers</i>	<i>Window kits</i>	
<i>Financing</i>		<i>Appliance recycling</i>		

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# III. INCOME QUALIFYING HOUSEHOLDS

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## LOWER INCOME HOMES

### *Lower Income Market Segment*

- ▶ *160,000 Manitobans*
- ▶ *70% single detached home*
- ▶ *72% own their own home*

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▶ *Average year built = 1969*

▶ *Average size of home = 1,200 ft<sup>2</sup>*



# INCOME QUALIFYING CUSTOMERS



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# NEW OPPORTUNITIES



# BARRIERS

## Hard to reach

- ▶ Limited access to resources and information
- ▶ Language barriers
- ▶ Not a captive audience for energy efficiency

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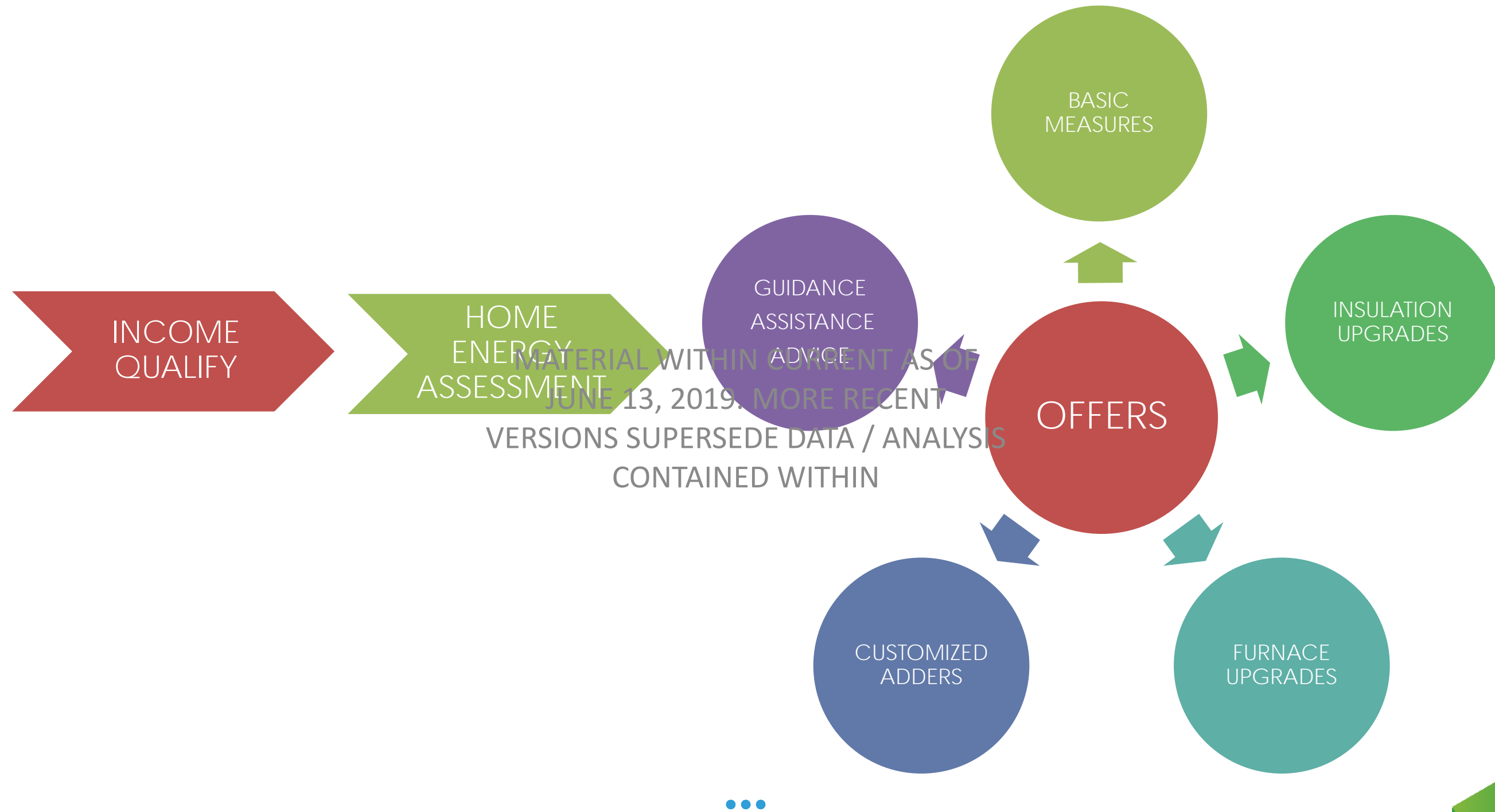
## Hard to convert

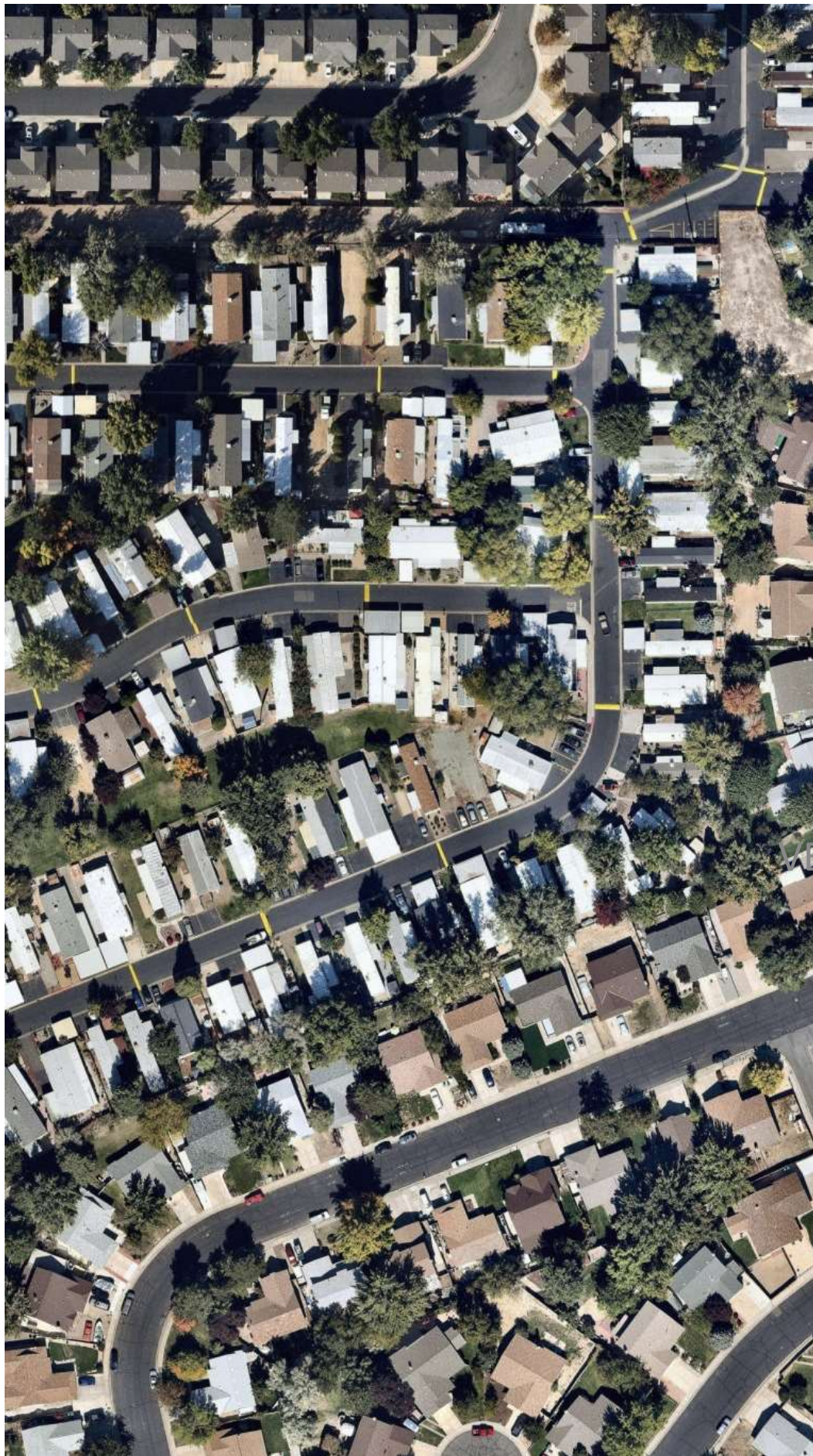
- ▶ Social and economic challenges
- ▶ Difficulty accessing areas of the home /prepping home
- ▶ Overwhelming project scope





# PROGRAM ENHANCEMENTS

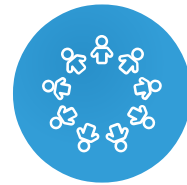




# APPROACHES



Individual



Community



Apartment/multi-unit

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# APPROACHES

- ▶ Partnerships with Neighborhood Renewal Corporations

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- ▶ Enlist Energy Advocates

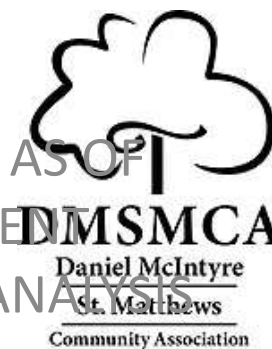
- ▶ Grass roots approach



# CREATE PARTNERSHIPS



Portage la Prairie  
Community  
Revitalization  
Corporation



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## ENERGY ADVOCATES

▶ *Lever of success = energy advocate*

▶ *Grassroots initiatives*

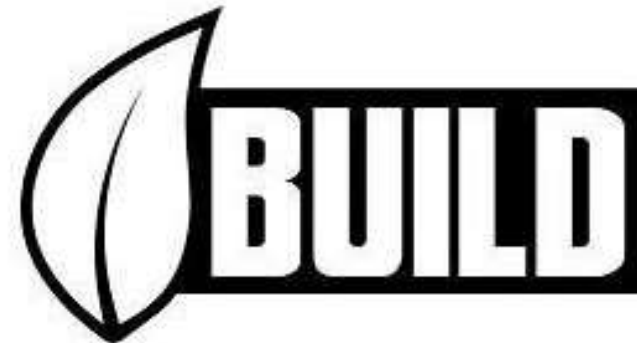
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▶ *Street by street project*

▶ *Local community events*



# SOCIAL ENTERPRISES



Social Enterprise  
Manitoba

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# IV. INDIGENOUS COMMUNITIES

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# INDIGENOUS MARKET

63

Communities

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15,456

Residential

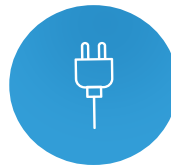
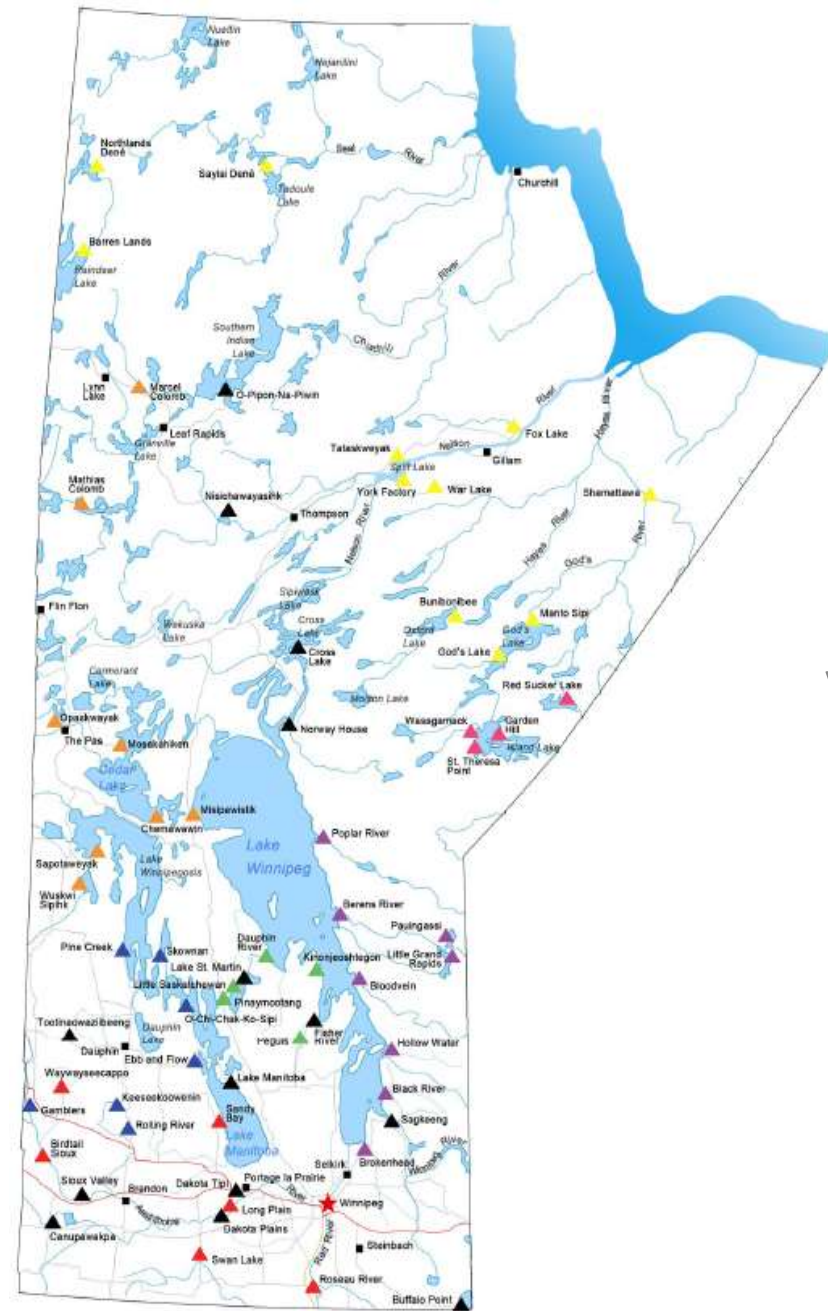
2,386

Commercial





# INDIGENOUS MARKET



97% electric heat



Average use per home



People per home

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99% *electrical heat*



<1% *natural gas heat*



# NEW STRATEGY

## 4 Drivers of Success

- ▶ Data Driven
- ▶ Community-Led
- ▶ Education Initiatives

## ▶ Strategic Partnerships

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# NEW STRATEGY - DATA DRIVEN

## Data Driven

- ▶ Target high users
- ▶ Identify the why!
- ▶ Maximize impact

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# NEW STRATEGY - COMMUNITY-LED

## Community-Led

- ▶ Where to focus efforts
- ▶ Community driven outcomes
- ▶ Economic development

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## NEW STRATEGY - EDUCATION

### Education

- ▶ Work with community schools
- ▶ Culturally based content for students
- ▶ Work with the schools to create a

team of energy ambassadors

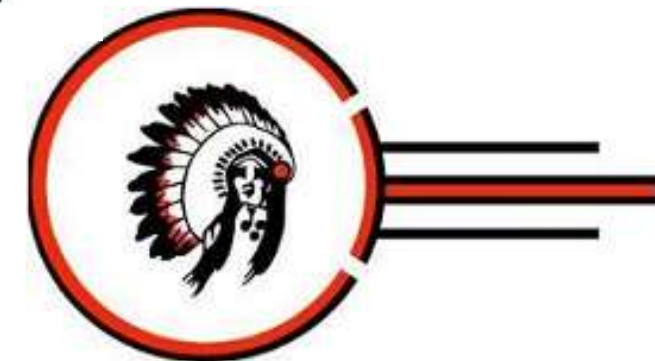
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# NEW STRATEGY - STRATEGIC PARTNERSHIPS



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Government  
of Canada






# COMMUNITY CHAMPION





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# 3-YEAR EFFICIENCY PLAN

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CONTAINED WITHIN

***COMMERCIAL, INDUSTRIAL  
AND AGRICULTURAL  
CUSTOMER MARKET  
SEGMENTS***

# OUTLINE

## I. Context

## II. Commercial, Industrial & Agricultural Customers

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# EFFICIENCY PLAN – PROCESS REMINDER

## (1) Idea Generation

Customer  
Market  
Segments

- Residential (Income Qualified / Rural / Remote)
- Indigenous Communities
- Commercial / Industrial / Agricultural

MATERIAL WITHIN CURRENT AS OF JUNE 14, 2019. MORE RECENT VERSIONS SUPERSEDE DATA / ANALYSIS CONTAINED WITHIN

Efficiency  
Technologies

- Market Adoption Curve
- Emerging
- R&D / Pilot Programs

...

(1) Idea  
Generation

# INNOVATION

## A comprehensive view to innovation:

- ▶ New ways of engaging with customers
  - ▶ Customer relationship management & portal
- ▶ New approaches to deliver programs
  - ▶ Market segment grouping
  - ▶ Program bundling
  - ▶ Partnerships and communities
- ▶ Program enhancements
- ▶ New technologies

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*For consideration and evaluation within 3-Year Plan*



# CUSTOMER RELATIONSHIP MANAGEMENT + PORTAL



## Improved Customer Relationship Management System (CRM)

- ▶ One combined database for all market sectors: residential, commercial, industrial
- ▶ Online applications to ease customer and contractor experience
- ▶ Access portals for customers and contractors to track history and status
- ▶ Mobile tools for internal Sales Representatives to gain efficiency and offer exceptional customer service



# CUSTOMER RELATIONSHIP MANAGEMENT + PORTAL



## Benefits of new CRM

- ▶ Improved customer experience
- ▶ Personalized product offers
- ▶ Shorter application cycles
- ▶ Organize contact data
- ▶ Segment market with increased detail
- ▶ Enhanced marketing opportunities
- ▶ Create reports more efficiently
- ▶ Business process and communication automation
- ▶ Increased participation conversion ratio
- ▶ Increase brand loyalty and engagement
- ▶ More cost effectiveness
- ▶ Improved team collaboration





# BUNDLING OFFERS

- ▶ Customer focused delivery strategy for Manitobans
- ▶ Bundling offers to fit specific market segment will enhance customer experience and drive participation
- ▶ Benefits include:
  - ▶ Simplified marketing and communications
  - ▶ Increased cross-promotion of additional offers
  - ▶ Increase efficiencies with streamlined internal processes
  - ▶ Cost-effective strategy to include measures which require support



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## II. COMMERCIAL, INDUSTRIAL & AGRICULTURAL CUSTOMERS

---

# COMMERCIAL MARKET

*Total Commercial Customers - 40,000*

*Electric Heat*



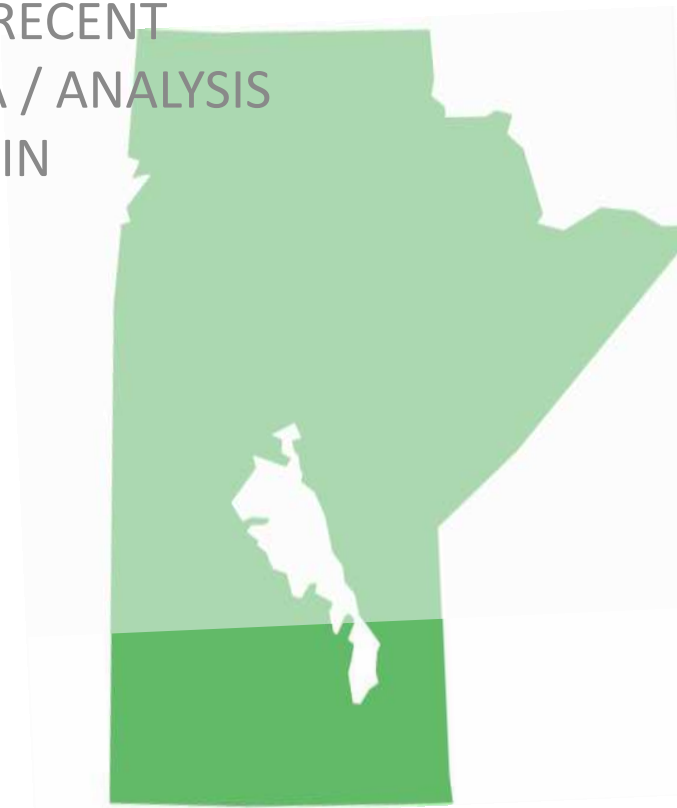
*11,000*



*Natural Gas Heat*



*24,000*



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# COMMERCIAL MARKET

- ▶ Offices 27%
- ▶ Retail and Grocery Stores 23%
- ▶ Apartment Buildings 9%
- ▶ Warehouses 9%
- ▶ Recreation Facilities 8%
- ▶ Restaurants 7%
- ▶ Churches 6%
- ▶ Schools and Colleges 5%
- ▶ Hotels 3%
- ▶ Personal Care Homes 1%
- ▶ Hospitals 1%

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# COMMERCIAL PRODUCTS

## ► Current offers:

- Insulation
- Windows
- Doors
- Curtain Wall
- Custom Measures
- Building Operations
- Geothermal
- Boilers
- Hot Water Heaters
- Carbon Dioxide (CO2) Sensors
- Heat Recovery Ventilators
- Kitchen Appliances
- Lighting
- Network Energy Management
- New Buildings
- Small Business Program
- Refrigeration
- Manitoba Race to Reduce

MATERIAL WITHIN CURRENT AS OF  
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CONTAINED WITHIN

# COMMERCIAL PRODUCTS

## ► Expanded offers:

- Insulation
- Windows
- Doors
- Curtain Wall
- Custom Measures
- Building Operations
- Geothermal
- Boilers
- Hot Water Heaters
- Deep Energy Retrofits
- Air Tightness and Sealing
- Variable Frequency Drives
- Air Cooled Chillers
- Hot Food Holding Cabinets
- Icemakers
- Carbon Dioxide (CO2) Sensors
- Heat Recovery Ventilators
- Kitchen Appliances
- Lighting
- Network Energy Management
- New Buildings
- Small Business Program
- Refrigeration
- Manitoba Race to Reduce – New Sectors
- ASHRAE Level 1, 2, and 3 Audits
- Water Saving Devices – New Sectors
- Convection Ovens
- Dishwashers
- Griddles
- Combi-ovens

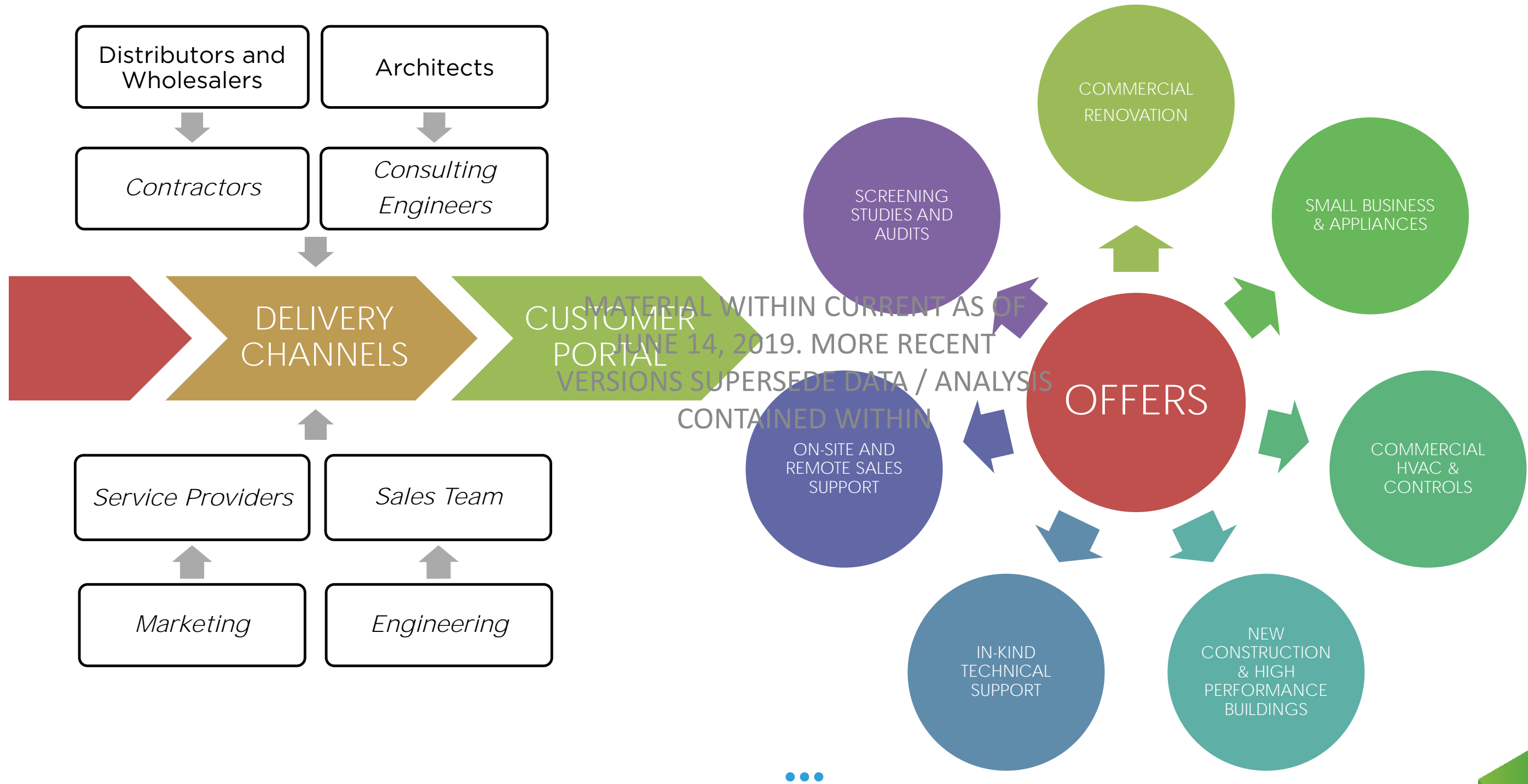
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# BUNDLING OFFERS - COMMERCIAL

<i>Commercial Renovation</i>	<i>Small Business &amp; Appliances</i>	<i>HVAC &amp; Controls</i>	<i>New Construction &amp; High Performance Buildings</i>
<i>Lighting</i>	<i>Small Business</i>	<i>Geothermal</i>	<i>New Buildings</i>
<i>Insulation</i>	<i>Refrigeration</i>	<i>Boilers</i>	<i>Custom Measures</i>
<i>Windows</i>	<i>Food Steamers</i>	<i>Hot Water Heaters</i>	<i>Building Operations</i>
<i>Doors</i>	<i>Deep Fryers</i>	<i>CO2 Sensors</i>	<i>Manitoba Race to Reduce - New Sectors</i>
<i>Curtain Wall</i>	<i>Water Saving Devices - New Sectors</i>	<i>Heat Recovery Ventilators</i>	<i>ASHRAE Level 1, 2, and 3 Audits</i>
<i>Air Tightness and Sealing</i>	<i>Icemakers</i>	<i>Variable Frequency Drives</i>	<i>Deep Energy Retrofits</i>
	<i>Holding Cabinets</i>	<i>Air Cooled Chillers</i>	
	<i>Griddles</i>		
	<i>Combi-ovens</i>		
	<i>Dishwashers</i>		

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# COMMERCIAL MARKET







## CUSTOMER FOCUSED MARKETING

Increased focus on marketing most appropriate savings opportunities to specific customer segments

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- ▶ An enhanced website design that allows customers to self-identify by business type and see customized program offers
  - ▶ Ability to answer a few questions to further screen for opportunities



# LEVERAGING EXTERNAL DELIVERY AGENTS



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# PARTNERING WITH MORE CUSTOMER ASSOCIATIONS



PPMA



**BOMA**  
Manitoba

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**CHES**  
Canadian Healthcare  
Engineering Society



MANITOBA | HOTEL | ASSOCIATION  
ESTABLISHED 1927



Manitoba  
**Restaurant &  
Foodservices**  
Association



# PARTNERING WITH MORE CUSTOMER ASSOCIATIONS

**PPMA**



**BOMA**  
Manitoba



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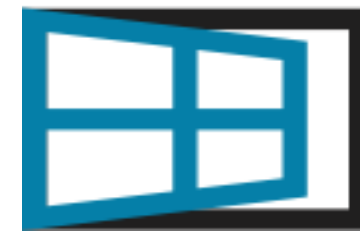
*In business for your business.™*



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# PARTNERING WITH MORE INDUSTRY ASSOCIATIONS



**FENESTRATION**  
MANITOBA

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# PARTNERING WITH MORE INDUSTRY ASSOCIATIONS



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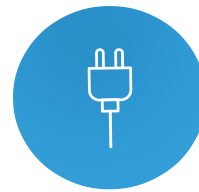


WINNIPEG  
CONSTRUCTION  
ASSOCIATION





# INDUSTRIAL MARKET



Electric:  
11,000 customers  
36% of domestic usage

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Natural Gas:  
2,000 customers  
25% of domestic usage





## INDUSTRIAL MARKET

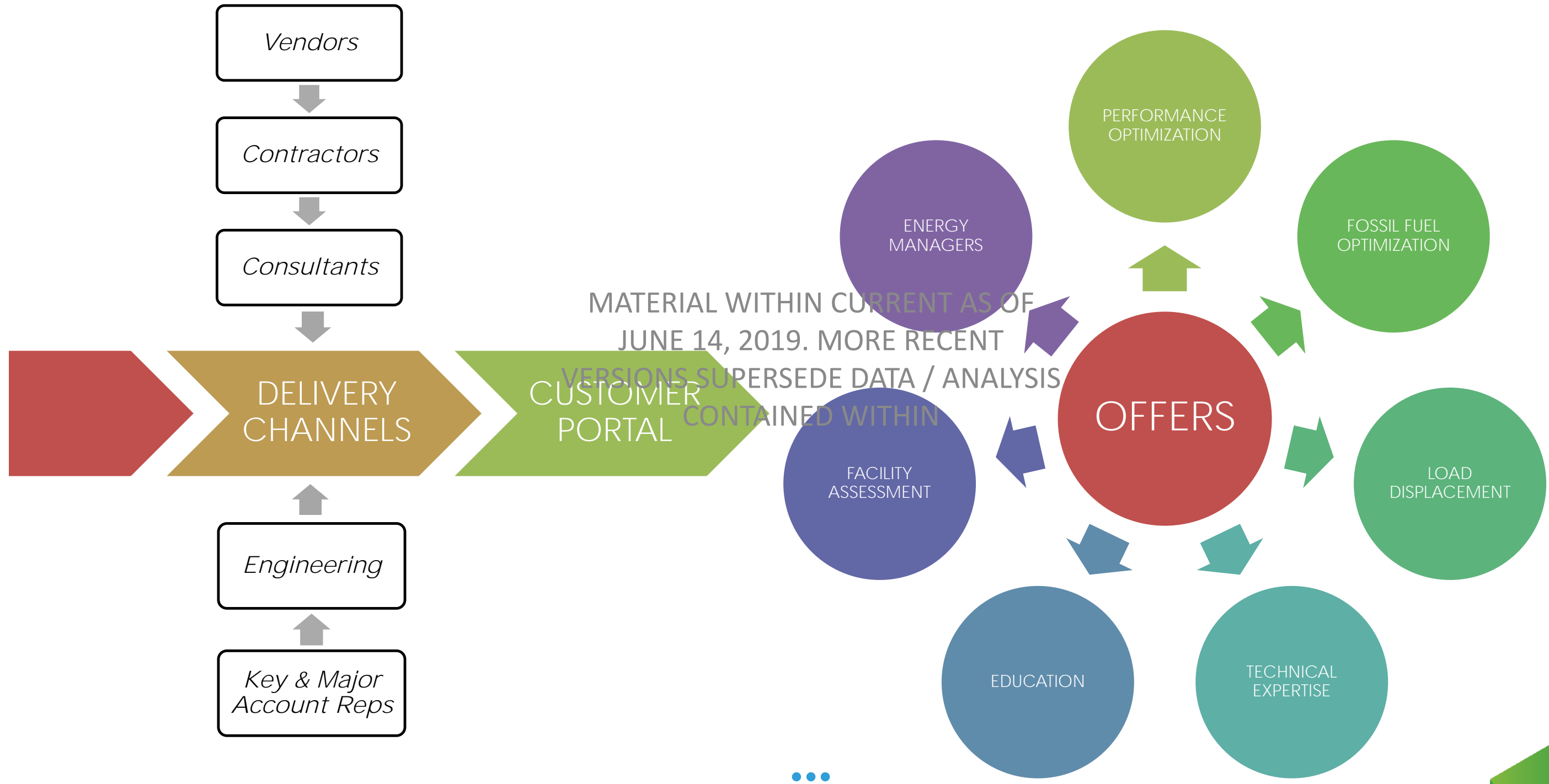
- ▶ Agriculture/Forest/Fish 37.6%
- ▶ Mining 0.5%
- ▶ Food/Beverage 2.5%
- ▶ Pulp/Paper 0.3%
- ▶ Chemicals/Treatment 2.3%
- ▶ Petroleum/Oil 0.4%
- ▶ Primary Metals 0.4%
- ▶ Miscellaneous Industrial 15.0%
- ▶ Industrial Non-Buildings 41.0%

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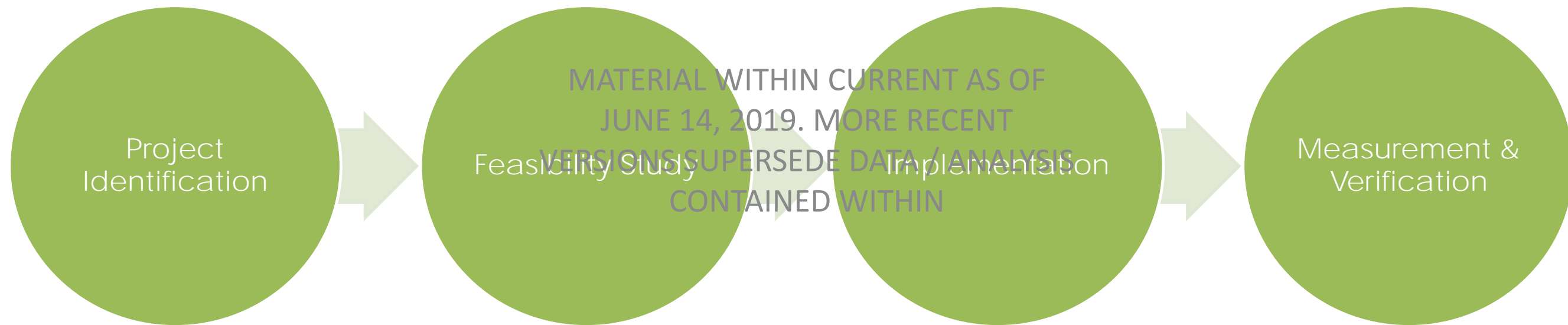
...



# INDUSTRIAL MARKET



# PROJECT LIFECYCLE



...



## SYSTEMS APPROACH

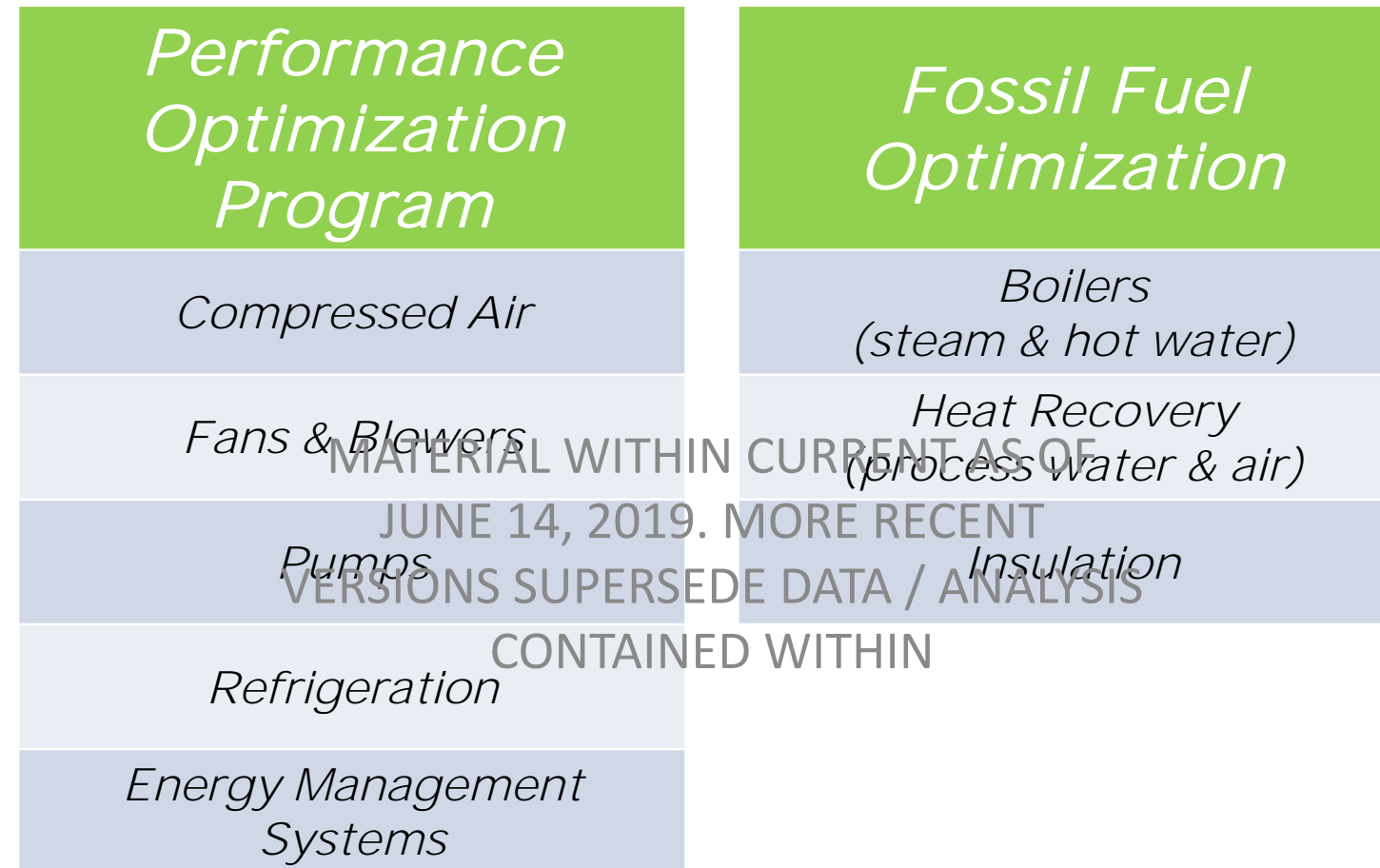
Consider the following elements:

- ▶ End Uses
- ▶ Distribution System
- ▶ Equipment Controls

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# INCENTIVE PROGRAMS



*Note:*

- 1. Industrial customers qualify for all commercial programs.*
- 2. Any project that saves energy will be considered.*

## ECONOMIC DEVELOPMENT

- ▶ Work with Manitoba Hydro and the Province of Manitoba to attract new customers or expansions to existing facilities

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- ▶ Opportunity to capture savings at the beginning of a project
- ▶ Improve energy efficiency as well as enhance productivity and competitiveness for Manitoba industry



# AGRICULTURE

Currently qualify for all other programs

- ▶ Lighting
- ▶ Building Envelope
- ▶ Performance Optimization Program

▶ Heat Pads

▶ Fan VFDs for vegetable storage

▶ Compressed air optimization

- ▶ Fossil Fuel Optimization

Potential program modifications

- ▶ Clarify participation
- ▶ Expand offerings



## LOAD DISPLACEMENT

- ▶ Industrial or municipal customers with production by-products or locally-available, low-cost sources

of biomass

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- ▶ Program encourages installation of customer-sited electric generation systems

- ▶ Require long-term performance contracts

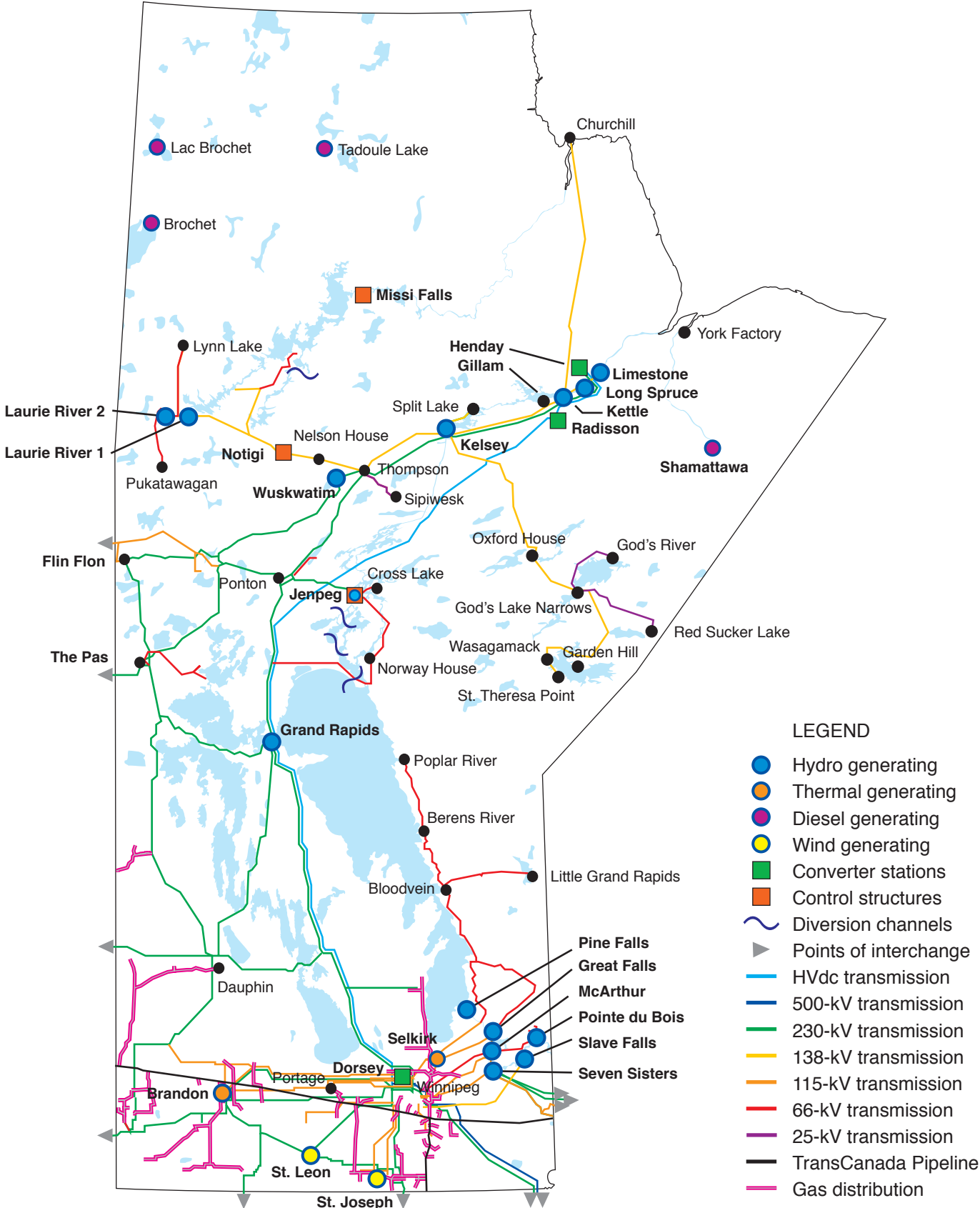





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# Major electrical and gas facilities



- LEGEND**
- Hydro generating
  - Thermal generating
  - Diesel generating
  - Wind generating
  - Converter stations
  - Control structures
  - ~ Diversion channels
  - ▶ Points of interchange
  - HVdc transmission
  - 500-kV transmission
  - 230-kV transmission
  - 138-kV transmission
  - 115-kV transmission
  - 66-kV transmission
  - 25-kV transmission
  - TransCanada Pipeline
  - Gas distribution



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# 3-YEAR EFFICIENCY PLAN

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*CONTAINED WITHIN  
ENABLING STRATEGIES,  
COST-EFFECTIVENESS AND  
INTEGRATED RESOURCE PLANNING*

# OUTLINE

## I. Enabling Strategies

## II. Measuring Cost-Effectiveness of Programs

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## III. Integrated Resource Planning Perspectives



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# I. ENABLING STRATEGIES



# ENABLING STRATEGIES



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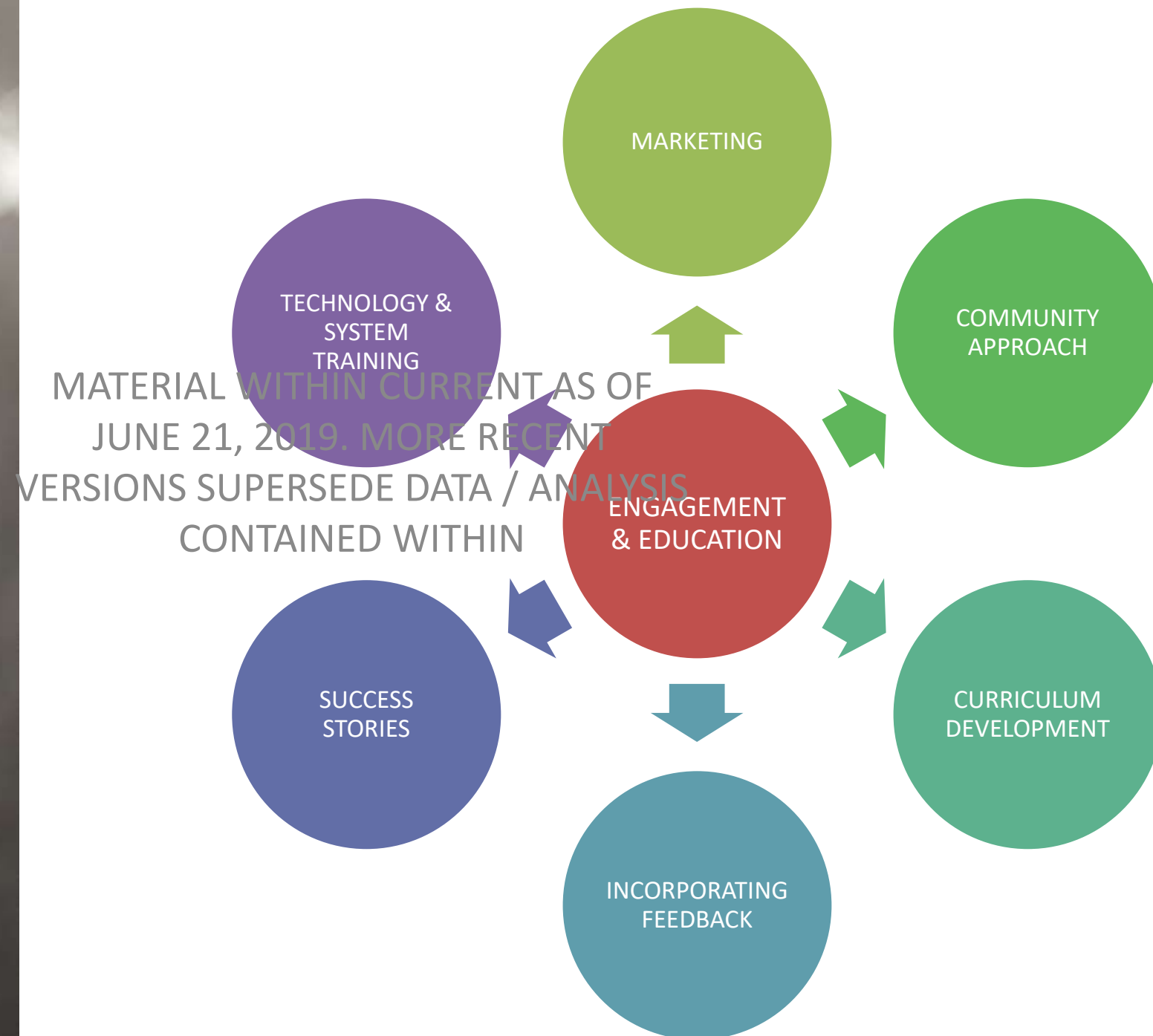
Education & Engagement

Emerging Technology





Codes & Standards



# ENGAGEMENT & EDUCATION



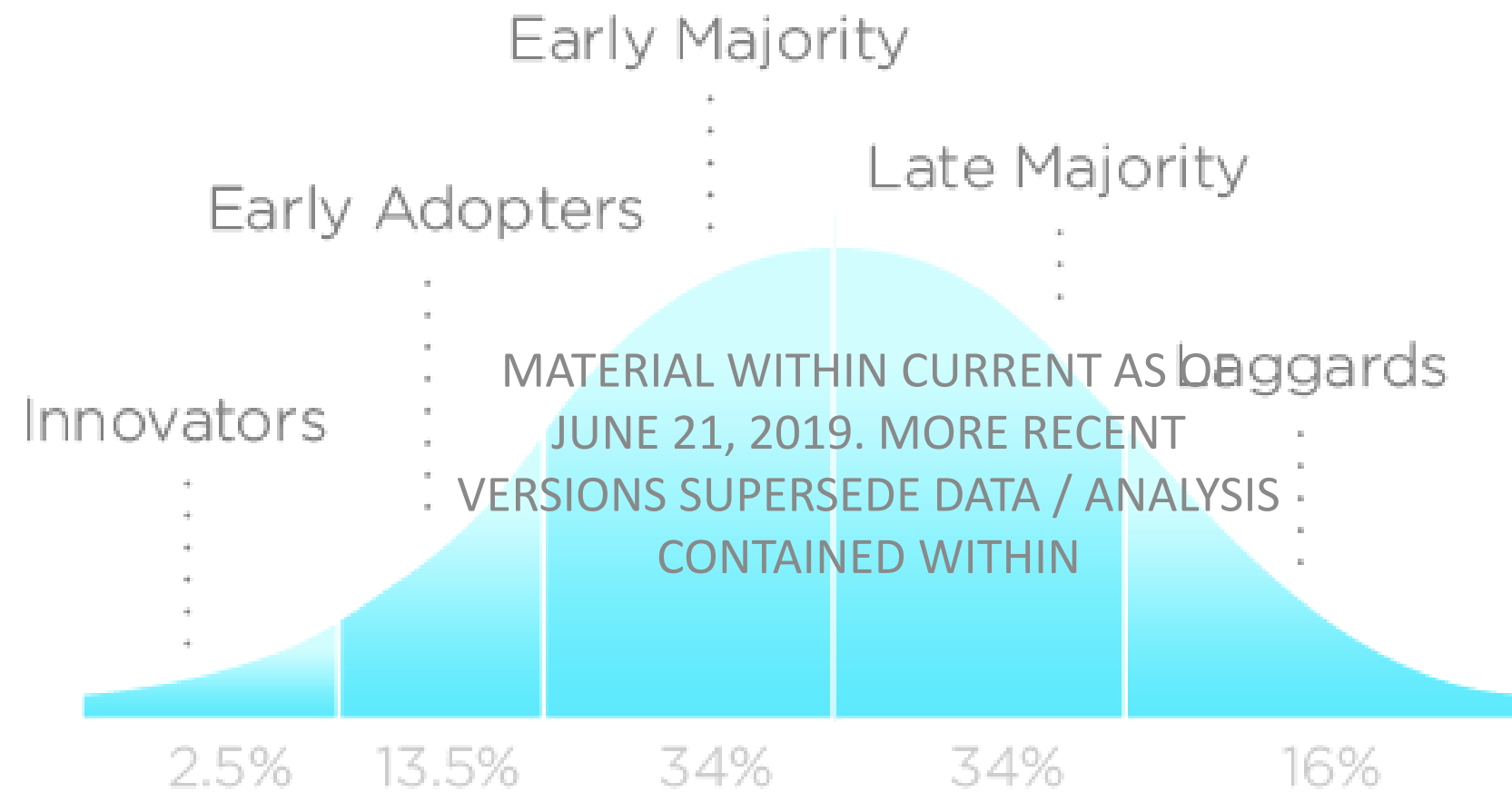
# EMERGING TECHNOLOGY

-  Economic considerations differ from established technologies
-  Pilot programming, R&D and education may be required
-  Partnerships with private industry or academia for research
-  Motivation for product adoption differ with customer groups





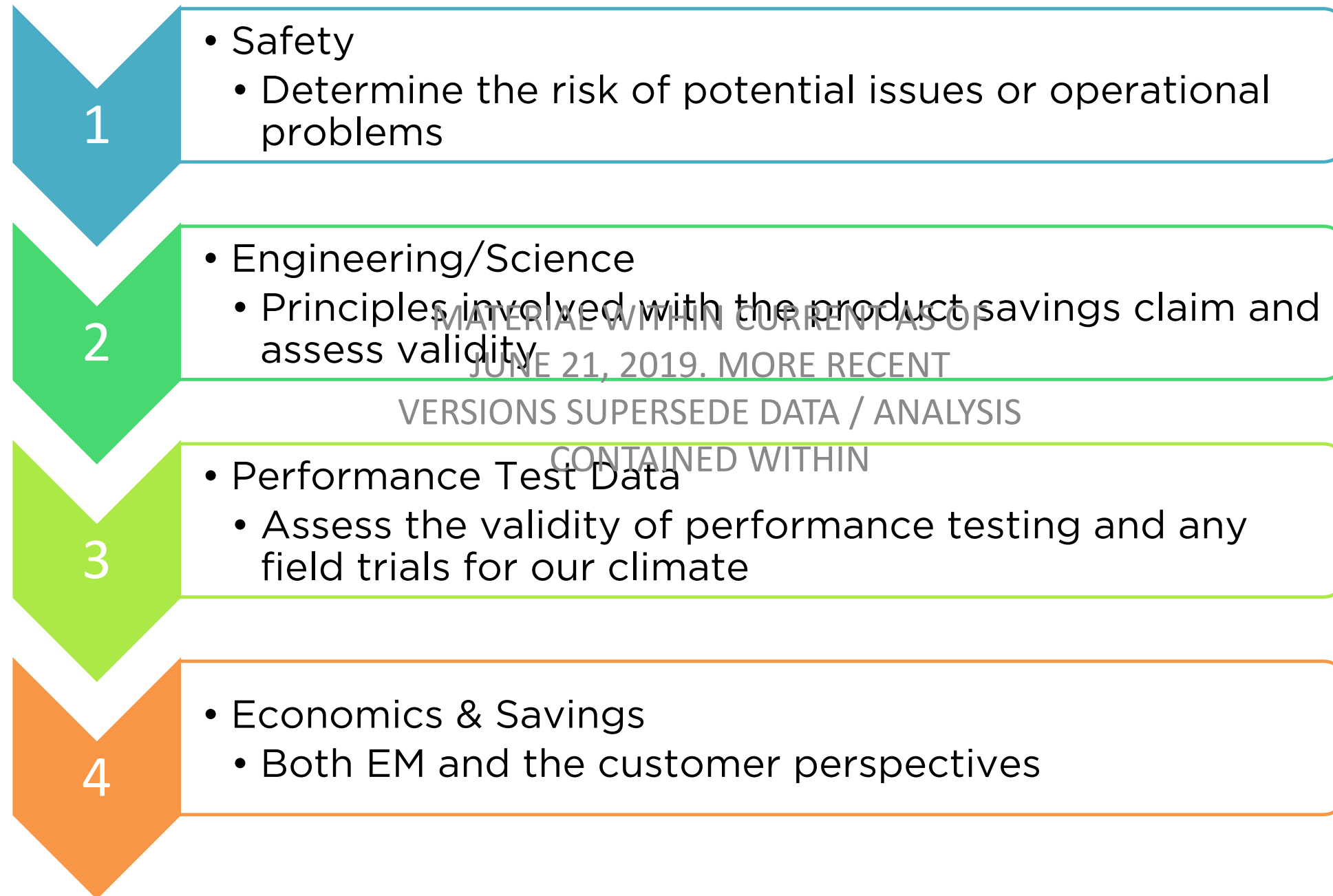
# TECHNOLOGY ADOPTION LIFECYCLE



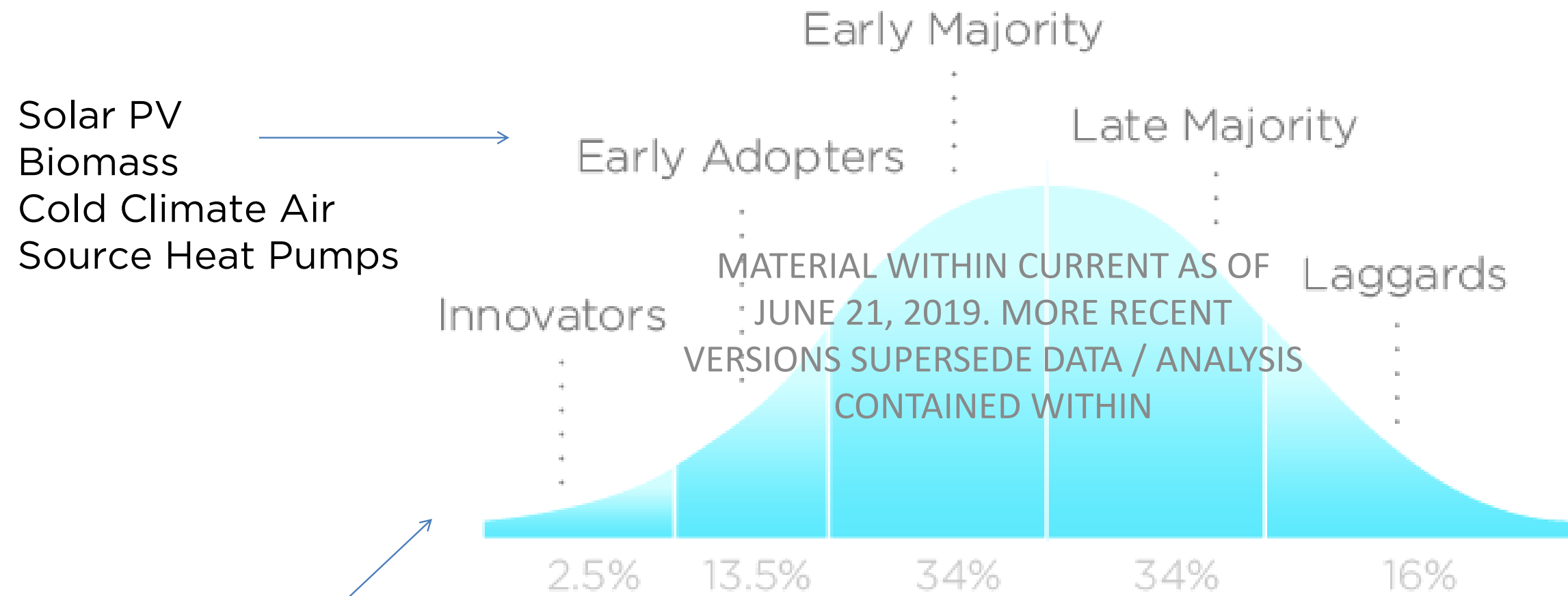
## INNOVATION ADOPTION LIFECYCLE



# PRODUCT TECHNICAL ASSESSMENT



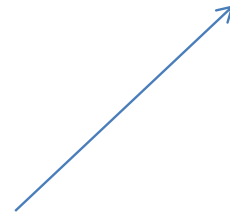
# EMERGING TECHNOLOGIES



Solar PV  
Biomass  
Cold Climate Air  
Source Heat Pumps



Woodstoves  
Sub-metering  
Smart Windows



## INNOVATION ADOPTION LIFECYCLE



# PAST PILOT PROJECT LEARNINGS

- ▶ Economics aren't everything
- ▶ Communication and consultation
- ▶ Industry preparedness

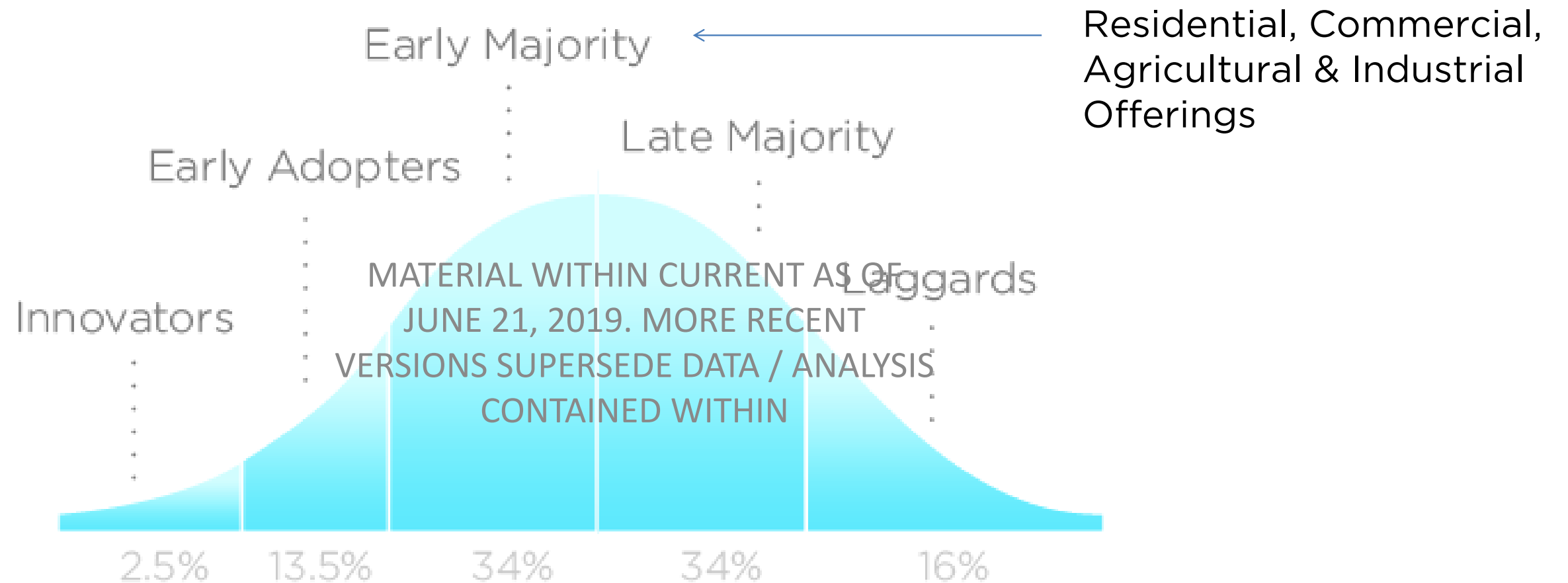
- ▶ Education

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- ▶ Definitive information



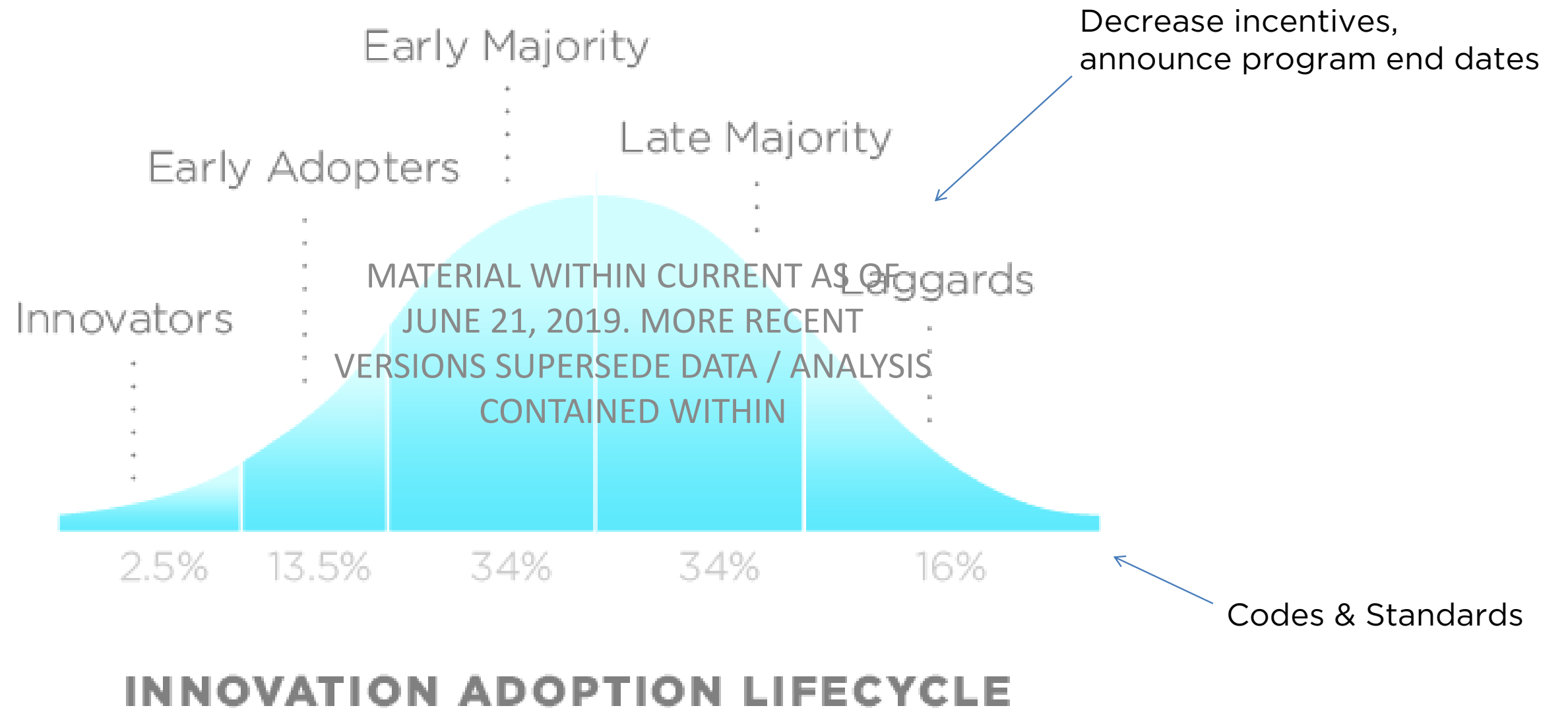
# ADVANCING THE MARKET



## INNOVATION ADOPTION LIFECYCLE



# MARKET TRANSFORMATION



# CODES & STANDARDS

- ▶ Product efficiency improvements
  - ▶ Development of standardized product test methodologies through national committees
- ▶ Establishment of product minimum energy performance levels
- ▶ Efficiency regulations & codes
  - ▶ Incorporates standards
  - ▶ Developed and adopted at national and provincial levels

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# STRATEGY

- ▶ Energy savings may be counted towards targets from codes, standards and regulations provided Efficiency Manitoba has made a *material contribution*

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- ▶ Strategy
  - ▶ Actively participate in code & standard development and adoption
  - ▶ Use program activities to move market to energy efficiency
  - ▶ Document and communicate efforts
  - ▶ Utilize third-party evaluation to verify savings and determine attribution
  - ▶ Introduce activities that improve code compliance
  - ▶ Incorporate interactive effects





## DISCUSSION POINT

Within each customer segment, please reflect on ...

- ▶ Strategies that enable energy efficiency and innovative technologies in particular

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## II. MEASURING COST- EFFECTIVENESS OF PROGRAMS

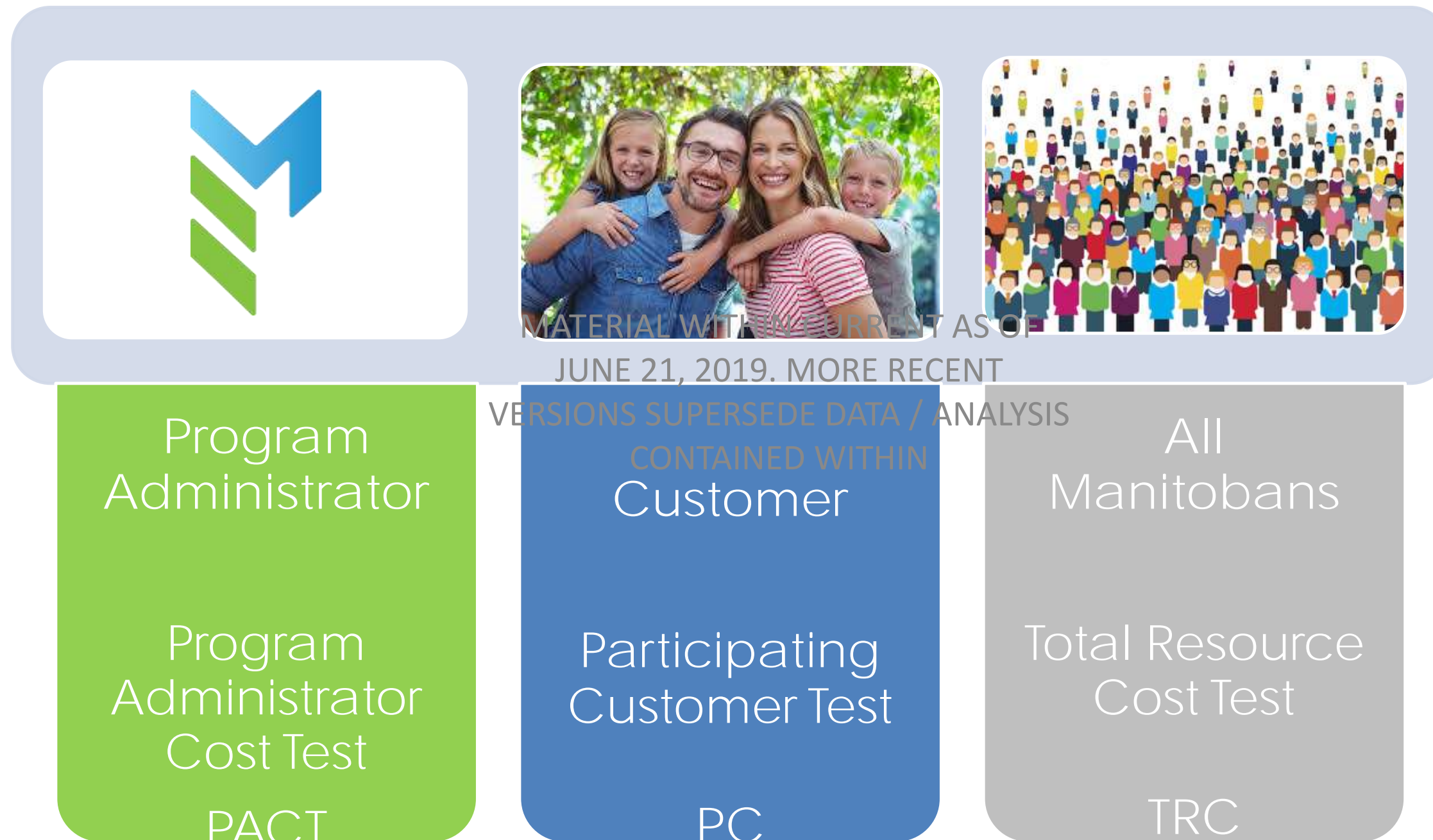
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# COST-EFFECTIVENESS EVALUATION

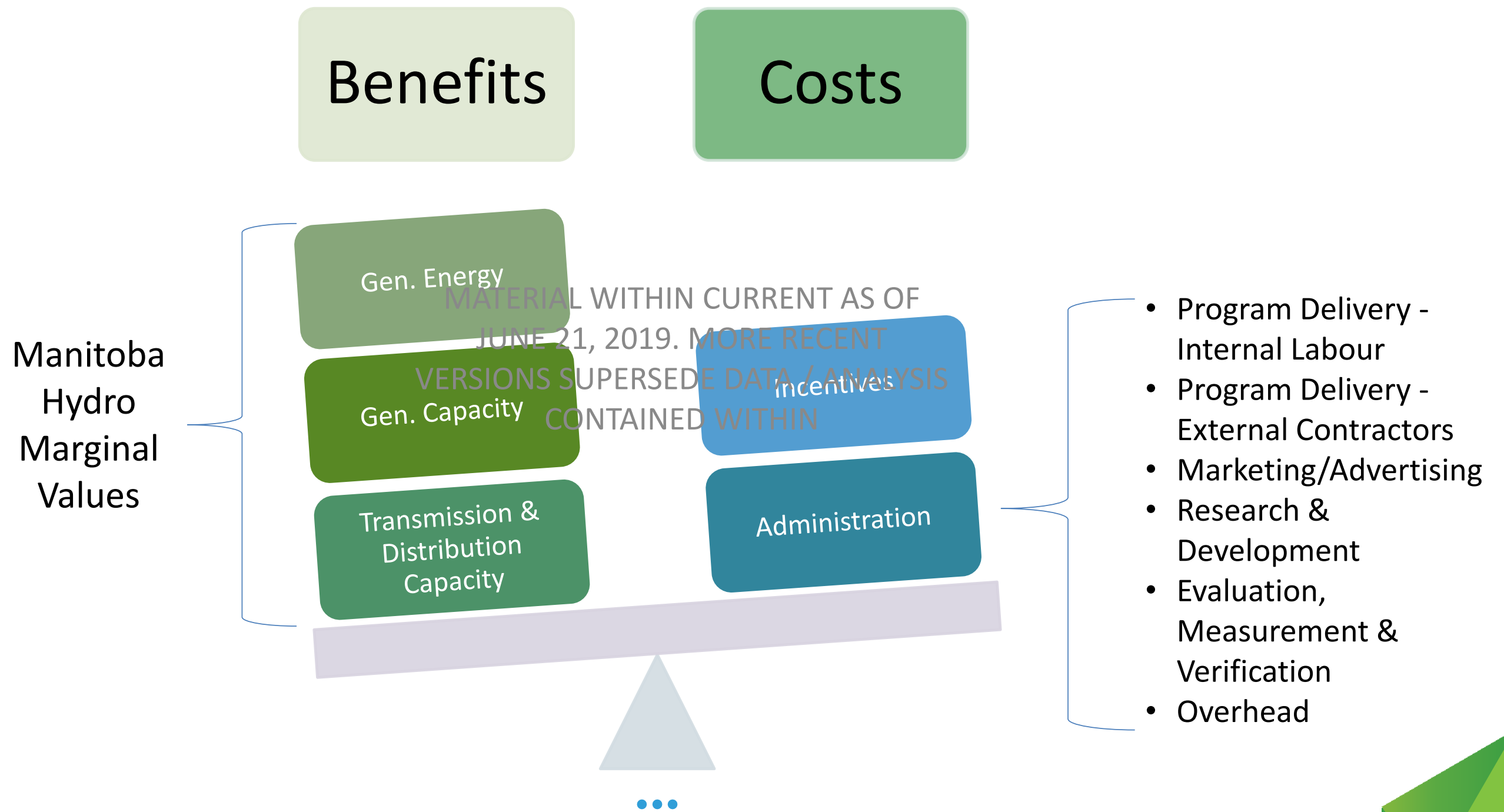
- ▶ Metrics for assessing energy efficiency programs
- ▶ Compares programs or portfolio cost-effectiveness with other distribution or and supply-side resources
- ▶ Calculates total benefits and total costs in dollars from a specific vantage point
- ▶ Metrics are typically selected by regulator



# COST BENEFIT ANALYSIS - PERSPECTIVE



# PROGRAM ADMINISTRATOR COST TEST (PACT)



# ENERGY SAVINGS

Savings are unique to each energy efficient technology and analysis includes:

- ▶ Savings profile (on/off peak and monthly variation of energy savings)
- ▶ Both energy and capacity components of savings
- ▶ Persistence (life of technology or measure)
- ▶ Projected participation (per year)

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# ELECTRIC MARGINAL VALUES

## Summer

- ▶ Generation Energy
- ▶ Generation Capacity

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## Winter

- ▶ Generation Energy
- ▶ Generation Capacity
- ▶ Transmission Capacity
- ▶ Distribution Capacity



# NATURAL GAS MARGINAL VALUES

Value to Manitoba Hydro based on:

- ▶ Reduced natural gas purchases into Manitoba
- ▶ Reduced natural gas transport into Manitoba

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# PROGRAM ADMINISTRATOR COST TEST (PACT)

Can be presented in three ways:

Format	Formula	Example of Value	Indicator
Ratio	$\frac{\text{NPV Benefits}}{\text{NPV Costs}}$	1.2	1.0 or higher: net positive benefits
Net Present Value (NPV)	$\text{NPV Benefits} - \text{NPV Costs}$	\$234,000	Positive value: net positive benefits
Levelized Cost	$\frac{\text{NPV Costs}}{\text{NPV Energy}}$	1.5 ¢/kW.h or 15.1 ¢/m <sup>3</sup>	Cost per unit saved



# RATE AND CUSTOMER BILL IMPACT ANALYSIS

## ELECTRIC RATE IMPACT ANALYSIS

### CONSIDERS:

- ▶ Efficiency Manitoba Costs
- ▶ Manitoba Hydro Lost Revenue
- ▶ Manitoba Hydro Marginal Values

## CUSTOMER BILL IMPACT

### CONSIDERS:

- ▶ Efficiency Manitoba Costs
- ▶ Manitoba Hydro Lost Revenue
- ▶ Manitoba Hydro Marginal Values
- ▶ Participating Customer Billing Reduction

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## DISCUSSION POINT

Within each customer segment, please reflect on ...

- ▶ Non-energy benefits (social, economic, environmental) of energy efficiency that could be quantified or highlighted



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# III. INTEGRATED RESOURCE PLANNING

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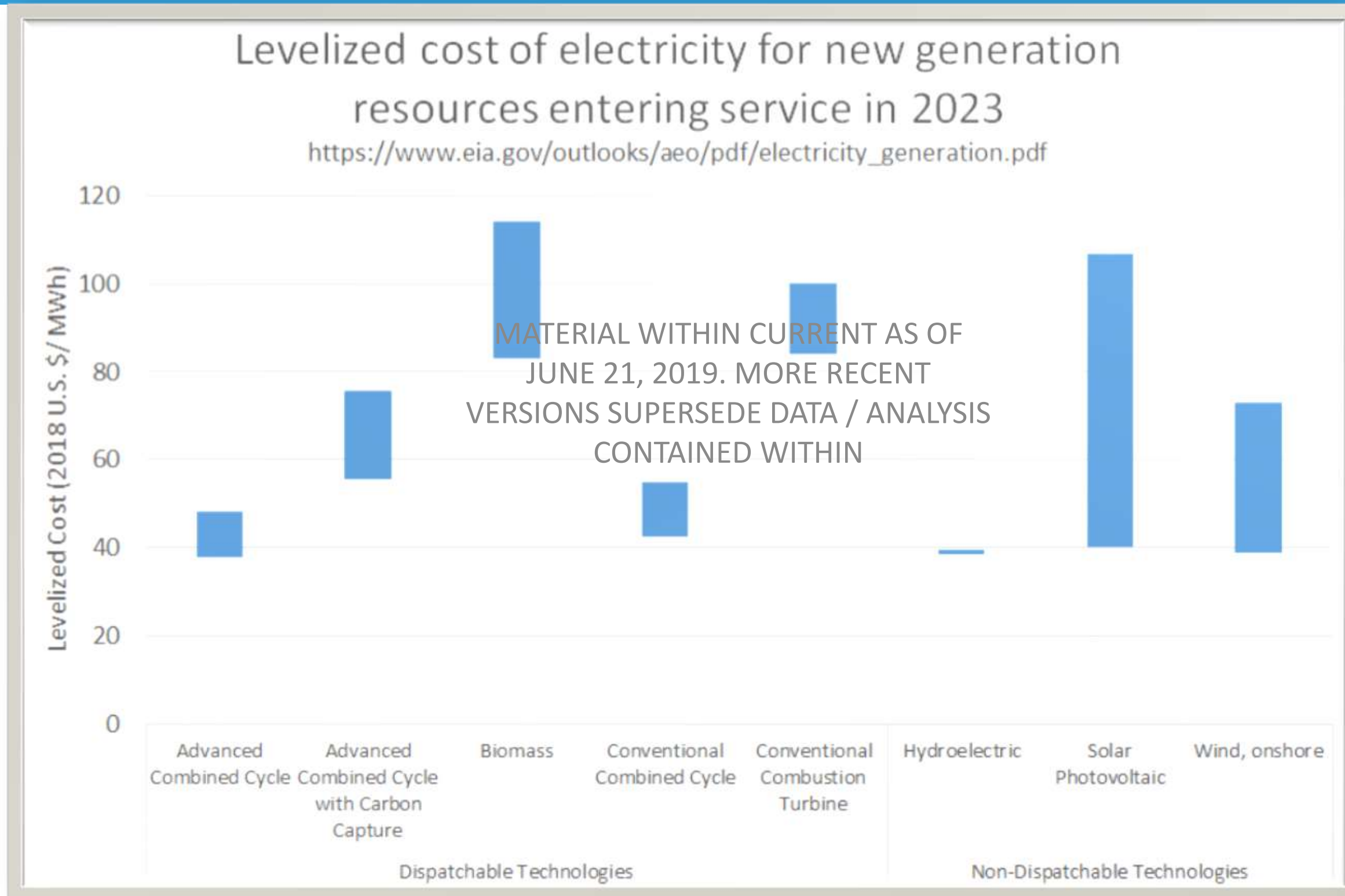
# INTEGRATED RESOURCE PLANNING

What is an integrated resource plan?

- ▶ A plan which considers both supply-side and demand-side options to enable a **utility** to satisfy future energy requirements
- ▶ Considers multiple criteria, options and plans
- ▶ Criteria could include cost-effectiveness, reliability, emissions perspectives and risk.



# SUPPLY SIDE RESOURCES



# DEMAND SIDE (DISTRIBUTED) RESOURCES

- ▶ Energy efficiency programs and measures
- ▶ Demand response programs and measures
- ▶ Customer sited (local) generation (solar photovoltaic, wind power, biomass, other).

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## EFFICIENCY MANITOBA'S ROLE

- ▶ Strive for cost-effective (from Manitoba Hydro's perspective) energy efficiency programs that satisfy the targets
- ▶ Provide near and long-term energy and capacity savings estimates for Manitoba Hydro to incorporate into Load Forecasting and Resource Planning activities
- ▶ Collaborate on and explore possible demand response programs and geographically targeted offerings for additional Manitoba Hydro benefits





## DISCUSSION POINT

Within each customer segment, please reflect on ...

- ▶ Long-term planning and EM's role in integrated resource planning

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# Electrifying Manitoba's Transportation

A market transformation role for

***Efficiency Manitoba***

Peter Miller  
Green Action Centre  
June 25, 2019

## Convergent drivers for action to electrify MB's transportation

- **Climate urgency** - Canada's climate emergency, Manitoba's competitive vision, transportation GHGs + available EVs → action
- **More EVs are available** – Most manufacturers, multiple types and models, longer ranges and more to come.
- **Manitoba Hydro benefits** – EV charging @ 8.74¢/kwh retail earns ~ 6¢/kwh more than opportunity exports @ ~2.75¢/kwh → higher Hydro revenues → lower rate increases.
- **Province of Manitoba benefits** – If EV customers pay PST on transport electricity and a road fee equivalent to fuel tax, Manitoba's economy and Treasury will benefit.
- **Efficiency Manitoba mandate** – conditional mandate to reduce transportation fossil fuel use + Power Smart experience in market transformation → **EM is well-positioned to respond to climate challenge.**

## EV opportunities are available & multiplying

- “Manitoba is an ideal place for ... electric vehicles that plug in.” See attached brief from Manitoba Electric Vehicle Association (MEVA).
- Multiple EV makes and models are in show rooms (elsewhere) and on the road or soon will be including light and heavy trucks, tractors, motorcycles, and mining equipment.
- Costs are coming down and ranges are going up.
- Federal Budget 2019 introduced a \$5,000 ZEV purchase incentive, which expires in 3 years. It can be added to provincial incentives. - Let’s make sure Manitobans get their share.

## Manitoba Hydro and its customers benefit

- Most EV charging is at home at current residential rate of 8.74¢/kwh.
- Otherwise, the power is sold in the opportunity export market at an average price of ~2.75¢/kwh.
- Thus, Manitoba Hydro earns 6¢/kwh more from sales to EV owners.
- Increasing EV owners → higher MH revenues → lower rate increases + more \$\$ to spend elsewhere in Manitoba.

## Province of Manitoba and tax payers benefit

- Converting from fossil fuels to hydroelectricity spends fuel dollars in Manitoba rather than Alberta to the benefit of Manitobans.
- If EV drivers pay PST on transport electricity and a road-use fee equivalent to the 14¢/litre fuel tax, then
  1. They will add 6¢/kwh of revenue to Manitoba Hydro.
  2. They will pay more into the Treasury than current ICE drivers, who pay no PST.
  3. They will still save money on fuel and operating expenses, while having a positive impact on Manitoba's economy and the climate.
  4. These added expenditures in Manitoba have a multiplier effect on Manitoba's economy and tax revenues.

(See attached spreadsheets from MEVA, illustrating economic impacts of EV sales [SUV and sub-compact] following Norway's EV sales trajectory.)

## Efficiency Manitoba's mandate

- *The Efficiency Manitoba Act, subsection 4(1), prescribes (conditionally):  
(d) if any of the following are prescribed as being subject to demand-side management under this Act, carry out the prescribed duties in respect of them:*
  - \* \* \*
  - (iii) fossil fuels consumed in the transportation sector in Manitoba.*
- The CGP Expert Advisory Council CSA report, June 2019, recognizes that “Efficiency Manitoba has a key role in offering energy efficiency solutions to Manitoba businesses and consumers to reduce emissions.”



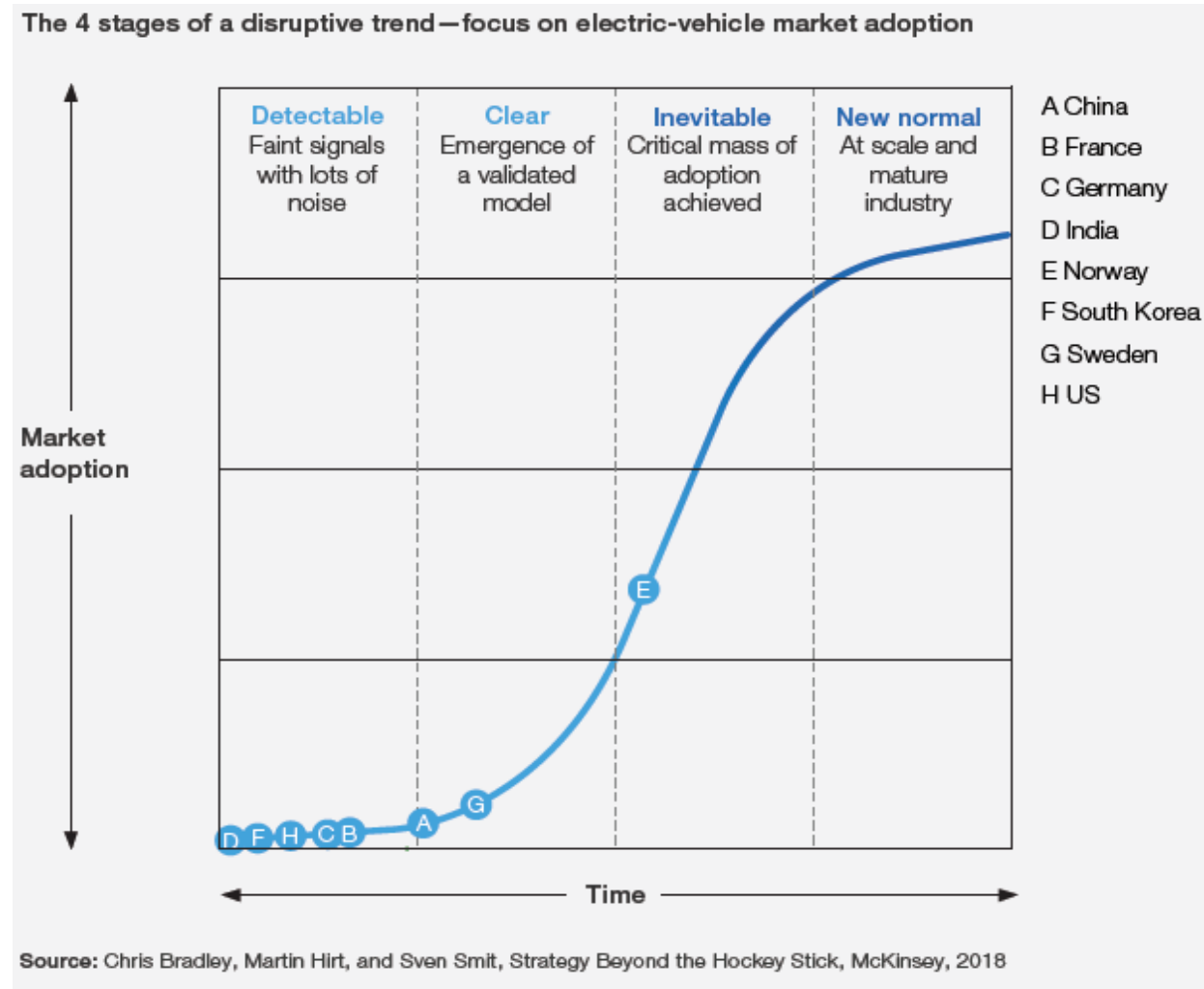
# Market transformation skills

Efficiency Manitoba has marketing skills from Power Smart including accelerating adoption of new technologies, like high-efficiency gas furnaces, geothermal systems and LED lights, following an “S” curve.

**In Norway—which is clearly ahead of other countries—the electric-vehicle disruption is inevitable.**

### *The Future of Mobility is Arriving Early*

<https://www.mckinsey.com/~media/McKinsey/Industries/Automotive%20and%20Assembly/Our%20Insights/Reserve%20a%20seat%20the%20future%20of%20mobility%20is%20arriving%20early/Reserve-a-seat-The-future-of-mobility-is-arriving-early.ashx> p. 9



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## NRCan has identified barriers to ZEV uptake on Prairies

- Lack of provincial government interest/engagement
- Lack of coordination of stakeholders/activities
- The higher cost of ZEVs and lack of models (e.g., pickup trucks and SUVs)
- Lack of public and standardized charging infrastructure
- Lack of consumer awareness (economic and environmental benefits, total cost of ownership, infrastructure, safety)
- Lack of ZEVs and service capabilities at dealerships
- Technology barriers (perceived cold weather performance)

<https://www.nrcan.gc.ca/energy/transportation/alternative-fuels/resources/21312>

# Proposal: Plug and Drive EV Information and Demonstration Hub

- See attached proposal for Efficiency Manitoba to convene a working group to develop an EV marketing hub like Plug In BC, Ontario's Plug'n Drive or Quebec's Running Electric.
- An initiative within the EV marketing campaign would be a Focus on Fleets as a cost-effective way to ramp up early EV adoption.
- Marketing plans should address barriers to EV adoption.
- Provincial regulations for Efficiency Manitoba should prescribe and support an EV marketing initiative.
- The EV marketing proposal should be included in the plan submitted to the PUB in October.

## Why EV marketing should not be postponed

- Most urgent is the short timeline for GHG reductions.
- Postponement negates the Climate and Green Plan Vision that “Manitoba will be Canada’s cleanest, greenest and most climate resilient province.”
- The cumulative emissions accounting that underlies Manitoba’s Carbon Savings Account means that additional GHGs accumulate in the atmosphere when savings opportunities are postponed.
- With EV adoption a net benefit to Manitoba Hydro and its customers and the provincial economy and treasury, postponement means an economic loss to Manitobans.
- Without augmentation from a marketing campaign in Manitoba, fewer federal EV rebates will accrue to Manitobans vs. other provinces.

## Next Step – Convene a working group to

- **Confirm and update opportunities and benefits** to Manitoba’s carbon savings account, Manitoba Hydro, Manitoba residents, and the provincial Treasury from enhancing EV sales.
- **Create a marketing plan, led by Efficiency Manitoba**, on the model of those in BC, ON and QC, capable of providing EV information and demonstration required to ramp up EV adoption in Manitoba.
- **Draft and propose Efficiency Manitoba regulations** that (a) direct EM to reduce transportation fossil fuels by promoting electrification as a fossil fuel DSM measure and (b) specify that the resulting electrical load growth shall be separated from the balance of domestic load when measuring targeted electric load reductions.
- **Ensure the EV marketing plan is part of 3-year plan** submitted to the PUB next October.
- **Identify a marketing advisory group** including, say, Manitoba Hydro, Efficiency Manitoba, Manitoba Electric Vehicle Association (MEVA), Red River College, Manitoba Trucking Association, Auto Dealers Association, and others.

# Strategic Objectives for Efficiency Manitoba and Manitoba Hydro

Peter Miller

Green Action Centre

June 25, 2019

## Need for coordinated planning

- Although corporately distinct, EM and MH need to
  - cooperate and coordinate their operations and
  - ensure important initiatives do not fall between the cracks
- Legacy of clean, economic and efficient power supply and use PLUS
- Legacy of long-term planning
  - Century-long for developing Manitoba's hydroelectric potential and amortizing assets
  - 15 years for mining Manitoba's efficiency resource and market transformation



## Strategic objectives for planning

1. Economic and efficient supply and end-use of power/energy
  - Mandated by The Manitoba Hydro Act
  - Take account of changed landscape of climate, distributed generation, electrification of transportation, etc.
2. Affordable energy (income qualified)
  - Mandated by the PUB – Special rates are being litigated but special low-income efficiency is established policy

### **Climate mandate leads to**

3. Decarbonizing Manitoba's energy supply
  - Focus on Centra Gas – 21% of Manitoba's emissions
4. Electrification of transportation

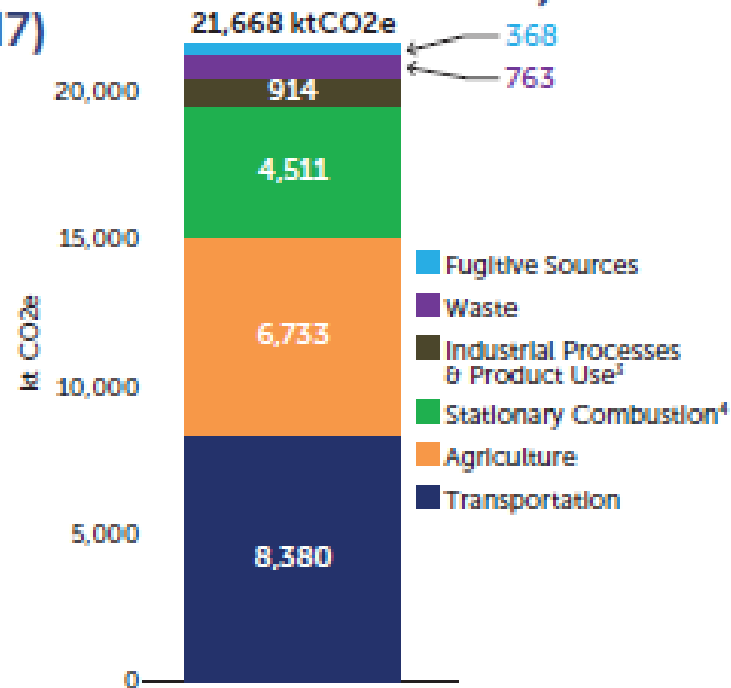
# Climate urgency

- *IPCC Special Report on Global Warming of 1.5°C*, October 2018.  
Must reduce GHG emissions by 45% by 2030 and net zero by 2050 to avoid worse consequences of higher-than-1.5°C temps.
- *ECCC Canada's Changing Climate Report*, May 2019.  
Canada rate of warming is twice global averages and 3X in arctic.
- Parliament declares a national climate emergency in Canada, June 17, 2019.

# Climate Urgency: CGP vision & profile

- *Climate and Green Plan* vision: “Manitoba will be Canada’s cleanest, greenest and most climate resilient province.”

**Manitoba’s GHG Emissions by Sector<sup>2</sup>  
(2017)**



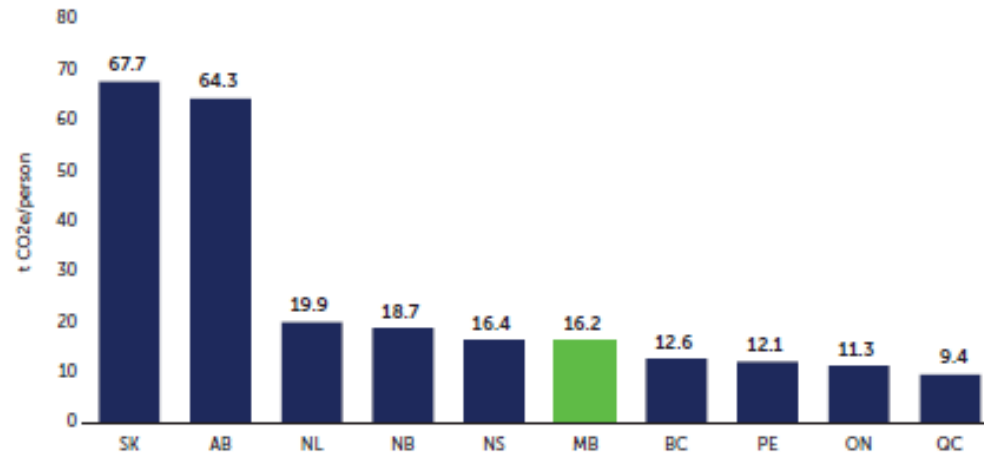
Manitoba 2017 Emissions Profile

Data Source: 2019 National Inventory Report

Manitoba’s total GHG emissions were 21.7 megatonnes (Mt) in 2017. Of that amount, 91% of all emissions came from three sources: transportation, agriculture, and stationary combustion, in that order. Transportation accounted for 39% of GHGs, agriculture for 31%, and stationary combustion in buildings and houses, for example, for 21%. These are the areas we must concentrate our efforts to reduce emissions in Manitoba.

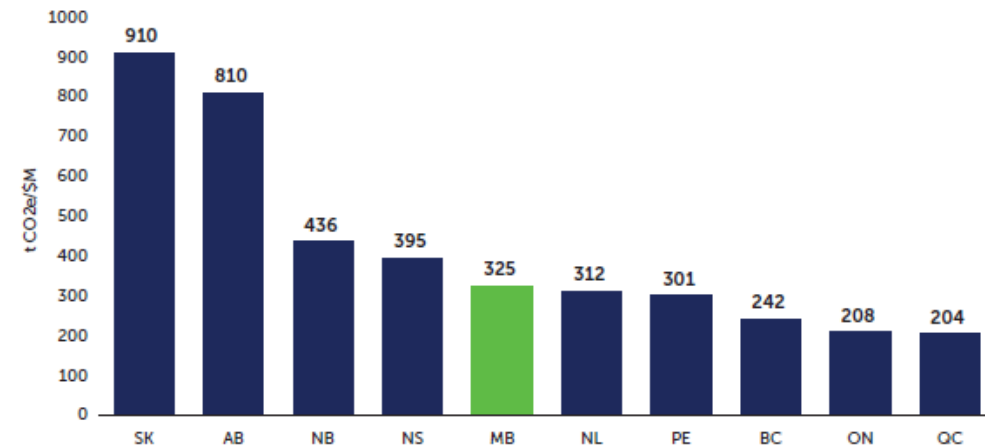
# Climate urgency: How does Manitoba compare?

2017 GHG Emissions per Capita by Province



Data Source: 2019 National Inventory Report & Statistics Canada Table: 17-10-0005-01

2017 GHG Emissions-Intensity of Provincial Economies



Data Source: 2019 National Inventory Report & Statistics Canada Table: 36-10-0222-01

**MB's GHGs are 6<sup>th</sup> highest per capita and 5<sup>th</sup> highest in GDP intensity.**  
**MB's GHGs are 1.7 X QC's per person and 1.6 X QC's per million dollars GDP.**  
**CONCLUSIONS: MB has a long ways to go to be cleanest and QC isn't standing still.**  
**Transportation is MBs greatest opportunity to reduce emissions.**

# Decarbonizing Centra Gas

- Need to plan to reduce and eventually eliminate (by 2050) net emissions arising from Manitoba's natural gas supply.
- Multiple strategies, including
  - Efficiency to reduce gas combustion
  - Substitution of renewable for fossil natural gas (from landfills, sewage, livestock operations)
  - Switching to other fuels and technologies

## Example: FortisBC's *Clean Growth Pathway to 2050*

Our pathway calls for four significant shifts in our energy systems to foster market transformation:

- making significant investments in both low and zero carbon vehicles and infrastructure in the transportation sector
- transitioning from higher carbon energy sources to lower carbon sources by ramping up Renewable Natural Gas (RNG) and hydrogen deployment to achieve a ten per cent zero-carbon fuel supply by 2030 and a thirty per cent supply by 2050
- positioning BC as a vital domestic and international Liquefied Natural Gas (LNG) provider to lower global GHG emissions
- tripling our investment in energy efficiency in the built environment and developing innovative energy projects in BC's communities

## Adapting FortisBC plan to Manitoba

- FortisBC plan includes increased gas supply to displace dirtier gasoline and diesel at home and coal abroad and fails to meet the zero net emissions target.
- A Centra plan might eliminate the third bullet (to be an LNG supplier), adapt the others to fit Manitoba, and add waste heat recovery, solar thermal, heat pumps (ground-, water- and air-sourced), and biomass conversions for heat.


# Electrification of transportation

See slide deck

## Electrifying Manitoba's Transportation

A market transformation role for  
***Efficiency Manitoba***





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# ENERGY EFFICIENCY ADVISORY GROUP MEETING

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*Activities & Feedback,  
Action Items and 3-Year Plan  
Update*

AUGUST 20, 2019

# OUTLINE

## I. Recent EEAG Member Activities and Feedback

## II. Action Items

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## III. 3-Year Plan Update



I. Recent **EEAG Member Activities**  
and **Feedback**

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# Notice

Efficiency Manitoba has strived to capture and summarize recent feedback received from EEAG members in the subsequent slides.

Any needed clarification or re-characterization provided by EEAG members will be completed within the August 20, 2019 EEAG Meeting Report.

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# Assembly of Manitoba Chiefs (AMC)

No specific engagement during July / early-August 2019

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# Association of Manitoba Municipalities (AMM)

## AMM letter and email exchanges in July 2019

### Feedback Received

- ▶ 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 3-year plan to leverage funding and avoid duplication



# Consumers' Association of Canada (CAC)

Written comments received regarding:

- ▶ *Efficiency Manitoba's proposed PUB filing outline*
- ▶ *Efficiency Manitoba's draft efficiency portfolio (v1.0)*

## Feedback Received

- ▶ Comments / questions / suggestions received regarding content, organization of PUB filing and draft portfolio related to topics such as:
  - ▶ Electric / Gas splits;
  - ▶ regulatory requirements and gaps;
  - ▶ target derivation;
  - ▶ budget delineation;
  - ▶ savings and cost-effectiveness assumptions and clarity; and
  - ▶ benefits to Manitoba Hydro...



# Expert Advisory Council on the Climate and Green Plan

No specific engagement during July / early-August 2019

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# Green Action Centre (GAC)

Presentation materials received regarding:

- ▶ *Electrifying Manitoba's Transportation*
- ▶ *Proposed role for Efficiency Manitoba in transport electrification*
- ▶ *Strategic objectives for Efficiency Manitoba and Manitoba Hydro*

Participation in Sustainable Development facilitated meeting regarding Manitoba electric charging stations and potential federal funding

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Feedback Received

- ▶ Efficiency Manitoba is well positioned to respond to climate challenge
- ▶ Efficiency Manitoba should lead the Manitoba electric vehicle market transformation



# International Institute of Sustainable Development (IISD)

No specific engagement during July / early-August 2019

## Prior Feedback Received

- ▶ Efficiency Manitoba has a role with respect to Carbon Savings Account
- ▶ Efficiency Manitoba could look to broaden climate change initiatives by diversifying funding (targeting other fossil fuels besides natural gas)

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# Keystone Agricultural Producers (KAP)

July 25, 2019 Meeting with several primary producers and included participation from University of Manitoba and Prairie Agricultural Machinery Institute (PAMI).

- ▶ Topics discussed:
  - ▶ Introduction to Efficiency Manitoba
  - ▶ Engagement Model
  - ▶ Near-Term Activities
  - ▶ Energy Efficiency Portfolio v1.0
  - ▶ Supporting Agricultural Projects

## Feedback Received

- ▶ Continued dialogue is needed to coordinate and collaborate on areas of shared interest including bioenergy, grain drying operations, heating, insulation and solar photovoltaics



# Manitoba Industrial Power Users' Group (MIPUG)

## Email exchanges in July 2019

### Feedback Received

- ▶ MIPUG members are focused on rate impacts
- ▶ Energy efficiency project implementation may be disruptive to 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 be captured
- ▶ Must be able to capture per unit energy savings (reduction in energy intensity versus absolute drop in energy consumption)
- ▶ Time and locational marginal values may present additional opportunities to both MIPUG members and Manitoba Hydro to reduce operating costs



# Manitoba Keewatinowi Okimakanak Inc. (MKO)

No specific engagement during July / early-August 2019

## Prior Feedback Received

- ▶ Efficiency Manitoba should have programming for diesel communities
- ▶ Efficiency Manitoba should play a role in long term provincial energy strategy
- ▶ Efficiency Manitoba needs to invest in meaningful engagement with First Nations, consider social impact and financial accessibility of any program
- ▶ Concern that due to lower percentage of overall savings, First Nation contribution may be lost in future assessments



# Manitoba Metis Federation (MMF)

Email exchanges starting mid-July 2019 to obtain MMF feedback and input regarding program design

## Feedback Received

- ▶ Email exchanges ongoing

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## Prior Feedback Received

- ▶ Request position from Efficiency Manitoba on Section 35 – Duty to Consult



# Southern Chiefs Organization (SCO)

Email exchanges in July 2019 regarding meeting with Grand Chief of SCO on August 19, 2019

## Feedback Received

- ▶ Still to be determined

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# II ACTION ITEMS



# HOW WILL THE PLAN CONTRIBUTE TO THE MANITOBA CARBON SAVINGS ACCOUNT?

- ▶ Discussion led by Colleen Sklar, Chair, Expert Advisory Council for the Made-in-Manitoba Climate and Green Plan.

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## HOW FUEL SWITCHING BE HANDLED?

Ground Source Heat Pump Example:

- ▶ Ground source heat pumps incentives will be available to Manitoba customers with existing electric or natural gas heating systems
- ▶ For natural gas heated customers this represents a switch in heating fuels (from natural gas to electric):
  - ▶ Natural gas energy savings: Reduction in natural gas savings counted towards achievement of targets
  - ▶ Electric energy: Increase in electric energy resulting from this conversion is accounted for (negative savings)
  - ▶ Cost Allocation: Due to the low percentage of overall program costs, all administration costs are covered by the (dominant) electric program. Incentive component is captured as a natural gas program cost.

## HOW WILL PROGRAMS BE ADMINISTERED EFFICIENTLY?

- ▶ Decision Making
- ▶ Streamlined organizational structure (fewer layers)
- ▶ CRM / DSM Tracking System
- ▶ Online applications
- ▶ Less paper waste / internal administration – repetitive database entry
- ▶ Delivery Agent / Contractor / Customer Portals
- ▶ Use of performance contracts for delivery agents
- ▶ PUB review of future 3-year plans will review actual performance



## WHAT IS EFFICIENCY MANITOBA'S POSITION REGARDING SECTION 35 - DUTY TO CONSULT?

- ▶ Efficiency Manitoba has reached out to Manitoba Crown Services to determine if this question has previously been received and / or addressed with communities
- ▶ Manitoba Crown Services has not yet identified an obligation to undertake Section 35 consultations with respect to Efficiency Manitoba Act, regulations or approval of the Plan
- ▶ Manitoba Crown Services is reviewing with Constitutional Law Branch



III. 3-YEAR PLAN UPDATE

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—

***ELECTRIC PORTFOLIO***  
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VERSIONS SUPERSEDE DATA ANALYSIS  
***SUMMARY V1.2***  
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# ELECTRIC PORTFOLIO SAVINGS SUMMARY

## Incremental Energy Savings and % of Load

	Year 1	Year 2	Year 3	
	2020/21	2021/22	2022/23	Average
Program Impacts (at generation)	284	303	301	296
Codes, Standards & Regulations (at generation)	88	103	108	100
<b>TOTAL GW.h (at generation)</b>	<b>372</b>	<b>406</b>	<b>409</b>	<b>396</b>
<b>% of Load</b>	<b>1.43%</b>	<b>1.56%</b>	<b>1.58%</b>	<b>1.52%</b>





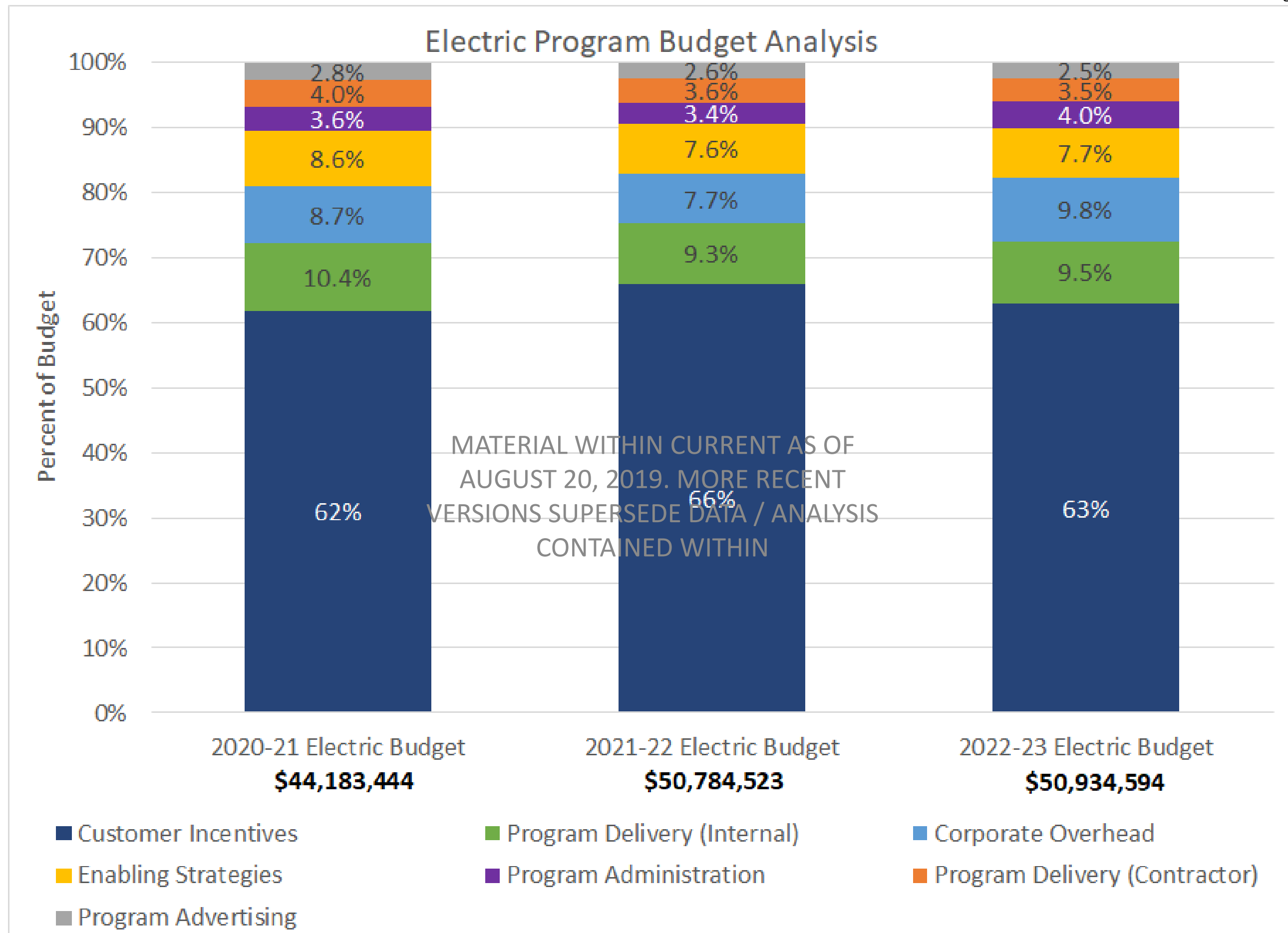
# ELECTRIC BUDGET AND COST-EFFECTIVENESS

Electric Budget	Year 1	Year 2	Year 3
	2020/21	2021/22	2022/23
<b>TOTAL EM COSTS</b>	<b>\$ 44,183,444</b>	<b>\$ 50,784,523</b>	<b>\$ 50,934,594</b>

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Overall Electric Portfolio Metrics			
PACT Ratio	PACT NPV	Levelized Cost (\$/kW.h)	Manitoba Hydro Marginal Value (\$/kW.h)
3.2	\$ 337,698,839	2.3	6.4





# *NATURAL GAS PORTFOLIO*

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# *SUMMARY V1.2*

# NATURAL GAS PORTFOLIO SAVINGS SUMMARY

Incremental Natural Gas Savings and % of Volume				
	Year 1	Year 2	Year 3	
	2020/21	2021/22	2022/23	Average
Program Impacts (After Interactive Effects)	8.0	8.3	8.4	8
MATERIAL WITHIN CURRENT AS OF Codes, Standards & Regulations AUGUST 20, 2019. MORE RECENT VERSIONS SUPERSEDE DATA / ANALYSIS CONTAINED WITHIN	3.5	4.1	4.4	4
<b>TOTAL million m<sup>3</sup> (After Interactive Effects)</b>	<b>11.5</b>	<b>12.4</b>	<b>12.8</b>	<b>12.2</b>
<b>TOTAL million m<sup>3</sup> (Prior to Interactive Effects)</b>	<b>13.8</b>	<b>14.5</b>	<b>14.8</b>	<b>14.4</b>
<b>% of Load (After Interactive Effects)</b>	<b>0.69%</b>	<b>0.75%</b>	<b>0.78%</b>	<b>0.74%</b>
<b>% of Load (Prior to Interactive Effects)</b>	<b>0.83%</b>	<b>0.88%</b>	<b>0.90%</b>	<b>0.87%</b>



# NATURAL GAS BUDGET AND COST-EFFECTIVENESS

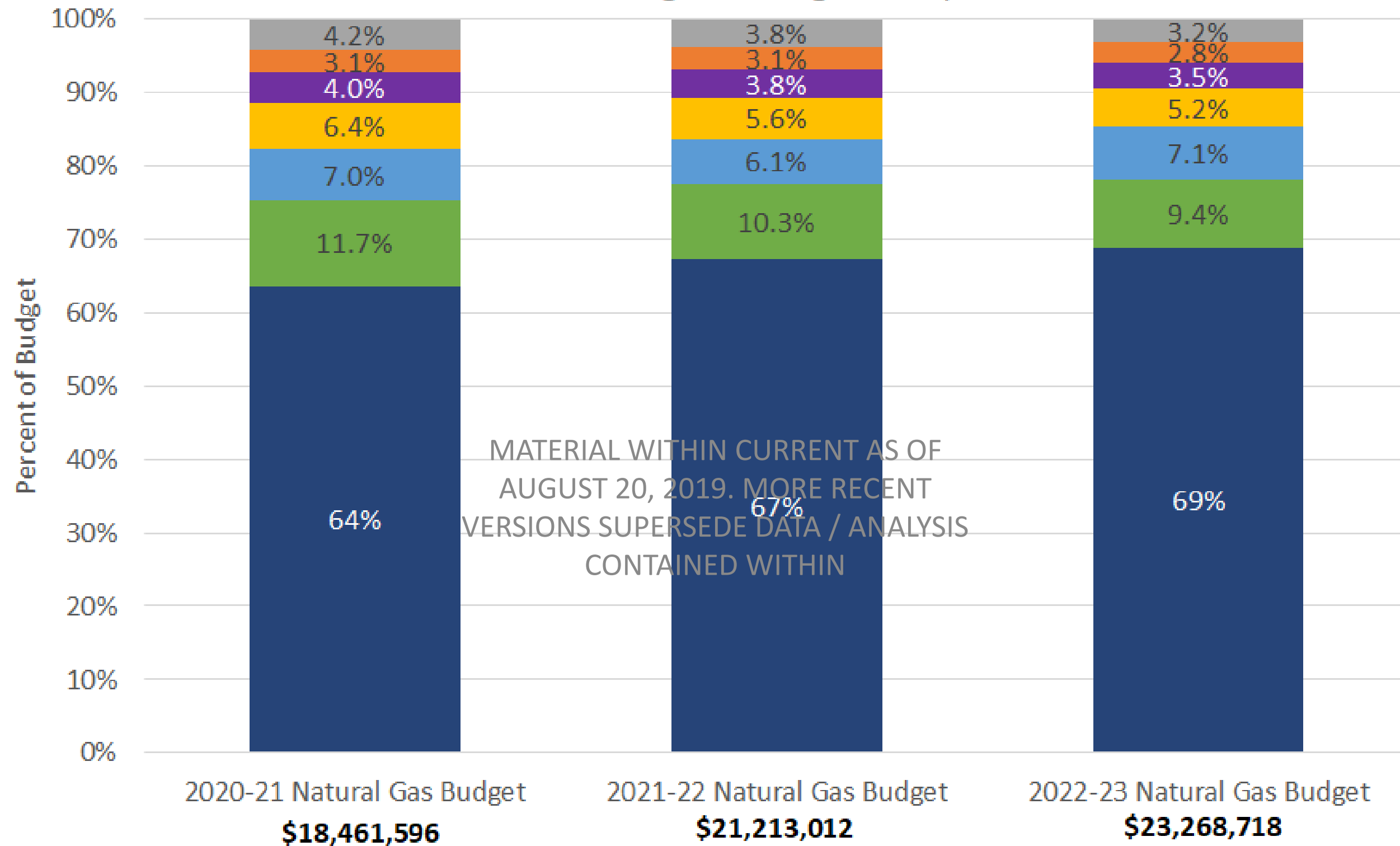
Natural Gas Budget	Year 1	Year 2	Year 3
	2020/21	2021/22	2022/23
<b>TOTAL EM COSTS</b>	<b>\$ 18,461,596</b>	<b>\$ 21,213,012</b>	<b>\$ 23,268,718</b>

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Overall Natural Gas Portfolio Metrics			
PACT Ratio	PACT NPV	Levelized Cost (¢/m <sup>3</sup> )	Manitoba Hydro Marginal Values (¢/m <sup>3</sup> )
1.0	\$ (1,342,766)	18.9	20.0

...

### Natural Gas Program Budget Analysis



- Customer Incentives
- Program Delivery (Internal)
- Corporate Overhead
- Enabling Strategies
- Program Administration
- Program Delivery (Contractor)
- Program Advertising

***OVERALL PORTFOLIO***  
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# OVERALL PROGRAMS BUDGET

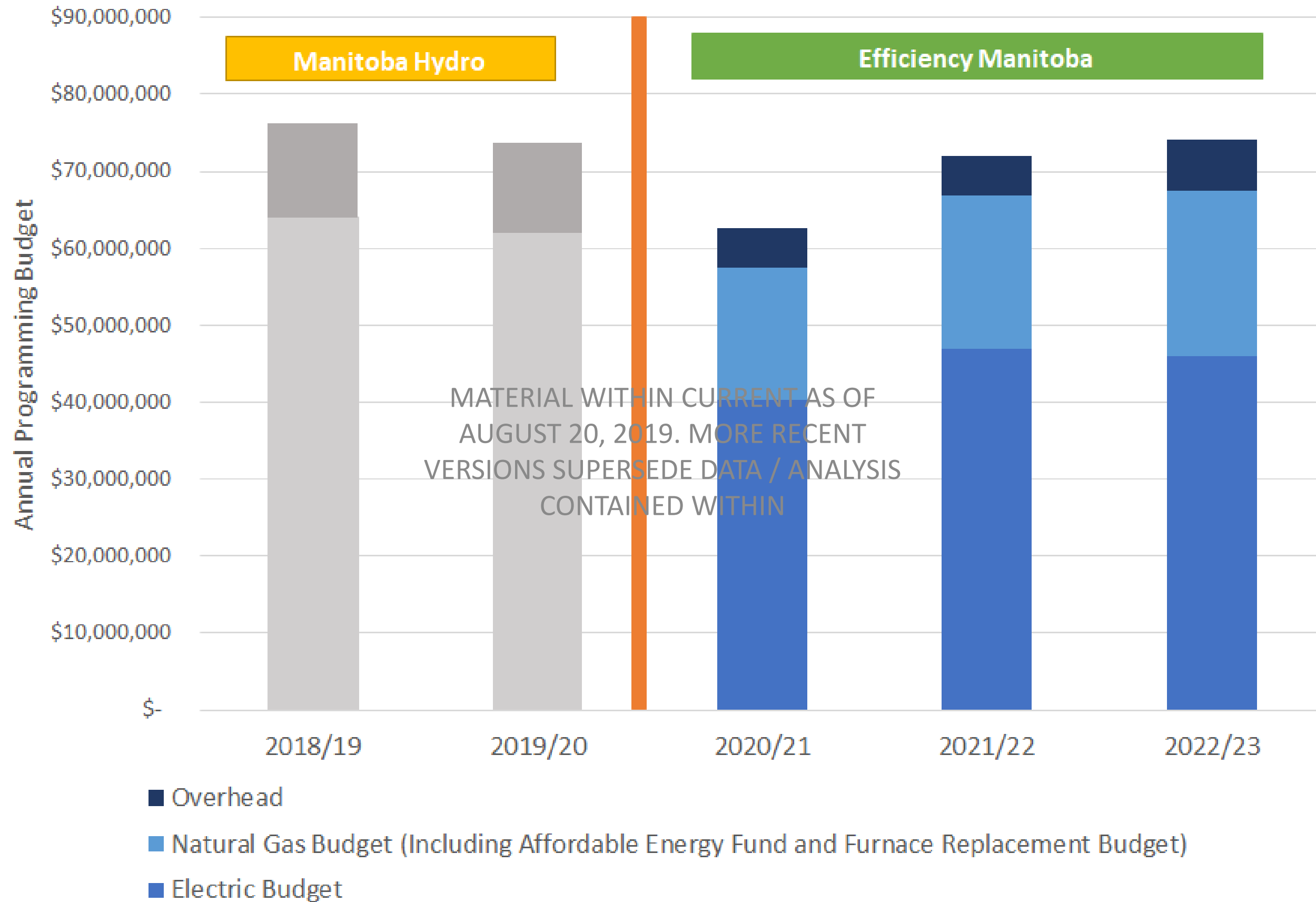
Overall Programs Budget			
	Year 1	Year 2	Year 3
	2020/21	2021/22	2022/23
	MATERIAL WITHIN CURRENT AS OF		
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	CONTAINED WITHIN		
<b>TOTAL EM COSTS</b>	<b>\$ 62,645,040</b>	<b>\$ 71,997,535</b>	<b>\$ 74,203,311</b>

- ▶ Includes Efficiency Manitoba Operations & Overhead

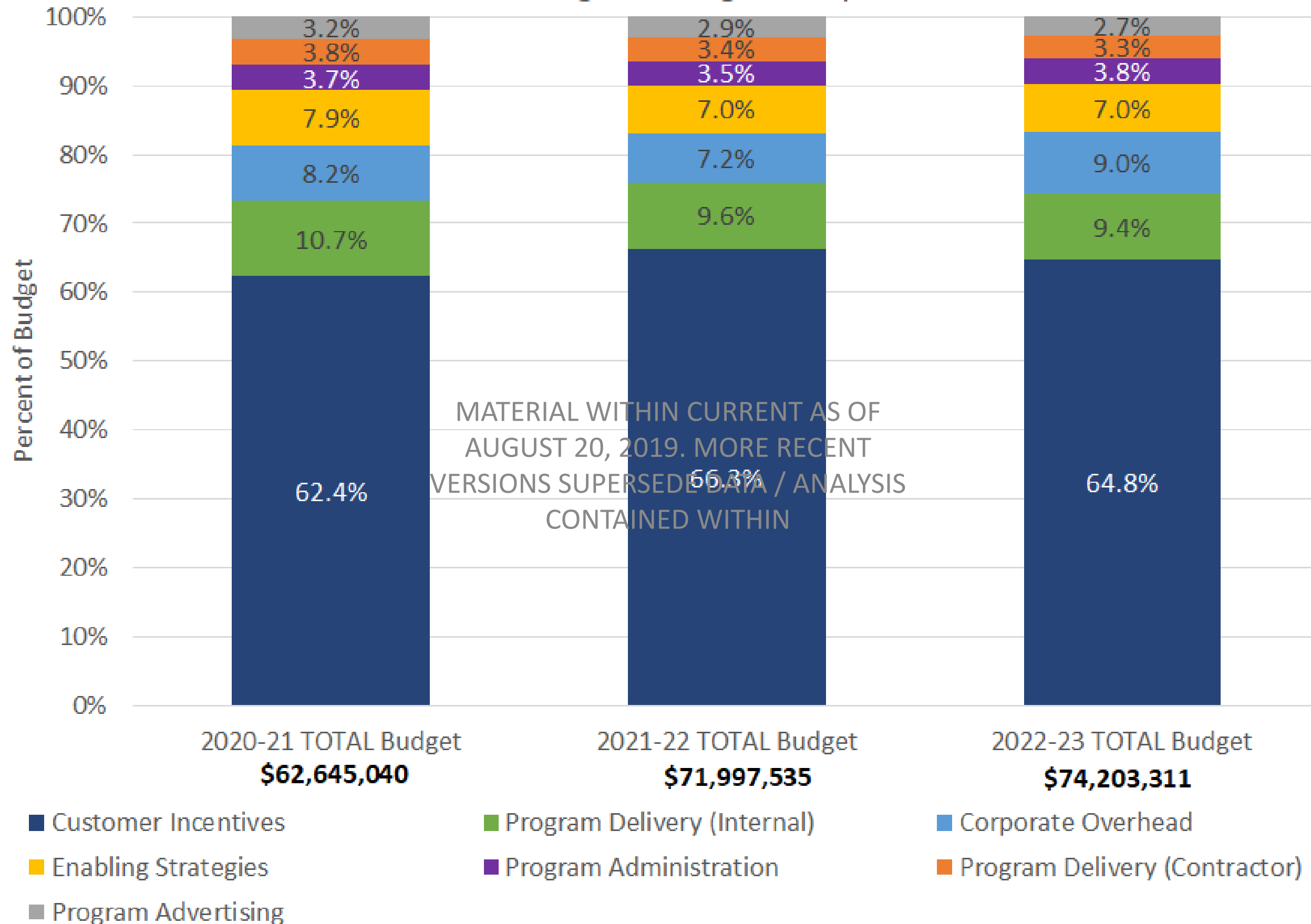





### Electric and Natural Gas DSM Program Budget Comparison




### TOTAL Program Budget Analysis





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# ENERGY EFFICIENCY ADVISORY GROUP MEETING

*Action Items, PUB Hearing Process  
and EEAG Next Steps*

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SEPTEMBER 5, 2019

# OUTLINE

## I. Action Items

## II. PUB Hearing Process

## III. Working Together Moving Forward

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# I ACTION ITEMS

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## RELATED DELIVERY PATHS ACROSS AGENCIES

### Efficiency Manitoba

- ▶ Responsible for design and delivery of all residential, income qualified, indigenous, commercial, industrial and agricultural incentive / rebate programs for energy efficient technologies included within 2020/23 Efficiency Plan
- ▶ Program Bundles such as Product Rebates, Direct Install and Manitoba Rate to Reduce delivered / administrated via third-party contractors
- ▶ Provides technical and program expertise, community and educational initiatives to support programming.
- ▶ First stop for energy efficiency in Manitoba





# RELATED DELIVERY PATHS ACROSS AGENCIES

## Manitoba Hydro

- ▶ Provides on-bill financing (details, promotion and administration coordination with Efficiency Manitoba still in process)
- ▶ Provides customer service with respect to billing, payment and existing energy consumption questions
- ▶ Provides customer service with respect to service expansion



# RELATED DELIVERY PATHS ACROSS AGENCIES

## Provincial Government

- ▶ Made in Manitoba Climate and Green Plan
- ▶ Administration, programming and tracking related to the Carbon Savings Account
- ▶ Green Energy Equipment Tax Credit for Geothermal Heat Pumps

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# RELATED DELIVERY PATHS ACROSS AGENCIES

## Federal Government

- ▶ Programs, Grants, Funding offered through:

### Natural Resources Canada

- ▶ Energy Efficiency
- ▶ Green Infrastructure Programs

### Environment and Natural Resources

- ▶ The Low Carbon Economy Fund
- ▶ Green Infrastructure Fund
- ▶ Clean Technology Programs

### Transport Canada

- ▶ Zero-emission vehicles



# AFFORDABLE ENERGY – FUEL CONSIDERATIONS

- ▶ The Affordable Energy Fund was established based on the Winter Heating Cost Control Act

Use of the Affordable Energy Fund going forward:

- ▶ *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*
- ▶ Includes propane and fuel oil used for home heating fuels

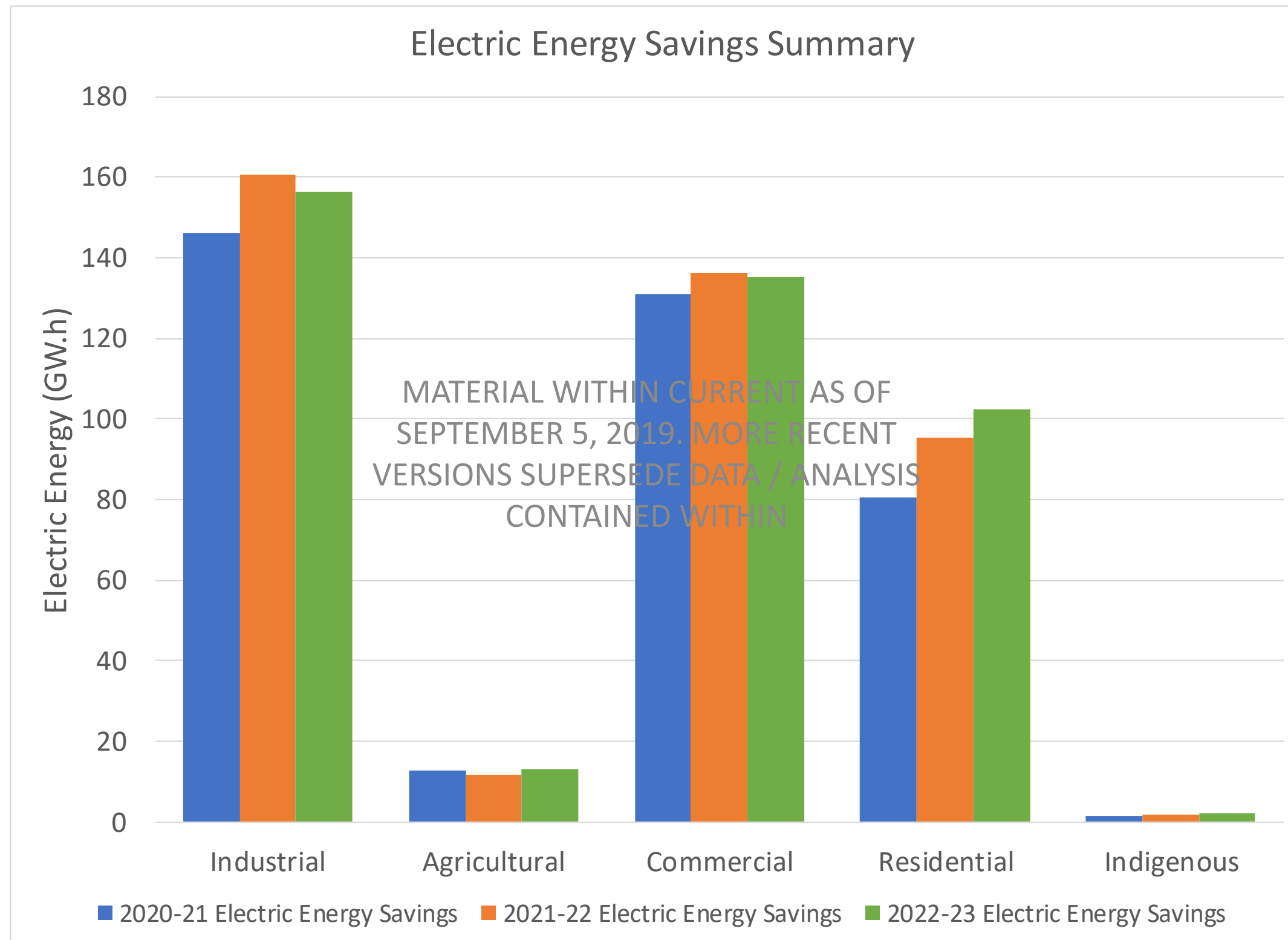


# AFFORDABLE ENERGY – FUEL CONSIDERATIONS

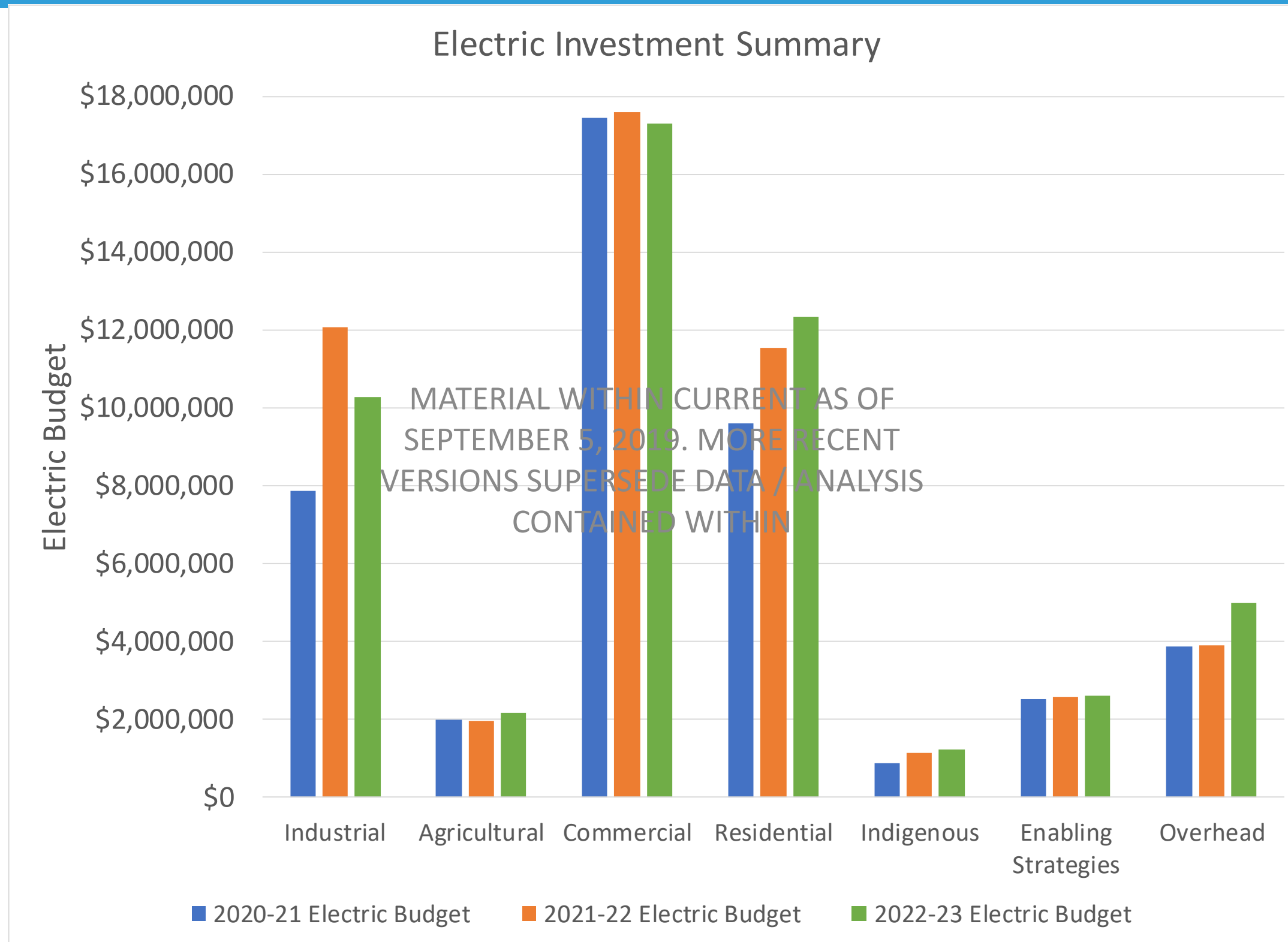
## Use of the Affordable Energy Fund going forward (continued)

- ▶ Efficiency Manitoba costs will be tracked and allocated to the Affordable Energy Fund for the following energy efficiency activities directed to propane and fuel oil heated residences:
  - ▶ Conversions to electric
  - ▶ Insulation incentives
- ▶ These costs are included in the overall natural gas portfolio budget and resulting fossil fuel savings will count towards natural gas savings targets...

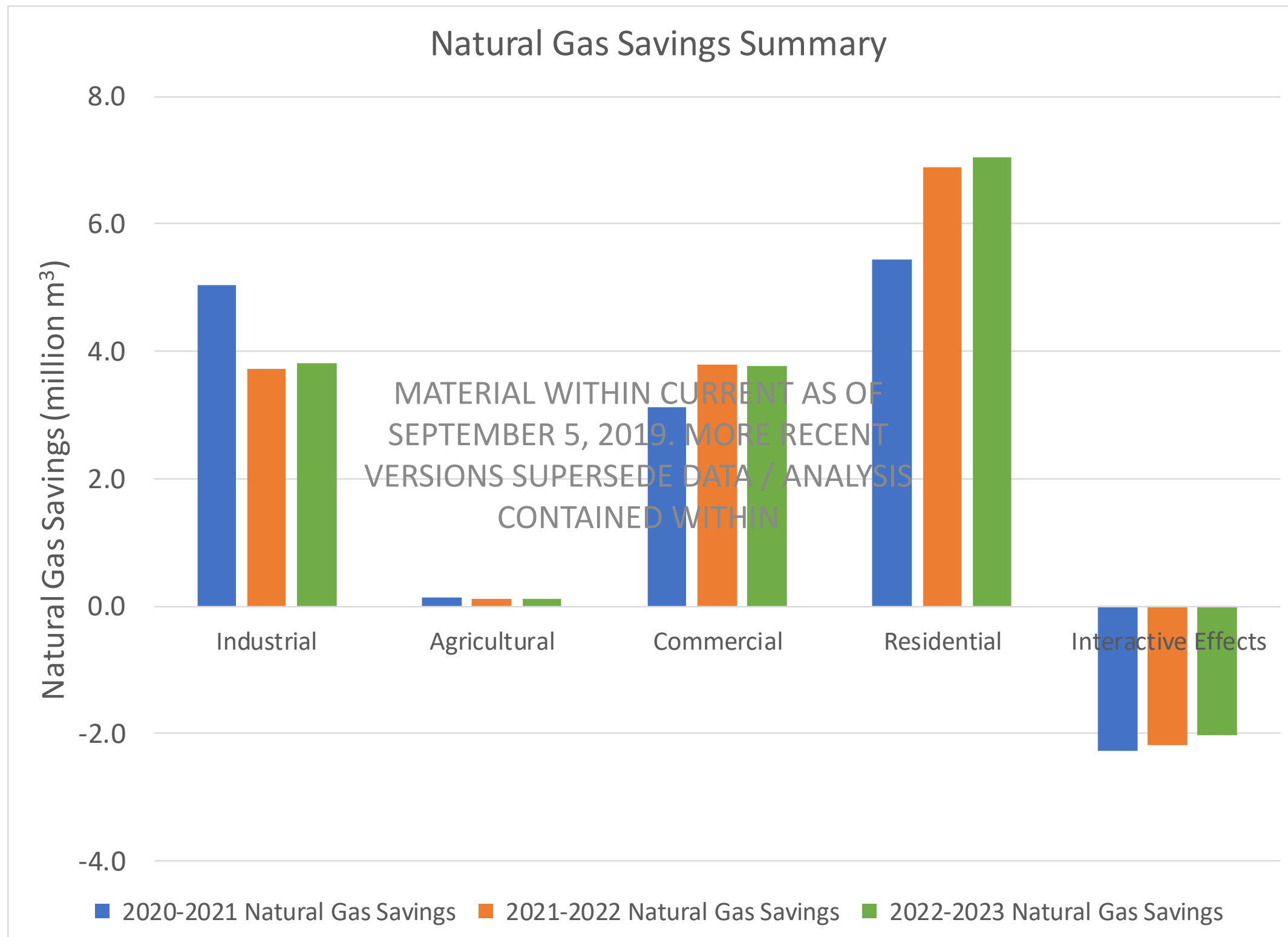
# 2020/23 EFFICIENCY PLAN: SAVINGS BY CUSTOMER SEGMENT



# 2020/23 EFFICIENCY PLAN: INVESTMENT BY CUSTOMER SEGMENT

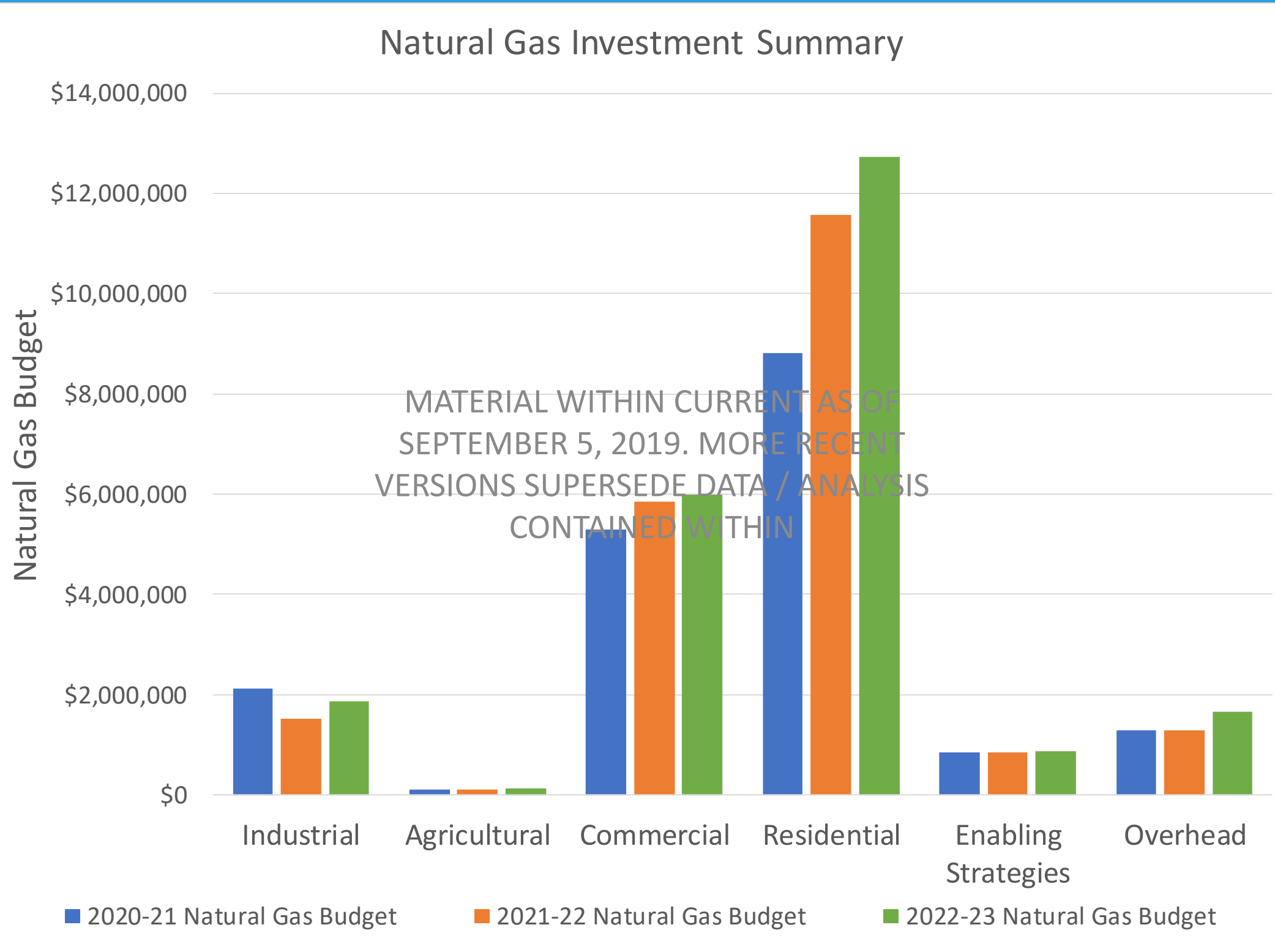


# 2020/23 EFFICIENCY PLAN: SAVINGS BY CUSTOMER SEGMENT





# 2020/23 EFFICIENCY PLAN: INVESTMENT BY CUSTOMER SEGMENT



## II. PUB Hearing Process

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## PUBLIC UTILITIES BOARD

- ▶ The PUB is “an independent, quasi-judicial administrative tribunal that has broad oversight and supervisory power over the public utilities and designated monopolies”.
- ▶ Rules of Practice & Procedure outlines the conventional regulatory process.
- ▶ Generally patterned after the legal process – with pre-hearing discovery and evidence, witnesses under oath for their testimony, decision that involve the objective consideration of facts/evidence



## ROLE – THE EFFICIENCY MANITOBA ACT

### Review and Recommendation by PUB

- ▶ 11 (1) The PUB must review an efficiency plan and make a report, with recommendations, to the minister as to whether the plan should be:
  - ▶ Approved;
  - ▶ Approved with suggested amendments; or
  - ▶ Rejected



## ROLE – THE EFFICIENCY MANITOBA ACT (Continued)

- ▶ 11 (4) In reviewing an efficiency plan... the PUB must consider:
  - ▶ The net savings required to meet the savings targets and the plans to address any existing shortfall;
  - ▶ The benefits and cost-effectiveness of the initiatives proposed in the plan;
  - ▶ Whether Efficiency Manitoba is reasonably achieving the aim of providing initiatives that are accessible to all Manitobans; and
  - ▶ Any additional factors prescribed by the regulations



## ROLE – THE EFFICIENCY MANITOBA ACT (Continued)

- ▶ In Regulation 119/2019, twelve additional factors that the PUB must consider are outlined

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# OPPORTUNITIES FOR PARTICIPATION

## Presenter

- ▶ Organizations or members of the public who wish to express their views regarding an application
- ▶ Can be written or oral

## Intervenor

- ▶ Need to register interest with the PUB
- ▶ Participate in the full hearing process typically assisted by legal counsel
- ▶ Can have costs awarded (ie. Funded for experts and legal counsel)

...

## PUB HEARING - NEXT STEPS

- ▶ Public Notice
- ▶ Intervenor Registration
- ▶ Pre-Hearing Conference
- ▶ OCTOBER 1 - EM Files Submission
- ▶ Procedural Order Issued
- ▶ Information Requests/Responses
- ▶ Intervenor Evidence Filed
- ▶ Information Requests/Responses
- ▶ EM Rebuttal Evidence
- ▶ Public Hearing





# III. FEAG Next Steps

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# EVALUATION FRAMEWORK AND PLAN

Efficiency Manitoba has contracted with Econoler to prepare an Evaluation Framework and Plan

- ▶ This document outlines the objectives, definitions and options to assess DSM program performance
- ▶ This document will provide a schedule and initial budget for completing assessment activities on the entire electric and natural gas portfolio over the course of the next 3 years
- ▶ This document will serve as a foundation for the development of an RFP for an evaluator to carry out the assessment



## 2019/20 EEAG Related Milestones

### 2019/20 Efficiency Manitoba Activities:

- ▶ Procurement of EEAG facilitation services going forward
- ▶ Following PUB Hearing, re-engage the EEAG
- ▶ Review outcome and recommendations from PUB hearing
- ▶ Communicate these with the EEAG
- ▶ Draft request for proposals to secure an evaluation provider
- ▶ Continue to flexibly engage members!




## 2019/20 EEAG Related Milestones

### 2019/20 EEAG Activities:

- ▶ Members may choose to participate in the PUB process
- ▶ Review and discuss outcome and recommendations from PUB hearing with Efficiency Manitoba
- ▶ Review and discuss draft request for proposals for an evaluation provider
- ▶ Provide advice related to specific customer segment activities and scope of assessment
- ▶ Continue to reach out to Efficiency Manitoba!





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REPORT OF THE  
**Expert Advisory  
Council *to the*  
Minister of  
Sustainable  
Development**

A Carbon Savings Account  
for Manitoba  
JUNE 2019

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# List of Abbreviations

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4R	Right Source @ Right Rate, Right Time, Right Place®
Act	The Climate and Green Plan Implementation Act
BAU	Business-as-usual
BMP	Beneficial management practices
CER	Cumulative emissions reduction
CGPIO	Climate and Green Plan Implementation Office
CO <sub>2</sub> e	Carbon dioxide equivalent
CSA	Carbon savings account
DSM	Demand-side management
EAC	Expert Advisory Council
ECCC	Environment and Climate Change Canada
EITE	Emissions-intensive trade-exposed
EPR	Extended Producer Responsibility
EV	Electric vehicle
GDP	Gross domestic product
GHG	Greenhouse gas
GOM	Government of Manitoba
GRE	Government of Manitoba Reporting Entities
HDV	Heavy-duty vehicle
HVAC	Heating, ventilation and air conditioning
IISD	International Institute for Sustainable Development
IPCC	Intergovernmental Panel on Climate Change
Kt	Kilotonnes
LDV	Light-duty vehicle
LULUCF	Land Use, land use change, and forestry
Mt	Megatonnes
MUSH	Municipalities, Universities, Schools, and Hospitals
NECB	National Energy Code for Buildings
NIR	National Inventory Report
SBVCTC	Small Business Venture Capital Tax Credit
SWG	Sector working groups
t	Tonnes
ZEV	Zero emission vehicle

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# Letter to the Minister of Sustainable Development

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Dear Minister,

Please find the first advisory report of the Expert Advisory Council (EAC) established under Section 7 of *The Climate and Green Plan Implementation Act* (the Act).

This report contains our recommendations and advice to you on establishing Manitoba's first carbon savings account (CSA), pursuant to Section 3 of the Act, setting out a Made-in-Manitoba GHG reduction goal with a series of measures that will result in tangible, measurable carbon emissions reductions for the province's first five-year carbon savings account period of 2018-2022.

Given what we have heard from Sector Working Groups and government advisers and from our knowledge of the subject matter, we believe that these actions are realistic and ready and will start the journey toward our end goal of being the cleanest, greenest and most climate resilient province in Canada.

Our independent advice has been arrived at after detailed consideration of how best to create a CSA for Manitoba that results in effective short and longer-term greenhouse gas emissions reductions. Our recommendations have been informed by data, analysis, and modelling work provided by both the federal and Manitoba governments, national and international experts in the field of carbon emissions, plus extensive stakeholder engagement with over 100 Manitoba participants representing a large cross-section of provincial industrial, business, environmental, community, and civil society organizations.

It is based, first and foremost, on a series of principles we set out in this report.

Our goal has been to establish a durable, workable approach to carbon emissions reductions that 'bends the carbon curve' once and for all, ensuring Manitoba emissions decline over time. We have sought to change the debate from 'something should be done' to 'this can be done' by providing a clear, action-oriented pathway to reduce emissions in a reasonable, realistic way while accounting for economic growth.

To do so, a strong foundational mechanism to set a clear emissions reduction goal, include specific actions that reduce emissions, and measure and adjust our progress as we go along is essential. That is what this report recommends.

Our recommended CSA is feasible. It will work. It sets out a made-in-Manitoba GHG emissions reduction goal with a series of recommended emissions reduction measures that will result in tangible, measurable carbon emissions reductions for the first five-year carbon savings account period of 2018-2022.

This advice is just the first step in establishing Manitoba's first CSA. More work lies ahead. The carbon savings account must be dynamic and flexible to incorporate updated emission forecasts and innovative actions as we go along. We need to learn, adjust, and improve. Standing still is not an option.

The EAC strongly believes Manitoba must play its part to help Canada – and the world – achieve GHG emissions reductions to help tackle climate change. Manitoba's emissions may be small compared to most, but our contribution to reduce them can be large. Establishing Canada's first-ever carbon savings account is a true leadership step.

We recommend the government adopt the proposed carbon savings account and associated actions, and consider the accompanying advice, as set out in this advisory report to you and all Manitobans.

Sincerely,



Colleen Sklar, *Chair*



Dennis Anderson



Ian Gillies



Karla Guyn



Jim Irwin



Andrew MacSkimming



Dimple Roy



Laurie Streich

# Executive Summary

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On June 12, 2018 the Manitoba government named its Expert Advisory Council, established to provide advice and recommendations to government on implementing the Made-in-Manitoba Climate and Green Plan.

This report sets out the Expert Advisory Council's considerations, advice and recommendations on establishing Manitoba's – and Canada's – first carbon savings account. It contains not just what the Council recommends for a GHG emissions reduction goal for Manitoba for the 2018 to 2022 period, but the specific actions and timetables to put this into effect.

In providing our advice and recommendations, the Council has been mindful of each of the parameters required in Section 3 of *The Climate and Green Plan Implementation Act*. We considered each of them through original modelling of various emissions reduction measures and scenarios, detailed sector analysis and stakeholder input, and the review of both past and future emissions trends and forecasts

Our aim has been to advise the Minister of Sustainable Development on GHG emissions reduction goals and actions that fundamentally 'bend the carbon curve' once and for all and deliver both cumulative and absolute emission reductions over time in Manitoba. We sought to do so in a manner that accounts for the investments made to date to reduce emissions, the nature of the provincial economy and the need for ongoing economic growth.

## Carbon Savings Account

The carbon savings account (or CSA) is a unique way to drive ongoing emissions reductions for Manitoba. Simply put, it is the sum of all emission reductions over a five-year period on a cumulative basis. This is tracked against a set cumulative emissions reductions goal for those five years. The emissions reductions are the 'carbon savings'; the tracking against that goal is the 'account'.

Cumulative emissions reductions is the best method to measure carbon emissions reductions in Manitoba, given the province's clean electricity grid and the nature of the province's emissions profile.

Each CSA period will be assigned a cumulative emissions reduction goal for the whole five-year timeframe. That goal will result from a set of specific emissions reduction actions to occur within the five-year CSA. Those actions will continue into subsequent CSA periods and will be built upon with additional emissions reduction measures.

The EAC considers the overall objective of each carbon savings account is to build on the prior account period and produce sustained emissions reductions to:

- Reduce the total amount of carbon emissions that would otherwise be generated in Manitoba without emissions reduction measures from a business-as-usual forecast;
- Reduce the absolute level of carbon emissions in Manitoba measured from the start and end points of each CSA; and
- 'Bend the curve' of provincial carbon emissions over time in Manitoba so sustained emissions reductions occur by ensuring fewer emissions are occurring over each five-year CSA period, compared to business-as-usual.

## Recommended Principles

As this is the first time in Manitoba and Canada a carbon savings account concept has been used, the EAC decided to establish a set of principles to guide it in advising and recommending a CSA and specific actions that should be included in it.

- **Effectiveness** – the goal and measures are both effective and cost-effective in reducing emissions.
- **Achievable** – the goal and measures are achievable.
- **Transparent** – the goal, measures, and analysis behind each is transparently set out.
- **Evidence-Based** – the goal and measures are based on solid evidence and analysis.
- **Fair Distribution and Contribution** – the goal and measures imply a fair and reasonable distribution and contribution of effort by emitting sectors and on Manitobans.
- **Dynamic** – the goal and measures can be added to within each CSA period.
- **Sustained Reductions** – the goal and measures lead to sustained emissions reductions.
- **Sustainable Development** – the goal and measures reflect the principles of sustainable development and the importance of both a healthy environment and a strong economy.

These principles were applied by the EAC in each step of its analysis and assessment leading to its recommendation of a carbon savings account for Manitoba. More importantly, the EAC believes these principles are essential for Manitobans to have confidence in the CSA and its application in our province. Reducing emissions is a whole-of-society effort. It takes time. Ensuring buy-in and support by Manitobans for this long-term project is absolutely necessary for its success.

## Recommended Carbon Savings Account for 2018-2022

1. Manitoba should set a GHG reduction goal of no less than 1 Mt of CO<sub>2</sub>e cumulative emissions reductions. This would 'bend the carbon curve' in Manitoba once and for all and put the province on a sustained path for even greater emissions reductions in subsequent CSA periods.
2. The 1 Mt goal should be comprised initially of the set of specific emissions reduction actions set out in Appendix I.
3. Additional actions should be considered for inclusion based on the EAC's recommendations and then added as soon as practical to the CSA to ensure achieving or surpassing the 1 Mt CSA reduction goal, as set out in Appendix I.
4. Any shortfall in achieving the 1 Mt goal must be added to the subsequent CSA period as part of the 'debit' feature of the CSA to ensure there is no relaxation of effort in reducing emissions.

Measuring against a business-as-usual forecast provides the benchmark to set and measure a CSA goal and actions to achieve that goal. The EAC recommends the dynamic year baseline as the most accurate and realistic way against which to measure progress. It fits the concept of a CSA best as it resets for the next five-year CSA period. It provides the best medium and longer-term baseline to determine future CSA goals. It incorporates all relevant measures by all governments and sectors into the actual level of emissions in that dynamic reference year to measure future progress so nothing is missed.

The emission forecast discrepancies render making recommendations related to the baseline for the 2018-2022 CSA challenging. As such, the EAC recommends that Manitoba track and measure reductions against various baselines and provide the results to the EAC annually. This will help provide further advice on the most relevant baseline for the province, and also inform further CSA considerations. No matter what baseline is used, the CSA reduction goal would still apply.

### **Recommended Reinforcing Steps**

1. Manitoba should adopt the National Energy Code of Canada for Buildings 2017 (NECB 2017) as a mandatory provincial regulation and align the provincial building code accordingly. Future building code improvements should be instituted on a regular, automatic basis and mandated into law after a certain date.
2. A 4R nutrient stewardship program should be designed for active implementation in the agriculture sector to improve farm management practices and reduce emissions.
3. Manitoba should take steps requiring developers to incorporate electric vehicle (EV) charging stations into all new residential and commercial development projects above a minimal size (and as part of major renovations).
4. Manitoba should explore the feasibility of adopting mandatory rules requiring a certain percentage of new motor vehicles sold in the province to be zero emission vehicles (ZEVs).
5. Building from the sector working groups' efforts, a working group should be established to develop policies and approaches to identify viable carbon sequestration opportunities in Manitoba and how they align with similar emerging opportunities in other provinces and regions.
6. In conjunction with the biofuel provisions included within the CSA, Manitoba should work toward the adoption of biofuel mandates for the various transportation subsectors at the highest percentages technically feasible for implementation in the next CSA period. This would help to establish new markets for agricultural products currently facing barriers to market access. Manitoba should then encourage other provinces and jurisdictions to adopt those higher mandates and purchase feedstock for biofuels from Manitoba thereby helping our economy grow.
7. To further integrate the Jobs Pillar of the Manitoba Climate and Green Plan with the government's Economic Development Strategy, a new low-carbon economy sector working group should be established to advise government and the EAC on policies and actions to foster low-carbon growth, investment, and job opportunities building on the province's clean energy brand.
8. As an example of this, the Small Business Venture Capital Tax Credit (SBVCTC) program should be opened up to junior mining companies that are exploring for and developing clean energy minerals in Manitoba such as lithium, cobalt and graphite.
9. Efficiency Manitoba has a key role in offering energy efficiency solutions to Manitoba businesses and consumers to reduce emissions. Ensuring this tool is used to its maximum potential in support of achieving the carbon emission reductions set out in the CSA is necessary. This will require ongoing coordination and alignment of approaches between the government's CSA and Efficiency Manitoba.
10. Manitoba should actively explore construction of an east-west transmission line for exporting clean energy to Saskatchewan.

## Recommended Implementation Steps

1. The government should take steps to reinforce that achieving the CSA requires a 'whole-of-government' approach with a commitment by departments and agencies to supporting and aligning policy, programs, and initiatives with the CSA goal. This approach should be coordinated by the Climate and Green Plan Implementation Office.
2. Independent modelling of progress towards the CSA goal should be undertaken on an annual basis and be published as part of the government's annual progress report to the legislature under *The Climate and Green Plan Implementation Act*.
3. Federal government ministers and officials should be briefed on Manitoba's CSA to avoid duplication and overlap in effort by governments and secure the most cost-effective emissions reductions available for Manitobans.
4. A full-accounting CSA should be developed to include both carbon removals and clean energy exports in order to show the complete GHG reductions story for Manitoba.

We need to reduce emissions while still growing the economy and moving it to a lower carbon footprint overall. This will neither be quick nor easy.

Tackling climate change requires all Manitobans to make the effort. This challenge will only get more urgent in the years ahead.

# Introduction

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This report sets out the Expert Advisory Council's considerations and recommendations on establishing Manitoba's – and Canada's – first-ever carbon savings account. It contains not just what we recommend for a GHG emissions reduction goal for Manitoba, but the specific actions and timetables to put this into effect.

The report is structured as follows:

**First**, we set out the mandate of the EAC and how we conducted our work.

**Second**, we profile Manitoba's emissions, illustrating the nature of the province's GHG emissions, and clarifying the challenge and context of reducing those emissions in our province.

**Third**, we formulate the features and considerations around the carbon savings account. We explain its concept, how it works, what it contains, and how it would be established.

**Fourth**, we offer our specific recommendations for a 2018-22 carbon savings account including a GHG reduction goal, actions to reduce emissions in this first period, how these should be measured and accounted for, and reinforcing steps to do even more.

# The Mandate of the Expert Advisory Council

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The Expert Advisory Council (EAC) was established under Section 7 of *The Climate and Green Plan Implementation Act*, passed by the Legislature of Manitoba on November 8, 2018.

The EAC is an independent group of experts with a mandate to provide advice and recommendations to the Minister on the Government of Manitoba's Climate and Green Plan. Specifically, under the Act, the Council is to:

- "(a) provide advice and recommendations to the minister on programs, policies and measures to be included in the climate and green plan;*
- (b) review progress on the implementation of the climate and green plan, and provide advice on any required changes to the plan; and*
- (c) provide advice and recommendations to the minister respecting greenhouse gas emissions reduction goals to be established under section 3."*

With this broad mandate, the EAC determined with the Minister, as its initial order of business, to focus on advice and recommendations to establish Manitoba's first carbon savings account and GHG emissions reduction goals. This will be the framework for all carbon reduction efforts within the province and hence, was necessary as our first focus.

While this has taken up much of the EAC's time to date, we have also begun work on establishing advice and recommendations on performance goals and progress indicators for the Climate and Green Plan as a whole. This will be the subject of a subsequent advisory report in 2019. Members of the EAC also participated in a separate waste advisory committee process established by the government.

*The Climate and Green Plan Implementation Act* sets out parameters the EAC must bear in mind as it advises on GHG reduction goals for the province and the carbon savings account. These are:

- "(a) the total amount of greenhouse gas emissions projected to occur in Manitoba in that five-year period if no new greenhouse gas emissions reduction measures are implemented in that period;*
- (b) economic, industrial and demographic projections;*
- (c) the implementation of greenhouse gas emissions reduction measures;*
- (d) the availability and use of new and emerging technologies; and*
- (e) any other considerations that the council considers relevant."*

The Council has been mindful of each of these parameters established by the Legislature. We considered each of them through original modelling of various emissions reduction measures and scenarios, detailed sector analysis and stakeholder input, plus the review of both past and future emissions trends and forecasts. Much of that information and analysis is set out in this report.



To facilitate and inform its work, the EAC received expert information and analysis from a range of sources, including:

- the province’s Climate and Green Plan Implementation Office (CGPIO) and officials from across the Government of Manitoba
- the International Institute for Sustainable Development (IISD)
- six sector working groups established specifically to consider emissions reduction actions
- the most up-to-date emissions data from Environment and Climate Change Canada (ECCC) and Statistics Canada
- independent expert modelling and analysis commissioned by the EAC
- direct briefings from government officials and national and international experts

The EAC’s work plan consisted of meetings of the EAC itself, plus participation in workshops on industrial carbon pricing as well as approaches to developing a carbon savings account with invited experts and stakeholders, nationally and internationally, including representatives from other governments.

In conducting its work, the EAC sought to be systematic and rigorous in its analysis and realistic in its advice and recommendations. We created an evaluation framework setting out specific criteria through which we could assess various emissions reduction measures and determine their overall feasibility and suitability. This framework is set out in Appendix III.

This evaluation framework was utilized by each of the sector working groups, which were established to provide direct input to the EAC on specific actions or measures to reduce emissions.

Those groups were:

**Sector Working Groups and Examples of Measures Considered**

**Transportation**

- renewable content of fuels
- heavy-duty vehicles
- electric vehicles and infrastructure

**Buildings**

- commercial
- residential
- off-grid communities

**Waste**

- organics diversion
- white goods management

**Agriculture**

- energy and technology practices
- soil, crops and livestock management practices

**Carbon Sequestration**

- enhanced conservation
- afforestation and woodlot management

**Low Carbon Government**

See Appendix II for a full list of participating organizations in each sector working group.

In contemplating various measures, the EAC considered range of policy instruments and approaches as part of its analysis. These are set out in Appendix III.

Our aim has been to advise on GHG emissions reduction goals and actions that fundamentally ‘bend the carbon curve’ once and for all and deliver both cumulative and absolute emission reductions over time in Manitoba. We sought to do so in a manner that accounts for the investments made to date to reduce emissions, the nature of the provincial economy and the need for ongoing economic growth.

We stress that these goals will not be accomplished all at once. There are many factors that could intervene and complicate this difficult and complex task. It will require sustained effort over many years by all participants and all Manitobans with regular reassessment of emission forecasts and reduction estimates as well as new actions to be taken.

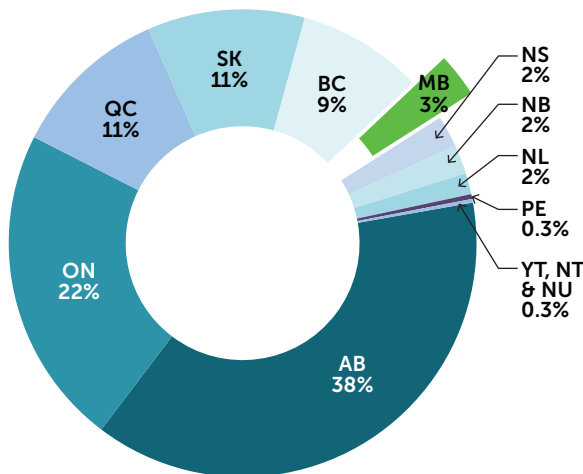
What is required first, though, is a clear path forward to do so. This is what this EAC report sets out.

# Manitoba's Emissions Profile

The starting point for determining future reductions of Manitoba GHG emissions is to understand the sources and trends of GHG emissions growth in the province. From here, we can assess the following: first, where to look for emissions reductions and second, how fast and deeply we can achieve emissions reductions.

This section sets out Manitoba's emissions profile. It is based on the most up-to-date data sources from ECCC and the Manitoba government.

## Manitoba's Emissions as Share of Total Canadian Emissions (2017)



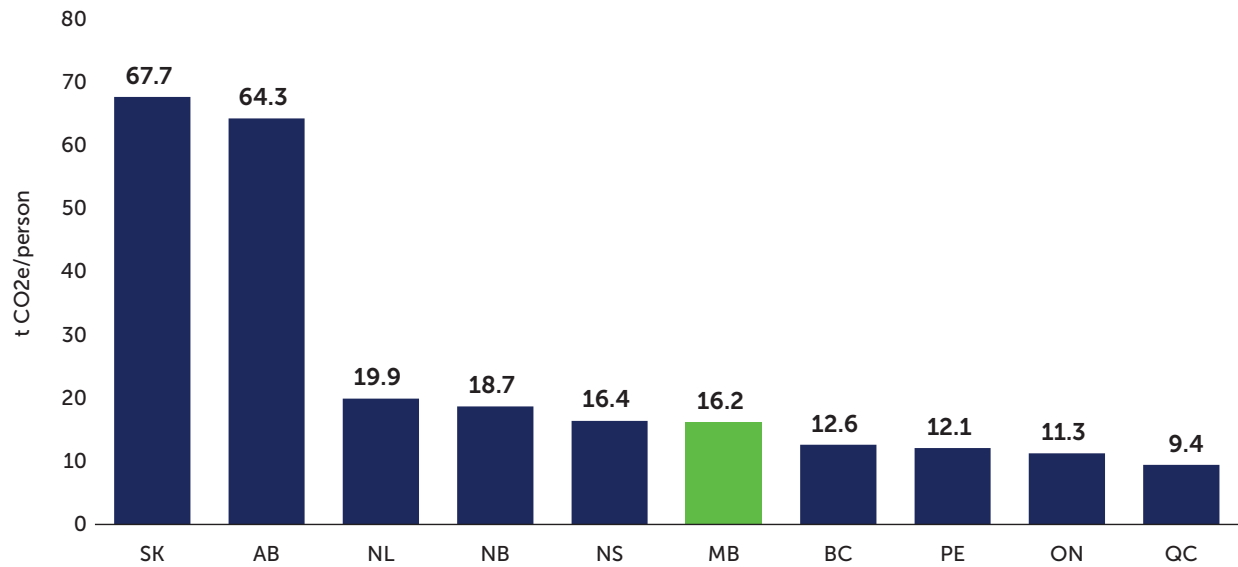
Overall, Manitoba is Canada's sixth-largest GHG emitter. We account for 3% of total Canadian emissions. Alberta is Canada's largest emitter due to its large fossil fuel energy industry and coal-fired electricity generation, followed by Ontario due to its overall population and economic size.

Data Source: 2019 National Inventory Report<sup>1</sup>

<sup>1</sup> 2019 National Inventory Report 1990-2017: Greenhouse Gas Sources and Sinks in Canada, Environment and Climate Change Canada (2019).

On a per-capita, or per-person basis, Manitoba is Canada’s sixth largest emitter, just behind Nova Scotia.

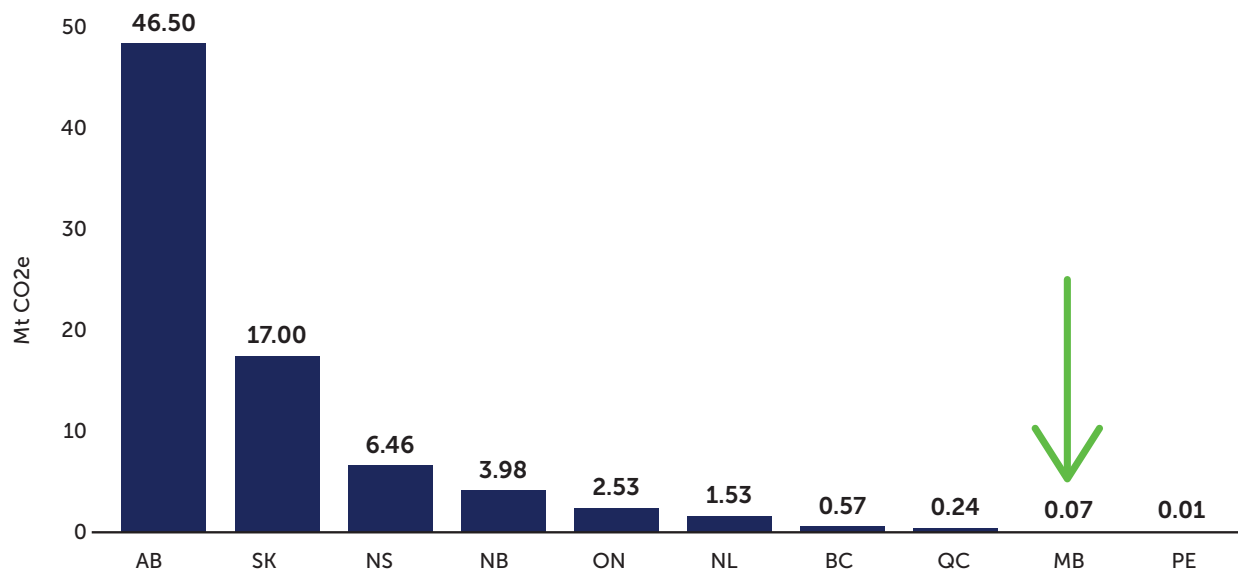
### 2017 GHG Emissions per Capita by Province



Data Source: 2019 National Inventory Report & Statistics Canada Table: 17-10-0005-01

Manitoba’s emissions are low relative to the rest of the country because the province enjoys one of Canada’s most clean electricity grids, producing fewer carbon emissions than any other province. (PEI has very little domestically-generated electricity.)

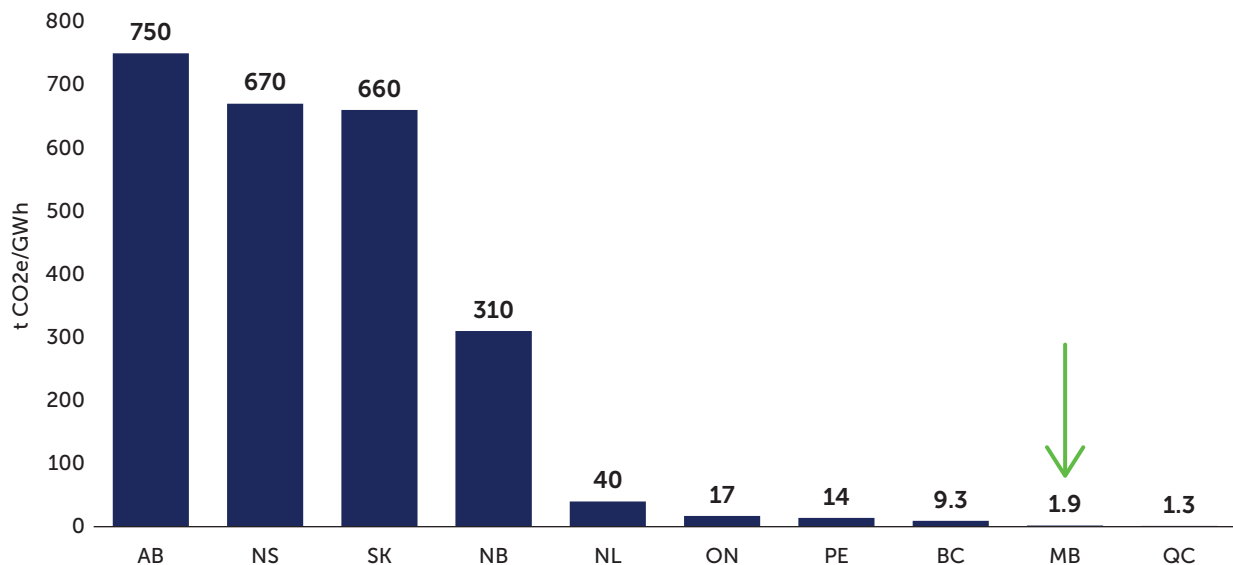
### 2017 GHG Emissions from Electricity Generation by Province



Data Source: 2019 National Inventory Report

Manitoba's past and current investments in hydro-generated electricity gives the province a very low GHG-intensive electricity generation system compared to the rest of Canada.

## 2017 GHG Emissions-Intensity of Electricity Generation by Province

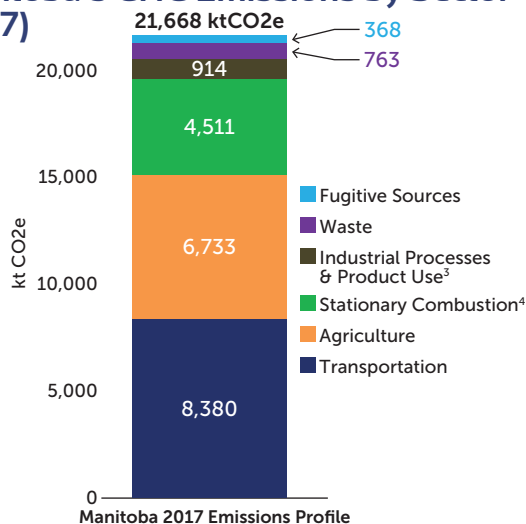


Data Source: 2019 National Inventory Report

### CSA Consideration

Manitoba already generates almost 100% of its electricity needs from renewable hydro and wind sources. Because of this clean electricity generation system, Manitoba cannot look to changing its electricity generation as a means of contributing significant GHG emission reductions to its carbon savings account. It will have to look everywhere else for reductions, unlike most other provinces where such reduction opportunities exist.

## Manitoba's GHG Emissions by Sector<sup>2</sup> (2017)



Data Source: 2019 National Inventory Report

Manitoba's total GHG emissions were 21.7 megatonnes (Mt) in 2017. Of that amount, 91% of all emissions came from three sources: transportation, agriculture, and stationary combustion, in that order. Transportation accounted for 39% of GHGs, agriculture for 31%, and stationary combustion in buildings and houses, for example, for 21%. These are the areas we must concentrate our efforts to reduce emissions in Manitoba.

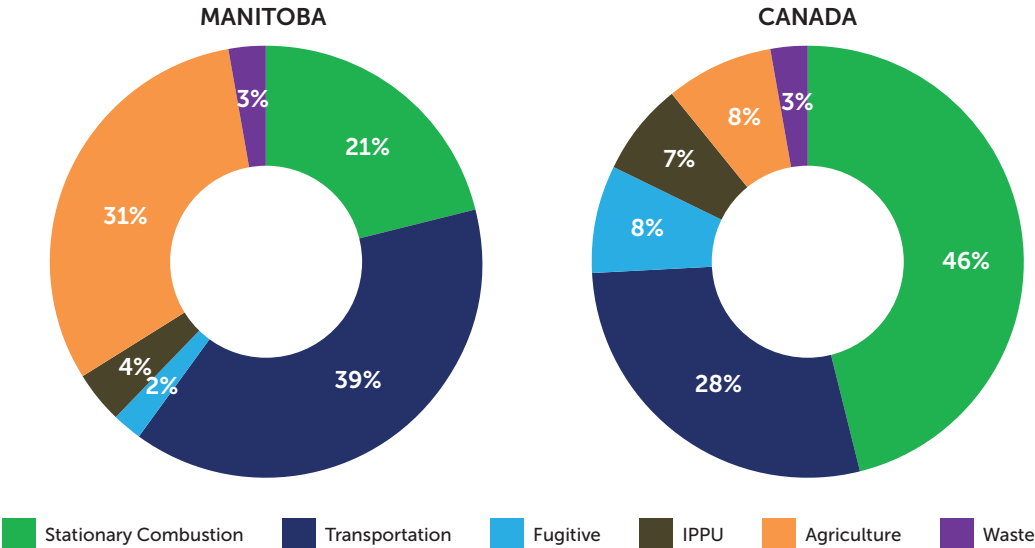
<sup>2</sup> The emissions profile is broken down by IPCC (Intergovernmental Panel on Climate Change) sector.

<sup>3</sup> Industrial processes and product use emissions sources include halocarbons, mineral products, and non-energy products from fuels.

<sup>4</sup> Stationary combustion emissions relate to fuel combustion. Sources include building heating, manufacturing and construction industries, electricity generation, mining, oil and gas extraction, and agriculture and forestry operations.

Compared to Canada as a whole, Manitoba has a larger proportion of transportation and agriculture emissions. This reflects the important contribution of these sectors to the provincial economy.

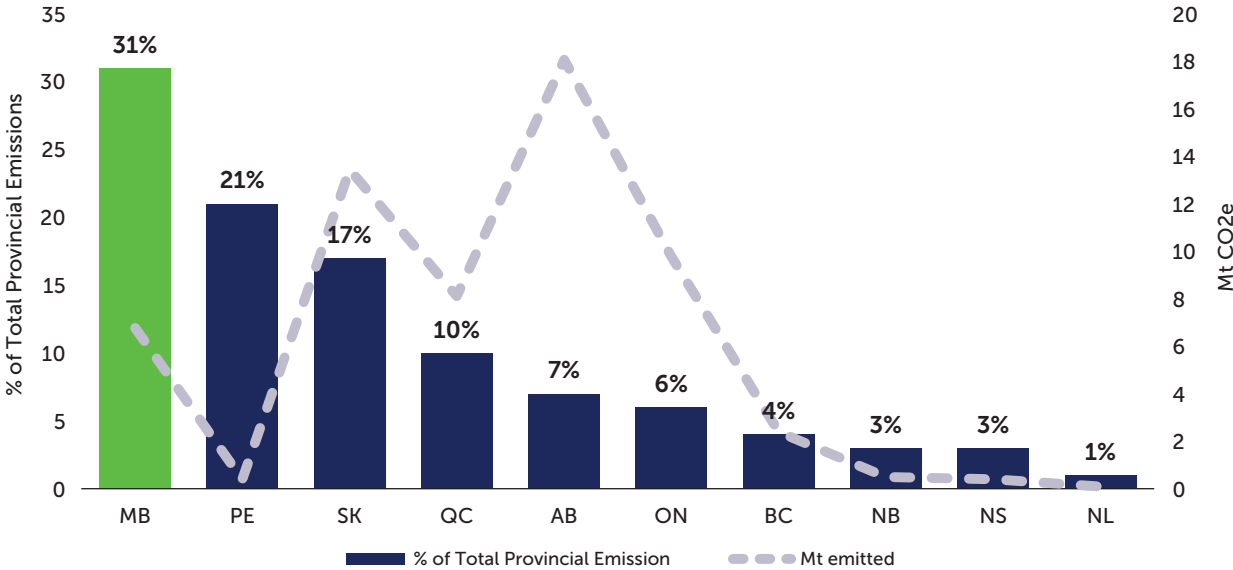
### 2017 Manitoba and Canada GHG Emissions Profile Comparison



Data Source: 2019 National Inventory Report

The contrast with agriculture emissions is particularly notable. Manitoba’s emissions from this sector are significantly higher than the national average – 31% in Manitoba compared to the national average of 8%.

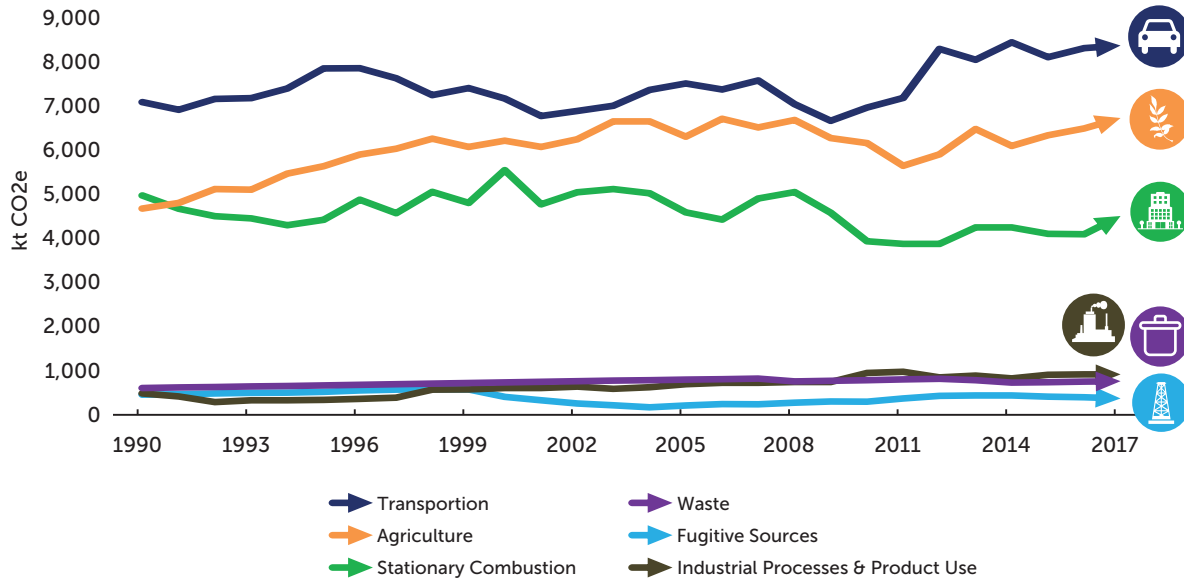
### 2017 Agriculture Emissions by Province



Data Source: 2019 National Inventory Report

A look at past Manitoba emissions shows clearly that these three sectors – transportation, agriculture, and stationary combustion – have dominated as the primary sources of emissions in the province.

### Manitoba's Past Emissions 1990-2017 by IPCC Sector



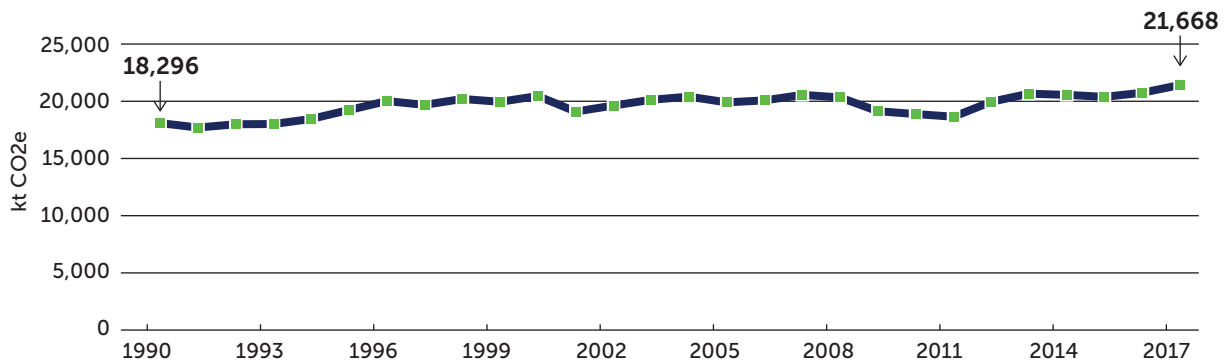
Data Source: 2019 National Inventory Report

#### CSA Consideration

Manitoba's unique emissions profile points to where emissions reductions need to come from most - transportation, agriculture, and stationary combustion energy use- if we are to achieve results.

Manitoba's GHG emissions have grown modestly but regularly from 1990 to 2017. In 1990, emissions were 18.3 Mt; in 2017, they were at 21.7 Mt – reflecting an increase of 3.4 Mt over the period. Declines were experienced during two economic downturns – 2000 and 2008. As the economy recovered so too did emissions growth.

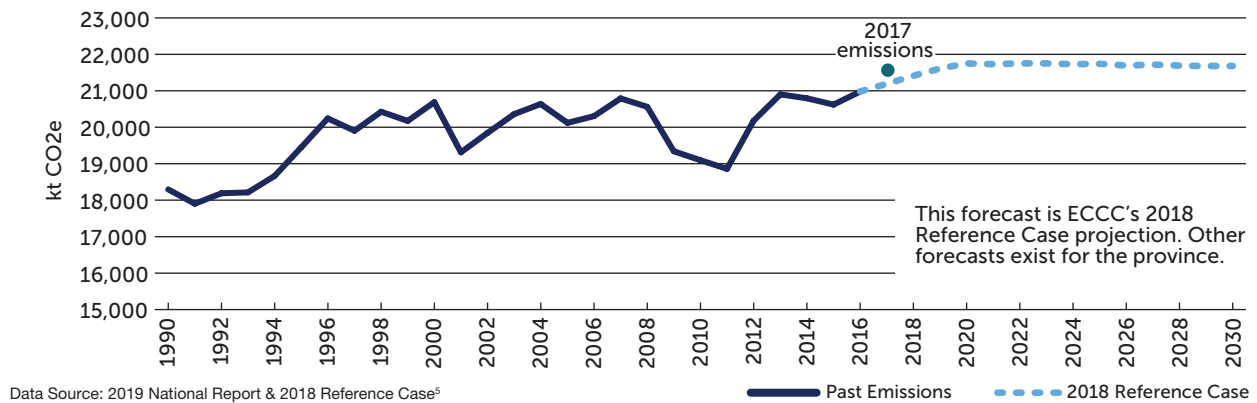
### Manitoba's Past Emissions 1990-2017



Data Source: 2019 National Inventory Report

Looking ahead, the same pattern is forecast. Projected emissions from now to 2030 show modest but continued GHG growth from a business-as-usual (BAU) scenario as shown in the figure below and Appendix VI. Without specific emissions reduction action, Manitoba’s emissions will continue to rise.

### Manitoba GHG Emissions Forecast



**CSA Consideration**

Overall, Manitoba’s emissions have been rising, not falling. We have not yet ‘bent the carbon curve’ to put emissions on a sustained downward path. While no large jumps in emissions are likely, Manitoba is forecasted to have continued emissions growth over the next 15 years unless new actions are taken to reduce our emissions.

### GHG Emissions and the Economy

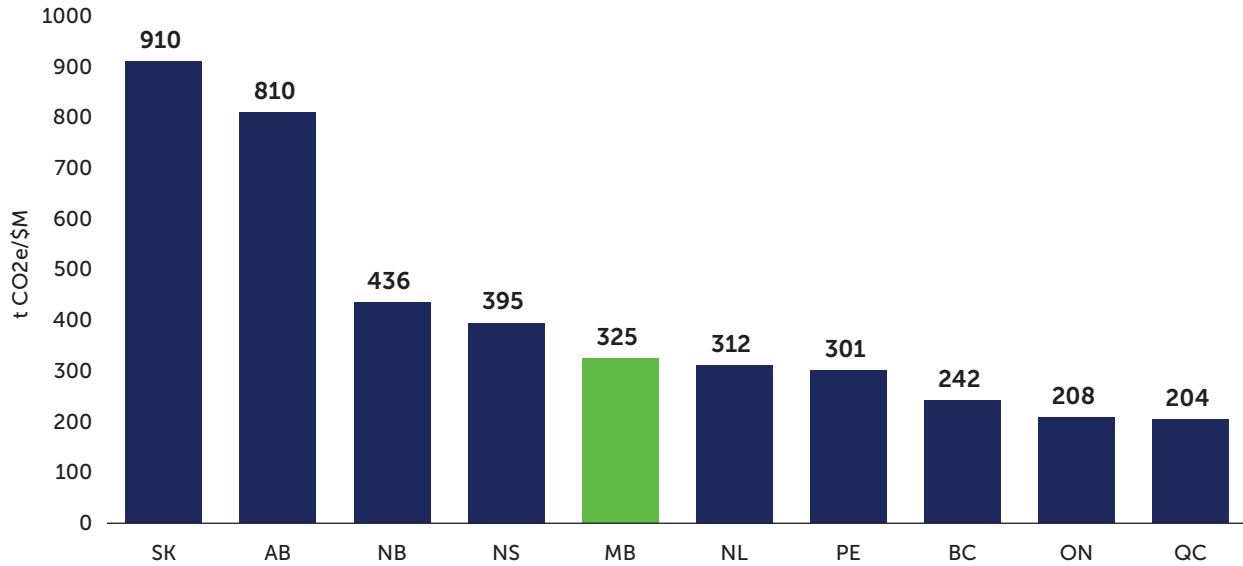
Greenhouse gas emissions are the result of economic activity, energy production and use, and land use management. The cars and trucks we drive, the heat and lights for our homes and businesses, the energy used for manufacturing or mining or agriculture, all contribute to GHG emissions. At the same time, that economic activity – and resulting GHGs – contribute to wealth and GDP.

Saskatchewan and Alberta lead Canada in terms of how much economic wealth is generated by highly GHG-intensive activity – in this case, oil and gas production and use, and coal-fired electricity generation.

Despite Manitoba’s clean electricity grid, it stands fifth in GHG emissions-intensity of its economy overall in Canada. This is due to emissions from the transportation and agriculture sectors, as principal economic contributors.

<sup>5</sup> 2018 Reference Case for Manitoba, Environment and Climate Change Canada (2018).

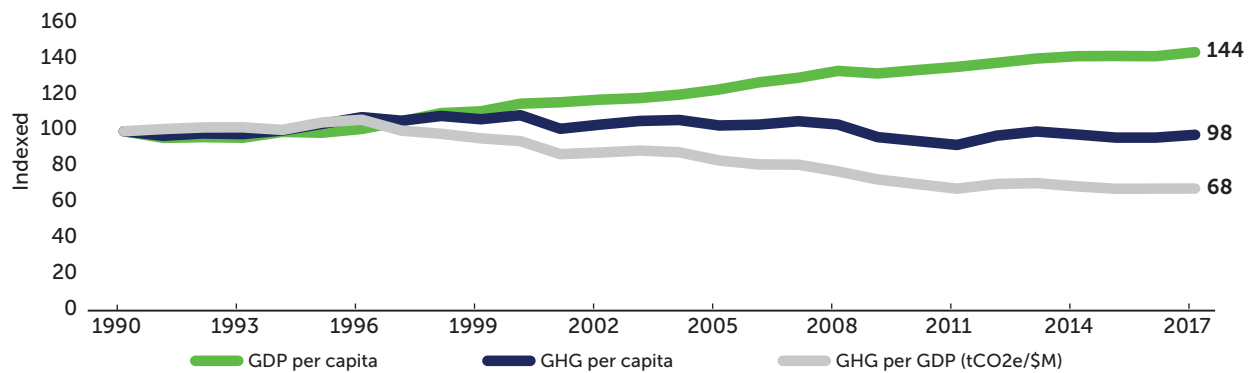
## 2017 GHG Emissions-Intensity of Provincial Economies



Data Source: 2019 National Inventory Report & Statistics Canada Table: 36-10-0222-01

Over the past almost 30 years, Manitoba has seen both stability and improvement in its GHG emissions profile as economic growth (GDP) has increased. On a per-capita basis, GHGs have remained stable over time. On a GDP basis, GHGs have actually declined since 1990 mostly due to clean electricity and energy efficiency.

## Manitoba GHG & GDP Trend 1990-2017



Data Sources: 2019 National Inventory Report & Statistics Canada Tables: 17-10-0005-01 and 36-10-0222-01

### CSA Consideration

Manitoba's emissions continue to rise overall despite ongoing improvements in decoupling GHG growth from GDP growth.



## Industrial Emissions in Manitoba

Manitoba has only six large industrial emitters producing 50,000 tonnes or more of CO<sub>2</sub>e each year. Industrial emissions rise and fall with economic growth cycles, commodity prices, and resource extraction and production demands. Overall, industrial emissions contribute less to the province’s total emissions now than they did 20 years ago. Nevertheless, they account for about 1.6 Mt of CO<sub>2</sub>e or about 7% of total Manitoba emissions.

Uniquely, Manitoba’s largest industrial emitters are not represented in any one sector but in six different sectors with one company contributing most emissions in each. The table and figure below shows the top industrial emitters in Manitoba and their sectors.

Company/Facility	Sector	Total 2017 Emissions (tonnes CO <sub>2</sub> e)
Koch Fertilizer Canada, ULC	Nitrogen Fertilizer	662,339
TransCanada PipeLines Ltd.	Natural Gas Pipelines	182,061
Graymont Western Canada Inc.	Lime	127,822
Canadian Kraft Paper Industries Ltd.	Pulp and Paper	80,703
Husky Oil Operations Limited	Chemicals (ethanol)	77,198
Vale Canada Limited	Mining	62,718

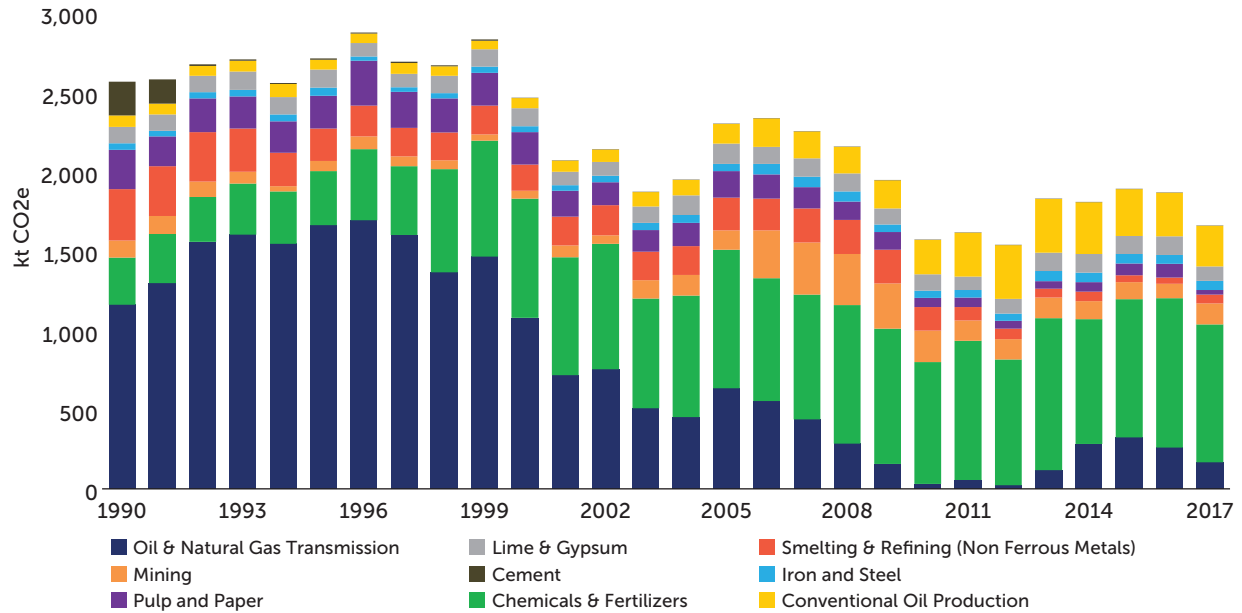
Data Source: 2017 GHG Reporting Program<sup>6</sup>

Large industrial emitters are often referred to as ‘emissions-intensive, trade-exposed’ (EITE). That is because they use GHG-intensive fuels and processes to extract or produce their commodities or products (emissions-intensive) which are typically exported internationally (trade-exposed). Reducing emissions from such sectors and facilities can be a complex undertaking to potential negative impacts, such as job losses and production declines, as businesses reduce operations and investments or even relocate to other jurisdictions with weaker carbon reduction policies. If a business opts to make investment in or relocate to a jurisdiction with weaker policies, GHG emissions may not be reduced globally.

<sup>6</sup> Greenhouse Gas Reporting Program, Environment and Climate Change Canada (2017).

The figure below shows the makeup of Manitoba's EITE emissions over time.

### Manitoba's Past EITE Emissions 1990-2017



Data Source: 2019 National Inventory Report

#### CSA Consideration

Manitoba's emissions profile demonstrates that no one economic sector, nor one single action, can be expected to produce significant emissions reductions on its own. A range of targeted actions across all economic sectors is required to reduce emissions and sequester carbon.

# Manitoba's Carbon Savings Account

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The carbon savings account (or CSA) is a unique way to drive ongoing emissions reductions for Manitoba. This will be the first time it is used in Canada. Simply put, it is the sum of all emission reductions over a five-year period on a cumulative basis. This is tracked against a set cumulative emissions reductions goal for those five years. The emissions reductions are the 'carbon savings'; the tracking against that goal is the 'account'.

The advantages of the CSA approach are several:

**First**, it ensures regular progress towards emissions reductions by setting, measuring, and adjusting against shorter (5 year) goals rather than longer-term targets too far into the future.

**Second**, it recognizes that the level of emissions in a future target year are not as important to tackling climate change as is the cumulative emissions over the CSA period. It is the stock of emissions going into the atmosphere each year that accumulate and cause climate change. The annual and cumulative emissions being generated should be the focus of reduction efforts, not just achieving a one-off target into the future.

**Third**, the CSA goal allows for individual sectors to contribute to emissions reductions in a more organized and effective way rather than rely on single, one-off measures.

**Fourth**, the shorter CSA period allows for greater transparency of progress and therefore accountability of results by government and sectors through more regular reporting.

**Fifth**, each CSA can be built upon the preceding period to ensure Manitoba is making real progress towards actual emissions reductions.

To reduce emissions in Manitoba, we must produce fewer of them in the years ahead. That means availing ourselves of current and future low-carbon technologies, using less energy in our daily activities, switching to clean electricity and low-carbon fuels, becoming more energy efficient, and focusing our efforts on the biggest, most carbon-intensive emissions sources in our province and economic sectors. A carbon savings account framework best captures the management of all these elements.

## CSA Principles

As this is the first time in Manitoba and Canada a carbon savings account concept has been used, the EAC decided to establish a set of principles to guide it in advising and recommending a CSA and specific actions that should be included in it.

- **Effectiveness** – the goal and measures are both effective and cost-effective in reducing emissions.
- **Achievable** – the goal and measures are achievable.
- **Transparent** – the goal, measures, and analysis behind each is transparently set out.
- **Evidence-Based** – the goal and measures are based on solid evidence and analysis.
- **Fair Distribution and Contribution** – the goal and measures imply a fair and reasonable distribution and contribution of effort by emitting sectors and on Manitobans.
- **Dynamic** – the goal and measures can be added to within each CSA period.
- **Sustained Reductions** – the goal and measures lead to sustained emissions reductions.
- **Sustainable Development** – the goal and measures reflect the principles of sustainable development and the importance of both a healthy environment and a strong economy.

The CSA approach and principles are based in part on research about the United Kingdom Climate Change Committee and its experience with carbon budgets and discussions with its former CEO.

These principles were applied by the EAC in each step of its analysis and assessment leading to its recommendation of a carbon savings account for Manitoba. More importantly, the EAC believes these principles are essential for Manitobans to have confidence in the CSA and its application in our province. Reducing emissions is a whole-of-society effort. It takes time. Ensuring buy-in and support by Manitobans for this long-term project is absolutely necessary for its success.

### *CSA Consideration*

A series of principles, as set out above, should be the guide in developing Manitoba's carbon savings account and determining actions to achieve it.

## How a CSA Works

Each CSA period will be for 5 years. The first CSA will run from 2018-2022, with subsequent five-year periods as follows:

- CSA 1 – 2018-22
- CSA 2 – 2023-27
- CSA 3 – 2028-32

Each CSA period will be assigned a cumulative emissions reduction (CER) goal for the whole five-year timeframe. That CER goal will result from a set of specific emissions reduction actions to occur within the five-year CSA. Those actions will continue into subsequent CSA periods and will be built upon with additional emissions reduction measures.

The EAC considers the overall objective of each carbon savings account is to build on the prior account period and produce sustained emissions reductions to:

- a. Reduce the total amount of carbon emissions that would otherwise be generated in Manitoba without emissions reduction measures from a business-as-usual forecast;
- b. Reduce the absolute level of carbon emissions in Manitoba measured from the start and end points of each CSA;
- c. 'Bend the curve' of provincial carbon emissions over time in Manitoba so sustained emissions reductions occur by ensuring fewer emissions are occurring over each five-year CSA period, compared to business-as-usual.

Cumulative emissions reductions over the CSA period should be the method to measure progress for reducing emissions in Manitoba. This approach recognizes that measuring one year's decline or growth in emissions does not provide a complete picture of whether progress is being made or is sufficient. Nor does simply setting a distant target in a forecast year. As the United Nation's Intergovernmental Panel on Climate Change stated:

*"the finding that climate warming responds linearly to cumulative carbon emissions is a powerful way to frame the climate problem, and opens avenues for both changing how we approach climate mitigation, as well as better predicting the climate impacts associated with a given emission pathway."*

The United Kingdom's Climate Change Committee also stated: *"...it is not simply the level of emissions in a future target year that we should be concerned about. It is cumulative emissions over the whole period that matter."*

### **CSA Consideration**

Cumulative emissions reductions is the best method to measure carbon emissions reductions in Manitoba, given the province's clean electricity grid and the nature of the province's emissions profile.

It is important to understand 'business-as-usual' or BAU in emissions forecasting. The starting point for each forecast of emissions is business-as-usual. BAU has four main components:

1. Economic growth that produces emissions
2. Population growth that produces emissions
3. Energy use that produces emissions
4. Climate action measures to reduce emissions

Several variables go into these forecasted components such as: historical data on GHG emissions, energy production and use, and economic data; GDP and population growth, oil and gas prices, and industrial production projections; and existing and announced climate action measures that will reduce emissions.

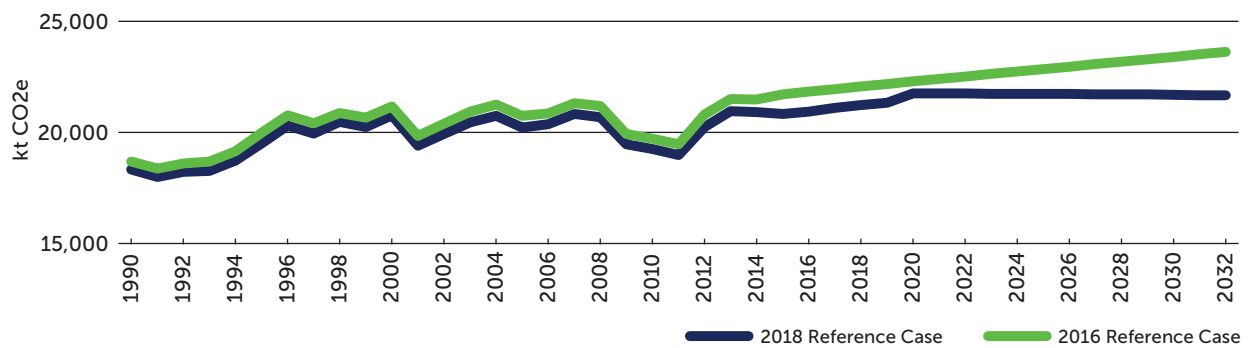
BAU is the forecasted projection of what emissions would look like if no actions were put in place to reduce emissions. It is the starting point for two things: (a) how much needs to be done to reduce emissions to achieve desired goals, and (b) what to measure success against in terms of cumulative emissions reductions from that BAU or what emissions would have been in the absence of climate actions.

BAU forecasts are updated each year based on new information received by the federal government and published in its annual National Inventory Report. For each updated annual report, previous year forecasts are adjusted based on final statistical information provided by companies and various sectors across the economy. Changes in economic growth and oil and gas prices are accounted for as well as other key variables noted above. Assumptions about take-up and results of climate action measures are reviewed against actual results.

Not unlike a government’s annual budget, the BAU is measured against what was forecasted for emissions reductions and what was actually achieved. Differences between ‘forecasts’ and ‘actuals’ are then incorporated into the revised BAU. Experience teaches what variables forecasts are sensitive to and can be presented accordingly in the BAU. Noting these sensitivities in a GHG forecast is important for clearly understanding and assessing actions and progress towards actual emissions reduction results.

The figure below illustrates the difference between the 2018 and 2016 BAU forecasts for Manitoba.

### Business-as-Usual Forecasts in Manitoba



Data Source: 2018 Reference Case & 2016 Reference Case<sup>7</sup>

#### CSA Consideration

Measuring against a business-as-usual forecast provides the benchmark to set and measure a CSA goal and actions to achieve that goal. This approach is used by all governments in Canada in considering the potential impact of climate actions.

<sup>7</sup> 2016 Reference Case for Manitoba, Environment and Climate Change Canada (2016).

## The CSA 'Debit' Feature

A key feature of the CSA approach is to build in a 'debit' mechanism so that any shortfall in cumulative emissions reductions occurring in one CSA period is added to the goal for the next CSA period. This means that the subsequent CSA goal would increase by a minimum of this amount to maintain the overall reduction direction and amounts.

The video below explains both the carbon savings account concept and how the debit mechanism would apply.



<https://www.youtube.com/watch?v=N9AGxUi4P4E>

### CSA Consideration

Any shortfall in achieving the CSA goal over a five-year period will be added to the subsequent CSA goal to ensure an ongoing commitment to emissions reductions.

## Establishing the Baseline

*The Climate and Green Plan Implementation Act* stipulates that the first CSA period will be 2018-2022. As a first step, the EAC needed to establish a clear baseline for (a) forecasting future emissions growth, and (b) measuring emissions reductions against that forecasted growth.

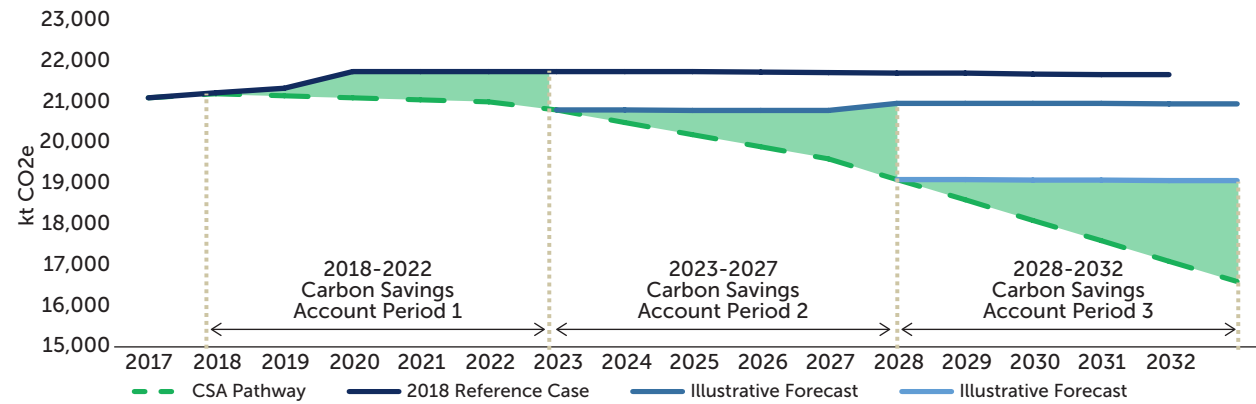
The EAC considered four baseline approaches:

- a static reference year (picking any past single year such as 2005 and measuring progress against that one year)
- a dynamic reference year (picking the year before each CSA period commences which would be 2017 for the first period, 2022 for the second period, and 2027 for the third period)
- a business-as-usual baseline year (based on the BAU forecast for Manitoba)
- or a federal measures baseline year (based on the BAU forecast after proposed federal measures such as carbon pricing were included).

The EAC recommends the dynamic year baseline as the most accurate and realistic way against which to measure progress. It fits the concept of a CSA best as it resets for the next five-year CSA period. It provides the best medium and longer-term baseline to determine future CSA goals. It incorporates all relevant measures by all governments and sectors into the actual level of emissions in that dynamic reference year to measure future progress so nothing is missed. (However, as noted later in this report, there are emissions forecast discrepancies, and for the 2018-2022 CSA, we recommend Manitoba measure reductions against various baselines. This will help the EAC provide further advice on the relevant baseline for the province.)

Below is how a dynamic year baseline would work in setting the first and subsequent cumulative emissions reduction goal in each CSA period, based on an illustrative 2-4-6 Mt CSA scenario.

### Dynamic Reference Baseline – Illustrative CSA Goals



Data Source: 2018 Reference Case

#### CSA Consideration

The dynamic baseline year provides the best starting point to gauge emissions reduction needs and results against – what are actual emissions in that year.

### Measuring CSA Progress

Each year, the government is required under *The Climate and Green Plan Implementation Act* to provide an annual progress report on emissions reductions in Manitoba. The relevant sections are these:

*“Reporting on greenhouse gas emissions reductions*

*5(2) If a measure under the climate and green plan results in a reduction in greenhouse gas emissions, the annual report must set out the emissions reduction achieved.*

*Emissions reduction goal and carbon savings account*

*5(3) The annual report must set out the applicable greenhouse gas emissions reduction goal established under section 3 and the current status of the carbon savings account”*

The CSA goal must be measurable if it is to be achievable. An important part of the EAC’s work, therefore, has been to consider how to establish the methodology and measurement benchmarks to meet this obligation.

As the CSA is a new and dynamic concept requiring ongoing addition of new measures and annual measurement of progress, the EAC was mindful of the need to incorporate regular updated data and information and establish a robust reporting and measurement framework as a first step. Like all provinces, Manitoba relies on Environment and Climate Change Canada for core emissions results and forecasts. Specifically, the development, measurement and reporting of the carbon savings account is based on several data sources:



- The National Inventory Report outlines annual and historical emissions for Canada and the provinces and territories. ECCC publishes its inventory annually including anthropogenic (human caused) emissions by sources and removals by sinks.
- Environment and Climate Change Canada develops a forecast that projects emissions under a notional scenario where no new measures are implemented. ECCC updates GHG emissions forecasts annually but only publishes forecasts every second year in Canada’s Biennial Report.

The Government of Manitoba will publish annual reports, outlining the policies, programs and measures employed in that year to implement the Climate and Green Plan, including any resulting GHG emission reductions. At the conclusion of the five-year CSA, the Government of Manitoba will prepare a report on GHG emissions throughout the period, including confirmation if the CSA goal was achieved. Because there is a two-year time lag between the National Inventory Report publication and GHG emissions, the Government of Manitoba is expected to release the final five-year report for the 2018 to 2022 CSA in mid 2024. The chart below sets out the timetable for federal and provincial reporting on Manitoba’s emissions for this first CSA period.

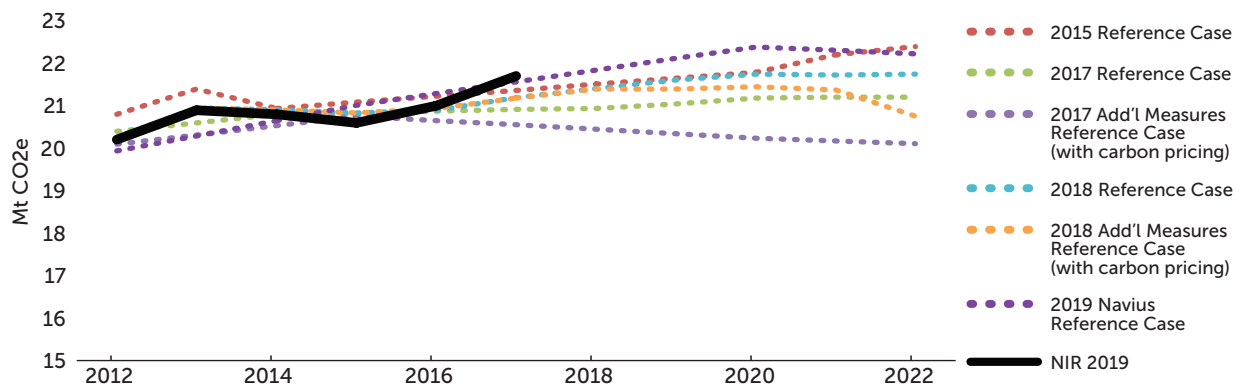
YEAR	2018	2019	2020	2021	2022	2023	2024
<b>ECCC National Inventory Report</b>	Publication of 2016 emissions by April 2018	Publication of 2017 emissions by April	Publication of 2018 emissions by April	Publication of 2019 emissions by April	Publication of 2020 emissions by April	Publication of 2021 emissions by April	Publication of 2022 emissions by April
<b>ECCC Forecast</b>	2018 forecast by November (based on established measures as of Nov 1 2018)	2019 forecast by November	2020 forecast by November	2021 forecast by November	2022 forecast by November	2023 forecast by November	2014 forecast by November
	Publication of 2017 forecast by January 2018		Publication of 2019 forecast by January		Publication of 2021 forecast by January		Publication of 2023 forecast by January
<b>Manitoba Climate and Green Plan Annual Report</b>			✓	✓	✓	✓	✓
<b>5-year CSA Report</b>							✓

Forecasts attempt to project outcomes in the future based on various assumptions. Forecast provide helpful insights into the future; however, they are not perfect representations. Future ambiguities such as oil and gas prices, economic and population growth, and policy decisions in and outside of domestic borders create inherent uncertainties for forecasts. As can be seen in the figure below, forecasted emissions tend to diverge from observed emissions, as reported in the NIR, with less forecasting accuracy over time. That is why it is necessary to model a range of reference-case scenarios to determine the range of potential emissions growth.

The emission forecast discrepancies render making recommendations related to the baseline for the 2018-2022 CSA challenging. For example, the 2018 Reference Case established in November 2018 forecast emissions for 2017 of 21.2 Mt; however the inventory report issued a couple months later in April 2019 indicated the emissions were 21.7 Mt. This 0.5 Mt difference is notable in the province of Manitoba with relatively few emissions. See Appendix VI for a table showing historical forecasts versus the actual National Inventory Report emissions for Manitoba.

As such, the EAC recommends that Manitoba track and measure reductions against various baselines and provide the results to the EAC annually. This will help provide advice on the most relevant baseline for the province, and also inform further CSA considerations. No matter what baseline is used, the full recommended CSA reduction goal would still apply. The figure below illustrates the range of reference-case scenarios modelled:

### GHG Emissions Forecasts for Manitoba



Data Source: 2019 National Inventory Report & ECCC Reference Cases for Manitoba<sup>8</sup> & Navius Research Inc. Forecast<sup>9</sup>

#### CSA Consideration

GHG forecasts and actual emissions for a given year will fluctuate as ECCC updates data each year. The CSA goal needs to take this into account in order to ensure continued progress on emissions reductions that is accurate and accountable for measuring progress and determining future actions.

### Federal Climate Actions in Manitoba

A key consideration for the EAC is to determine whether to include federal climate actions in determining Manitoba’s CSA goal or not. For the atmosphere, who ‘owns’ the emissions or causes the emissions is immaterial. They are all lumped in together. But for determining accountable actions by governments in reducing emissions, they need to be distinguished and separated.

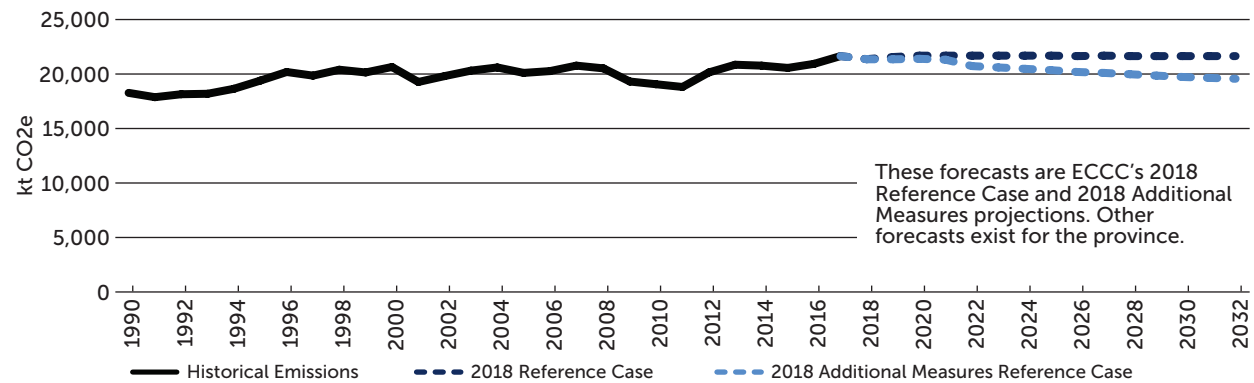
The figure below shows the forecast emission reductions from current and proposed federal actions compared to the business-as-usual forecast for Manitoba. These include:

- the federal backstop of a carbon tax on fossil fuels commencing at \$20 per tonne in 2019, rising to \$50 per tonne in 2022
- the federal backstop of an output-based carbon price on large industrial emitters
- a clean fuel standard (proposed, not established)
- Low Carbon Economy Fund investments
- strategic interconnections in electricity
- building retrofits
- post-2025 light-duty vehicle regulations

<sup>8</sup> Canada’s 7th National Communication and 3rd Biennial Report and Canada’s 2nd Biennial Report on Climate Change, Environment and Climate Change Canada (2018 and 2016).  
<sup>9</sup> gTech Model Manitoba forecast, Navius Research Inc. (May 2019).

The figure shows that emissions in Manitoba are forecasted to decline slightly from the current business-as-usual forecast for 2018-2032 with these additional measures. This includes the estimated 0.99 Mt of emission reductions in the 2018-2022 CSA period as a result of federal carbon pricing.

### Historical Manitoba GHG Emissions & GHG Emissions Forecast



Data Source: 2019 National Inventory Report & 2018 Reference Case & 2018 Additional Measures Reference Case

Separating actions from one government or sector can be somewhat misleading. The reality is that in the real economic world, actions by all governments will affect the behaviour of people, businesses, and sectors. Specifically, carbon pricing being implemented by the federal government will interact with actions chosen by the Manitoba government. These 'interactive' effects need to be factored in by GHG forecast modelling in assessing emission reduction results. The Manitoba government is not responsible for the impacts of these federal measures but needs to take them into account in determining its own CSA.

To that end, the EAC has chosen to represent the results of emission reduction actions within the CSA period on a disaggregated basis (separate accounting for new Manitoba actions). It does so to show clearly the effects of Manitoba's actions over and above the existing provincial and federal measures for transparency and accountability purposes.

#### CSA Consideration

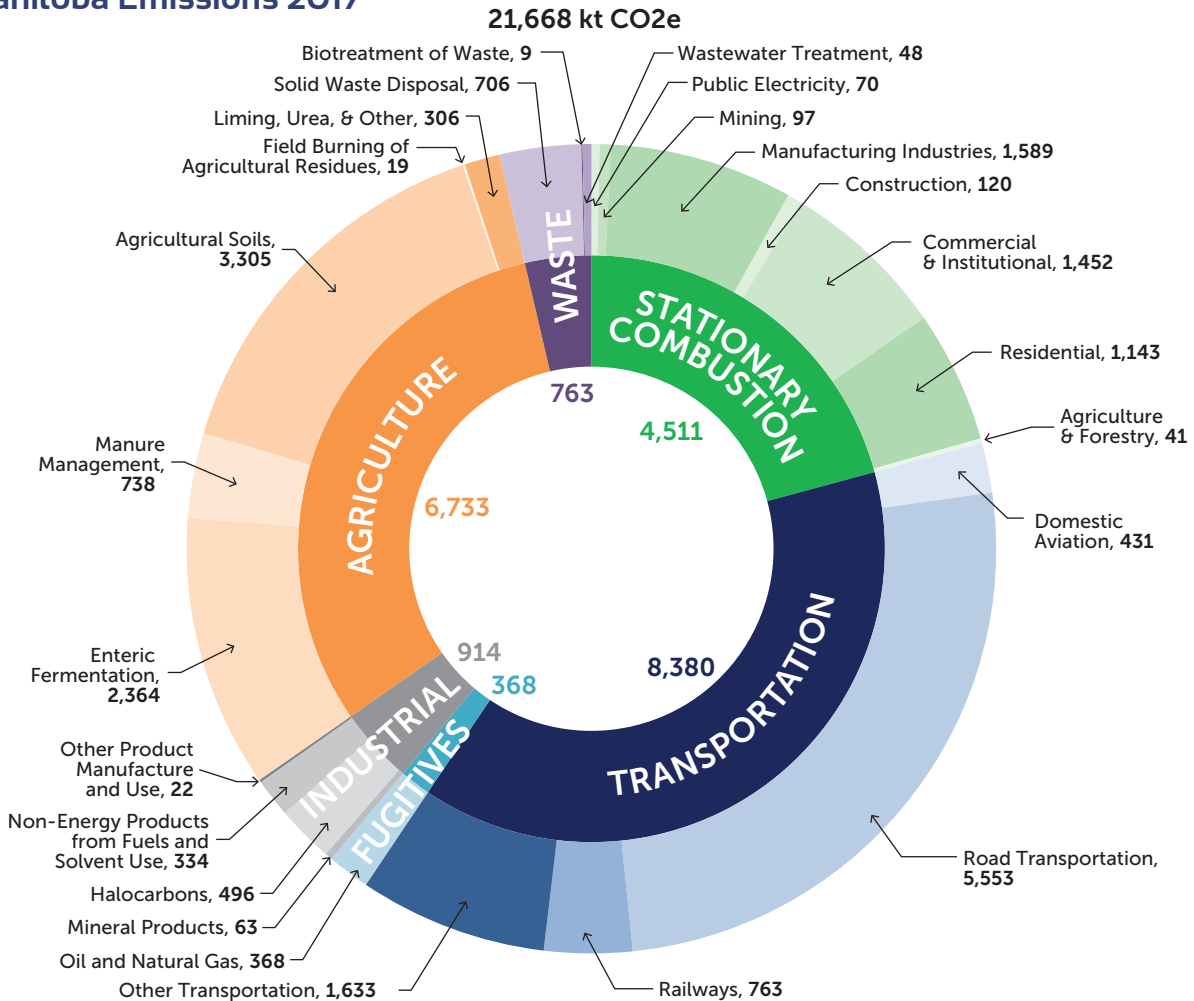
Manitoba is responsible only for emissions reductions from its own implemented actions. Emission reductions from all levels of government, however, need to be understood in establishing Manitoba's carbon savings account.

### Sector Emissions and Reduction Opportunities

The Made-in-Manitoba Climate and Green Plan identifies sector emission reductions coming from economic sectors and energy users as a priority area for action. The EAC examined the nature of sector emissions to assess possible actions. At the same time, a series of sector working groups were established to review possible actions set out in the Climate and Green Plan, as well as others, and offer views and ideas for EAC consideration. These were the most advanced in development and hence, are recommended for inclusion in the CSA in this first report of the EAC.

The figure below identifies the main components of each sector’s emissions in Manitoba. This is the detailed basis for determining carbon reduction opportunities. Within each sector, a number of priority areas emerge based on the amount of emissions in each sub-sector. The top ones include: road transportation; building, manufacturing, and residential heat and energy use; and agricultural soils. These provided the initial focus of the EAC’s analysis and assessment.

### Manitoba Emissions 2017



Data Source: 2019 National Inventory Report

This sector approach aligns with the government’s Economic Development Strategy also. The December 2018 *Economic Growth Action Plan* for Manitoba calls for the development of sector competitiveness strategies. Reducing emissions in targeted sectors as well as growing those sectors in a low-carbon manner should be considered together. This is how that report cited Manitoba’s “clean and green advantage”:

### ***The Clean and Green Advantage***

Stakeholders frequently pointed to the potential to pursue opportunities in clean technology. As the world transitions to a low-carbon economy to address climate change, clean technology development will present new opportunities for Manitoba companies.

Manitoba's clean hydro-electricity was often cited as a strength, as was our 'clean and green' brand, which can be used to attract new investment in a world increasingly seized with growing, producing, and selling products and services that are equally 'clean and green'.

This is consistent with the government's Climate and Green Plan.

Details on the recommended initiatives for inclusion in the 2018-2022 CSA are provided in Appendix I. The following sections provide further information related to some areas.

## **Carbon Sequestration, Land Use, and Agricultural Management in Manitoba**

Manitoba's Climate and Green Plan encourages steps to increase carbon sequestration in our lands and forests. Land and forests can act as a 'carbon sink', sequestering carbon that would otherwise go into the atmosphere. A complete CSA for the province would take carbon removals as well as emissions into account. Incorporating sequestration into the CSA is difficult. Trees and forests can store carbon, but a forest fire can release it.

Current analysis and inputs from experts indicate that carbon removals from lands and forests in Manitoba will not have a significant impact on the emissions profile in the 2018 to 2022 period.

### ***GHG Emissions Accounting Considerations***

GHG emissions accounting is generally done in two streams – the inventory of emissions from transportation, stationary combustion, agriculture practices, waste, etc, and the inventory for LULUCF emissions.

Land Use, Land Use Change, and Forestry (LULUCF), is defined as a greenhouse gas inventory sector that covers reports on emissions and removals of greenhouse gases resulting from direct human-induced land-use, land-use change, and forestry activities. The LULUCF reporting categories include: forest land; cropland; managed agricultural grassland; settlement land; wetlands. The emissions are tracked distinctly due to various reasons, such as the natural effects can be relative large. Emissions and removals from lands exposed to natural disturbances such as wildfires and severe insect infestations, are tracked separately as they can have large impacts on annual emission and removal estimates and their occurrence is outside of human control.

National and provincial GHG emissions inventory totals are reported to the UNFCCC with and without LULUCF.

Note that emission sources from the agriculture and forestry sectors are accounted for in the inventory of emissions. For example, agriculture emissions included in the GHG emissions inventory include energy use, enteric fermentation, manure management, agricultural soils, field burning of agricultural residues and liming, urea application and other carbon-containing fertilizers.

The EAC has provided advice on actions that can improve our carbon sequestration potential and how these actions can be considered within future carbon savings accounts. At this stage, specific actions identified include enhanced programming in the context of integrated watershed management planning program, afforestation (establishing new forest lands) and woodlot management (enhancing sequestration from existing forests). These actions provide sequestration benefits, while also enhancing a number of co-benefits within the context of the overall Climate and Green Plan.

Enhancing carbon sequestration monitoring systems will enable us to better estimate GHG removals into the future.

### **4R Nutrient Stewardship Program**

The Climate and Green Plan notes the potential of a 4R Nutrient Stewardship program - Right Source @ Right Rate, Right Time, Right Place® - in reducing emissions and increasing economic profitability of farms.

Fertilizer Canada assessment<sup>10</sup> indicates the following:

Research has shown that implementing 4R Nutrient Stewardship on the farm can result in up to an \$87/acre increase in returns to farmers. By implementing 4R Nutrient Stewardship at a basic level on the major crop rotations in Manitoba (canola, corn, spring and winter wheat, flaxseed, barley and oats), there is a potential GHG emission reduction of approximately 275,000 tonnes CO<sub>2</sub>e per year.

The Canada Canola Growers Association included 4R Nutrient Stewardship in their list of sustainability targets with a goal to have 50% of canola production acres under 4R Nutrient Stewardship by 2025. If 50% of canola production acres in Manitoba applied advanced 4R practices, Manitoba is expected reduce GHG emissions by 130,000 tonnes per year. The Fertilizer Use Survey indicated that 75% of Manitoba canola growers or 2.3 million Manitoba canola acres are practicing basic 4R Nutrient Stewardship BMPs.

## **Low Carbon Government**

Government business practices can serve a leadership role in market transformation for a low carbon economy. Adopting climate forward policies and practices creates certainty and confidence for business investment and establishes standards of practice and performance.

Low carbon government is included in the Climate and Green Plan as an initiative for government to lead by example and reduce its own carbon footprint.

This sector is typically defined as provincial and municipal government operations or the MUSH sector: municipalities, universities, schools, and hospitals. With the City of Winnipeg taking up such a large carbon footprint in the province, examining what can be done here is particularly important. Current estimates are that this sector accounts for about 480,000 tonnes of CO<sub>2</sub>e annually. Buildings account for about 310,000 tonnes of CO<sub>2</sub>e and vehicles about 170,000 tonnes. The government of Manitoba's own footprint is about 94,000 tonnes of this amount.

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<sup>10</sup> 4R Climate Smart Strategy as a Solution for Greenhouse Gas (GHG) Emissions Reductions in Manitoba, Fertilizer Canada (2019).

Government operations refers to activities undertaken government to conduct business operations and includes:

- procurement of goods and services
- building design, construction, management and leasing
- fleet vehicle and equipment purchase, leasing and management
- Crown land management and leasing
- infrastructure operation and maintenance (water, transportation, etc.)
- information and communications technologies
- waste reduction and management

A number of initiatives are possible across government operations to reduce carbon emissions from the overall MUSH sector and advance low carbon government. These include: reducing energy demand, waste reduction, fuel switching, operational efficiencies, innovation, and green procurement. Tracking these activities as part of the government's performance management is essential to ensure value for money and cost-effective low carbon progress.

The EAC has set out a menu of possible initiatives it is recommending for consideration and implementation by the government. These are set out in Appendix V.

## **Building Codes and Energy Efficiency**

Building codes are an area of shared jurisdiction between the federal and provincial governments. The federal government develops the National Energy Code for Buildings (NECB) which sets out the technical requirements for the energy efficient design and construction of new buildings and develops new energy efficiency requirements for new housing and small buildings.

The Manitoba government facilitates the adoption of the NECB and new energy efficiency requirements for housing and smaller buildings as part of the National Building Code (NBC) by regulation and is responsible for compliance and enforcement of the energy code in Manitoba.

The federal government is advancing towards even more stringent energy efficiency building codes. This includes:

- a path for "net-zero energy ready"<sup>11</sup> building codes by 2030, where the code commission process is now launched with technical committee work underway to publish a more stringent model energy code for buildings, including the net-zero energy ready code, in 2020;
- a possible retrofit code for existing buildings by 2022, to guide energy efficiency improvements that can be made when Canadians renovate their homes and buildings.

Manitoba's current code is as follows:

- For larger buildings (commercial/institutional) it is the 2011 NECB, which came into force on December 1, 2014.
- For low-rise houses and small buildings, it is the energy efficiency requirements under Part 9 of the 2012 NBC, which became effective on April 1, 2016.
- Recommendations have been made (but no decision yet made) to adopt either 2015 NECB or the 2017 NECB, which is the baseline code for future net-zero energy ready building codes, now being developed by the federal government.

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<sup>11</sup> A net-zero energy building is a high performance building that combines superior standards in energy efficiency with renewable energy production to offset all of the building's annual energy consumption.

Both the 2015 and 2017 NECBs provide improvements to energy use and efficiency. They update standards for lighting, service water, HVAC systems, roofs, windows and doors, and other items.

Although Manitoba is not alone amongst provinces in continuing to apply the 2012 building codes, delays in adopting and implementing updated building codes will affect Manitoba's energy efficiency performance. More importantly, it will impact the amount of carbon emissions reductions desired under the recommended carbon savings account.

### **Clean Energy Exports and Manitoba's CSA**

Not only is Manitoba Canada's cleanest province for on-grid electricity generation, it exports this clean energy to the United States. This reduces emissions in those American states because they do not need to use fossil fuels for energy generation. At present, those emissions reductions are not counted for Manitoba's carbon savings account; they accrue to the jurisdiction that imports our clean energy.

Similarly, the prospect of an east-west transmission line for clean energy between Manitoba and Saskatchewan, or even Alberta, would reduce emissions in our neighbouring provinces but not count towards Manitoba's CSA. This is no reason not to advance such a project. A clean energy transmission line in Western Canada would be good for all of Canada, helping to reduce emissions and provide cheaper, cleaner energy to more Canadians. It would provide ongoing export opportunities for Manitoba Hydro.

There is a need for a more complete consideration by the federal and provincial/territorial governments on how clean energy exports can be incorporated into emissions reductions outcomes in order to encourage such projects. Manitoba stands to gain by such an approach.



# Recommendations

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This section of our report sets out specific recommendations to establish Manitoba's first carbon savings account and the actions required to achieve the GHG emissions reduction goal. This should be the framework by which all provincial climate actions and emission reduction measures follow. The recommended CSA contains the following elements:

- A cumulative emissions reduction goal for the period 2018-2022;
- A series of specific emission reduction actions to be taken by Manitoba to achieve that goal; and
- A forecast based on modelling of where this will take Manitoba into subsequent CSA periods.

Additionally, the EAC is providing recommendations on the following:

- A list of actions (to be established and undertaken) that could be incorporated into the proposed first CSA period to achieve even larger reductions;
- Reinforcing steps to support the CSA and create more momentum for emissions reductions;
- Implementation steps necessary to put the CSA into effect and help meet the Climate and Green Plan's vision of making Manitoba the cleanest, greenest, and most climate resilient province.

## Recommendations

### *A Carbon Savings Account Goal and Actions for 2018-2022*

1. Manitoba should set a GHG emissions reduction goal of no less than 1 Mt of CO<sub>2</sub>e cumulative emissions reductions. This would 'bend the carbon curve' in Manitoba once and for all and put the province on a sustained path for even greater emissions reductions in subsequent CSA periods.
2. The 1 Mt goal should be comprised initially of the set of specific emissions reduction actions set out in Appendix I.
3. Additional actions should be considered for inclusion based on the EAC's recommendations and then added as soon as practical to the CSA to ensure achieving or surpassing the 1 Mt CSA reduction goal, as set out in Appendix I.
4. Any shortfall in achieving the 1 Mt goal must be added to the subsequent CSA period as part of the 'debit' feature of the CSA to ensure there is no relaxation of effort in reducing emissions.

### *Reinforcing Steps for Carbon Reductions in Manitoba*

1. Manitoba should adopt the National Energy Code for Buildings 2017 (NECB 2017) as a mandatory provincial regulation and align the provincial building code accordingly. Future building code improvements should be instituted on a regular, automatic basis and mandated into law after a certain date.
2. A 4R nutrient stewardship program should be designed for active implementation in the agriculture sector to improve farm management practices and reduce emissions.
3. Manitoba should take steps requiring developers to incorporate electric vehicle (EV) charging stations into all new residential and commercial development projects above a minimal size (and as part of major renovations).
4. Manitoba should explore the feasibility of adopting mandatory rules requiring a certain percentage of new motor vehicles sold in the province to be zero emission vehicles (ZEVs).

5. Building from the sector working groups' efforts, a working group should be established to develop policies and approaches to identify viable carbon sequestration opportunities in Manitoba and how they align with similar emerging opportunities in other provinces and regions.
6. In conjunction with the biofuel provisions included within the CSA, Manitoba should work toward the adoption of biofuel mandates for the various transportation subsectors at the highest percentages technically feasible for implementation in the next CSA period. This would help to establish new markets for agricultural products currently facing barriers to market access. Manitoba should then encourage other provinces and jurisdictions to adopt those higher mandates and purchase feedstock for biofuels from Manitoba thereby helping our economy grow.
7. To further integrate the Jobs Pillar of the Manitoba Climate and Green Plan with the government's Economic Development Strategy, a new low-carbon economy sector working group should be established to advise government and the EAC on policies and actions to foster low-carbon growth, investment, and job opportunities building on the province's clean energy brand.
8. As an example of this, the Small Business Venture Capital Tax Credit (SBVCTC) program should be opened up to junior mining companies that are exploring for and developing clean energy minerals in Manitoba such as lithium, cobalt and graphite.
9. Efficiency Manitoba has a key role in offering energy efficiency solutions to Manitoba businesses and consumers to reduce emissions. Ensuring this tool is used to its maximum potential in support of achieving the carbon emission reductions set out in the CSA is necessary. This will require ongoing coordination and alignment of approaches between the government's CSA and Efficiency Manitoba.
10. Manitoba should actively explore construction of an east-west transmission line for exporting clean energy to Saskatchewan.

### **Implementation Steps**

1. The government should take steps to reinforce that achieving the CSA requires a 'whole-of-government' approach with a commitment by departments and agencies to supporting and aligning policy, programs, and initiatives with the CSA goal. This approach should be coordinated by the Climate and Green Plan Implementation Office.
2. Independent modelling of progress towards the CSA goal should be undertaken on an annual basis and be published as part of the government's annual progress report to the legislature under *The Climate and Green Plan Implementation Act*.
3. Federal government ministers and officials should be briefed on Manitoba's CSA to avoid duplication and overlap in effort by governments and secure the most cost-effective emissions reductions available for Manitobans.
4. A full-accounting CSA should be developed to include both carbon removals and clean energy exports in order to show the complete GHG reductions story for Manitoba.

### **CSA Consideration**

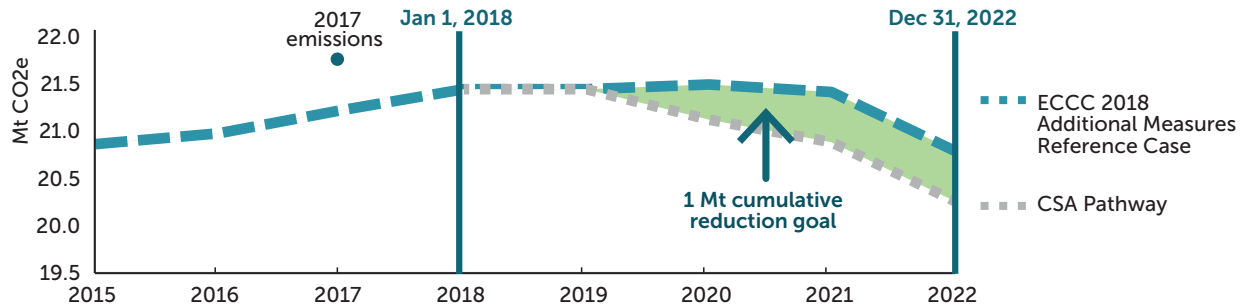
Achieving the 1 Mt cumulative emissions reduction goal would mean Manitoba's emissions would be lower at the end of the CSA period in 2022 than in the year before it started, in 2017. This would be the single-largest GHG emissions reduction by design in Manitoba's history.

## CSA Pathway and Outcomes

The figures below represent independent modelling of the pathway to achieve the CSA goal of 1 Mt of cumulative emissions reductions from 2018–22. Two reference cases were modelled using an ECCC baseline and an independent modelling baseline. As can be seen below, both produce the 1 Mt of cumulative emissions reductions.

Using the ECCC 2018 Reference Case, Manitoba’s emissions level in 2022 would be 20.3 Mt as can be seen in this figure.

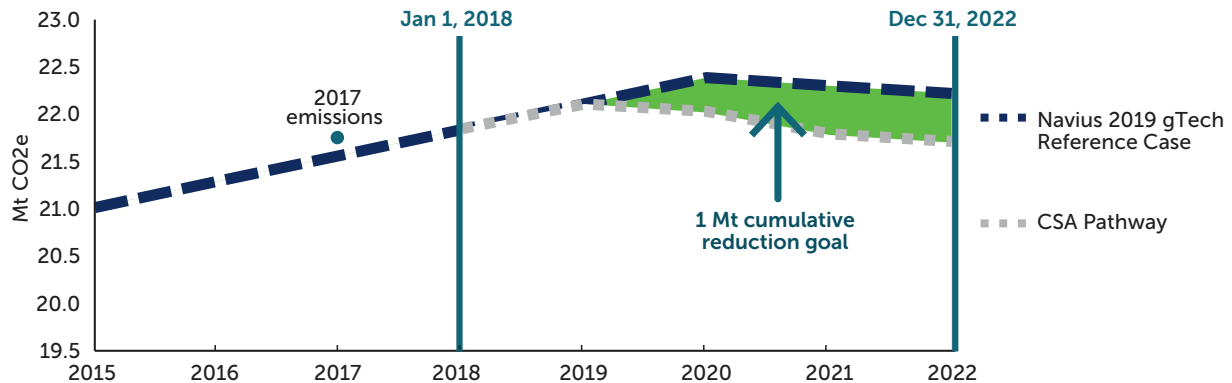
### CSA Pathway - ECCC 2018 Additional Measures Reference Case



Data Source: 2018 Additional Measures Reference Case & Navius Research Inc. Forecast & Navius Research Inc. Modelling and Analysis 2019.

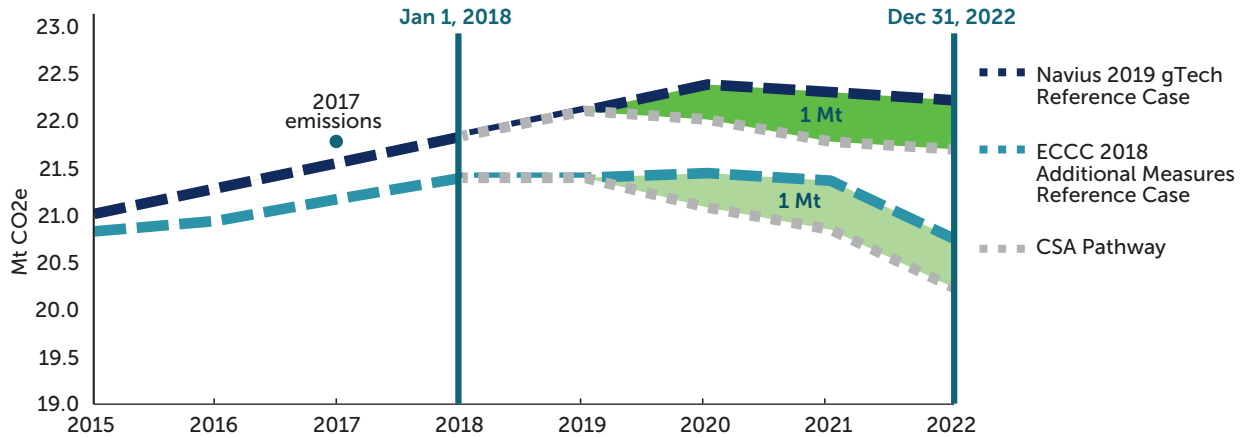
Using the EAC’s independent modelling (using gTech), Manitoba’s emissions level in 2022 would be 21.8 Mt, as can be seen in this figure.

### CSA Pathway - Navius 2019 gTech Reference Case



Data Source: Navius Research Inc. Forecast & Navius Research Inc. Modelling and Analysis 2019.

## CSA Pathway - Comparison of Reference Cases



Data Source: 2018 Additional Measures Reference Case & Navius Research Inc. Forecast & Navius Research Inc. Modelling and Analysis 2019.

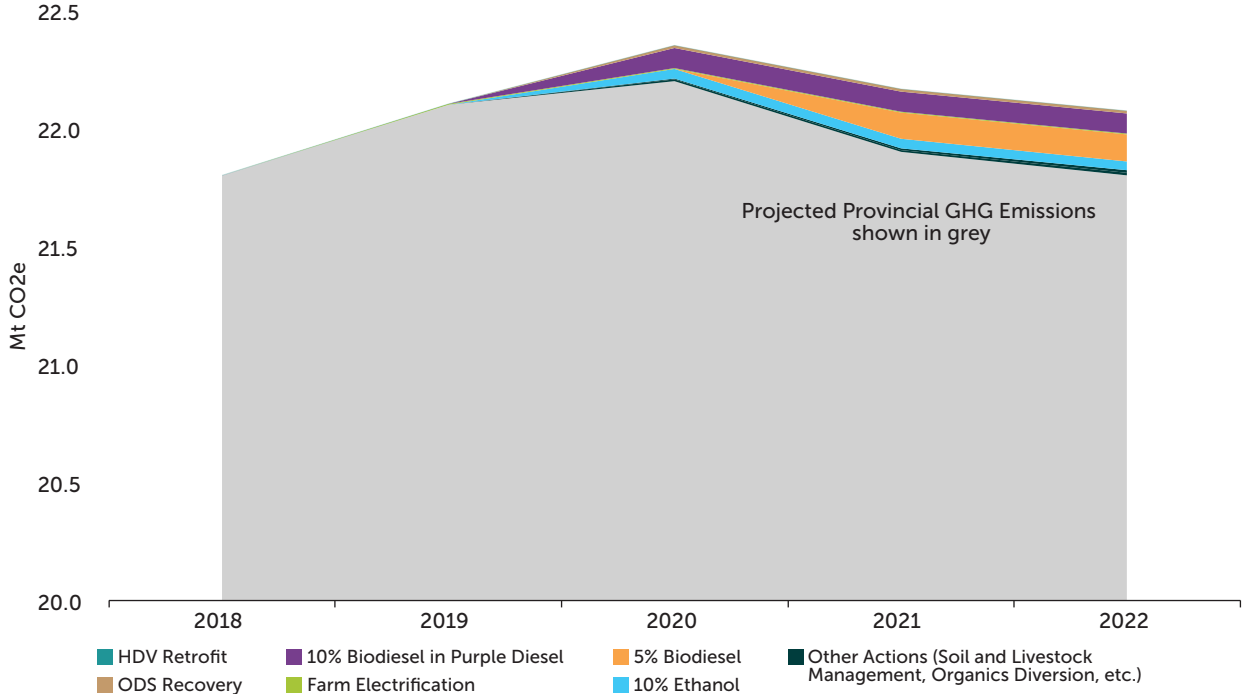
This typical difference in modelled outcomes shows why setting and focusing on the actual goal of cumulative emissions reductions makes sense for Manitoba.

The figure below shows the contribution of each action in reducing emissions over the first five-year CSA period of 2018-2022.

Note that under both the baselines shown in the figures above and below (the ECCC reference case and the independent modelling forecast), the business-as-usual forecasts include climate mitigation actions taken since the January 1, 2018 start of the of CSA period. For example, the baselines include Manitoba’s early closure of its last coal-fired electricity generation station and federal carbon pricing. This means the 1 Mt reduction goal is additional to the emission reductions achieved in the same 2018-2022 period by these already established actions.

Also, the scenarios illustrated in the figures below do not include the potential impact of carbon sequestration measures or LULUCF measures. The sector working group assessment estimated emissions reduction potential of 55 kt in the 2018-2022 period, and as discussed earlier in the report, carbon sequestration actions should be undertaken. Any reductions achieved would be additional to those depicted in these figures as LULUCF emissions are not included in any of the business-as-usual baselines. This approach respects international accounting methodologies.

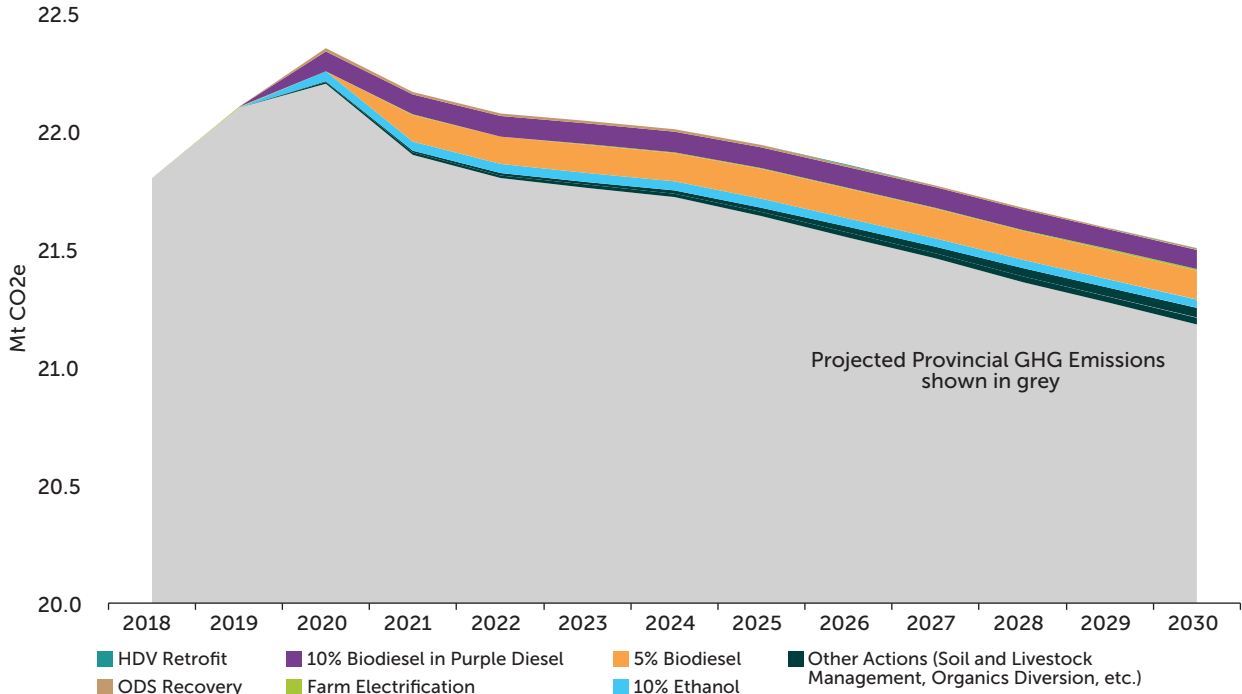
**CSA Pathway – Scenario of Recommended Actions**



Data Source: Navius Research Inc. 2019

The effect of these actions grows over time as they help keep emissions from rising after they are in place. They lead to greater emissions reductions over the longer-term as can be seen in the figure below.

**Future CSA Pathway - Illustrative Scenario of Ongoing Impact of Action**



Data Source: Navius Research Inc. 2019

# Conclusion

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A realistic GHG reduction goal and accounting foundation is the absolutely necessary first step in reducing GHG emissions in Manitoba. The aim is to put Manitoba on a sustained, downward path to reducing emissions. That means 'bending the carbon curve' once and for all. This must be the overarching objective of the first carbon savings account. The EAC believes its recommendations do just that.

Not all GHG reductions can happen at once. We need to reduce emissions while still growing the economy and moving it to a lower carbon footprint overall. This will neither be quick nor easy. But without a clear goal and pathway ahead, Manitoba will not make the progress it needs.

This report sets out that goal and pathway. It provides certainty to governments, business, and Manitobans as to what we must do and how we must do it. It fixes a five-year emissions reduction goal with a clear focus and commitment to achieve it. It establishes a base for adding to that goal with more actions as we measure and adjust our progress. That has not existed before in our province. This is the clear signal Manitobans need to move forward.

Tackling climate change requires all Manitobans to make the effort. This challenge will only get more urgent in the years ahead. This report will help our province meet that challenge.

# Appendix I

## Lists of Recommended Actions for Inclusion in CSA

TABLE 1: Recommended Initiatives to Achieve the 2018-2022 Reduction Goal

Initiative	Description	Policy Instrument	Estimated Emission Reductions 2018-2022 (ktCO <sub>2</sub> e)*
5% Biodiesel Mandate	Manitoba was the first jurisdiction in Canada to establish a biodiesel mandate in 2009, and the mandate requires that diesel fuel sold in the province contain a minimum renewable content blend of 2% by volume. This initiative proposes an increase in the biodiesel mandate to a minimum renewable content blend of 5%.	Regulatory	200
10% Biodiesel in Purple Diesel Mandate	Manitoba was the first jurisdiction in Canada to establish a biodiesel mandate in 2009, and the mandate requires that diesel fuel sold in the province contain a minimum renewable content blend of 2% by volume. This initiative proposes an increase in the biodiesel mandate in marked diesel (which is predominantly used in the agricultural sector) to a minimum renewable content blend of 10% (regardless of whether the provincial blend requirement increased). This increased level of ambition compared to the overall provincial mandate could position Manitoba's agriculture sector as a leader in lower carbon intensity fuel, support the oilseed production industry, and further stimulate the biofuels industry in Manitoba through increased opportunities for local production of biodiesel.	Regulatory	200
10% Ethanol Mandate	Manitoba's current ethanol blending mandate is at 8.5%, which is the highest blending requirement in the country. This initiative proposes an increase in the ethanol mandate for gasoline sold at the pump in the province to 10%.	Regulatory	175
Demand-side Management Programs and Building Codes	This initiative is related to demand-side management (DSM) energy programs. Efficiency Manitoba is a newly created Crown Corporation with a mandate to develop and deliver DSM programs to achieve energy savings targets set in the <i>Efficiency Manitoba Act</i> of 1.5% of annual domestic electricity demand and 0.75% of annual domestic natural gas demand, over a 15-year period. Energy savings could be realized through energy code changes (established by government), product standards (established by government), mandatory energy disclosure and energy benchmarking, and demand-side management incentive programs.	Economic (Incentive) / Regulatory	135
Soil, Crops and Livestock Practices	The Ag Action Manitoba Program provides cost-shared funding support for on-farm beneficial management practices (BMPs), targeting a wide variety of environmental benefits including greenhouse gas mitigation. This initiative proposes an increase in program funding support for those BMPs (current and new) that offer substantial GHG mitigation potential to increase uptake, including: establishment of a cover crop (current); increasing frequency of perennials within annual crop rotations (current); perennial cover for sensitive lands (current); improved quality of pasture and forage-based diets (current); intercropping (current); and nitrogen fertilizer management (new).	Economic (Incentive)	70

**TABLE 1: Recommended Initiatives to Achieve the 2018-2022 Reduction Goal**

Initiative	Description	Policy Instrument	Estimated Emission Reductions 2018-2022 (ktCO <sub>2</sub> e)*
Heavy-duty Vehicle Retrofits	Fuel efficiency is a means to achieve GHG emissions reductions in the transportation sector through This initiative proposes to create a fuel efficiency program for heavy duty vehicles, with cost-sharing rebates on the purchase of fuel saving technologies (retrofits).	Economic (Incentive)	60
Public Sector GHG Emissions Inventory	This initiative is a proposed GHG emission inventory for government-reporting entities (GRE) as a first step in emissions management. GREs include provincial departments, public housing, Crown corporations, post-secondary institutions, school divisions and health care institutions. The inventory would include fleet vehicle emissions, building emissions and electricity use for all facilities operationally controlled by these sectors.	Information	45
Whitegoods / ODS Recovery	This initiative proposes to reduce ozone-depleting substances (ODS) and GHG emissions by increasing the management of end-of-life white goods (e.g., fridges, freezers) with the intent of establishing Extended Producer Responsibility through a producer responsibility organization. Approximately 43,500 fridges and freezers reach end-of-life in Manitoba annually, and there are an unknown number of stockpiled units across the province that have not been recycled to the extent possible. The producer responsibility organization would optimize management (recycling and safe disposal) of all end-of-life whitegoods in the province including in northern and remote areas.	Economic (Incentive)	35
Agriculture Energy BMPs	The Ag Action Manitoba Program provides cost-shared funding support for on-farm beneficial management practices (BMPs), targeting a wide variety of environmental benefits including greenhouse gas mitigation. Current programming does not target GHG emissions from energy use. This initiative is a proposed expansion of program funding to support new energy-related on-farm BMPs that offer substantial GHG mitigation from improved energy efficiency or from switching away from fossil fuels to alternative energy sources. The new BMPs that are proposed include: energy efficiency retrofits (greenhouse facility improvements; heating and ventilation improvements to livestock facilities; grain drying upgrades); supply of biomass heat to displace fossil fuel heat; and on-farm electrification.	Economic (Incentive)	10
Electric Buses in Winnipeg	This initiative proposes adding an initial 20 electric buses to Winnipeg Transit's fleet with associated charging infrastructure.	Investment	5



**TABLE 1: Recommended Initiatives to Achieve the 2018-2022 Reduction Goal**

Initiative	Description	Policy Instrument	Estimated Emission Reductions 2018-2022 (ktCO <sub>2</sub> e)*
Organics Diversion – Manitoba Composts Program	An estimated 30-40% of waste disposed in landfills in Manitoba is organic material. The Manitoba Composts Program was established under Manitoba’s Waste Reduction and Recycling Support Program to support public and private sector composting operations to encourage the diversion of organic waste from landfills. The Manitoba Composts Support Payment is an incentive payment established under the Manitoba Composts Program, with support provided to public and private sector composting facilities that provide processing services for eligible organic waste from residential, industrial, commercial and institutional sectors. This initiative proposes to reach the goal of diverting 100,000 tonnes of organics annually by expanding operations at existing compost facilities and/or developing new compost facilities.	Economic (Incentive)	5
Electrifying Churchill (Displacing Propane)	The community of Churchill is predominantly dependent upon heating oil and propane for building heat, with the fuels typical shipped into the community by rail or marine transport. This initiative proposes the electrification of heat and displacement of propane heat systems for some townhouses. Fuel switching to clean renewable electricity can provide the following benefits: GHG emission reductions; improved energy affordability for the heating of public housing; and enhanced energy security in the supply of heat for homes in a northern community.	Investment	5
Enhanced Carbon Sequestration Programming (Carbon Removal)**	<i>This initiative proposes funding support for expanding existing programming aimed at carbon sequestration. The Conservation District provincial-municipal partnership program (transitioning to the Watershed District program) provides incentives to private and public entities for land management practice changes that improve watershed resiliency in Manitoba. Eligible BMPs include: planting grassed waterways; planting and distributing forage seed; riparian enhancements and restoration; planting shelterbelts; native grassland restoration; and soil health programs such as intercropping and composting.</i>	Cooperative Management / Economic (Incentive)	50
	<i>(**counted as part of Manitoba’s LULUCF contribution)</i>		
Afforestation (Carbon Removal)**	<i>This initiative proposes to promote carbon sequestration through establishing new-forested lands (afforestation) on Crown land or private land such as marginal agricultural land, pasture, abandoned lands, degraded industrial lands such as mines or landfill sites, etc. In addition to large-scale block plantings, shelterbelt establishment and renewal could be an efficient and effective means of promoting carbon sequestration.</i>	Investment / Cooperative Management	5
	<i>(** counted as part of Manitoba’s LULUCF contribution)</i>		

\* Emissions reduction projections are intended to demonstrate order of magnitude and relative impact of each proposed initiative. Emission reductions are not cumulative as there are interactive effects among the initiatives.

**TABLE 2: Additional Recommended Initiatives to Support Achieving the 2018-2022 Reduction Goal**

Initiative	Description	Policy Instrument	Estimated Emission Reductions 2018-2022 (ktCO <sub>2</sub> e)*
10% Biodiesel Mandate	Manitoba was the first jurisdiction in Canada to establish a biodiesel mandate in 2009, and the mandate requires that diesel fuel sold in the province contain a minimum renewable content blend of 2% by volume. This initiative proposes an increase in the biodiesel mandate to a minimum renewable content blend of 10%.	Regulatory	220
15% Ethanol Mandate	Manitoba's current ethanol blending mandate is at 8.5%, which is the highest blending requirement in the country. This initiative would increase the ethanol mandate for gasoline sold at the pump in the province to 15%.	Regulatory	180
4R Nutrient Stewardship	A Memorandum of Understanding exists between Fertilizer Canada, Keystone Agricultural Producers and the Government of Manitoba to promote 4R Nutrient Stewardship as the leading approach to sustainable nutrient beneficial management practices (BMPs) in the province. This initiative proposes to increase the promotion and integration of the 4R Nutrient Stewardship program including: recognizing 4R Nutrient Stewardship as the standard for proper nutrient management in Manitoba; recognizing voluntary actions undertaken to reduce environmental impacts through investments in research as well as accreditation and verification programming; adopting and supporting science-based decisions on matters related to nutrient management; identifying a 4R Nutrient Stewardship target for Manitoba; incentives to growers/grower organizations for implementing a 4R Plan with a 4R designated agri-retailer as opposed to single BMP adoption; working with landowners to incorporate requirements for a 4R Nutrient Stewardship plan.	Economic (Incentive) / Information	130

\* Emissions reduction projections are intended to demonstrate order of magnitude and relative impact of each proposed initiative. Emission reductions are not cumulative as there are interactive effects among the initiatives.

**TABLE 3: Initiatives Requiring Further Evaluation and Analysis (to be considered for future CSAs)**

Initiative	Description	Policy Instrument	Estimated Emission Reductions 2018-2022 (ktCO <sub>2</sub> e)*
20% Biodiesel in Purple Diesel Mandate	<p>Manitoba was the first jurisdiction in Canada to establish a biodiesel mandate in 2009, and the mandate requires that diesel fuel sold in the province contain a minimum renewable content blend of 2% by volume. This initiative would propose an increase in the biodiesel mandate in marked diesel (which is predominantly used in the agricultural sector) to a minimum renewable content blend of 20% (regardless of whether the provincial blend requirement increased). This increased level of ambition compared to the overall provincial mandate could position Manitoba's agriculture sector as a leader in lower carbon intensity fuel, support the oilseed production industry, and further stimulate the biofuels industry in Manitoba through increased opportunities for local production of biodiesel.</p>	Regulatory	430
Modal Shift and Strategic Transport Plan	<p>As an urban centre, commuter hub, and home to 60% of Manitoba's population, the City of Winnipeg offers special opportunities to reduce transportation emissions. The proposed Modal Shift initiative, therefore, focusses on the City of Winnipeg and the Metropolitan Region, as a starting point, and is aligned with implementation of the Winnipeg Climate Action Plan transportation strategy.</p> <p>This initiative is designed to support systems and programs that help Manitobans to use the most sustainable mode of transport for each part of each journey. Less than 1% of Winnipeg's emissions arise from transit, whereas 32% are from personal vehicles. This proposal assumes multiple investments, new policies and regulations, education and awareness, etc. (transit services and facilities, cycling routes and sidewalks, bike racks, etc.). This initiative focused on modal transport, but should be considered as part of broader strategic transport plans to further consider GHG emission reductions, including through enhanced freight and goods movement.</p>	Regulatory / Investment / Information	200
Flex Fuel Refueling Stations	<p>Manitobans can currently choose gasoline that is premium (containing no ethanol), medium (containing up to 5% ethanol) or regular (containing up to 10% ethanol), and the vast majority of diesel users in Manitoba presently have access to only one grade of diesel fuel. There are no retail pumps in the province that provide higher renewable fuel blends such as E85 (for use in flex fuel gasoline vehicles) or B20 (for use in a most light, medium and heavy duty diesel vehicles), and consequently users do not have a choice to use fuels with higher renewable content blends. This initiative proposes to increase consumer access to medium and high renewable fuel blends by providing financial support to fuel marketers and retailers to install fuel pumps and tanks dedicated to higher blend fuels under a new renewable fuel access fund.</p>	Investment	75
FeeEV	<p>This initiative would introduce a fee on the purchase of new, inefficient light duty vehicles and use the revenue collected to provide a financial incentive for the purchase of new battery-electric vehicles. Through the program, a \$100 fee would be applied to the purchase of a new truck in Manitoba (in 2017, there were nearly 50,000 new truck sales in Manitoba). The revenue generated from the fee would be earmarked into an electric vehicle (EV) incentive fund, where consumers purchasing a new EV in the province would be eligible for a rebate valued at \$4000 per vehicle.</p>	Economic (Incentive)	30

**TABLE 3: Initiatives Requiring Further Evaluation and Analysis (to be considered for future CSAs)**

<b>Initiative</b>	<b>Description</b>	<b>Policy Instrument</b>	<b>Estimated Emission Reductions 2018-2022 (ktCO<sub>2</sub>e)*</b>
<b>Off-grid Communities</b>	Manitoba has four off-grid communities (not connected to the province's electricity grid) - Sayisi Dene (Tadoule Lake), Northlands (Lac Brochet), Shamattawa and Barren Lands (Brochet). These communities have diesel-fired generation for electricity and use heating oil for heat. Collectively they consume over 4.4 million litres of diesel fuel annually. The federal government is currently evaluating options for the reduction of diesel-fired generation in these communities, with input from provincial officials and others.	Investment	10
<b>Electric Vehicle and Charging Incentive</b>	This initiative would encourage the adoption of electric vehicles (EV) via an EV and charging station purchase incentive program. The incentive is currently valued at a maximum of \$7,500 per vehicle, \$750 per residential Level 2 charger, and \$1,500 per Level 2 charging point for workplace stations.	Economic (Incentive)	10
<b>Coordinated Land Use Planning and Services</b>	The Government of Manitoba released the findings of its planning, zoning and permitting review. Transparent plans are identified as supportive of efficient regulatory processes. Numerous findings were identified, including the need for unified planning across the Winnipeg Metropolitan Region, including single view of land, water and resource management and coordinated services. Coordinate planning of and use and services could reduce GHG emissions (e.g., transportation planning, etc.).	Economic Regulatory / Investment / Cooperative Management	TBD

\* Emissions reduction projections are intended to demonstrate order of magnitude and relative impact of each proposed initiative. Emission reductions are not cumulative as there are interactive effects among the initiatives.

# Appendix II

## Sector Working Group Members

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### Transportation Sector Working Group

- Advanced Biofuels Canada
- Bison Transport
- Canadian Fuels Association
- CentrePort
- Efficiency Manitoba
- Electric Vehicle Technology and Education Centre - Red River College
- Federated Co-operatives Limited
- Functional Transit
- Global Automakers of Canada
- Green Action Centre
- Husky
- Manitoba Electric Vehicle Association
- Manitoba Heavy Construction Association
- Manitoba Hydro
- Manitoba Motor Dealers Association
- Manitoba Sustainable Development
- Manitoba Trucking Association
- New Flyer
- University of Manitoba
- Winnipeg Airport Authority
- Winnipeg Metropolitan Region
- Winnipeg Trails Association

## **Agriculture Sector Working Group**

- Agriculture and Agri-Food Canada
- Boke Consulting
- Efficiency Manitoba
- Enterprise Machine Intelligence & Learning Initiative
- Federated Co-op Ltd.
- Fertilizer Canada
- International Institute for Sustainable Development
- International Plant Nutrition Institute
- Keystone Agricultural Producers
- Manitoba Agriculture
- Manitoba Beef Producers
- Manitoba Canola Growers
- Manitoba Conservation Districts Association
- Manitoba Forage and Grassland Association
- Manitoba Organic Alliance
- Manitoba Pulse and Soybean Growers
- Manitoba Sustainable Development
- Prairie Agriculture Machinery Institute
- Soil Conservation Council of Canada
- University of Manitoba

## **Buildings Sector Working Group**

- American Society of Heating, Refrigerating and Air-Conditioning Engineers
- Building Owners and Managers Association of Manitoba
- Canada Mortgage and Housing Corporation
- Centre for Applied Research in Sustainable Infrastructure- Red River College
- Construction Association of Rural Manitoba
- Efficiency Manitoba
- Engineers Geoscientists Manitoba
- Manitoba Chapter of the Canada Green Building Council
- Manitoba Green Building Coordination Team
- Manitoba Home Builders Association
- Manitoba Housing Corporation
- Manitoba Real Estate Association
- Manitoba Sustainable Development
- Manitoba Sustainable Energy Association
- Office of the Fire Commissioner
- Sustainable Building Manitoba

## **Waste Sector Working Group**

- City of Winnipeg
- Eco-West Canada & Manitoba Association of Regional Recyclers
- Green Action Centre
- Indigenous Services Canada
- Manitoba Ozone Protection Industry Association
- Manitoba Sustainable Development
- Multi-Material Stewardship Manitoba
- Overton Environmental Enterprises Inc.
- Retail Council of Canada
- Southern Chiefs' Organization
- Strategy Makers
- Winnipeg Metropolitan Region

## **Carbon Sequestration Sector Working Group**

- Canadian Sphagnum Peat Moss Association
- Ducks Unlimited Canada
- International Institute for Sustainable Development
- Manitoba Conservation Districts Association
- Manitoba Forestry Association
- Manitoba Habitat Heritage Corporation
- Manitoba Sustainable Development
- Nature Conservancy of Canada
- Upper Assiniboine River Conservation District

## **Low Carbon Government Sector Working Group**

- Association of Manitoba Municipalities
- City of Brandon
- City of Dauphin
- City of Selkirk
- City of Winnipeg
- Manitoba Association of School Board Officials
- Manitoba Finance
- Manitoba Health, Seniors and Active Living
- Manitoba Liquor & Lotteries
- Manitoba Sustainable Development
- Prairie Mountain Health
- University College of the North
- University of Manitoba
- University of Winnipeg
- Vehicle & Equipment Management Agency
- Winnipeg Regional Health Authority

# Appendix III

## Evaluation and Policy Frameworks

### Evaluation Framework

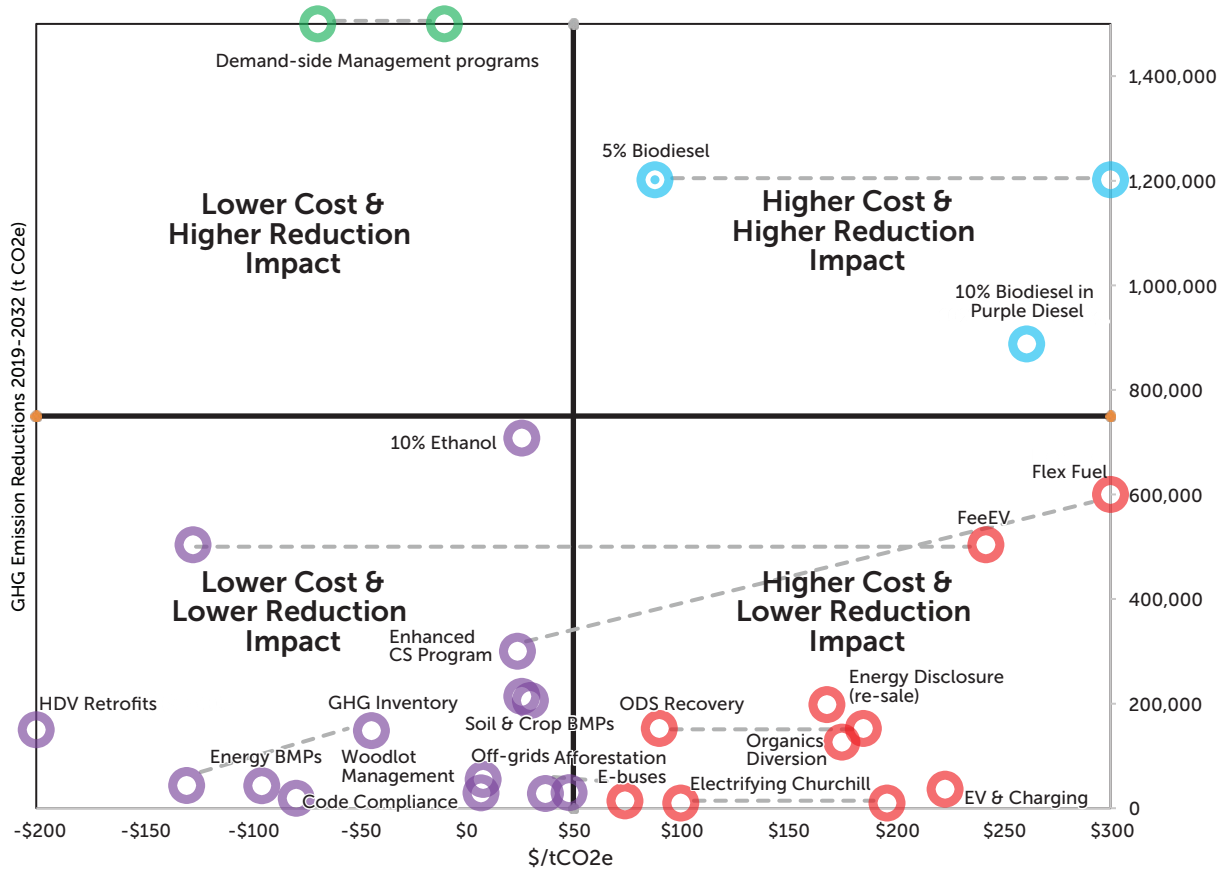
Criteria	Measure
Effectiveness	The peak volume of annual GHG reductions from the policy/program
Cost	The impact of the policy/program to the provincial Treasury
Efficiency	The policy/program costs per tonne of CO2e reduced
Stakeholder Acceptance	The extent to which key stakeholders support the policy/program
Implementation Complexity	The duration necessary to implement the policy/program
Funding Availability	The number of federal funds available to potentially leverage (e.g. LCEF, Green Infrastructure Bank)
Co-benefits	The number of Climate and Green Plan pillars the policy/program complements

### Policy Instruments

Spectrum	Examples
<b>Regulatory Instruments</b> - Statutes, regulations and standards	<ul style="list-style-type: none"> <li>- Technical or design specifications</li> <li>- Performance-based standards</li> <li>- Product bans or substance limits</li> <li>- Approvals and permits</li> <li>- Guidance and codes of practice</li> </ul>
<b>Economic Instruments</b> - Market forces to motivate behaviour	<ul style="list-style-type: none"> <li>- Pollution or product charges (fees, taxes, etc)</li> <li>- Royalties and user charges</li> <li>- Resource allocation trading (emissions, etc)</li> <li>- Deposit / refund systems</li> <li>- Incentives and subsidies (grants, loans, contracts, etc.)</li> </ul>
<b>Cooperative Management Instruments</b> - Binding agreements	<ul style="list-style-type: none"> <li>- Conservation easements</li> <li>- Negotiated agreements (covenants)</li> <li>- Challenge requirements (implementation strategies to meet targets)</li> </ul>
<b>Information Instruments</b> - Disclosure and capacity building	<ul style="list-style-type: none"> <li>- Education, awareness and outreach</li> <li>- Product labelling</li> <li>- Performance and environmental reporting</li> <li>- Performance awards</li> </ul>
<b>Voluntary Initiatives</b> - Stewardship	<ul style="list-style-type: none"> <li>- Environmental management systems (ISO, Responsible Care, etc.)</li> <li>- Collaboration / consensus approaches (partnerships)</li> <li>- Corporate social responsibility and voluntary reporting</li> <li>- Procurement standards</li> </ul>



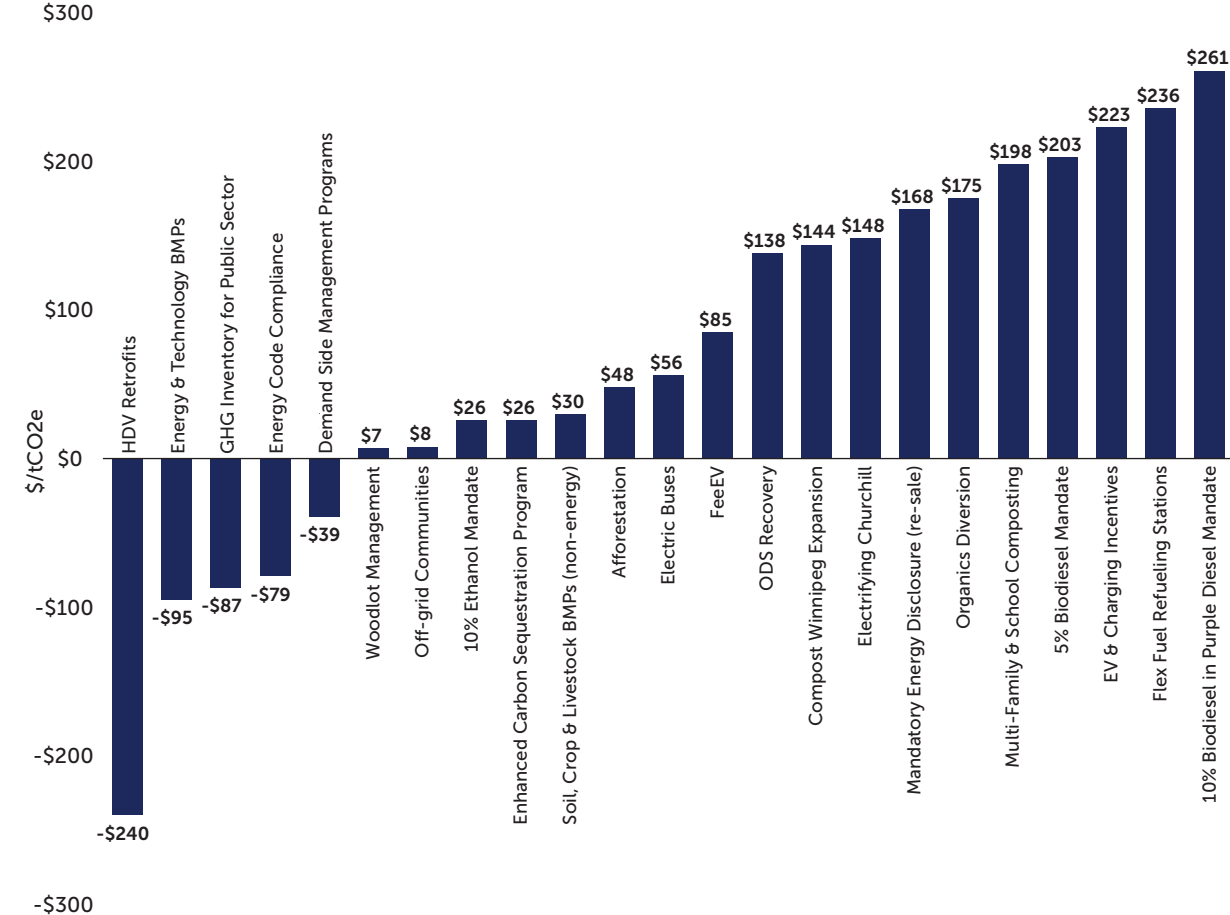
## Evaluation of Potential Mitigation Opportunities - Effectiveness and Efficiency



Data Source: Sector Working Groups, 2019

Potential mitigation opportunities are plotted in four categories based on the evaluation framework effectiveness and efficiency criteria results. Each category is plotted in quadrants that are colour-coded. Potential initiatives with lower costs on a cost per tonne of emissions reduced basis (more efficient) are plotted in the left quadrants. Potential initiatives with a higher reduction impact in terms of cumulative GHG emissions reductions over the 2019 to 2032 period (more effective) are plotted in the top quadrants. Grey dotted lines between potential initiatives represent the range of results, depending on the assumptions considered in the evaluation framework assessment.

Evaluation of Potential Mitigation Opportunities - Efficiency



Data Source: Sector Working Groups, 2019

# Appendix IV

## Modelling Details

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### Model

The modelling was undertaken using a computable general equilibrium model established by Navius Research Inc. Navius works with numerous and diverse clients to evaluate national and provincial climate change strategies including British Columbia and Ontario.

The EAC used this model in two ways: first, to compare forecast results with those from ECCC across six different scenarios, and second, to identify cost-effective emissions reductions actions.

The Navius model is called gTech. It is an integrated energy-economy model, which combines a detailed representation of energy-related technologies with key economic transactions within the economy. Its combination of technological detail and macroeconomic completeness allows simulation of the effects of virtually various types of energy or climate policy on technology adoption, energy consumption, greenhouse gas emissions and the broader economy. The model:

- includes 12 regions of North America (all Canadian provinces and territories and the United States);
- balances supply and demand for 86 commodities and services in and across each region;
- simulates how households and businesses select technologies; and
- includes over 50 end-uses (e.g., process heat, clothes washer, manure management, etc.) and 200 technologies (including emerging technologies) to meet end-use demand across all sectors of the economy.

### Assumptions

Modelling inherently has some degree of uncertainty, and associated outputs reflect the underlying assumptions. Assumptions related to future economic and population growth as well as assumptions related to policy that influences GHG emissions influence the baseline projections. The gTech model includes federal and provincial forecast information related to economic and population growth. Notably, the baseline projection includes existing and established policies across Canada, including but not limited to carbon pricing.

Key assumptions include:

- GDP growth is 2% based on Finance Canada projections.
- Electricity demand increases to 25 TWh by 2022.

Navius Research Inc. Model Assumptions	2017	2018	2019	2020	2021	2022
<b>GDP growth rate</b>						
Total	2.0%	2.0%	2.0%	2.0%	1.9%	1.9%
<i>Transportation</i>	1.4%	1.4%	1.4%	1.4%	2.0%	2.0%
<i>Utilities</i>	0.6%	0.6%	0.6%	0.6%	0.0%	0.0%
<i>Resources</i>	1.1%	1.1%	1.1%	1.1%	3.0%	3.0%
<i>Manufacturing</i>	2.6%	2.6%	2.6%	2.6%	1.1%	1.1%
<i>Services</i>	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%
<i>Construction</i>	1.3%	1.3%	1.3%	1.3%	1.6%	1.6%
Crude Oil (2010\$ per barrel)	76.0	73.3	70.5	67.8	69.2	70.6
Natural Gas (2010\$ per mmbTU)	3.8	3.7	3.5	3.3	3.4	3.6
Electricity demand (PJ)	86.1	87.1	88.1	89.1	89.6	90.1
Carbon price Nominal \$/t CO <sub>2</sub> e	n/a	n/a	20	30	40	50

For comparison purposes, the assumptions in gTech are comparable to those included in the Environment and Climate Change Canada's reference case forecasts. Canada's model generally includes macro-economic data from: Finance Canada's annual economic statements and long-term economic projections; population growth from Statistics Canada projections; and oil and natural gas prices and production for the National Energy Board's projections.

# Appendix V

## Low Carbon Government Initiatives

Asset Management	Examples of Initiatives
i. <b>Reduce Energy Demand</b> Demand for fossil fuel consumption can be reduced by maximizing the efficiency of existing assets through management practices. Fine-tuning the existing infrastructure (buildings, intersections, highways etc.) and removing wasted capacity can stimulate reductions in GHG emissions and are less cost intensive.	<ul style="list-style-type: none"> <li>- Install automated tracking on fleet vehicles</li> <li>- Right-size the GoM vehicle fleet (remove underutilized leavy-duty and light-duty vehicles from the fleet)</li> <li>- Install building automation systems to ensure optimal operation of systems (HVAC)</li> <li>- "Shutdown" non-essential buildings during holidays</li> <li>- Adopt climate friendly specifications when acquiring new assets</li> </ul>
ii. <b>Waste Reduction</b> Solid waste generation due directly to government operations or contracted services are not typically managed or tracked. While to volumes are not large, GoM does business with a large part of the market and represents an opportunity to lead or influence how solid waste is managed in multiple sectors.	<ul style="list-style-type: none"> <li>- Construction waste management for new buildings and renovations</li> <li>- Recycling services on Manitoba Housing properties</li> <li>- Awareness program to reduce contamination of recyclables</li> <li>- Divert biomedical waste from incineration</li> </ul>
iii. <b>Fuel Switching</b> Fuel switching for owned assets can be can be effective to demonstrate government leadership and for GHG emission reductions, but are potentially more complicated and costly. Electrification is not the only approach - propane to natural gas, biomass, or geothermal to heat buildings would also reduce GHG emissions.	<ul style="list-style-type: none"> <li>- Evaluate fuel-switching opportunities during asset maintenance or replacement</li> <li>- Convert buildings from propane to natural gas</li> <li>- Increase biofuels blends in fleet vehicles</li> <li>- Install EV charging stations at government buildings and rural areas</li> </ul>
iv. <b>Crown land management practices</b> Best management practices to reduce and sequester emissions – forestry, agriculture – in leases and GoM operations.	

Policies and Practices		Examples of Initiatives
i. <b>Operational policies</b>	How GoM employees operate assets impacts emissions can impact emissions. Setting operating policies paired with monitoring compliance within the asset is a visible and inexpensive measure.	<ul style="list-style-type: none"> <li>- Establish maximum allowable speed for GoM vehicles</li> <li>- Reduce vehicle idling</li> <li>- Migrate paper mail service to email-encrypted delivery of standard government documentation</li> <li>- Electronic bid systems , digital records management</li> </ul>
ii. <b>Support Innovation</b>	New and innovative services, products and materials exist in Manitoba but often struggle with access to contracts and sales. The opportunity to access innovation can benefit government operations and support local business development. Initiatives focus on testing and incubating innovative practices and technology in the development, operation and maintenance of Manitoba assets.	<ul style="list-style-type: none"> <li>- Build Net Zero demonstration house to test best technologies for new builds and demonstrate leadership</li> <li>- Partner with academic intuitions to promote research</li> </ul>
iii. <b>Procurement requirements and processes</b>	Manitoba procures a relatively significant value of goods and services on a continual basis. Each purchase has the potential to communicate and demonstrate Manitoba’s commitment to the vision of the Climate and Green Plan. Initiatives focus on sustainable specifications and market leverage.	<ul style="list-style-type: none"> <li>- Require reporting on services or commodities that have GHG implications</li> <li>- Reduce purchase of single use goods</li> </ul>
Reporting and Performance Metrics		Examples of Initiatives
i. <b>Tracking, reporting and Balanced Scorecards</b>	Fulfill tracking and reporting requirements of <i>The Climate and Green Plan Implementation Act</i> and Balanced Scorecard initiatives to provide transparency and report progress to achievement of outcomes.	<ul style="list-style-type: none"> <li>- Fulfil reporting requirements outlined in <i>The Climate and Green Plan Implementation Act</i></li> <li>- Tracking and reporting on fuel use data across the GoM fleet</li> </ul>

# Appendix VI

## GHG Forecasts Under Various Baseline Reference Cases and Actual Emissions

Megatonnes Co2e	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ECCC 2015 Reference Case	20.8	21.4	20.9	21.1	21.2	21.4	21.5	21.7	21.8	22.2	22.4	22.6	22.8	23.0
ECCC 2017 Reference Case	20.4	20.6	20.8	20.8	20.9	20.9	20.9	21.0	21.2	21.2	21.2	21.2	21.3	21.3
ECCC 2017 Additional Measures Reference Case (includes carbon pricing)	20.1	20.3	20.5	20.8	20.7	20.6	20.4	20.3	20.2	20.2	20.1	20.0	20.0	19.9
ECCC 2018 Reference Case	20.2	21.0	20.9	20.8	20.9	21.2	21.4	21.6	21.8	21.7	21.8	21.8	21.7	21.7
ECCC 2018 Additional Measures Reference Case (includes carbon pricing)	20.2	21.0	20.9	20.8	20.9	21.2	21.4	21.4	21.5	21.4	20.8	20.7	20.5	20.4
Navius 2019 gTech Reference	19.9	20.3	20.7	21.0	21.3	21.6	21.8	22.1	22.4	22.3	22.2	22.1	22.1	22.0
NIR 2019 (Emissions)	20.2	20.9	20.8	20.6	21.0	21.7	-	-	-	-	-	-	-	-

# Appendix VII

## Glossary of Terms

Term	Definition
4R Nutrient Stewardship	A stewardship program that has four principles (Right Source @ Right Rate, Right Time, Right Place®) to help improve nutrient management of fertilizer use in farming practices.
Biofuel	Fuel derived from biomass or organic matter for energy purposes, such as transportation or heating fuel.
Carbon dioxide equivalent (CO <sub>2</sub> e)	Term used to describe different gases in a common unit, equivalency to carbon dioxide (CO <sub>2</sub> ).
Carbon savings account	Part of the Made-in-Manitoba Climate and Green Plan to drive emission reductions for the province. It is the sum of all emission reductions over a five-year period on a cumulative basis.
Carbon sequestration	It is the process of capturing and storing carbon dioxide. It is usually a long-term storage of carbon in plants, soils, geologic formations, and the ocean.
Carbon sink	A natural reservoir, such as a forest, ocean, that absorbs and stores carbon dioxide from the atmosphere.
Carbon tax	A fiscal policy tool used by governments that applies a charge on the greenhouse gas content of fossil fuels.
Clean Fuel Standard	A Government of Canada policy designed to reduce emissions from liquid, gaseous and solid fuels used in transportation, industry and buildings. The policy has a target of reducing 30 million tonnes of CO <sub>2</sub> e annually by 2030.
Cumulative emissions	Described as the total sum of GHG emissions within specific time period.
Demand-side management	Initiatives or technologies designed to encourage consumers lower their energy consumption.
Emissions-intensive, trade-exposed (EITE)	Industries with high levels of emissions relative to volume of output and vulnerable to outside competitors.
Fuel switching	Displacing or changing one fuel type for another. Usually switching from fossil fuels to non-fossil fuel sources.
Forecast	Modeling results used to predict future outcomes, such as GHG emissions.
Gross domestic product	The measure of the total output of goods and services of a given country.
Greenhouse gas (GHG)	Atmospheric gases which absorbs and re-emits heat, and include water vapor (H <sub>2</sub> O), carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), ozone (O <sub>3</sub> ), chlorofluorocarbons (CFCs), and hydrofluorocarbons (includes HCFCs and HFCs).



Term	Definition
Intergovernmental Panel on Climate Change (IPCC)	A United Nations body for assessing the science related to climate change.
Kilo/Mega/tonnes	Metrics for measuring GHG emissions, usually for carbon dioxide (CO <sub>2</sub> ) or carbon dioxide equivalent (CO <sub>2</sub> e).
MUSH	Acronym used to group municipalities, universities, schools and hospitals.
Net Zero	A home or system that produces as much energy as it consumes on an annual basis.
Per capita	A metric used to denote on a per-person basis.
Reference case	The scenario used as a baseline to measure additional actions or programs against and analyze changes in outcomes.
Reference year	The year used as a starting point to measure progress against.
Scenarios	Used in economic modelling to analyze possible future outcomes by considering alternative possible measures or actions. A scenario analysis can demonstrate several possible future outcomes.
Small Business Venture Capital Tax Credit	A Government of Manitoba incentive that provides a non-refundable provincial tax credit of up to 45% to individuals and corporations who acquire equity capital in eligible Manitoba enterprises.

# Appendix VIII

## EAC Members and Bios

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### **Colleen Sklar, *Chair***

Colleen Sklar is the Executive Director of the Winnipeg Metropolitan Region where she works collaboratively with local leaders from across Manitoba to develop integrated regional responses and innovative approaches to land use planning, infrastructure investment, economic development, water management and protection to allow our growing communities to meet the demands of the future. Colleen is an IAP2 Certified Community Consultant, a recipient of the Queen Elizabeth Diamond Jubilee Medal for her volunteer work and acted in the capacity of vice-chair on the Lake Manitoba Flood Appeal Commission for the Province of Manitoba.

### **Dennis Anderson, *BSc, MBA, PhD***

Dr. Dennis Anderson (Gimli) served 10 years as President of Brandon University (BU). Prior to joining BU, he was marketing professor and Associate Dean of Asper School of Business at the University of Manitoba. He conducted a number of research studies for the federal government and utility organizations focused on consumers' energy consumption behaviour, attitudes, and preferences. And he completed numerous applied research studies and consultations for private and public organizations on the marketing feasibility of new products and services.

### **Ian Gillies**

Now retired, Ian Gillies (Winnipeg) had a thirty-year career with Cargill Limited, where he served in various management roles from 1984-2013. He holds a master of natural resource management from the University of Manitoba and has served on the Clean Environment Commission since 2016.

### **Karla Guyn**

Karla Guyn (Lockport) is the CEO of Ducks Unlimited Canada. Prior to assuming the role of CEO, she held several senior leadership positions with Ducks Unlimited Canada over her 22-year career with the organization. This included serving as the national director of conservation (2013 – 2016) and director of conservation planning (2006-2013). She is recognized as a North American conservation leader, serving on international committees including the North American Waterfowl Management Plan and the Sustainable Forestry Initiative. Karla holds a masters of Science and a PhD from the University of Saskatchewan.

### **Jim Irwin**

Jim Irwin (Lake Audy) is the owner of Experiential Tourism Strategies Consulting. From 1984-2015, he operated Riding Mountain Guest Ranch. Mr. Irwin holds a bachelor of science, a master of science and a PhD. His areas of expertise include ecology, wildlife and resource management and wildlife diseases. He also serves as chair of the Riding Mountain UNESCO World Biosphere Reserve.

### **Andrew MacSkimming, *Vice-Chair***

Andrew MacSkimming (Winnipeg) is a lawyer and owner of A.H MacSkimming Law Office. He has been a practicing lawyer since 2005 and has also worked as a Senior Policy Advisor for the federal Office of the Minister of the Environment (2006-2007). Prior to that he worked as a lawyer and articling student with Environment Canada Legal Services and as a Research Analyst with a leading energy consulting and brokerage firm. Mr. MacSkimming has also served in a variety of public roles including as Chair of the Manitoba Bar Association's Environmental, Energy and Resources Law Section. He holds an LL.M. or Master of Laws in Environmental Law (2004).

## **Dimple Roy**

Dimple Roy (Winnipeg) is a director with the International Institute for Sustainable Development, where she has worked in various capacities since 2008. Ms. Roy provides research leadership, policy analyses, and management functions on issues related to sustainable development in the context of people, land, water and agriculture in Canada and globally. She is also a former policy analyst for Manitoba Conservation (2005-2006).

## **Laurie Streich**

Laurie Streich (Winnipeg) retired from government in 2015. She served in many environment-related positions during her career, including her role as director of the pollution prevention branch of the former department of Manitoba Conservation. Ms. Streich has been a member of the Clean Environment Commission since 2016.

## **David McLaughlin, *Technical Advisor to the EAC***

David McLaughlin (Ottawa) MA, MBA, is one of Canada's leading climate and sustainability experts. He is currently director, climate change for the International Institute for Sustainable Development. He is the former president and CEO of the National Round Table on the Environment and the Economy. He was senior advisor, climate change in the Manitoba government. Mr. McLaughlin served in the New Brunswick government as deputy minister for policy and planning, secretary to the Cabinet Committee on Policy and Priorities, and Intergovernmental Affairs. He was chief of staff to the Prime Minister of Canada, the Premier of New Brunswick, and federal Minister of Finance.

**REFERENCE:**

Overview, Pie Chart, PDF page 22

**PREAMBLE TO IR (IF ANY):**

The components of the Plan budget are shown in the pie chart referenced. Of the total budget 65% goes to incentives, 20% to the private sector and 2% allocated to securing private industry support services.

**QUESTION:**

- a. Please describe in detail what is meant by each segment of the pie chart.
- b. Does the 87% include Efficiency Manitoba's staff costs? If not, why not?
- c. How much of staff costs are spent on people who will work and reside in Manitoba

**RATIONALE FOR QUESTION:**

Need a clearer picture on the impact to the Manitoba economy

**RESPONSE:**

- a) Incentives – Financial benefits 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 service (2020/23 Efficiency Plan, Attachment 1 - Glossary, p. 443 of 591). Additional details are also provided in Table 4.5 (Section 4.4.1, p. 113 of 591)  
Program Costs – Program Costs include costs related to programs such as program delivery, enabling strategies, tools, procurement, advertising, contracting, and evaluation (See Table 4.6 in Section 4.4.2, p. 115 of 591).  
Staff Costs – Staff Costs are the cost related to personnel employed by Efficiency Manitoba and the related employee benefits Additional details are provided in Table 4.7 (Section 4.4.2, p. 115 of 591).

Overhead – Overhead cost are for expenses related to the Board of Directors, regulatory, accommodations and the Energy Efficiency Advisory Group. Additional details are provided in Table 4.8 (Section 4.4.3, p. 120 of 591).

- b) On page 22 of the filing, it was stated “87% of Efficiency Manitoba’s combined budget is returned to Manitobans through program incentives, private sector energy efficiency delivery partners and outsourced corporate support functions”. This statement implies that all 87% of the budget will be spent in Manitoba. However, it was meant to say that 87% of the budget will be returned to Manitobans and the public sector. It is not anticipated that all 87% will be spent within Manitoba, as some private sector expenses will be related to businesses outside of Manitoba. The 87% does not include Efficiency Manitoba staff.
  
- c) It is expected that 100% of Efficiency Manitoba’s employees will work and reside in Manitoba.

**REFERENCE:**

Overview, Electric and Natural Gas Portfolio Summary, PDF page 37

**PREAMBLE TO IR (IF ANY):**

The table provides the Composition of energy savings and by Customer Segment. The proportion of budget and energy savings vary widely among the segments suggesting a much different cost per unit savings across the customers segments. We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba

**QUESTION:**

- a) Please provide the following data for each segment
  - i. Annual electric energy consumed
  - ii. Number of electric customers
  - iii. Annual natural gas consumed
  - iv. Number of natural gas customers
- b) Please provide the levelized cost of electric energy efficiency and natural gas energy efficiency for each segment
- c) Please explain the wide variance in savings and budget percentages among different customer segments.

**RATIONALE FOR QUESTION:**

Necessary to understand the cost of comprehensive inclusion into energy efficiency programs

**RESPONSE:**

a) Please see table below which answers part i., ii., iii., and iv.

Customer Segment	Annual Electric Energy Consumed (GWh)	% of Total	# of Electric Customers	% of Total	Annual Natural Gas Consumed (million m <sup>3</sup> )	% of Total	# of Natural Gas Customers	% of Total
Agricultural	811	4%	4,040	1%				
Commercial	6,122	27%	57,863	10%				
Industrial	7,502	33%	6,656	1%				
Residential	7,454	33%	494,237	85%				
First Nation On Reserve Homes & Businesses	845	4%	20,451	4%				
<b>Total</b>	<b>22,734</b>	<b>100%</b>	<b>583,246</b>	<b>100%</b>		<b>100%</b>		<b>100%</b>

2b

Please note that the First Nations data consists of only First Nation on-reserve and that the lower income customers who may qualify for Income Qualified Offers are included within the Residential customer segment as it is not possible to extract actual energy consumption data for this customer segment. As per the 2020/23 Efficiency Plan (Appendix A, Section A5, p. 315 of 591), it is estimated there are approximately 159,000 homes in Manitoba that fall below the LICO 125 threshold.

b) Please see table below for PACT levelized costs for electric by segment. Note that the Indigenous PACT levelized costs include all the programs under the Indigenous bundle and not just programming to First Nations on-reserve.

<b>PACT Levelized Cost - Electric Portfolio</b>	
<b>PACT Levelized Cost (cents/kWh)</b>	
Agricultural	1.61
Commercial	1.75
Industrial	1.48
Residential	3.04
Indigenous	4.67
Income Qualified	3.70
<b>Program Impact Totals</b>	<b>1.89</b>

*Note. Programs only - Does not include Program Support, Enabling Strategies & Corporate Overhead.*

Please see table below for PACT levelized costs for natural gas by segment. Note that the Indigenous PACT levelized costs include all the programs under the Indigenous bundle.

<b>PACT Levelized Cost - Natural Gas Portfolio</b>	
<b>PACT Levelized Cost (cents/m<sup>3</sup>)</b>	
<b>Agricultural</b>	5.65
<b>Commercial</b>	12.90
<b>Industrial</b>	3.17
<b>Residential</b>	19.49
<b>Indigenous</b>	44.94
<b>Income Qualified</b>	40.29
<b>Program Impact Totals</b>	<b>13.03</b>

*Note. Programs only - Does not include Program Support, Enabling Strategies & Corporate Overhead.*

- c) As per the 2020/23 Efficiency Plan, Section 1, p.37 of 591 – Composition of Annual Energy Savings & Budget by Customer Segment – there is, a wide variance in savings and budget percentages among different customer segments. Related to this however, in the table provided above in response to question a) i., ii., iii., and iv., please note the corresponding ranges related to the relative contribution of energy consumption across the various customer segments in question. When comparing the relative contribution of energy consumption across the various customer segments to the composition of annual energy savings & budget by customer segment, please observe that the figures are directionally aligned. Any significant differences between the two tables, within the same sector, can be attributed to factors such as the impact of historical demand side management participation, as well as market potential considerations such as limited electric savings opportunities to offset the prevalence of electric space and water heating within the residential market.



**REFERENCE:**

The Efficiency Manitoba Regulation 119/2019, Section 7(a & b)

**PREAMBLE TO IR (IF ANY):**

The Efficiency Manitoba Act, Section 7 (a & b) mentions that Efficiency Manitoba may participate or assist other stakeholders in the development and updating of building or energy codes, standards and regulations, including model codes, standards or regulations, in respect of matters relating to energy efficiency.

**QUESTION:**

- a) Please confirm if Efficiency Manitoba is planning to participate in any activities related with codes & standards mentioned in The Efficiency Manitoba Act, Section 7(a &b) during the period of proposed 2020/23 Plan period.
- b) If yes to above question, please provide detailed annual energy savings, both electric and natural gas, along with the proposed budget related with activities surrounding codes and standards mentioned in The Efficiency Manitoba Act, Section 7(a &b).

**RATIONALE FOR QUESTION:**

Comparing the Efficiency Manitoba Act with the proposed Plan.

**RESPONSE:**

- a) Please see response to DAYMARK/EM I-62 for activities that Efficiency Manitoba will be undertaking in relation to 7 (a) of the Efficiency Manitoba Regulation 119/2019.

Section 7 (b) states that Efficiency Manitoba may “assist various levels of government in consulting with Manitoba stakeholders for the purpose of developing or updating building or energy codes, standards and regulations in respect of matters relating to energy efficiency.” Efficiency Manitoba has not yet established specific activities related to 7 (b) of the Efficiency Manitoba Regulation 119/2019.

- b) Please see response to PUB/EM I-39 for annual energy savings, both electric and natural gas, along with the proposed budget related to codes and standards activities mentioned in The Efficiency Manitoba Act, Section 7(a).

**REFERENCE:**

The Efficiency Manitoba Regulation 119/2019, Section 7 ( c )

**PREAMBLE TO IR (IF ANY):**

The Efficiency Manitoba Act, Section 7(c) mentions that Efficiency Manitoba may develop and implement programs to improve building designs, building techniques and building technologies to increase energy efficiency.

**QUESTION:**

- a) Please confirm if Efficiency Manitoba is planning to develop and implement building energy efficiency activities mentioned in The Efficiency Manitoba Act, Section 7(c) during the period of proposed 2020/23 Plan period.
- b) If yes to above question, please provide detailed annual energy savings, both electric and natural gas, along with the proposed budget related with activities surrounding developing and implementing building energy efficiency activities mentioned in The Efficiency Manitoba Act, Section 7(c).

**RATIONALE FOR QUESTION:**

Comparing the Efficiency Manitoba Act with the proposed Plan.

**RESPONSE:**

- a) Confirmed. Efficiency Manitoba is planning to develop and implement building energy efficiency activities mentioned in The Efficiency Manitoba Regulation, Section 7(c) during the period of proposed 2020/23 Efficiency Plan (“Plan”).
- b) Please see below table for detailed annual energy savings, both electric and natural gas, along with the proposed budget related to activities surrounding developing and implementing building energy efficiency activities mentioned in The Efficiency Manitoba Regulation, Section 7(c):

Program	Year 1 (2020-21)			Year 2 (2021-22)			Year 3 (2022-23)		
	Elec savings (kWh)	NG savings	Program budget	Elec savings (kWh)	NG savings	Program budget	Elec savings (kWh)	NG savings	Program budget
Commercial Custom Measures Program [Plan, Appendix A – Section A7, p.399 of 591]	285,000	125,000	\$271,000	456,000	200,000	\$348,000	627,000	275,000	\$427,000
Enhanced Building Operations Program [Plan, Appendix A – Section A7, p.391 of 591]	1,078,000	89,000	\$471,000	2,223,000	184,000	\$654,000	3,166,000	263,000	\$885,000
New Buildings Program 2.1 [Plan, Appendix A – Section A7, p.389 of 591]	3,994,000	449,000	\$2,768,000	4,992,000	561,000	\$3,428,000	3,994,000	449,000	\$2,875,000

*Note.* Electric energy savings at generation. Budget in nominal dollars

**REFERENCE:**

The Efficiency Manitoba Regulation 119/2019, Section 8 outlines the

**PREAMBLE TO IR (IF ANY):**

The Efficiency Manitoba Act mentions that net savings are attributable to the savings goal resulting from DSM initiative undertaken by Manitoba Hydro under four conditions specified in Section 8(b). We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba

**QUESTION:**

- a) As specified in Efficiency Manitoba Act Section 8.b.i, please provide detailed measure-level savings and budget information if any Manitoba Hydro initiative is included in the proposed 2020/23 Efficiency Plan.
- b) As specified in Efficiency Manitoba Act Section 8.b.ii, please provide detailed measure-level savings and budget information if the proposed 2020/23 Efficiency Plan includes any measures initiated by Manitoba Hydro but operationally supported by Efficiency Manitoba.
- c) As specified in Efficiency Manitoba Act Section 8.b.iii, please provide detailed measure-level savings and budget information if the proposed 2020/23 Efficiency Plan includes any codes & standards activities to which Manitoba Hydro or Efficiency Manitoba (EM) has made material contribution.
- d) As specified in Efficiency Manitoba Act Section 8.b.iv, please provide detailed savings and budget information savings included in the goal includes any impact of rate to which Efficiency Manitoba (EM) has made a material contribution.

**RATIONALE FOR QUESTION:**

To understand what is included in proposed EE portfolio.

**RESPONSE:**

- a) Only the Load Displacement Program Bundle contains an industrial project that was undertaken by Manitoba Hydro and contains incremental energy savings included within the 2020/23 Efficiency Plan (“Plan”) as Efficiency Manitoba intends to provide ongoing operating incentives to achieve these incremental energy savings. Efficiency Manitoba has provided electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK. The electronic workpapers associated with the Load Displacement Program Bundle include the requested savings and budget information.
- b) Please see the response to DAYMARK/EM I-10a.
- c) Please see the response to DAYMARK/EM I-8.
- d) Please see response to PUB/EM – 1 b).

**REFERENCE:**

Reference: The Efficiency Manitoba Regulation 119/2019, Section 8(b)

**PREAMBLE TO IR (IF ANY):**

The Efficiency Manitoba Act mentions that net savings are attributable to the savings goal resulting from DSM initiative undertaken by Manitoba Hydro under four conditions specified in Section 8(b).

**QUESTION:**

Please discuss the cost-effectiveness analysis methodology performed by Efficiency Manitoba for any DSM initiative undertaken by Manitoba Hydro included in its proposed 2020/23 Plan.

**RATIONALE FOR QUESTION:**

To understand the cost-effectiveness analysis performed by Efficiency Manitoba of any Manitoba Hydro initiated DSM activities included in Efficiency Manitoba's proposed 2020/23 Plan.

**RESPONSE:**

As identified in DAYMARK-EM I-10a, only the Load Displacement Program Bundle contains an industrial project that was undertaken by Manitoba Hydro and contains incremental energy savings included within the 2020/23 Efficiency Plan ("Plan") as Efficiency Manitoba intends to provide ongoing operating incentives to achieve these incremental energy savings. Appendix A – Section A7.9 (p. 399 of 591) provides the savings, cost and cost-effectiveness (program administrator cost test analysis) results for the Load Displacement Program.

Efficiency Manitoba has provided electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK. The electronic workpapers associated with the Load Displacement Program Bundle include the requested cost-effectiveness information on a project level basis.

**REFERENCE:**

Section 3.2.3, PDF page 83-89, lines 127-219.

**PREAMBLE TO IR (IF ANY):**

The report mentions existing Manitoba Hydro's offering enhancements to existing DSM programs but does not explain if these are for electric or natural gas customers.

**QUESTION:**

Please verify that Centra Gas will no longer offer their existing DSM and energy efficiency programs.

**RATIONALE FOR QUESTION:**

Necessary to understand the overall benefit to Manitoba Hydro / Centra Gas customers, including all customer classes and confirm any overlap.

**RESPONSE:**

Manitoba Hydro will no longer offer natural gas DSM programs.



**REFERENCE:**

Section 3.3 Comprehensive Engagement, PDF page 90, lines 234-238, and Section 4, PDF page 106, lines 12-16.

**PREAMBLE TO IR (IF ANY):**

The report emphasizes in both Section 3.3 and Section 4 that it is critical to engage with delivery partners -- including 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 -- for program design decisions including incentive structures and implementation strategies, and that it relies on continuity of programs for Manitoba customers and stability for service providers and delivery partners to meet the mandated targets within the first three years of the plan.

**QUESTION:**

- a) Please provide a list of these critical service providers and delivery partners who will be relied upon to meet mandated annual targets, showing which will be relied on for electric versus natural gas measures and which are new or existing providers.
- b) Please provide any estimates of additional partners by type that Efficiency Manitoba will be seeking.
- c) Also, please provide a timeframe for onboarding new partners to the program.
- d) Please provide a table that shows the total assumed number of participants for each natural gas efficiency measure by customer class and by year over the life of each measure and explain how this participation level is determined.
- e) Please indicate which program delivery partners will be responsible for converting these target customers to participants in each year.
- f) Please explain how Efficiency Manitoba derived what it considers to be the appropriate incentive level to convert these customers to participants, and how this incentive level differs by customer class.

**RATIONALE FOR QUESTION:**

Determine the pace at which Efficiency Manitoba will be able meet the mandated targets for the first year of the plan.

**RESPONSE:**

- a) Delivery partners will include contractors, retailers, installers, distributors, wholesalers, service professionals, and procured third-party contractors and service providers. Specific parties have not yet been onboarded by Efficiency Manitoba therefore a list is not available at this time. Providers may be responsible for electric or natural gas measures or both, depending on their type of business. They may be new to offering DSM programming or may have previously participated in Manitoba Hydro's energy efficiency programs.
- b) Efficiency Manitoba will need to recruit service providers and delivery partners to deliver programs starting April 1, 2020 and beyond. The following are estimates of the service providers Efficiency Manitoba will be seeking along with the estimated timeframe for onboarding of these new service providers.

Service Provider Description	Timeframe for onboarding new service provider
<p><b>Home Renovation Program</b></p> <p>1) <b>Energy Audit Service providers</b> – service providers will be needed to conduct the home energy audits under the Home Renovation Program. These providers will conduct pre and post home energy audits for residential customers participating in the Home Renovation Program.</p> <p>2) <b>Verification Service Provider</b> - A service provider will be needed to conduct pre and post install verifications for insulation and window/door upgrades.</p>	<p>Energy Audit providers – Fall/Winter 2020</p> <p>Verification provider – Early 2020</p>
<p><b>New Homes and Major Renovation Programs</b></p> <p>3) <b>Certified Service Organization delivering EnerGuide</b> - a service provider with a Service Organization (SO) designation from</p>	<p>New Homes provider – Early 2020</p>

<p>Natural Resources Canada, qualified to conduct energy modelling, deliver EnerGuide pre-and post-assessments and issue ratings in the province of Manitoba via a staff of Certified Energy Advisors.</p>	<p>Major Renovation provider - Fall/Winter 2020</p>
<p><b>Product Rebates</b></p> <p>4) <b>Retail and Online Rebates service provider</b> – A service provider will coordinate and secure contractual agreements with retailers, build/maintain the program’s online application form and process customer inquiries/incentives.</p> <p>5) <b>Appliance Recycling Program service provider</b> – A provider will maintain a phone line and website to accept customer enrollments, remove appliances from customer homes, manage the disposal and recycling of appliances, issue incentives to customers, and handle customer inquiries, issues, and complaints.</p>	<p>Retail and Online Rebates provider – Procured October 2019</p> <p>Appliance Recycling provider – Early 2020</p>
<p><b>Manitoba Race to Reduce</b></p> <p>6) <b>Program delivery agent</b> – Manitoba Race to Reduce will be delivered by a 3<sup>rd</sup> party delivery agency specializing in customer outreach programming that focuses heavily on outward communication, event management/execution, social media, customer data analysis, and expertise with energy benchmarking tools (notably Portfolio Manager).</p>	<p>Delivery agent - Summer 2021</p>
<p><b>Income Qualified Offers</b></p> <p>7) <b>Home Energy Check-up Service Providers</b> – service providers to perform a home energy assessment for all income qualified participants under the Income Qualified Program, conducting a review of the home for current insulation levels, details on current heating source, and current inventories and potential for other energy saving devices.</p> <p>8) <b>Verification/Post Inspection Service Provider</b> - A service provider will be needed to conduct post inspections of installed</p>	<p>Home Check-up provider -Early 2020</p> <p>Verification provider - Early 2020</p>

<p>energy efficiency upgrades.</p> <p>9) <b>Appliances Service Provider</b> – a service provider to supply and install a front load clothes washer for eligible income qualified participants.</p> <p>10) <b>Smart Thermostat Service Provider</b> – a service provider to supply and install a smart thermostat to eligible income qualified participants.</p> <p>11) <b>Insulation Contractors</b> – Multiple contractors to supply and install eligible insulation upgrades for eligible customers.</p> <p>12) <b>Furnace Contractors</b> - Multiple contractors to supply and install high efficiency furnaces for eligible customers.</p> <p>13) <b>Decluttering/Moving Service provider</b> – a service provider to provide assistance moving and/or removing household items to prepare the space for upgrades that otherwise would not get completed.</p> <p>14) <b>Energy and Water Saving Devices Service Provider</b> – a service provider to supply and distribute water and energy saving devices for provision and installation at the time of the Home Energy Checkup, and the provision and direct install for MURB customers</p>	<p>Appliance provider - Spring 2021</p> <p>Thermostat provider - Spring 2021</p> <p>Insulation contractors - Spring 2020</p> <p>Furnace contractors - Spring 2020</p> <p>Moving provider - Fall 2020</p> <p>Devices provider - Spring 2020</p>
<p><b>Small Business Program</b></p> <p>15) <b>Delivery Service Provider</b> -The service provider will be required to go door-to-door offering the Small Business Program to eligible customers; install direct install items such as aerators, spray valves, showerheads, and A-line LED bulbs; conduct a lighting assessment of the business; and coordinate the product and scheduling of deeper retrofits with local electricians.</p>	<p>Delivery provider - Early 2020</p>
<p><b>Metis Income Qualified Offers</b></p>	

<p>16) <b>Home Energy Check-up Service Providers</b> – service providers to perform a home energy assessment for all Metis income qualified participants under the Metis Income Qualified Program, conducting a review of the home for current insulation levels, details on current heating source, and current inventories and potential for other energy saving devices.</p> <p>17) <b>Verification/Post Inspection Service Provider</b> - A service provider will be needed to conduct post inspections of installed energy efficiency upgrade.</p> <p>18) <b>Energy and Water Saving Devices Service Provider</b> – a service provider to supply and distribute water and energy saving devices for provision and installation at the time of the Home Energy Checkup.</p> <p>19) <b>Appliances Service Provider</b> – a service provider to supply and install a front load clothes washer for eligible Metis income qualified participants.</p> <p>20) <b>Smart Thermostat Service Provider</b> – a service provider to supply and install a smart thermostat for eligible Metis income qualified participants.</p> <p>21) <b>Insulation Contractors</b> – Multiple contractors to supply and install eligible insulation upgrades to eligible Metis income qualified customers. Work with Manitoba Metis Federation for sourcing.</p> <p>22) <b>Furnace Contractors</b> - Multiple contractors to supply and install high efficiency furnaces for eligible Metis income customers. Work with Manitoba Metis Federation for sourcing.</p>	<p>Home Check-up provider - Early 2020</p> <p>Verification provider - Early 2020</p> <p>Devices provider - Spring 2020</p> <p>Appliance provider - Spring 2021</p> <p>Thermostat provider - Spring 2021</p> <p>Insulation contractors - Spring 2020</p> <p>Furnace contractors - Spring 2020</p>
<p><b>Indigenous Small Business Program</b></p> <p>23) <b>Delivery provider</b> - A service provider will be required to go door-to-door offering the Small Business Program to eligible</p>	<p>Delivery provider - Early 2020</p>

<p>customers; install direct install items such as aerators, spray valves, showerheads, and A-line LED bulbs; conduct a lighting assessment of the business; and coordinate the product and scheduling of deeper retrofits with local electricians.</p>	
<p><b>First Nation Insulation and Direct Install</b></p> <p>24) <b>Appliances Service Provider</b> – a service provider to supply and install a front load clothes washer for participants.</p> <p>25) <b>Smart Thermostat Service Provider</b> – a service provider to supply and install a smart thermostat to eligible participants.</p> <p>26) <b>Energy and Water Saving Devices Service Provider</b>- a service provider to supply and distribute water and energy saving devices and LEDs.</p>	<p>Appliance provider - Spring 2021</p> <p>Thermostat provider - Spring 2021</p> <p>Devices provider - Spring 2020</p>
<p><b>Home Energy Efficiency Kits and Education</b></p> <p>27) <b>Energy Efficient Products</b> – A service provider will be required to supply energy efficient products provided through the Home Energy Efficiency Kits and Education offer.</p>	<p>Products provider- Spring 2020</p>
<p><b>Home Check Up</b></p> <p>28) <b>Energy Efficient Products provider</b> – A service provider will be required to supply energy efficient products provided through the Home Check Up offer.</p> <p>29) <b>Installation Services provider</b> – a service provider will be required to install eligible energy efficient products in participating customer’s homes.</p> <p>30) <b>Online questionnaire service provider</b> – A service provider will be required to develop and implement an online energy efficiency questionnaire.</p>	<p>Products provider - Spring 2020</p> <p>Install provider - Spring 2020</p> <p>Online Questionnaire provider – Fall 2020</p>
<p><b>In-Suite Efficiency</b></p> <p>31) <b>Energy Efficient Products</b> – A service provider will be required to supply energy efficient products provided through the In-</p>	<p>Products provider - Spring 2020</p>

Suite Efficiency offer. <b>32) Installation Services</b> – a service provider will be required to install eligible energy efficient products in participating suites.	Install Provider - Spring 2020
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- c) Efficiency Manitoba has been collecting contact information for businesses interested in offering energy efficiency programs to their customers since the Spring of 2019. In early 2020, Efficiency Manitoba plans to communicate with these businesses as well as Manitoba Hydro’s active participating program suppliers inviting them to sign a participating supplier agreement with Efficiency Manitoba. This will not be a limited time sign-up as new delivery partners will be able to register with Efficiency Manitoba at any time. Efficiency Manitoba will be in regular communication with these contacts as well as various industry associations providing them with updates and program materials as commencements of programs get closer.

Service provider procurement has been initiated and will be ongoing. Manitoba Hydro’s existing program delivery contracts have transferability clauses related to Efficiency Manitoba that can be executed as needed. Several new initiatives are planned for commencement in years two and three of the plan to allow time for program planning, including the procurement of service providers.

The timeframe for onboarding new service providers is included in the chart (above) in response to DAYMARK/EM I-13 b.

- d) Please see the attached table for the response to this question.

Columns E through G include the assumed natural gas participation by measure for each year the technology is included in the plan along with a description of how this participation level is determined. Technologies with an N/A in the natural gas participation columns are technologies with electric savings only.

- e) Please see the attached table for the response to this question.

Outlined in column D are the program delivery partners that will be relied upon to convert these target customers to participants in each year.

- f) Please see the response to DAYMARK/EM I-77.





**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 4, PDF page 107

**PREAMBLE TO IR (IF ANY):**

EM has presented following annual budget during 2020 to 2023 period:

**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.*

**QUESTION:**

Why is there a jump in electric annual budget for 2021/22 year from \$44.5 million to \$51.1 million and again drop in 2022/23 period?

**RATIONALE FOR QUESTION:**

Understanding EE program design and budget.

**RESPONSE:**

The general increase from 2020/21 through 2022/23 observed within the electric portfolio budget in the 2020/23 Efficiency Plan ("Plan") corresponds to the increase in energy savings opportunities targeted over this same time period. Namely, electric energy savings increase from 373 GWh (at generation) in 2020/21 to 403 GWh (at generation) in 2021/22 and 2022/23 (Plan, Attachment 3, Annual Electric Savings (GWh) Table, p. 513 of 591). As shown the Annual Electric Costs table (Plan, Attachment 3, p. 515 of 591), program costs within each of customer segments increase between 2020/21 and 2022/23 reflective of the increase in programming, participation and energy savings targeted.

The specific reason for the decrease between the 2021/22 and 2022/23 electric portfolio costs is due to the timing of large industrial energy efficiency projects within the Custom Program Bundle and the Load Displacement Offer. In these instances, there are a relatively few number of projects which are impacting the electric portfolio budget. This can be demonstrated by the decrease observed between 2020/21 and 2021/22 for the Customer Program Bundle program electric costs and the decrease observed between 2021/22 and 2022/23 for the Load Displacement offer electric costs shown (Plan, Attachment 3, Annual Electric Costs table, p. 515 of 591).

**REFERENCE:**

Section 4, Tables 4.6 and 4.7, page 115, and Section 3.2.9 Enabling Strategies, PDF page 88, lines 195-209.

**PREAMBLE TO IR (IF ANY):**

Table 4.6 shows the total budget cost for Enabling Strategies for Electric versus Natural Gas programs allocated to the Private Sector and Table 4.7 shows the same breakdown allocated to Administrative costs. The definition of what is included in Enabling Strategies appears in Section 3.2.9 but does not distinguish among those strategies and tasks that will be handled by private entities versus program administration.

**QUESTION:**

Please provide a more detailed explanation of how the tasks required to deploy enabling strategies are allocated to private delivery partners versus administrators and include several examples for both electric and gas measures and programs.

**RATIONALE FOR QUESTION:**

Necessary to review this breakdown to determine whether enabling strategy costs can or should be moved from one category to the other to change the cost benefit metric for a program or program bundle.

**RESPONSE:**

Section 4.4.2 (p. 118 of 591) of the 2020/23 Efficiency Plan (“Plan”) provides a general description of what is included with the Enabling Strategies private sector budget including 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.

These private sector services are distinct from the private sector program delivery and implementation budgets included within program costs. Note that sub-headings within Table 4.5 should not read “private sector program costs” but should read more generally “private sector costs”.

The following table provides additional details of the individual enabling strategies budget components that are allocated to private sector versus Efficiency Manitoba staff costs:

Enabling Strategies Private Sector Cost Categories	Overall Portfolio Annual Average
Contracted program support services	\$2,203,000
Legal / business consultants	\$1,142,000
Innovation / Research & Development	\$713,000
Contracted business support services	\$613,000
DSM and enterprise systems	\$552,000
Business Communications	\$449,000
Program support expenses (travel, courier, printing services)	\$343,000
Codes & Standards	\$255,000
Professional development, memberships and training	\$239,000
Other	\$230,000
<b>TOTAL</b>	<b>\$6,739,000</b>

Note: Currency is expressed in nominal dollars. Totals may not add up exactly due to rounding. Other category includes business support budget items such as creative design, materials and supplies.

Enabling strategies are not specific to electric and natural gas measures and programs and therefore there are no examples to provide.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 4, PDF page 118, line 162 – 164.

**PREAMBLE TO IR (IF ANY):**

The cost allocation of programs that are predominantly electric focused, EM is proposing that costs to support these activities be allocated such that 75% of the total cost is covered by electric portfolio and the remaining 25% covered by natural gas portfolio.

**QUESTION:**

Please provide rationale, including analysis and supporting documents, to support proposed cost allocation of 75% and 25% is just and reasonable.

**RATIONALE FOR QUESTION:**

Understanding cost allocation across natural gas and electric portfolios.

**RESPONSE:**

The 2020/23 Efficiency Plan (“Plan”), Section 4.4.2 (p. 118 of 591) reference provided in the preamble discusses the cost allocation approach for enabling strategies and not, as stated in the preamble, for private sector program delivery or for Efficiency Manitoba program design, modelling, management, administration, technical support and customer support budgets. Program specific budget allocation to the electric or natural gas portfolio is tied directly to the measure. Program delivery and Efficiency Manitoba staff costs for electric energy savings measures are allocated to the electric portfolio while program delivery and Efficiency Manitoba staff costs for natural gas energy savings measures are allocated to the natural gas portfolio.

As stated in the Plan, Section 4.4.2 (p. 118 of 591), for energy efficiency support activities (enabling strategies) directed at customers that are predominately electric focused, 100 percent of the associated enabling strategy budget was allocated to the electric portfolio. Examples of this would be enabling strategies and activities for First Nation customers.

However, also as stated in this Section 4.4.2 for the remaining enabling strategy budgets, 75 percent of these supporting costs were assumed to reside with the electric portfolio and 25 percent with the natural gas portfolio. This allocation of costs is based on converting the net electricity savings and net natural gas savings forecast in the Plan to an equivalent measure (Gigajoule) and then allocating these joint costs based on each fuel's share of the total Gigajoule savings. This allocation methodology is the same as what has been used in past demand side management plans developed by Manitoba Hydro.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 4, PDF page 118, line 162 – 164.

**PREAMBLE TO IR (IF ANY):**

Cost allocation method.

**QUESTION:**

If applicable, please describe the methodology EM employed in determining cost allocation related with proposed 2020-2023 Efficiency Plan between rate classes. Please provide any related workpapers with formulae intact.

**RATIONALE FOR QUESTION:**

Understanding cost allocation across natural gas and electric portfolios.

**RESPONSE:**

Efficiency Manitoba adopted the LRI approach and therefore did not allocate costs within the Electric or Natural Gas portfolio to specific rate classes. Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Refer to Section 5, PDF page 127, lines 14-16.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba is using a 30-year time frame analysis.

**QUESTION:**

Please provide a list measures considered in developing EE portfolio in excel format with formulae intact where applicable. Please include measure-level details, including but not limited to, expected useful life, energy savings in kWh per year, installed quantity, and installed cost of each measure proposed under both the Efficiency Manitoba Electric and Natural Gas portfolios for each year.

**RATIONALE FOR QUESTION:**

To assess the cost-benefit analysis of proposed energy efficiency plan.

**RESPONSE:**

Please see response to PUB/EM I-1a for measures that were considered but rejected for inclusion in the Plan. For details on measure that were included, Efficiency Manitoba has provided the corresponding electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

See also COALITION/EM I-91c.



**REFERENCE:**

Refer to Section 5.1.1, PDF page 128-129, lines 33-37 AND Table 5.1

**PREAMBLE TO IR (IF ANY):**

Program bundle costs include program administration costs. Portfolio costs include all program bundle costs as well as enabling strategies and corporate overhead costs.

**QUESTION:**

Please provide detailed annual cost components and \$ values of both program administration and corporate overhead cost headings separately for both electric and natural gas components. Please provide the information in excel format with formulae intact cells where applicable. Specifically, please detail the types of labor costs involved in each.

**RATIONALE FOR QUESTION:**

We would like a better understanding of what types of costs are included in each, to determine whether the proper costs were included in each calculation

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric and natural gas portfolio summary electronic workpapers to Daymark and Consumers Coalition.

**REFERENCE:**

Section 5.1.2, PDF page 130, lines 65-66 and 131, lines 86-87.

**PREAMBLE TO IR (IF ANY):**

The determination of marginal values (for both electric and natural gas programs) was done independently by Manitoba Hydro. We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba.

**QUESTION:**

- a. Please describe in detail the granularity or nature of the marginal costs values the Efficiency Manitoba received from Manitoba and used in its analyses, such as 8,760 hours in a year, hours in typical weeks for each month, monthly, off peak hours, shoulder hours and peak hours, average monthly, average seasonal, average annual etc.
- b. Please provide a list of measures and that also shows what granularity was used to perform cost benefit analysis for each.

**RATIONALE FOR QUESTION:**

Understand the marginal cost calculations prepared by Manitoba Hydro and used as inputs by Efficiency Manitoba.

**RESPONSE:**

- a) Electric marginal value information:

Manitoba Hydro provides Efficiency Manitoba with a forecast of 30 years of generation, transmission and distribution marginal values. The generation marginal values for each year are broken out between marginal energy values and marginal capacity values that are then each differentiated between summer and winter seasons. Transmission marginal values are forecast on the basis of winter capacity for each of the 30 years.

Distribution marginal values are also forecast on the basis of winter capacity for each of the 30 years.

Natural gas marginal value information:

Manitoba Hydro provides Efficiency Manitoba with a forecast of 30 years of annual marginal values for natural gas commodity purchasing and upstream transportation costs. Efficiency Manitoba understands that Centra Gas does not include any marginal benefits associated with the deferral of transmission or distribution capacity requirements on the Centra Gas system. Efficiency Manitoba also understands that the natural gas marginal values do not include any marginal benefits associated with greenhouse gas emission reductions.

Efficiency Manitoba has provided corresponding marginal cost electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

- b) Cost benefit analysis was provided in Section 5.2 (beginning at p. 134 of 591) of the 2020/23 Efficiency Plan (“Plan”) at the overall electric and natural gas portfolio level. In order to satisfy the PUB’s mandatory review requirements outlined in the Efficiency Manitoba Regulation 119/2019, Section 11 (d) which states; *whether the portfolio of demand-side management initiatives required to achieve the savings targets is cost effective*. Attachment 3 of the Plan (beginning at p. 506 of 591) provides cost benefit analysis completed at the program bundle level.

Efficiency Manitoba has provided the corresponding cost benefit analysis electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

**REFERENCE:**

Section 5.1.2, PDF page 131, lines 75-76.

**PREAMBLE TO IR (IF ANY):**

The detailed energy savings and capacity savings associated with each program or bundle. We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba.

**QUESTION:**

Please provide a detailed mapping of what annual or seasonal marginal cost value was used for evaluating each program or bundle.

**RATIONALE FOR QUESTION:**

Understand the marginal cost calculations prepared by Manitoba Hydro and used as inputs by Efficiency Manitoba.

**RESPONSE:**

The 2020/23 Efficiency Plan (“Plan”), Appendix A – Section A2.2.2 (p. 226 and p. 228-229 of 591) provides a description of the methodology applied to all measures. As described, each energy savings measure has a unique load shape which refers to the distribution of energy savings into on-peak or peak-peak, and winter and summer time periods for electric energy savings measures. This distribution and associated winter and summer on-peak capacity savings values for electric energy savings measures are estimated based on the operational characteristics of each measure. To illustrate, the electric energy savings profile for insulating an electrically heated home would be unique from the electric energy savings profile for a high efficiency lighting measure. As further explained in A2.2.2, the Manitoba Hydro marginal value realized will vary depending upon these measure specific electric energy and demand savings profiles.

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Section 5.1.2, PDF page 131, lines 89-90.

**PREAMBLE TO IR (IF ANY):**

Manitoba Hydro provides a table to Efficiency Manitoba documenting marginal values annually for natural gas purchasing and transportation costs. We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba

**QUESTION:**

- a) Please provide the table in excel format with formulae intact referenced in the preamble.

**RATIONALE FOR QUESTION:**

Understand the marginal cost calculations prepared by Manitoba Hydro and used as inputs by Efficiency Manitoba.

**RESPONSE:**

Efficiency Manitoba has provided electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Section 5, Table 5.3, PDF page 135

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba uses program administration cost test (PACT) for cost-effectiveness testing.

**QUESTION:**

Please provide all workpapers and excel spreadsheets in digital format with intact and functional formulas used to estimate values reported in Table 5.3.

**RATIONALE FOR QUESTION:**

Understand electric PACT methodology.

**RESPONSE:**

The 2020/23 Efficiency Plan, Attachment 3 (p. 516 of 591) provides the Electric Program Cost-Effectiveness Metrics technical table for each program bundle within the electric portfolio and provides additional detail to the values reported in Table 5.3 (p. 135 of 591).

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains this technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Section 5.2 PACT Ratio for the Natural Gas Efficiency Portfolio, Tables 5.4 and 5.5, PDF page 136-137.

**PREAMBLE TO IR (IF ANY):**

Table 5.5 shows a sensitivity based on a 15-year vs a 30-year time horizon for the Plan. A comparison of results for PACT ratio, NPV and levelized cost between Table 5.4 and Table 5.5 shows that when program only metrics are considered, the natural gas program portfolio has a negative NPV and a PACT near or slightly below 1.0. The levelized cost goes up under the 15-year time horizon sensitivity. We understand that this may involve CSI as governed by the Non-disclosure Agreement between Daymark Energy Advisors and Efficiency Manitoba

**QUESTION:**

Please explain how the expected natural gas program benefits are expected to be distributed in each year, rather than on a levelized basis, and explain if these benefits accrue mostly beyond the three-year plan horizon?

**RATIONALE FOR QUESTION:**

Important to understand how the measures were selected and rolled up to the program and portfolio level to achieve a cost-effective natural gas efficiency plan.

**RESPONSE:**

The 2020/23 Efficiency Plan (“Plan”), Appendix A – Section A2.2.2 (p. 229 of 591) provides a description of the natural gas program energy benefits methodology applied to all measures. As described, each energy savings measure has a unique load shape which refers to the distribution of energy savings into winter and summer time periods for natural gas energy savings measures. This distribution and associated winter and summer savings values for natural gas energy savings measures are estimated based on the operational characteristics of each measure. To illustrate, the seasonal natural gas energy savings profile for insulating a



natural gas heated home would be unique from the natural gas energy savings profile for an industrial process. These profiles along with the natural gas savings persistence (described in Appendix A – Section A2.2.2 of the Plan p. 227 of 591) when used with the natural gas marginal values, determines the estimated annual natural gas benefits. The natural gas program benefits accrue from three years of planned activity and persist based on product life, resulting in benefits which are mostly beyond 2023.

Efficiency Manitoba has provided the corresponding electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

**REFERENCE:**

Section 5, Table 5.4, PDF page 136

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba uses program administration cost test (PACT) for cost-effectiveness testing.

**QUESTION:**

Please provide all workpapers and excel spreadsheets in digital format with intact and functional formulas used to estimate the values presented in Table 5.4

**RATIONALE FOR QUESTION:**

Understand natural gas PACT methodology.

**RESPONSE:**

The 2020/23 Efficiency Plan, Attachment 3 (p. 511 of 591) provides the Natural Gas Program Cost-Effectiveness Metrics technical table for each program bundle within the natural gas portfolio and provides additional detail to the values reported in Table 5.4 (p. 136 of 591).

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains this technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Program administration cost test (PACT)

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba uses program administration cost test (PACT) for cost-effectiveness testing. In other jurisdictions the Total Resource Cost Test is used instead of or in addition to the PACT.

**QUESTION:**

Did Efficiency Manitoba perform any analysis of its electric and/or natural gas efficiency measures, programs or plan using the Total Resource Cost Test? If not, why not. If yes, please provide all workpapers and excel spreadsheets in digital format with intact and functional formulas used.

**RATIONALE FOR QUESTION:**

Understand natural gas PACT methodology

**RESPONSE:**

PUB-EM I-11a provides tables of both the electric and natural gas portfolio cost effectiveness results for the program administrator cost test (PACT); total resource cost test (TRC); participating customer cost test (PC); simple customer payback; and rate impact measure (RIM) for each program bundle in the 2020/23 Efficiency Plan. These additional cost effectiveness results are provided as additional information but were not used in determining what programs to include in the portfolio. The Efficiency Manitoba Regulation has prescribed the PACT as the cost-effectiveness test that should be applied at the portfolio level (Efficiency Manitoba Regulation 119/2019, Sections 11(d) and 12). In considering the mandated electric and natural gas targets, applying additional non-prescribed cost-effectiveness screens to eliminate or reduce programming to customer segments may restrict Efficiency Manitoba's ability to satisfy the energy savings targets or to provide equitable and accessible programming. As provided in

PUB-EM I-11, information on additional cost-effectiveness test results for program bundles and the overall portfolio have been made available.

**REFERENCE:**

Section 5, Table 5.5, PDF pages 136-137

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba performed sensitivity analysis in PACT by varying discount rate and NPV time horizon.

**QUESTION:**

Please provide all workpapers and excel spreadsheets in digital format with intact and functional formulas used to estimate the values listed in Table 5.5.

**RATIONALE FOR QUESTION:**

Understand sensitivity analysis of PACT test.

**RESPONSE:**

Efficiency Manitoba has provided the corresponding PACT sensitivity analysis electronic workpapers to DAYMARK.

**REFERENCE:**

Overview – “The Plan Achieves Savings Targets & is Cost-Effective with Low Rate Impacts”, PDF page 24, lines 129-130.

**PREAMBLE TO IR (IF ANY):**

The electric and Natural Gas portfolio cost-effectiveness metrics were determined to be 3.27 and 0.99 respectively.

**QUESTION:**

Please provide the mathematical formulae and calculation parameters that were used to determine the measure-level PACT Ratio, PACT NPV and PACT Levelized Cost in both the Electric and Natural Gas portfolio cost-effectiveness metrics tables.

**RATIONALE FOR QUESTION:**

This will help us gain a better understanding of how the cost-effective and rate impact metrics are were determined and the reasonableness of the cost-benefits calculations for Efficiency Manitoba.

**RESPONSE:**

The 2020/23 Efficiency Plan (“Plan”), Attachment 3 (p. 516 of 591) provides the Electric Program Cost-Effectiveness Metrics technical table for each program bundle within the electric portfolio. Attachment 3 of the Plan (p. 511 of 591) provides the Natural Gas Program Cost-Effectiveness Metrics technical table for each program bundle within the electric portfolio.

The mathematical formulae associated with the program administrator cost test (“PACT”) are outlined with in the Plan in Appendix A – Section A2.3.1 (p. 231 – 234 of 591). The formula shown are identical if applied on a measure, program bundle or portfolio basis.

For program bundle and portfolio level PACT results, Efficiency Manitoba has provided the corresponding electric and natural gas portfolio summary electronic workpapers that contains these calculations to both Daymark and Consumers Coalition.

For measure level PACT results, Efficiency Manitoba has provided corresponding electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

**REFERENCE:**

Section 5.4.2, PDF page 140, lines 205-212.

**PREAMBLE TO IR (IF ANY):**

Furnace Replacement Program (FRP) Costs were excluded from the overall levelized PACT cost, as the budgeted costs have already been collected from natural gas customers.

**QUESTION:**

Are the FRP benefits captured in other areas of Efficiency Manitoba's cost-benefit or rate impact analyses? If so, please describe where. If no, please explain why the FRP costs are not necessary to be considered even though they have been collected from natural gas customers.

**RATIONALE FOR QUESTION:**

Understanding the cost-benefit analysis of FRP program.

**RESPONSE:**

The preamble to this question does not capture the full sentence provided in the 2020/23 Efficiency Plan ("Plan"), Section 5.4.2 (p.140 of 591) which should read "For the purposes of determining the LRI for the natural gas portfolio, the Furnace Replacement Program (FRP) Costs were excluded from the overall levelized PACT cost, as the budgeted costs have already been collected from natural gas customers." As stated in this section, the costs associated with the FRP have already been collected from natural gas customers and are therefore not appropriate to be included within the lifecycle revenue impact analysis. For clarity, all FRP costs are all included within the overall natural gas portfolio budget and all FRP costs and benefits are included within the program administrator cost test (PACT) results.



**REFERENCE:**

Overview, Lifecycle Revenue Impact Metric, PDF pages 27-28, lines 168-175.

**PREAMBLE TO IR (IF ANY):**

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.

**QUESTION:**

- a) LRI was selected as it applies the standard DSM rate impact measure test components and is consistent with the PACT. Did Efficiency Manitoba consider other measures besides LRI?
- b) If so, what other measures were considered in this analysis, and why was the LRI approach selected?

**RATIONALE FOR QUESTION:**

To better understand the distinguishing factors among the options considered and why the LRI measure was selected as the preferred option.

**RESPONSE:**

- a) Section 5.4 of the 2020/23 Efficiency Plan (p. 139 of 591) outlines that the lifecycle revenue impact ("LRI") metric is a one-time equivalent directional estimate that calculates the impact on electric rates resulting from the activities and costs proposed within the Plan. Other rate setting factors under the jurisdiction of Manitoba Hydro such as rate class cost allocation, utility capital expenditure plans, utility operating and maintenance costs, financing expenses, or utility targeted debt-to-equity ratios are outside the scope and ability for Efficiency Manitoba to model and evaluate. The LRI was

the only rate impact measure considered as it includes benefit and cost components identical to those determined using the program administrator cost test (“PACT”) as determined from the costs and savings proposed in the Plan. Efficiency Manitoba is aware of and has reviewed the Rate and Bill Impact Analysis used by Efficiency One but its use for the Plan was not considered as per the response to PUB/EM 22d.

b) Please see the response to DAY-EM I-30a.

**REFERENCE:**

Overview, One-Time Equivalent Rate Increase, PDF pages 28, Between lines 178-183.

**PREAMBLE TO IR (IF ANY):**

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<sup>3</sup> with a range of rate increases of 1.00 percent to 1.22 percent assuming various average natural gas rates for comparison.

**QUESTION:**

Please provide additional information as to how the rate increases were determined. If available, provide any mathematical formulae and calculation input parameters that were used to determine these metrics.

**RATIONALE FOR QUESTION:**

This will help us gain a better understanding of how the one-time equivalent rate increases were attained.

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Overview, Annual Bill Savings for Participating Customers, PDF page 29, lines 187-193

**PREAMBLE TO IR (IF ANY):**

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.

**QUESTION:**

How exactly were these bill savings calculated? Please provide additional information, formulae, reference documentations, historical customer rates (most recent 5 years if available) to shed additional light on how these bill saving projections were determined.

**RATIONALE FOR QUESTION:**

To help us determine the overall reasonableness of the cost saving projections for participating customers.

**RESPONSE:**

The 2020/23 Efficiency Plan, Attachment 3 (beginning of p. 506 of 591) contains the technical tables that provide the annual average bill reduction per program bundle for both natural gas and electric portfolios. For the electric portfolio (shown on p. 517 of 591) these bill reductions are based on the three-year average electric bill savings for participating customers. These bill savings are estimated using the energy and capacity savings associated with each program measure and the Manitoba Hydro electric rates approved as of June 1, 2018. For the natural gas portfolio (shown on p. 510 of 591) these bill reductions are based on the three-year average natural gas bill savings and reduction in the federal carbon charge for participating customers. These bill savings are estimated using the energy savings associated with each program measure and the Centra Gas rates approved as of November 1, 2018.

These federal carbon charge bill savings are estimated using the calculated greenhouse gas (GHG) reductions associated with each program bundle (shown on p. 509 of 591) and a \$30/tonne CO<sub>2</sub>eq, \$40/tonne CO<sub>2</sub>eq and \$50/tonne CO<sub>2</sub>eq federal carbon charge in 2020/21, 2021/22 and 2022/23 respectively. As outlined in Section 3.1 of the Plan (p. 78 of 591) the Manitoba Hydro natural gas GHG emission factor of 0.0019 CO<sub>2</sub>e/m<sup>3</sup> was used to determine the GHG reductions resulting from the natural gas energy savings.

Historical Manitoba Hydro electric and natural gas rates by rate class are available at [https://www.hydro.mb.ca/accounts\\_and\\_services/rates/historical\\_rates/](https://www.hydro.mb.ca/accounts_and_services/rates/historical_rates/).

Efficiency Manitoba has provided the measure specific electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Section 5.5.1, PDF page 142, lines 234-236 and Table 5.8

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba's total customer electric bill savings are dependent on customer participation and electricity consumption per customer in each segment.

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate customer participation rates and total customer energy use, culminating in the amounts shown in Table 5.8.

**RATIONALE FOR QUESTION:**

Participation rates calculation is crucial to determining the overall cost savings to Manitobans in avoided energy bill costs.

**RESPONSE:**

Table 5.8 (2020/23 Efficiency Plan, Section 5.5.1, p.142 of 591) has been revised in COALITION/EM I-102.

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Section 5.5.2, PDF page 143, lines 253-256 and Table 5.9

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba's total customer natural gas bill savings are dependent on customer participation and natural gas consumption per customer in each segment.

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate customer participation rates and total customer energy use, culminating in the amounts shown in Table 5.8.

**RATIONALE FOR QUESTION:**

Participation rates calculation is crucial to determining the overall cost savings to Manitobans in avoided energy bill costs.

**RESPONSE:**

Table 5.8 (2020/23 Efficiency Plan, Section 5.5.1, p.142 of 591) and Table 5.9 (2020/23 Efficiency Plan, Section 5.5.1, p.144 of 591) has been revised in COALITION/EM I-102.

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Table 5.10, PDF page 146 of Section 5.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba's Acquisition Costs broken down into fiscal year.

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate acquisition costs per year by electric and natural gas segments used to produce the values as shown in Table 5.10

**RATIONALE FOR QUESTION:**

Benchmarking is useful but ensuring acquisition costs are calculated according to industry standards are important in comparisons.

**RESPONSE:**

The Efficiency Manitoba acquisition costs are provided in the 2020/23 Efficiency Plan ("Plan"), Section 5.6, Table 5.10, p. 146 of 591. To illustrate the calculation methodology, the 2020/21 electric portfolio acquisition costs are determined by dividing the 2020/21 total annual electric portfolio costs of \$44,546,000 (Plan, Section 1, p. 21 of 591) by the 2020/21 annual electric energy savings of 373 GWh or 373,000,000 kWh (Plan, Section 1, p. 17 of 591) to produce \$0.12/kWh shown in Table 5.10 for 2020/21. The same methodology was used for the natural gas portfolio acquisition costs to determine the values in \$/m<sup>3</sup>. An approximate conversion constant of 26.5 GJ/m<sup>3</sup> was used to determine the acquisition costs in \$/GJ.

These calculations can be verified using the electric and natural gas portfolio summary electronic workpapers that contains the annual energy savings and annual cost technical tables provided by Efficiency Manitoba to both Daymark and Consumers Coalition.



**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 5, PDF page 127, line 14.

**PREAMBLE TO IR (IF ANY):**

EM is proposing to use 30-year time span for cost-benefit analysis.

**QUESTION:**

Please provide rationale, including analysis and supporting documents, to support the proposed time span of 30 year for benefit calculation.

**RATIONALE FOR QUESTION:**

understanding benefit-cost analysis.

**RESPONSE:**

The 30-year time span for cost-benefit analysis is consistent with past DSM practice in Manitoba. This is an appropriate time frame to allow for the incorporation of the full benefits associated with longer useful energy efficiency measure lives.

**REFERENCE:**

Reference: Refer to 2020/23 Efficiency Plan, Section 5, PDF page 129, lines 38 – 39.

**PREAMBLE TO IR (IF ANY):**

EM mentioned that it considered various factors to determine the net energy savings at DSM program bundle level.

**QUESTION:**

Please provide supporting workpapers, in excel format with formula intact where possible, that shows estimation of net energy savings by considering all the factors: product mix, weather normalization, savings and load shape, capacity savings, interactive effects, and savings persistence.

**RATIONALE FOR QUESTION:**

Understanding net energy savings estimation methodology.

**RESPONSE:**

Efficiency Manitoba has provided electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 5, PDF page 129, lines 38 – 39.

**PREAMBLE TO IR (IF ANY):**

Net energy savings methodology.

**QUESTION:**

Did EM consider free-ridership and spillover effect in estimating the net energy savings? If so, please provide measure-level free-ridership and spillover rates along with supporting workpapers (where possible in excel format with formulae intact) for estimating net energy savings from gross savings. If not, please provide the reasoning why this was not considered.

**RATIONALE FOR QUESTION:**

Net energy savings versus gross-energy savings.

**RESPONSE:**

Efficiency Manitoba considered free-ridership and spillover (free-drivers) in estimating the net energy savings. Measure-level free-ridership and free-driver values are provided in the attachment to DAY/EM I-13d.

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 5, PDF pages 132 – 133.

**PREAMBLE TO IR (IF ANY):**

EM is using Program Administrative Cost Test (PACT) as a measure of cost-effectiveness.

**QUESTION:**

Did EM performed any other commonly used cost-effectiveness test (such as Total Resource Cost Test and Participant Cost Test) while preparing 2020/23 Plan analysis? If yes, please provide these the results of these tests where possible in excel format with formulae intact. If not, please discuss other tests were not analyzed?

**RATIONALE FOR QUESTION:**

Understand different cost-effectiveness methodologies.

**RESPONSE:**

PUB-EM I-11a provides tables of both the electric and natural gas portfolio cost effectiveness results for the program administrator cost test (PACT); total resource cost test (TRC); participating customer cost test (PC); simple customer payback; and rate impact measure (RIM) for each initiative in the 2020/23 Efficiency Plan. These additional cost effectiveness results are provided as additional information but were not used in determining what programs to include in the portfolio. The Efficiency Manitoba Regulation has prescribed the PACT as the cost-effectiveness test that should be applied at the portfolio level (Efficiency Manitoba Regulation 119/2019, Sections 11(d) and 12). In considering the mandated electric and natural gas targets, applying additional non-prescribed cost-effectiveness screens to eliminate or reduce programming to customer segments may restrict Efficiency Manitoba's ability to satisfy the energy savings targets or to provide equitable and accessible programming. As provided in PUB-EM I-11, information on additional cost-effectiveness test results for program bundles and the overall portfolio have been made available.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 5, PDF page 135, line 130.

**PREAMBLE TO IR (IF ANY):**

EM considered impact of interactive effects while estimating benefits of the natural gas EE portfolio.

**QUESTION:**

Please discuss why the interactive effects were considered? Please provide supporting documents and workpapers associated with estimating interactive effects.

**RATIONALE FOR QUESTION:**

Natural gas and electric savings.

**RESPONSE:**

The installation of electric energy efficient measures generally results in a reduction in the amount of waste heat generated by the measure. This reduction in waste heat results in an increased heating requirement and a decreased cooling requirement. For facilities and homes heated by electricity, the increased electric heating requirements are subtracted from the electric measure savings. For facilities and homes that are electrically cooled, the decreased cooling requirements are added to the measure savings. The net measure savings after considering the estimated heating and cooling interactive effects are used in the measure forecasts in the 2020/23 Efficiency Plan ("Plan").

The definition of net savings from Efficiency Manitoba Act (p. 3) states that "*net savings means, in respect of a change in the consumption of electrical energy or natural gas in Manitoba, the savings that occur after taking into account any other adjustments in the consumption that are attributable to, or influenced by, the change.*" Given that electricity savings reduce the waste heat that is useful within buildings during the heating season, there is an adjustment (increase)

in the heating requirement which will be made up for by the electric or natural gas heating system. In electrically heated buildings, this increase in heating is subtracted from the measure's electricity savings. In gas heated buildings, this increase in gas usage must be counted against the natural gas DSM portfolio.

The annual natural gas energy savings technical table provided in Attachment 3 in the Plan (p. 507 of 591) provides the interactive effects at the portfolio level.

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Please refer to PDF page 135 of Section 5, line 134-135 in the 2020/23 Efficiency Plan.

**PREAMBLE TO IR (IF ANY):**

The program only PACT ratio was 1.42, which didn't consider enabling strategies and corporate overhead costs besides the electric programming interactive effects.

**QUESTION:**

Please justify the reason to remove the enabling strategies and corporate overhead costs from the PACT calculation for the program only metrics.

**RATIONALE FOR QUESTION:**

It makes sense to take out the electric programming interactive effects in the gas portfolio to eliminate double counting issue. However, the enabling strategies and corporate overhead costs don't have the same impact as the costs associated with electric programming interactive effects. Why removing the enabling strategies and corporate overhead costs as well in the program only metrics?

**RESPONSE:**

As provided in Table 5.4 (2020/23 Efficiency Plan, Section 5.2, p. 136 of 591) the overall portfolio metric program administrator cost test (PACT) ratio for the natural gas portfolio is presented as 0.99. The program only PACT metrics were provided for illustrative purposes to demonstrate the impact on the natural gas PACT metrics of interactive effects (reduction in PACT benefits), enabling strategies and corporate overhead.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 5, PDF page 136, Table 5.5.

**PREAMBLE TO IR (IF ANY):**

In the sensitivity analysis of PACT test, EM has used 15 year of time horizon in place of 30 years used in its base analysis.

**QUESTION:**

Please discuss why EM used 15-year time span in the sensitivity analysis. Please provide supporting documents, if any.

**RATIONALE FOR QUESTION:**

Understanding PACT sensitivity analysis.

**RESPONSE:**

A 15-year time horizon for the program administrator cost test (PACT) sensitivity analysis shown in Table 5.5 (2020/23 Efficiency Plan, Section 5.2, p. 136 of 591) was selected to simply illustrate the PACT metric impacts if the 30-year time horizon considered was halved.



**REFERENCE:**

Section 1, Benchmarking Analysis, PDF page 30, lines 193-199

**PREAMBLE TO IR (IF ANY):**

According to the filing, external benchmarking of the first-year acquisition cost (the cost of procuring DSM first-year savings) confirms the reasonableness and cost-effectiveness of the Efficiency Manitoba electric and natural gas portfolios compared to other jurisdictions.

**QUESTION:**

- a) Why did Efficiency Manitoba restrict the benchmarking to just three external jurisdictions? Why only Nova Scotia, Massachusetts, and Oregon?
- b) What specific parameters or measures did Efficiency Manitoba use for comparison as part of the external benchmarking process?

**RATIONALE FOR QUESTION:**

To evaluate the reasonableness of the assumptions and input parameters that were considered in the calculation of these metrics.

**RESPONSE:**

- a) For the purposes of external benchmarking of the first-year acquisition cost, Dunskey Energy Consulting compared Efficiency Manitoba against six jurisdictions/administrators: Massachusetts Program Administrators (gas and electric), New Brunswick Power (electric), Hydro Quebec (electric), Energir (gas), BC Hydro (electric) and EfficiencyOne (Nova Scotia, electric). In addition to the five Canadian comparators (which together represent a significant share of all Canadian DSM Program Administrators), they also included a higher-level comparison of the first year acquisition costs for all U.S. states, as reported on the ACEEE 2018 State Scorecard. Please see Attachment 4, page 529 of the submission for further details on the rationale for the selection of comparator jurisdictions.

- b) The comparisons were done on the basis of first-year acquisition cost at the portfolio level. The metric was calculated by Dunsky Energy Consulting based on the total DSM expenditures divided by the net, first-year energy savings. In the case of electricity, energy savings “at the meter”, (i.e. excluding avoided transmission and distribution losses) were used.

**REFERENCE:**

Section 1, Benchmarking Analysis, PDF page 30, lines 193-199

**PREAMBLE TO IR (IF ANY):**

According to the filing, external benchmarking of the first-year acquisition cost (the cost of procuring DSM first-year savings) confirms the reasonableness and cost-effectiveness of the Efficiency Manitoba electric and natural gas portfolios compared to other jurisdictions.

**QUESTION:**

- c) Did Efficiency Manitoba derive PAC Test results based on the same set of parameters across all three external jurisdictions?
- d) How exactly were the \$0.12/kWh (electric portfolio) and \$1.67/m<sup>3</sup> (natural gas portfolio) costs determined?

**RATIONALE FOR QUESTION:**

To evaluate the reasonableness of the assumptions and input parameters that were considered in the calculation of these metrics.

**RESPONSE:**

- c) Efficiency Manitoba did not calculate PAC Test results across any other jurisdictions. In a memo dated September 30, 2019 (2020/23 Efficiency Plan, Attachment 4, p. 526 – 533 of 591) Dunskey Energy Consultants cautioned Efficiency Manitoba about benchmarking PACT results against other jurisdictions. For further information, please see the response to PUB/EM I-9.
- d) DAY/EM I-35 provides the methodology used to determine the acquisition costs provided in the 2020/23 Efficiency Plan, Section 5.6, Table 5.10, p. 146 of 591. Note that Efficiency Manitoba used electric energy savings at generation to determine the electric acquisition costs provided in Table 5.10 versus the

methodology utilized by Dunsky Energy Consultants. This slight difference in methodology does not alter the conclusions or materially alter the Efficiency Manitoba values. To illustrate, repeating the calculation using the Efficiency Manitoba electric portfolio energy savings at meter would alter the 2020/21 acquisition cost shown in Table 5.10 from \$0.12/kWh to \$0.13/kWh.

**REFERENCE:**

Section 1 PDF pages 29-33, lines 193-199

**PREAMBLE TO IR (IF ANY):**

According to the filing, 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, based on four parameters – Incentive Costs, Program Costs, Staff Costs, and Overhead Costs.

**QUESTION:**

- a) When will this analysis referenced in Section 5.7 be available for review?
- b) How exactly were the metrics in Figure 5.7 (Section 1, page 22 of 32) determined?
- c) Please provide additional information as to how the annual average 2020/23 efficiency plan metrics for Efficiency Manitoba were determined for the four parameters mentioned above.

**RATIONALE FOR QUESTION:**

To understand how the annual average 2020/23 efficiency plan metrics for Efficiency Manitoba were determined, given that there is no direct and equitable comparison between Efficiency Manitoba's plan and the prior plan by Manitoba Hydro.

**RESPONSE:**

- a) The preamble references the Overview, Section 1 of the 2020/23 Efficiency Plan ("Plan"), p. 29 -33 of 591. Additional discussion regarding the comparison between the Plan and the 2015/16 Manitoba Hydro DSM Plan is available for review and provided in Section 5.7 (Plan, p. 146 – 153). The four parameters referenced in the preamble (Incentive Costs, Program Costs, Staff Costs, and Overhead Costs) are compared between the 2015/16 Manitoba Hydro DSM Plan and the Efficiency Manitoba Plan in Figure 5.5 (Plan, Section 5.7, p. 149 of 591).

- b) The cost comparisons completed within Figure 5.5 (Plan, Section 5.7, p. 149 of 591) were based upon an analysis of the Manitoba Hydro 2015/16 Power Smart Plan (“2015/16 PSP”) available at: [https://www.hydro.mb.ca/docs/regulatory\\_affairs/pdf/electric/supplemental\\_filing\\_2015/26\\_attachment\\_24\\_load\\_forecast\\_and\\_power\\_smart\\_plans\\_mfr\\_1.pdf](https://www.hydro.mb.ca/docs/regulatory_affairs/pdf/electric/supplemental_filing_2015/26_attachment_24_load_forecast_and_power_smart_plans_mfr_1.pdf)) and the Plan.

The following summarizes the source of the Efficiency Manitoba Annual Average budget values provided in Figure 5.5:

Efficiency Manitoba Incentive Costs: \$45.2 million

- Details and breakdown of this value is provided in Table 4.5 (Plan, Section 4.4.1, p. 113 of 591).

Efficiency Manitoba Program Costs: \$13.8 million

- Details and breakdown of this value is provided in Table 4.6 (Plan, Section 4.4.2, p. 115 of 591).

Efficiency Manitoba Staff Costs: \$9.4 million

- Details and breakdown of this value is provided in Table 4.7 (Plan, Section 4.4.2, p. 115 of 591).

Efficiency Manitoba Overhead Costs: \$1.5 million

- Details and breakdown of this value is provided in Table 4.8 (Plan, Section 4.4.3, p. 119 of 591). Note that this only includes non-staff overhead cost components with the overhead Efficiency Manitoba staff components being captured under the Staff Costs category as outlined in Table 4.7 (Plan, Section 4.4.2, p. 115 of 591).

The following summarizes the source of the Manitoba Hydro 2015/16 Power Smart Annual Average budget values provided in Figure 5.5:

2015/16 PSP Total Costs: \$76.4 million

- This value includes the total forecasted internal DSM budget for 2015/16 of \$79.0 million (2015/16 PSP, p. 69 of 115), less the 2015/16 Curtailable Rate Program budget of \$6.0 million (2015/16 PSP, p. 88 of 115), plus \$3.4 million for corporate overhead (staff and non-staff costs) provided to Efficiency Manitoba and estimated by Manitoba Hydro (see 2015/16 PSP overhead cost description below). This provides the total cost of \$76.4 million. Note that this includes \$7.1 million (2015/16 PSP, p. 69 of 115) for the Affordable Energy Fund (“AEF”) and natural gas Furnace Replacement Program (“FRP”) budget.

**2015/16 PSP Incentive Costs: \$49.3 million**

- This value includes the total electric DSM incentive costs of \$43.5 million (2015/16 PSP, p. 88 of 115), less the 2015/16 Curtailable Rate Program budget of \$6.0 million (2015/16 PSP, p. 88 of 115), plus the total natural gas DSM incentive costs of \$7.0 million (2015/16 PSP, p. 99 of 115), plus an estimated incentive portion of the FRP and additional AEF of \$4.8 million (needed to reconcile the table on 2015/16 PSP, p. 69 of 115 which includes FRP and AEF funds and the tables on 2015/16 PSP, p. 88 of 115 and 2015/16 PSP, p. 99 of 115).

**2015/16 PSP Program Costs: \$9.9 million**

- This value is based on a split of the overall DSM administration costs within the 2015/16 PSP.
- Total administration costs includes the total electric DSM administration costs of \$18.1 million (2015/16 PSP, p. 87 of 115) plus the total natural gas DSM administration costs of \$3.2 million (2015/16 PSP, p. 98 of 115), plus an estimated administration portion of the FRP and additional administration of AEF of \$2.3 million (needed to reconcile the table on 2015/16 PSP, p. 69 of 115 which includes FRP and AEF funds and the tables on 2015/16 PSP, p. 88 of 115 and 2015/16 PSP, p. 99 of 115). Total administration costs were therefore determined to be \$23.6 million.
- Program costs were taken as 42% of the total administration budget.

**2015/16 PSP Staff Costs: \$14.9 million**

- Staff costs were determined by summing the 2015/16 PSP program staff costs with the estimated overhead staff costs.
- The 2015/16 PSP program staff costs are based on a split of the overall DSM administration costs within the 2015/16 PSP. The DSM administration costs were determined to be \$23.6 million as per the 2015/16 PSP Program Costs description Program Cost description. Staff program costs were taken as 58% of the total administration budget, or \$13.7 million.
- The 2015/16 PSP overhead staff costs of \$1.2 million were provided by Manitoba Hydro to Efficiency Manitoba.

2015/16 PSP Overhead Costs: \$2.2 million

- The 2015/16 PSP overhead costs (non-staff) of \$2.2 million were provided by Manitoba Hydro to Efficiency Manitoba.

c) Please see response to DAYMARK/EM I-44b above.



**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 5, PDF pages 146 – 149.

**PREAMBLE TO IR (IF ANY):**

EM has compared key metrics of proposed 2020/23 Efficiency Plan with Manitoba Hydro's 2015/16 Efficiency Plan.

**QUESTION:**

Please provide measure-level data for the proposed 2020/23 Efficiency Plan with Manitoba Hydro's 2015/16 Efficiency Plan comparing key parameters such as energy and capacity savings, incentive levels, program costs and staff costs.

**RATIONALE FOR QUESTION:**

Comparing 2020/23 Efficiency Plan with Manitoba Hydro's 2015/16 Efficiency Plan.

**RESPONSE:**

In the 2020/23 Efficiency Plan ("Plan"), Efficiency Manitoba has compared overall electric and natural gas energy savings with the 2015/16 Manitoba Hydro DSM Plan (Plan, Section 5.7, Figure 5.4, p. 148 of 591).

Within the Plan, Efficiency Manitoba has also provided an overall budget comparison with the 2015/16 Manitoba Hydro DSM Plan (Plan, Section 5.7, Figure 5.5, p. 149 of 591). Additional details of this budget comparison are provided in DAY/EM I-44.

Efficiency Manitoba did not complete any measure-level comparison between the Plan and the 2015/16 Manitoba Hydro DSM Plan. PUB/EM I-33b presents tables that outline the specific measures or technologies being offered within a program bundle that are new to Manitoba. Due to these new offers, the use of program bundles and the distinct customer segmenting approach taken by Efficiency Manitoba, a measure-level comparison between the 2015/16 Manitoba Hydro DSM Plan and the Plan cannot be readily completed.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 6, PDF page 168, lines 118 – 139.

**PREAMBLE TO IR (IF ANY):**

EM has proposed average of 3% of electric EE budget and 30% of natural gas EE budget for income qualified customers.

**QUESTION:**

Please discuss why natural gas EE budget for income-qualified customers is significantly higher in terms to total EE budget as compared with similar percentage for electric EE budget.

**RATIONALE FOR QUESTION:**

Understanding income-qualified customer EE programs.

**RESPONSE:**

Please see the response to PUB/EM I – 5.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 6, PDF pages 169-171.

**PREAMBLE TO IR (IF ANY):**

EM has discussed non-energy benefits (NEBs) related with proposed 2020/23 Efficiency Plan.

**QUESTION:**

Has EM quantified any NEBs outlined in line 143-147 of PDF page 169? If so, please provide supporting analysis.

**RATIONALE FOR QUESTION:**

Non-energy benefits methodology.

**RESPONSE:**

Efficiency Manitoba has not quantified any of the non-energy benefits (“NEBs”) outlined in the 2020/23 Efficiency Plan page 169 of 591, lines 143 to 147. Efficiency Manitoba recognizes that there is a growing body of research that has aimed to both identify and quantify NEBs and their importance to motivating customer behavior and establishing public policy in the support of energy efficiency and will investigate this research upon approval of the Plan. Although not quantified, NEBs will be used in consumer messaging and marketing collateral to increase the value proposition of Efficiency Manitoba programs and offers.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 7, PDF page 178, lines 13 – 15.

**PREAMBLE TO IR (IF ANY):**

The Act allows EM 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.”

**QUESTION:**

- a) In the event prior to any adjustment to the approved Plan, what is EM’s proposed methodology for measuring cost-effectiveness of the proposed changes?
- b) In any event of Plan adjustment, is there going to be program and savings adjustments across program bundle?

**RATIONALE FOR QUESTION:**

Understanding plan adjustment once it is approved.

**RESPONSE:**

- a. For individual measure, program or program bundle adjustments, Efficiency Manitoba will evaluate proposed deviations from an approved Efficiency Plan based on the incremental energy savings, cost (while maintaining within the overall approved Plan annual budget), acquisition cost metric and the program administrator cost test (“PACT”) metrics.
- b. Depending on the nature of the adjustment, changes to program and program bundle savings and costs may be realized.

**REFERENCE:**

Section 7.1, page 180, lines 18-22

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba states that the procurement and implementation of a comprehensive and integrated customer relationship management/demand side management (CRM/DSM) system is foundational to its success

**QUESTION:**

Does the reference to the CRM/DSM system in the future tense mean that it has yet to be deployed, and if so, what is the timeline before it can be demonstrated as being in use and able to provide validated data? Does the cost for this CRM program include a contingency fee and/or a factor to accommodate delay in deployment?

**RATIONALE FOR QUESTION:**

Determine the pace at which Efficiency Manitoba will be able to show that savings have been achieved, so that progress towards annual goals can be measured. Please also provide examples of dashboard reporting.

**RESPONSE:**

The procurement and subsequent implementation of an integrated Customer Relationship Management System and Demand Side Management Tracking System (“CRM/DSM system”) is currently ongoing. Future targeted milestones include issuance of a Request for Proposal by December 2019; vendor evaluation and selection by February 2020; and implementation work commencing by March 2020.

Various features of the CRM/DSM system will go live in a phased approach between August 2020 and November 2020. Legacy tracking systems will continue to be utilized to provide all required interim reporting until the CRM/DSM system is live, tested and completely operational.

Dashboard reporting will be fully defined during the implementation phase, however, will include but is not limited to monthly and year-to-date cumulative results versus targeted results, as it relates to:

- electricity energy savings (kWh)
- electricity demand savings (kW)
- natural gas savings (m3)
- GHG reductions (CO2e)
- customer bill savings (\$)
- budget expenditures (\$)
- number of participants

The above dashboard reporting will be available for each program bundle as well as at the customer segment level for Residential; Income Qualified; Indigenous; and Commercial, Industrial, and Agricultural.

Budget development for the CRM/DSM system considered potential risks and associated costs during implementation, including but not limited to, delays as well as configuration and customization requirements.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 7, PDF page 180

**PREAMBLE TO IR (IF ANY):**

EM is proposing to implement a comprehensive and integrated customer relationship management/demand side management system for streamlining and enhancing operations.

**QUESTION:**

- a) Please provide the detailed information of CRM/DSM system.
- b) What is the status of CRM/DSM system procurement? Does EM have shortlist of CRM/DSM system providers?

**RATIONALE FOR QUESTION:**

CRM/DSM system.

**RESPONSE:**

- a) The Customer Relationship Management System and Demand Side Management Tracking System (“CRM/DSM system”), will offer the following features:
  - Manages all aspects of customer and contractor relationships, including but not limited to, tracking customer data, project status, and issues.
  - Simplifies transfer of customer utility information from Manitoba Hydro to Efficiency Manitoba.
  - Stores, tracks, and manages Demand Side Management program data and workflows, and has the ability to:
    - Track customer participation, savings (including incorporating calculation methodologies), and costs;
    - Offer online customer and vendor application forms;
    - Provide vendor specific portals for direct entry of program data by outside parties; and

- Show dashboards and generate reporting.
  - Maintains all customer and program data securely while accessible via cloud for all staff in and away from the office.
  - Leverages “out-of-the box” functionality to minimize configuration and customization effort and cost – Efficiency Manitoba will consider redesign of present-day process flow, data, and reporting to accommodate.
  - Has minimal ongoing in-house I.T. resources required to support (i.e. Software as a Service).
- b) The procurement and subsequent implementation of an integrated CRM/DSM system is currently underway. Future targeted milestones include issuance of a Request for Proposal by December 2019; vendor evaluation and selection by February 2020; and implementation work commencing by March 2020.

A formal shortlist of vendors will be identified following a review of all bids to the Request for Proposal during the vendor evaluation process, culminating with final selection taking place in February 2020.



**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 7, PDF page 181-182.

**PREAMBLE TO IR (IF ANY):**

The filing mentioned that EM has developed a DSM scorecard to benchmark both portfolio performance and corporate performance against other energy efficiency program administrators.

**QUESTION:**

- a) Please provide details on the methodology and key parameters considered in estimating DSM Scorecard and provide specifics on how these key parameters are scored?
- b) Is DSM Scorecard going to be developed by EM or a third-party entity?
- c) What “other energy efficiency program administrators” are considered in the benchmarking? What are the selection criteria of these program administrators?
- d) What is the process for reviewing and updating, if any, other energy efficiency program administrators considered in the benchmarking in future years?
- e) Please provide the list of lowest portfolio and corporate levels scored in the proposed DSM scorecard to estimate the Scorecard.
- f) Please provide supporting documents that outlines how DSM Scorecard will be calculated and administered?

**RATIONALE FOR QUESTION:**

Evaluation of EE Plan implementation.

**RESPONSE:**

- a) The specific details on methodologies and the scoring of key parameters can be found in the DSM Scorecard attached in response to DAYMARK/EM I–2a.
- b) Efficiency Manitoba engaged Dunsky Energy Consulting to develop the DSM Scorecard.

- c) Benchmarked entities are anonymized in Dunsky Energy Consulting's reports. Please refer to the DSM Scorecard Report attached in response to DAYMARK/EM I-2a.
- d) Efficiency Manitoba is intending to update the DSM Scorecard on an annual basis. This update process will include consideration of whether any changes to the cohort of energy efficiency program administrators used for benchmarking are required.
- e) Please note that the initial Scorecard results reflect EM's "Year 0 (Baseline)", i.e. the last year during which Manitoba Hydro ran all programs. With that clarification, the lowest scores for EM's Year 0 (baseline) are End-to-End DSM Design, Emerging Programs, Depth of Energy Savings and Achievement of Energy Savings Targets. Please refer to the DSM Scorecard Report attached in response to DAYMARK/EM I-2a.
- f) Please see the DSM Scorecard attached in response to DAYMARK/EM I-2a as documentation of calculation and administration details.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Attachment 5, Evaluation Framework & Planning Report

**PREAMBLE TO IR (IF ANY):**

EM shared 2020/2023 evaluation, measurement, and verification (EM&V) framework and plan with the Filing.

**QUESTION:**

Please discuss how proposed EM&V framework and plan compare with industry standard approaches such as International performance measurement and verification protocol (IPMVP), uniform methods project (UMP) developed of Department of Energy, and National Standard Practice Manual (NSPM) for energy efficiency?

**RATIONALE FOR QUESTION:**

Comparing proposed EM&V methodology with industry standards.

**RESPONSE:**

The proposed EM&V Framework and Plan was developed based on elements of evaluation best practices and protocols like the uniform methods project (UMP). An independent assessor will be selected through a request for proposal to evaluate the DSM programs based on the EM&V Framework and Plan. As part of the evaluation, the assessor will develop detailed evaluation methodologies using the UMP and other protocols.

**REFERENCE:**

Appendix A, Section A2.3.4, PDF page 238-239 lines 684-688.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba used the Multi-Criteria Decision Analysis while designing their electric and natural gas portfolios

**QUESTION:**

Please provide all supporting documents including working papers, where applicable in excel spreadsheets in digital format with intact and functional formulas, used to develop multi-criteria decision analysis for each technology both included in the final Efficiency Manitoba plan, as well as for those technologies eliminated by this analysis.

**RATIONALE FOR QUESTION:**

It is important to determine whether or not certain energy efficiency measures were unjustifiably eliminated, unjustifiably targeted to different program population, or unjustifiably incentivized.

**RESPONSE:**

As documented in PUB-EM I-1 a high-level screen of programs was considered, and a number of measures were rejected prior to the development of a preliminary portfolio. Efficiency Manitoba used the resulting programs to develop a preliminary portfolio with the intent of achieving the mandated electric and natural gas energy savings targets. PUB-EM I-4 provides a discussion of the changes to the natural gas and electric portfolio program bundles that were driven by the results of the multi-criteria decision analysis considering both quantitative and qualitative perspectives. The multi-criteria decision analysis did not produce additional electronic workpapers than those already provided to DAYMARK regarding both individual measure analysis models and portfolio summary workpapers. Supporting documents and workpapers used in the development of the preliminary portfolio for each technology would

require an extensive amount of time to gather and coordinate as it is not kept in a centralized repository nor is it available in a consistent format (i.e. background documentation is different for each technology). Efficiency Manitoba has determined there is not adequate time to gather this information; however, two examples of this type of documentation are provided as attachments in PUB-EM I-1. By providing these examples, one can gain a sense of the analysis done, both quantitatively and qualitatively, and how decisions surrounding which measures were included in the Plan were finalized.

**REFERENCE:**

Appendix A, Table A3.1, Figures A3.1, A3.2

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents their electric portfolio savings in GWh, and capacity savings in MW

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the energy savings as listed in Table A3.1 and figures A3.1 and A3.2, broken down by program bundles and individual measures.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers to Daymark and Consumers Coalition.

**REFERENCE:**

Appendix A, Table A3.2, Figures A3.3, A3.4

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents their natural gas portfolio savings in millions of cubic meters, and GHG savings in tonnes of CO2 equivalents.

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the energy savings as listed in Table A3.2, and Figures A3.3 and A3.4 broken down by program bundles and individual measures.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers to Daymark and Consumers Coalition.

**REFERENCE:**

Appendix A, Table A3.3, Figures A3.5

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents their electric portfolio budget by program bundle

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the program bundle budgets, down to the level of individual measures.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.



**REFERENCE:**

Appendix A, Table A3.4, Figures A3.6

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents their natural gas portfolio budget by program bundle

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the program bundle budgets, down to the level of individual measures.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Appendix A, Tables A3.5

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents monthly Electric funding Schedules for 2020-2023 period.

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the monthly funding presented in Table A3.5.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the requested electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

**REFERENCE:**

Appendix A, Tables A3.6

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents monthly Natural Gas Funding schedules for 2020-2023 period.

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the monthly funding presented in Table A3.6.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the requested electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.

**REFERENCE:**

Appendix A, Table A3.7, Figures A3.7, A3.8, A3.9

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents their electric portfolio PACT Results

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the measure-level PACT results that are then utilized to create Table A3.7 and Figures A3.7, A3.8, A3.9.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Appendix A, Table A3.8, Figures A3.10, A3.11, A3.12

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presents their natural gas portfolio PACT Results

**QUESTION:**

Please provide all working papers and excel spreadsheets in digital format with intact and functional formulas used to calculate the measure-level PACT results that are then utilized to create Table A3.8 and Figures A3.10, A3.11, A3.12

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Refer to Appendix A – Section A9, Page 429 – 433.

**PREAMBLE TO IR (IF ANY):**

EM mentioned that it will approach the change in Codes & Standards related savings by being active participant in several national energy efficiency building codes and performance standards committees.

**QUESTION:**

- a) Please specify what national energy efficiency building codes and performance standards committees that EM plans to participate?

**RATIONALE FOR QUESTION:**

Codes & Standards related savings.

**RESPONSE:**

- a) Efficiency Manitoba and energy efficiency staff at Manitoba Hydro currently have representation on both the national Standing Committee on Energy Efficiency (SC-EE) and the national Canadian Standards Association's Steering Committee on the Performance of Energy Efficiency and Renewables (SCOPEER). Efficiency Manitoba, through Manitoba Hydro energy efficiency staff, also has representation on one Task Group that supports the work of SC-EE and 6 Technical Sub-committees that support the work of SCOPEER.

SC-EE is responsible for recommendations, technical content, and user guides associated with the National Energy Code for Buildings (NECB) and the Energy Efficiency portion of the National Building Code (Section 9.36). SCOPEER provides oversight and guidance for the development of energy performance standards related to electric and

fuel-burning equipment used in residential, commercial and industrial applications and buildings.

For a fulsome description of the detailed activities related to codes and standards committees please see response to PUB/EM I-39.

**REFERENCE:**

Refer to Appendix A – Section A9, Page 429 – 433.

**PREAMBLE TO IR (IF ANY):**

EM mentioned that it will approach the change in Codes & Standards related savings by being active participant in several national energy efficiency building codes and performance standards committees.

**QUESTION:**

- b) How does EM plan to measure its success in changing Codes & Standards by participating in different building codes and performance standards committees?

**RATIONALE FOR QUESTION:**

Codes & Standards related savings.

**RESPONSE:**

- b) Efficiency Manitoba will rely on its third-party evaluator to implement the methodology outlined by Econoler to assess the success and impact of Efficiency Manitoba's participation in codes and standard committees.



**REFERENCE:**

Refer to Appendix A – Section A9, Table A9.1, PDF page 435.

**PREAMBLE TO IR (IF ANY):**

EM presented annual savings related with Codes & Standards during 2020/23 period.

**QUESTION:**

Please provide all supporting documents and working papers, if applicable in digital excel spreadsheets with formulae intact, used to calculate the annual savings reported in Table A9.1

**RATIONALE FOR QUESTION:**

Codes & Standards related savings.

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK.

**REFERENCE:**

Attachment 3

**PREAMBLE TO IR (IF ANY):**

Technical Tables

**QUESTION:**

Please provide all the tables included in Attachment 3 in excel format with formulae intact.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric and natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical tables to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Natural Gas Energy Savings Table, PDF page 507.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual Natural Gas Energy Savings (million m<sup>3</sup>) at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual natural gas energy savings.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Natural Gas Costs (000's \$), PDF page 508.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual Natural Gas Costs (000's \$) at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual natural gas costs.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Natural Gas GHG Savings (tonnes CO<sub>2</sub>eq), PDF page 509.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual Natural Gas GHG Savings (tonnes CO<sub>2</sub>eq) at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual natural gas GHG savings.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Bill Reduction Per Program Bundle (All Participants), PDF page 510.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual bill reduction per program bundle (all participants) for natural gas portfolio.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual bill reduction per program bundle

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Natural Gas Program Cost-Effectiveness Metrics, PDF page 511

**PREAMBLE TO IR (IF ANY):**

EM has presented natural gas program cost-effectiveness metrics at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to calculate the natural gas program cost-effectiveness metrics.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Natural Gas Participation, PDF page 512.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual Natural Gas participation estimates at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual natural gas participation numbers at the program-bundle level.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition. Please also see Coalition/EM I-102 for revised participation within the Income Qualified customer segment.



**REFERENCE:**

Attachment 3, Annual Electric Energy Savings (GWh), PDF page 513.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual Electric Energy Savings (GWh) at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual electric energy savings.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Electric Capacity Savings (MW) , PDF page 514.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual electric capacity savings (MW) at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual electric capacity savings.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Electric Costs (000's \$), PDF page 515.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual electric costs (000's \$) at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual electric costs.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Electric Program Cost-Effectiveness Metrics, PDF page 516.

**PREAMBLE TO IR (IF ANY):**

EM has presented electric program cost effectiveness metrics at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate electric program cost-effectiveness metrics.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Bill Reduction Per Program Bundle, PDF page 517.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual bill reduction at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual bill reduction per program bundle.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition.

**REFERENCE:**

Attachment 3, Annual Electric Participation, PDF page 518.

**PREAMBLE TO IR (IF ANY):**

EM has presented annual electric participation at the program-bundle level.

**QUESTION:**

Please provide all supporting documents including working papers, in excel spreadsheets in digital format with intact and functional formulas, that includes analysis used to estimate annual electric participation.

**RATIONALE FOR QUESTION:**

Due Diligence

**RESPONSE:**

Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Attachment 3 technical table to both Daymark and Consumers Coalition. Please also see COALITION/EM I-102 for revised participation within the Income Qualified customer segment.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 4, PDF page 112.

**PREAMBLE TO IR (IF ANY):**

EM has proposed levels of incentives for 2020/23 Efficiency Plan.

**QUESTION:**

- a) Please discuss EM's incentive setting methodology used in developing incentives for the proposed three-year plan.
- b) If applicable, please provide supporting documents including workpapers (in digital excel format with formulae intact, where possible) that describes EM incentive setting methodology.

**RATIONALE FOR QUESTION:**

Incentive setting methodology.

**RESPONSE:**

Creating effective programming requires all aspects of program design be considered. This assessment is undertaken for each unique customer demographic and measure and is broader than setting incentive levels. Program structure, program delivery, incentives, marketing and education campaigns, and many other levers work together to address barriers and influence the success of a given program or offer. To illustrate this concept, consider how widely the program designs for LED lighting differ within the residential sector:

	<b>Retail Rebates</b>	<b>Income Qualified Offers</b>
<b>Sector</b>	Residential	Residential
<b>Segment</b>	Mass Market	Lower-income
<b>Product Lifecycle</b>	Maturity	Growth
<b>Cost effectiveness</b>	Critical to determining incentive level	Less weighting relative to incentive level
<b>Incentive Level</b>	Product costs partially rebated (15%-30%)	Product costs fully rebated (100%)
<b>Delivery Method</b>	Instant rebate	Direct install
<b>Historical Incentive</b>	Customer shares in cost of upgrade	Upgrades at no cost

- a) Several factors that are considered when determining incentive amounts include 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 factors are described in detail below:
- Market penetration: Efficiency Manitoba reviews existing market penetration data such as energy use surveys, past program participation, and consultations with industry to determine how much influence incentive levels are likely to have on the local adoption of a given energy-efficient technology. Market penetration and incentive levels typically have an inverse correlation in program design, as less incentive will be needed to influence the adoption of technologies as they become more commonplace.
  - Stage in the product lifecycle: the product lifecycle also influences how effective incentives will be at improving adoption of energy efficient technology. Other levers, such as awareness and education, are useful for products in the emerging stage of the product lifecycle, where incentives alone may not have a significant impact. Incentives are most effective at delivering incremental savings in the growth stage of the product lifecycle. By the time a product reaches the maturity stage, incentives produce diminishing returns, are subject to increased free ridership and may taper off or be drastically reduced.



- Customer cost and economics: customer costs and economics must be considered when determining incentive levels. Higher prices and longer payback periods are significant barriers to the customer's decision to select an energy-efficient technology. To address these barriers, incremental costs and payback periods must be calculated and considered against the standard efficiency option. Larger incremental costs may require larger incentive levels in order to make the energy-efficient technology more attractive to customers. Incentive levels create a stronger economic case for adoption of higher-cost energy-efficient technology long before competition exerts downward pressure on pricing.
- Historical incentives: Manitoba Hydro's historical incentive levels served as a starting point when determining Efficiency Manitoba's incentive levels.
- Comparable offerings in other markets: comparable DSM programs in other jurisdictions were also considered throughout the program design process. Information on programs from other jurisdictions from ESource (<https://www.esource.com/>, a service provider specializing in DSM/utility market research) and information available online from utilities/DSM agencies.
- Cost-effectiveness of the program offer: incentive levels are a key input to determining program cost effectiveness. Incentive levels are directly related to program participation, as incentive levels increase, program participation is likely to increase, subsequently leading to an increase in overall program energy savings and costs thus impacting the cost effectiveness. In the program design phase, different incentive levels will be considered along with their resulting impacts on participation and cost effectiveness. This is illustrated in the response to PUB/EM I-4 which compares the preliminary portfolio of programs versus the portfolio included within the 2020/23 Efficiency Plan.

b) Not applicable.

**REFERENCE:**

Overall energy efficiency program design

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba has developed separate electric and natural gas portfolios.

**QUESTION:**

Did Efficiency Manitoba refer to any DSM potential study for designing its proposed Plan for 2020/23 period?

**RATIONALE FOR QUESTION:**

Program design.

**RESPONSE:**

The last Demand Side Management (DSM) Potential Study that was completed in Manitoba was in 2013. This study informed program designs under Manitoba Hydro that are also continuing under Efficiency Manitoba's three-year Plan.

Efficiency Manitoba has budgeted to undertake a DSM Potential Study anticipated to commence within Efficiency Manitoba's first year of operation, in order to inform design decisions for the next three-year Efficiency Plan.

**REFERENCE:**

Refer to 2020/23 Efficiency Plan, Section 4.

**PREAMBLE TO IR (IF ANY):**

Underspending of the approved energy efficiency budget.

**QUESTION:**

What is the process of managing any underspent fund (if any) from the approved energy efficiency budget for 2020/23 Plan?

**RATIONALE FOR QUESTION:**

Managing under-spent energy efficiency budget.

**RESPONSE:**

Efficiency Manitoba will be requesting funding from Manitoba Hydro on a monthly basis. If funds are not required due to timing issues, Efficiency Manitoba will not request the funds. Efficiency Manitoba will only request fund that are required. See PUB-EM-17 for further information.

**REFERENCE:**

Section 1, Overview, pdf page 15 of 591.

**PREAMBLE TO IR (IF ANY):**

In the Table of Electric and Natural Gas Portfolio Savings it shows GHG savings under Natural Gas and not Electric

**QUESTION:**

- a) Please provide where in either the Efficiency Manitoba Bill 19, PUB Regulation 119/2019 or any other enabling documents that give Efficiency Manitoba a GHG reduction objective.
- b) Please explain why the electric portfolio savings does not show a GHG reduction.

**RATIONALE FOR QUESTION:**

This is important to understand Efficiency Manitoba's goals, objectives and strategy.

**RESPONSE:**

- a) There are no enabling documents that give Efficiency Manitoba a greenhouse gas reduction objective. As per Section 4 (1) (a) of the Efficiency Manitoba Act, Efficiency Manitoba will "achieve any resulting reductions in greenhouse gas emissions in Manitoba" through meeting the natural gas savings targets that have been established.
- b) Efficiency Manitoba has not calculated resulting greenhouse gas reductions from electricity savings due to the very low emissions factor associated with hydro-electric generation in Manitoba which makes up approximately 98% of Manitoba's generation resource.

**REFERENCE:**

Section 2, pdf page 51 of 591, Line 51 – 52.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba is budgeted to have up to 75 full-time equivalent staff inclusive of all the activities within the Plan.

**QUESTION:**

- a) What is the full-time equivalent staff count of Efficiency Manitoba as of November 8, 2019?
- b) Is Efficiency Manitoba planning to have all 75 full-time equivalent staffs by April 1, 2020 that is prior to the launch of 2020/21 Efficiency Plan?
- c) If yes, please discuss Efficiency Manitoba's plan from now to April 1, 2020 regarding hiring 75 full-time equivalent staffs.
- d) If no, please discuss what staffing level is Efficiency Manitoba is planning to reach by April 1, 2020 Further, please discuss why this level of staff is sufficient

**RATIONALE FOR QUESTION:**

To assess reasonable expectation that the Efficiency Manitoba will deliver net savings mandated by the Regulation.

**RESPONSE:**

- a) On November 8, 2019, Efficiency Manitoba had 5 full-time equivalent staff.
- b) Efficiency Manitoba is working through its implementation plan including organization structure to ensure staffing levels are adequate to deliver on the Plan. Being fully operational has assumed that required staff will be employees of Efficiency Manitoba by April 1, 2020.

- c) There are labour and employee relations dimensions of Efficiency Manitoba's requirements to staff the organization which require coordination with Manitoba Hydro as the current employer of energy efficiency staff. In addition, bargaining units currently represent a portion of employees doing this work. Efficiency Manitoba has held introductory meetings with the bargaining units and is in contact with Manitoba Hydro. The process of confirming Efficiency Manitoba's requirements and planning for the transition strategy is ongoing. Efficiency Manitoba is planning to make offers of employment and post positions where applicable prior to its April 1, 2020 commencement date.
- d) It is not anticipated that Efficiency Manitoba will be operating with insufficient staff levels on April 1, 2020.

**REFERENCE:**

Section 2, pdf page 53 of 591, line 115-116.

**PREAMBLE TO IR (IF ANY):**

As required by Efficiency Manitoba Act and Crown Corporations Governance and Accountability Act, Efficiency Manitoba will prepare Annual Report. Moreover, the Report will provide explanations if there is variance between actual results and specific outcome of the year.

**QUESTION:**

- a) Please list the specific outcome that will be included in the Report.
- b) Please specify the variance amount, in term of percentage, between actual versus targeted goal, that will warrant explanation in the Report. Please comment whether this variance amount is mandated by any regulation or not.

**RATIONALE FOR QUESTION:**

To understand the annual reporting from Efficiency Manitoba.

**RESPONSE:**

- a) Section 10(1) of the Crown Corporations Governance and Accountability Act along with Section 32(1) of The Efficiency Manitoba Act outline the specific expectations of Efficiency Manitoba relative to annual reporting. These are noted below for ease of reference.

The Crown Corporations Governance and Accountability Act requires reporting relative to the Annual Business Plan which is developed prior to the fiscal year to which it pertains. Specific annual reporting is thus driven by the planned outcomes articulated in the Annual Business Plan. Recognizing annual reporting requirements contained within The Efficiency Manitoba Act are contingent upon the implementation of an approved efficiency plan, pending approval of the 2020-2023 Efficiency Plan ("Plan"), Efficiency

Manitoba's first annual report including the requirements specified in The Efficiency Manitoba Act will be for the 2020-2021 fiscal year produced following the conclusion of the fiscal year.

## **Crown Corporations Governance and Accountability Act**

### **Annual reporting on outcomes**

10(1) Each corporation must, within four months after the end of the fiscal year of the corporation, make an annual report to the responsible minister on the operations of the corporation during the applicable fiscal year, which must include

- (a) the audited financial statements of the corporation;
- (b) a comparison of the actual results for the fiscal year with the specific outcomes to be achieved by the corporation, as set out in corporation's annual business plan for that year;
- (c) if there is a variance between the actual results and the specific outcomes for the fiscal year, an explanation for the variance; and
- (d) any other information that the Lieutenant Governor in Council may request.

## **Efficiency Manitoba Act**

### **Annual report**

32(1) Within six months after the end of each fiscal year, Efficiency Manitoba must prepare and submit to the minister an annual report on its activities and operations during that fiscal year. The report must include

- (a) Efficiency Manitoba's audited financial statements for the fiscal year;
- (b) for the plan year that ends in the fiscal year, Efficiency Manitoba's comparison of the net savings attained in the plan year with the projected net savings for that plan year that were set out in the applicable approved efficiency plan, together with an explanation of any significant discrepancy between the two;
- (c) if any portion of the contingency fund was used in the applicable plan year, as provided for in subclause 9(I)(iii),
  - (i) a description of the initiatives for which the contingency fund was used,
  - (ii) an assessment of the net savings and other benefits realized as a result of those initiatives, and
  - (iii) an analysis of the cost-effectiveness of those initiatives; and
- (d) a description of any operational adjustments Efficiency Manitoba made during the fiscal year, as provided for under subsection 12(5).



- b) Expectations for variance amounts are not mandated in Regulation. Prior to Efficiency Manitoba preparing its first annual report considering the requirements in The Efficiency Manitoba Act, Efficiency Manitoba anticipates discussion with the Minister responsible to ensure reporting meets expectations, ensures public accountability, and reports on information of a material nature while communicating to the public the corporations progress towards an increasingly energy efficient Manitoba.

**REFERENCE:**

Section 2, pdf page 59 of 591, Line 174-180.

**PREAMBLE TO IR (IF ANY):**

Per filing “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.”

**QUESTION:**

- a) Please confirm the annual net savings target for both electric and natural gas is based on the consumption of previous year.
- b) Regarding the 15-year cumulative savings, please specify the base year used for calculating the savings target of 22.5 percent and 11.25 percent for electric and natural gas, respectively.
- c) Regarding the 15-year cumulative savings target, please provide simple mathematical calculation to support the statement that the total cumulative annual percentage savings targets for electric energy is 22.5 % and 11.25% for natural gas.

**RATIONALE FOR QUESTION:**

To understand the total cumulative net energy savings goal.

**RESPONSE:**

- a) As per section 7 of the Efficiency Manitoba Act (page 9), each annual target is calculated over the consumption in the preceding year.

“In the initial year following the commencement date, net savings that are at least equal to 1.5% of the consumption of electrical energy in the preceding year. In each of the

following years, incremental net savings that are at least equal to 1.5% of the consumption of electrical energy in the immediately preceding year.”

“In the initial year following the commencement date, net savings that are at least equal to 0.75% of the consumption of natural gas in the preceding year.

In each of the following years, incremental net savings that are at least equal to 0.75% of the consumption of natural gas in the immediately preceding year.”

The term consumption is defined within the Efficiency Manitoba Act as follows:

"consumption" means, on a weather-adjusted basis,

(a) for electrical energy, electrical energy that is metered and sold to a customer in Manitoba; and

(b) for natural gas, natural gas that

(i) is metered and sold to a customer in Manitoba, and

b) (ii) is not used as a feedstock or ingredient in the manufacture of a product. The cumulative energy savings targets for electricity and natural gas are not calculated based on one independent starting base year. Rather, it is an assessment of whether Efficiency Manitoba has met, surpassed or fallen short of its percentage target in any given year. Shortfalls or surpluses in the target carry forward to following years and the resulting percentages are summed. As per DAYMARK/EM I-83a, each annual target is calculated over the preceding year's consumption versus one singular base year.

c) Formula for cumulative electricity savings target:

$$1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 + 1.5 = 22.5$$

Formula for cumulative natural gas savings target:

$$0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 = 11.25$$

For clarity, the calculation for obtaining the cumulative savings are not energy based.

**REFERENCE:**

Section 3, pdf page 79 of 591, lines 25-36

**PREAMBLE TO IR (IF ANY):**

The report acknowledges an overall shortfall in natural gas energy savings in the first year while committing to achieving the 15-year energy savings as mandated in the Act. The report also states that natural gas marginal benefits include Centra/Manitoba Hydro's avoided cost of gas supply purchases and transportation.

**QUESTION:**

Please explain whether the natural gas program savings objective is to pursue conversion of uses currently fueled by natural gas to electrification, and if so, please list these target conversion projects.

**RATIONALE FOR QUESTION:**

Necessary to understand why natural gas target savings are expected to be achieved over such a long horizon.

**RESPONSE:**

The natural gas savings objective does not provide direction on how natural gas savings could be achieved. However, in the definition of "demand-side management initiative" Section 2 of the Efficiency Manitoba Act outlines that a fuel switch from one source to another that results in an increase in greenhouse gas emissions in Manitoba is expressly not recognized as demand-side management (and thus ineligible for counting towards achievement of energy savings targets) implying that a fuel switch that decreases is emissions in Manitoba (ie. Natural gas to electricity) would be permitted. This is also discussed within Section 2.3.4 of the 2020/23 Efficiency Plan (p. 66 of 591).

Efficiency Manitoba is proposing to offer incentives for high efficiency electric heating systems (geothermal heat pumps and air source heat pumps). Customers heating with natural gas would be eligible to participate in these incentives which would result in a switch in heating fuels, contribution to natural gas savings targets, and a resulting decrease in greenhouse gas emissions.

**REFERENCE:**

Appendix A – Section A3, pdf page 248-253 of 591.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba used measure-level savings to present savings at the program bundle-level and portfolio level in Appendix A – Section A3. And total measure-level savings are estimated based on the useful life and annual savings amount.

**QUESTION:**

- a) Did EM adjust for the possibility of any energy efficiency measures for not being able to realize their full useful life under different circumstances such as early replacement, failures etc?
- b) If yes, please specify the location in the workpaper where this adjustment could be located.
- c) If not, please discuss if there is possibility for any energy efficiency measures for not being able to realize their full useful life and how this could affect estimated energy savings and \$ benefits during 30-year period.

**RATIONALE FOR QUESTION:**

To assess the impact of measures not being able to realize full useful life in estimated benefits.

**RESPONSE:**

- a) All measures are analyzed and adjusted with a persistence factor for equipment replacement and failure. The definition of persistence factor is noted in Attachment 1.2 Cost & Savings Terms & Definitions p.444 of 591 of the 2020/23 Efficiency Plan:  
*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.*

- b) The persistence factor input can be found on the *Basic Inputs* tab of the modelling tool. Efficiency Manitoba has provided the corresponding electronic workpapers to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and Daymark.
- c) Not applicable as per DAYMARK/EM I-85b.

**REFERENCE:**

Attachment 5, Evaluation Framework & Planning Report, pdf page 550-591 of 591.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba filed Evaluation Framework & Planning Report with its 2020/23 application.

**QUESTION:**

Please discuss the relevance of filing Evaluation Framework & Planning Report with the 2020/23 application. Specifically, is EM planning to use any part of the filed Framework for the evaluation of proposed 2020/23 programs?

**RATIONALE FOR QUESTION:**

Understand the relevance of Evaluation Framework & Planning Report.

**RESPONSE:**

As per the Efficiency Manitoba Act Section 9 (m) on page 13, the Plan is to include a description of the manner in which the outcomes achieved under the Plan are to be assessed. The evaluation framework and plan document will be used as the basis for Efficiency Manitoba's request for proposal to contract for external private sector evaluation services of the 2020/23 programs.



**REFERENCE:**

Section 7.3.2, pdf page 186 of 591 & Attachment 5, Evaluation Framework & Planning Report, pdf page 550-591 of 591.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba will be conducting evaluation of the offered programs.

**QUESTION:**

- a) Is EM planning to use the filed Evaluation Framework & Planning Report for evaluation of electric energy efficiency programs? If no, please discuss EM's methodology and timeline of developing evaluation plans for the electric programs during 2020/23 period.
- b) Is EM planning to use the filed Evaluation Framework & Planning Report for evaluation of natural gas energy efficiency programs? If no, please discuss EM's methodology and timeline of developing evaluation plans for the natural gas programs during 2020/23 period.

**RATIONALE FOR QUESTION:**

EM&V methodology.

**RESPONSE:**

- a) Please see response to DAYMARK/EM I-86.
- b) Please see response to DAYMARK/EM I-86.

**REFERENCE:**

Appendix A – Section A9, pdf page 429-435 of 591 & Attachment 5, Evaluation Framework & Planning Report, pdf page 564 of 591.

**PREAMBLE TO IR (IF ANY):**

EM has included energy savings related with Codes and Standards programs in 2020/23 Plan (Appendix A – Section A9, Table A.9.1, pdf page 435 of 591). And filed Evaluation Framework & Planning Report discusses evaluation of Codes and Standards programs (pdf page 564 of 591, Attachment 5).

**QUESTION:**

- a) Is EM planning to perform evaluation of any Codes & Standards programs during 2020/23 Plan period?
- b) If yes, please discuss the methodology and timeline when such evaluation plan will be developed to evaluate Codes & Standards programs.
- c) If no, please discuss why the evaluation of Codes & Standards program is not necessary during 2020/23 period.

**RATIONALE FOR QUESTION:**

Understand evaluation of Codes & Standards programs.

**RESPONSE:**

- a) Yes, Efficiency Manitoba is planning to perform an evaluation of the codes and standards savings forecast over the 2020/23 Plan period.
- b) The Evaluation, Measurement and Verification Framework and Plan recommends that an impact evaluation of relevant codes and standards should focus on developing a baseline, 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. The detailed evaluation methodology will be determined by the independent assessor selected through a request for proposal that Efficiency Manitoba is planning to develop within the first half of 2020/21.

c) Not applicable.

**REFERENCE:**

Appendix A – Section A7, Table A7.14 pdf page 399 of 591.

**PREAMBLE TO IR (IF ANY):**

Customer Sited Load Displacement program is projected to have the biggest electrical savings targets among commercial, industrial and agriculture sectors. It is important that evaluation plan is well developed for Customer Sited Load Displacement program.

**QUESTION:**

- a) Is EM planning to perform full impact evaluation planned for Customer Sited Load Displacement program during 2020/23 Plan period?
- b) If yes, please discuss the methodology and timeline when such evaluation plan will be developed to evaluate Customer Sited Load Displacement program.
- c) If no, please discuss why the evaluation of Customer Sited Load Displacement program is not necessary during 2020/23 period.

**RATIONALE FOR QUESTION:**

Understand EM's plan for evaluating Customer Sited Load Displacement program since this provides the largest share of savings in the commercial sector.

**RESPONSE:**

- a) Yes, Efficiency Manitoba is planning to perform a full impact evaluation of savings forecast by the Customer Sited Load Displacement Program over the 2020/23 Efficiency Plan ("Plan") period since each project is unique, it will require its own measurement and verification plan and the savings adjustments cannot be extrapolated to other sites or projects. As outlined in Table 6 (p. 577 of 591) of the Plan, the Evaluation, Measurement and Verification Framework and Plan recommends a full impact evaluation of the Customer Sited Load Displacement Program for each of the three years of the plan.

- b) The evaluation plan that will outline the specific measurement and verification methodologies will be developed by the independent assessor selected through a request for proposal that Efficiency Manitoba is planning to develop within the first half of 2020/21.
  
- c) Not applicable.

**REFERENCE:**

Section 3.2.3 Programming, pdf page 83 of 591.

**PREAMBLE TO IR (IF ANY):**

This section states that the Plan includes continuation and augmentation of existing energy efficiency programs and initiatives.

**QUESTION:**

- a) Please describe the costs that will be reduced by using program bundles compared the existing energy efficiency programs.
- b) Will these costs reductions be due to reduced administration costs or lower incentives offered to participating customers?
- c) If cost savings do not come from lower incentives paid to target customers, how will continuity of existing energy programs be achieved?
- d) What is the percentage and dollar savings by cost category expected to be achieved in each year by using program bundles?

**RATIONALE FOR QUESTION:**

Understand how program continuity and deliverability targets will be achieved.

**RESPONSE:**

- a) Please see the response to PUB/EM I-29. This response outlines several of the organizational and operational differences highlighted within the 2020/23 Efficiency Plan ("Plan"). As stated within this response, Section 3.2.3 of the Plan (beginning at p. 83 of 591) describes the importance of maintaining continuity of offers while making enhancements and organizing offers in program bundles. New program bundles group offerings that share features and comparable delivery models. The intended outcomes

are to reduce paperwork, streamline the process and provide targeted customer segments with the information they need to make decisions to improve their home or businesses energy efficiency. Therefore, the intent is to reduce internal program administration costs while also facilitating an improved customer journey to further participation and engagement with Efficiency Manitoba.

- b) Efficiency Manitoba did not complete a quantitative analysis to model or isolate individual components of the organizational and operational differences highlighted within PUB/EM I-29. Lowering customer incentives is not a feature of program bundling. Referring to PUB-EM 2b - Attachment 1 for memos produced for Efficiency Manitoba by Dunsy Energy Consultants in 2018, one memo provided to Efficiency Manitoba titled “Efficiency Manitoba Program ‘Bundling’ Memo”, dated June, 28th, 2018 outlines the following benefits of program bundling:

#### *BENEFITS OF PROGRAM BUNDLING*

##### *1. Simplifying Marketing & Communications*

*Simplicity is a friend when it comes to product promotion. Having a smaller number of uniform packages can help program administrators establish a recognizable brand, and ultimately enhance marketing efforts. Similarly, trade allies such as windows distributors can be more easily led to cross promote broader savings opportunities (e.g. home retrofit) rather than simply focusing on the benefits of their single measure.*

##### *2. Streamlining Internal Processes*

*A large number of programs can create needless administrative burden, as internal processes for each program evolve in different ways over time. They also increase the risks associated with managing multiple silos, which include suboptimal program designs and inconsistent methods applied across the portfolio (e.g. are measures in one program treated the same way as measures in another program?).*

##### *3. Decision Making*

*Too much choice can become a barrier to action. Presenting potential participants with a large number of opportunities that they then have to match with a long list of programs can be daunting, and customers may not have the*

*time or expertise to navigate the decision- making process. Reducing complexity can increase participation and customer satisfaction.*

- c) As outlined in PUB/EM I-33a the Plan is based on innovative and new approaches which build upon the established programs that have shown to be successful in Manitoba and provide continuity with Manitoba to enable a smooth customer transition to Efficiency Manitoba. The tables provided in PUB/EM I-33b identify which specific measures or technologies being offered within a program bundle that are new to Manitoba. As shown within this table, continuity is achieved by maintaining existing Manitoba Hydro offers with complimentary enhancements and new measures.
- d) Efficiency Manitoba is not able to model or isolate the percentage and dollar savings associated with program bundling.



**REFERENCE:**

Section 3.2.2 Plan Development Process, pdf page 82 of 591.

**PREAMBLE TO IR (IF ANY):**

Section 3.2.2 references research that had already been contracted by Manitoba Hydro in 2017 and incorporating recommendations from the resulting Manitoba Hydro DSM Optimization report.

**QUESTION:**

- a) Please confirm if the research contracted by Manitoba Hydro, and further identified in footnote 3 as “Optimizing Power Smart: Options to Achieve Manitoba’s New Energy Savings Targets, 2017, Dunskey Energy Consulting”, is the same as the subsequent reference to the Manitoba Hydro DSM Optimization report.
- b) If it is not the same document, please provide a copy of the Manitoba Hydro DSM Optimization Report.

**RATIONALE FOR QUESTION:**

Understand how program savings targets will be achieved.

**RESPONSE:**

- a) Confirmed. The report entitled “Optimizing Power Smart: Options to Achieve Manitoba’s New Energy Savings Targets, 2017, Dunskey Energy Consulting” and which is filed in response to PUB/EM I-2 is the same as the subsequent reference to the “Manitoba Hydro DSM Optimization report”.
- b) Not applicable as per response to DAYMARK/EM I-91a.

**REFERENCE:**

Section 3.2.3 Programming, pdf page 83 of 591.

**PREAMBLE TO IR (IF ANY):**

Section 3.2.3 states that 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.

**QUESTION:**

Please explain:

- a) Please explain which contributes more to the reason for placing programs in a program bundle: shared features or comparable delivery models?
- b) Please identify and describe the delivery models used for grouping programs into bundles.
- c) Please identify the shared features used to group programs into bundles.

**RATIONALE FOR QUESTION:**

Understand how program savings targets will be achieved.

**RESPONSE:**

- a) The development of program bundles as presented in the 2020/23 Efficiency Plan (“Plan”), resulted pursuant to Efficiency Manitoba taking into account numerous considerations, including but not limited to:
  - i. shared features such as similar technologies or technologies within the same industry trade;

- ii. comparable delivery models;
- iii. consolidation of opportunities across program bundles for select hard-to-reach customer groups including income qualified, Indigenous, and small business;
- iv. considerations related to cost-effectively servicing all customer segments through an inclusive and diverse portfolio;
- v. objectives related to identifying innovative approaches to better serve Manitobans while achieving the mandated energy savings; and
- vi. objectives related to building and sustaining meaningful partnerships.

Additional considerations, in part leading to the development of program bundles as presented in the 2020/23 Efficiency Plan, can be viewed in PUB-EM 2b - Attachment 1 – memos produced for Efficiency Manitoba by Dunsky Energy Consultants in 2018. One memo provided to Efficiency Manitoba titled “Efficiency Manitoba Program ‘Bundling’ Memo”, dated June, 28th, 2018 outlines the following benefits of program bundling:

#### *BENEFITS OF PROGRAM BUNDLING*

##### *1. Simplifying Marketing & Communications*

*Simplicity is a friend when it comes to product promotion. Having a smaller number of uniform packages can help program administrators establish a recognizable brand, and ultimately enhance marketing efforts. Similarly, trade allies such as windows distributors can be more easily led to cross promote broader savings opportunities (e.g. home retrofit) rather than simply focusing on the benefits of their single measure.*

##### *2. Streamlining Internal Processes*

*A large number of programs can create needless administrative burden, as internal processes for each program evolve in different ways over time. They also increase the risks associated with managing multiple silos, which include suboptimal program designs and inconsistent methods applied across the portfolio (e.g. are measures in one program treated the same way as measures in another program?).*

### 3. Decision Making

*Too much choice can become a barrier to action. Presenting potential participants with a large number of opportunities that they then have to match with a long list of programs can be daunting, and customers may not have the time or expertise to navigate the decision-making process. Reducing complexity can increase participation and customer satisfaction.*

Efficiency Manitoba did not complete a quantitative analysis to model or isolate the relative weighting of the considerations and benefits that led to the creation of program bundles.

- b) The delivery models associated with the various program bundles are shown in the far-right column of the provided table below. Utilizing the delivery model as a criteria to consider when creating program bundles will serve to simplify marketing and communications; streamline internal processes; and ease and accelerate customer decision making.

## Residential

BUNDLES	MEASURES	NEW OR CONTINUING OFFER	DELIVERY
DIRECT INSTALL OFFERS	Online Home Energy Questionnaire	New Efficiency Manitoba offer	Online
	Home Energy Check-Up	New Efficiency Manitoba offer	Contracted third-party
	Free basic energy-efficient upgrades: <ul style="list-style-type: none"> <li>Up to two energy-efficient showerheads (5.7 LPM)</li> <li>Up to two energy-efficient bathroom aerators (5.7 LPM)</li> <li>Up to five LED bulbs</li> <li>Tier 2 advanced power strips <b>*NEW</b></li> <li>Window insulating kits <b>*NEW</b></li> <li>Weatherstripping <b>*NEW</b></li> <li>Outdoor car plug timers <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (supply and installation)
	Incentive-based energy-efficient upgrades: <ul style="list-style-type: none"> <li>Heat recovery ventilator (HRV) controls</li> <li>Smart thermostats <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (supply and installation)

BUNDLES	MEASURES	NEW OR CONTINUING OFFER	DELIVERY
<b>PRODUCT REBATE OFFERS</b>	<b>Retail Rebates</b> <ul style="list-style-type: none"> <li>ENERGY STAR® certified LED bulbs</li> <li>ENERGY STAR certified integrated LED fixtures</li> <li>Lighting controls</li> <li>Outdoor car plug timers &amp; smart plugs</li> <li>Energy-efficient showerheads (5.7 LPM)</li> <li>Tier 1 advanced power strips</li> <li>Weatherstripping</li> <li>Window insulating kits</li> <li>ENERGY STAR certified clothes washers</li> <li>ENERGY STAR certified clothes washer/dryer pairs</li> <li>ENERGY STAR certified refrigerators</li> <li>ENERGY STAR certified dishwashers <b>*NEW</b></li> <li>ENERGY STAR certified smart thermostats</li> <li>Clotheslines (giveaways at select events)</li> </ul>	Manitoba Hydro program with enhancements	Retailers (supply), contracted third-party (coordination)
	<b>Appliance Recycling Program</b> <ul style="list-style-type: none"> <li>Refrigerators</li> <li>Freezers</li> <li>Dehumidifiers <b>*NEW</b></li> <li>Window air conditioners <b>*NEW</b></li> <li>Bar fridges <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (coordination)
<b>HOME RENOVATION OFFERS</b>	<b>Home Energy Audit</b> <hr/> Rebates: <ul style="list-style-type: none"> <li>Building envelope: insulation upgrades (attic, wall, foundation), windows &amp; doors, air sealing <b>*NEW rebates for windows, doors, air sealing</b></li> <li>Appliances: clothes washers &amp; dryers, refrigerators, dishwashers <b>*NEW as per product rebates</b></li> <li>Drain water heat recovery <b>*NEW</b></li> <li>HVAC: geothermal, HRV controls, smart thermostats <b>*NEW</b></li> <li>Pool pumps <b>*NEW</b></li> <li>Air source heat pumps <b>*NEW</b></li> <li>Bonus incentive (with Home Energy Audit) <b>*NEW</b></li> </ul>	<b>New Efficiency Manitoba offer</b>	Industry
	Loans: <ul style="list-style-type: none"> <li>Building envelope</li> </ul>	Manitoba Hydro program	Manitoba

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BUNDLES	MEASURES	NEW OR CONTINUING OFFER	DELIVERY
	<ul style="list-style-type: none"> <li>Space and water heating</li> <li>Ventilation</li> <li>Emerging technologies</li> <li>Custom energy efficiency projects</li> </ul>		Hydro (billing), retailers (supply), industry (installation)
NEW HOMES & MAJOR RENOVATION OFFERS	<b>New Homes</b> <ul style="list-style-type: none"> <li>Individual measures <b>*NEW</b></li> <li>Prescriptive Path</li> <li>Performance Path</li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (modelling), industry (construction)
	<b>Major Renovation</b>	<b>New Efficiency Manitoba offer</b>	Contracted third-party (home evaluation), industry (supply)
HOME ENERGY EFFICIENCY KITS & EDUCATION OFFERS	<b>Energy Efficiency Kits</b> <ul style="list-style-type: none"> <li>Up to two energy-efficient showerheads (5.7 LPM)</li> <li>Up to two energy-efficient bathroom aerators (5.7 LPM)</li> <li>Shower timer</li> <li>Up to five LED bulbs</li> <li>Tier 2 advanced power strip</li> <li>Window insulating kit</li> <li>Weatherstripping</li> <li>Outdoor car plug timer</li> </ul>	<b>New Efficiency Manitoba offer</b>	Contracted third-party (supply)

## Income Qualified

PROGRAM	MEASURES	STATUS	DELIVERY
<b>INCOME QUALIFIED OFFERS</b>	<ul style="list-style-type: none"> <li>• Home Energy Check-Up</li> <li>• installation of free energy-saving and water-saving devices</li> <li>• air sealing measures</li> <li>• insulation upgrades</li> <li>• a gas furnace or boiler upgrade</li> <li>• a front load clothes washer <b>*NEW</b></li> <li>• a smart thermostat <b>*NEW</b></li> <li>• guidance and support to facilitate installation of qualifying measures and implementation of energy-efficient upgrades <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (delivery and supply)

## Indigenous

PROGRAM	MEASURES	STATUS	DELIVERY
<b>INSULATION AND DIRECT INSTALL OFFERS</b>	<b>Home energy efficiency upgrades:</b> <ul style="list-style-type: none"> <li>• Insulation</li> <li>• Direct install measures</li> <li>• Smart thermostats <b>*NEW</b></li> <li>• ENERGY STAR® certified clothes washers <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements	Participating First Nations (installation)
<b>SMALL BUSINESS OFFERS</b>	<b>Product rebates:</b> <ul style="list-style-type: none"> <li>• Aerators and showerheads</li> <li>• Lighting</li> <li>• Smart / programmable thermostats</li> </ul>	<b>New Efficiency Manitoba offer</b>	Contracted third-party (supply and installation)
<b>COMMUNITY GEOTHERMAL</b>	<b>Geothermal heat pumps</b>	Manitoba Hydro program with enhancements	Indigenous social enterprise (coordination), First nation (installation)
<b>METIS INCOME QUALIFIED</b>	<b>Home energy efficiency upgrades:</b> <ul style="list-style-type: none"> <li>• Insulation</li> <li>• Natural gas furnace</li> <li>• Direct install measures</li> <li>• Smart thermostats</li> <li>• ENERGY STAR certified clothes washers</li> </ul>	<b>New Efficiency Manitoba offer</b>	Contracted third-party (installation)

## Commercial, Industrial, and Agricultural

BUNDLES	MEASURES	STATUS	DELIVERY
<b>SMALL BUSINESS &amp; APPLIANCES OFFERS</b>	<b>Commercial Kitchen Appliances</b> ENERGY STAR® certified appliances listed below may qualify for rebates under this initiative: <ul style="list-style-type: none"> <li>• Steamers</li> <li>• Fryers</li> <li>• Convection ovens <b>*NEW</b></li> <li>• Dishwashers <b>*NEW</b></li> <li>• Griddles <b>*NEW</b></li> <li>• Hot food holding cabinets <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements	Industry (installation)
	<b>Commercial Refrigeration Equipment</b> Products listed below may qualify for rebates under this initiative: <ul style="list-style-type: none"> <li>• New vertical display case with standard doors</li> <li>• New vertical display case with special (heat free) doors</li> <li>• Anti-sweat heater (ASH) controls</li> <li>• Night covers</li> <li>• High-efficiency compressor</li> <li>• ECM evaporator fan motors</li> <li>• Strip curtains</li> <li>• Automatic door closers</li> <li>• LED display case and walk-in box lighting</li> <li>• Door gaskets</li> <li>• Evaporator efficiency controller</li> </ul>	Manitoba Hydro program with enhancements	Industry (installation)
	<b>Small Business</b> <ul style="list-style-type: none"> <li>• Kitchen aerators</li> <li>• Bathroom aerators</li> <li>• Pre-rinse spray valves</li> <li>• A-line LEDs</li> <li>• Dimmer switches</li> <li>• T8 ballasts</li> <li>• LED T8 linear lamps</li> <li>• T8 energy-efficient lamps</li> <li>• T8 tandem fixtures</li> <li>• Specialty LED lamps</li> <li>• Exit signs</li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (coordination, supply, installation)



BUNDLES	MEASURES	STATUS	DELIVERY
	<ul style="list-style-type: none"> <li>Showerheads <b>*NEW</b></li> <li>Smart thermostats <b>*NEW</b></li> <li>HVAC and controls offers <b>*NEW</b></li> <li>Cross promote renovation offers</li> </ul>		
IN-SUITE EFFICIENCY	<b>Energy-efficient upgrades installed at no charge include:</b> <ul style="list-style-type: none"> <li>Up to two energy-efficient showerheads (5.7 LPM)</li> <li>Up to two energy-efficient bathroom aerators (5.7 LPM)</li> <li>Up to nine LED bulbs</li> </ul>	Manitoba Hydro program with enhancements	Contracted third-party (coordination, supply, installation)
	<b>Energy-efficient upgrades eligible for incentives:</b> <ul style="list-style-type: none"> <li>Heat recovery ventilator (HRV) controls <b>*NEW</b></li> <li>Smart Thermostats <b>*NEW</b></li> </ul>		
RENOVATION OFFERS	<b>Lighting products</b> <ul style="list-style-type: none"> <li>LED lamps (screw-in T8, T5)</li> <li>LED specialty lamps (HID ballast, line voltage)</li> <li>LED fixtures</li> <li>Backlit signage</li> </ul>	Manitoba Hydro program with enhancements	Industry (installation)
	<b>Lighting controls</b> <ul style="list-style-type: none"> <li>Occupancy sensors</li> <li>Control systems</li> </ul>		
	<b>Building Envelope Products and Systems</b> <ul style="list-style-type: none"> <li>Surface and cavity insulation for roof, attic, wall, and foundation applications <b>*NEW for foundation</b></li> <li>Window systems including punched, in-fill, curtain wall, and storefront</li> <li>Glazed doors including overhead, single-swinging, sliding, and garden</li> </ul>	Manitoba Hydro program with enhancements	Industry (installation)
	<b>Building Envelope Financial Assistance</b> <ul style="list-style-type: none"> <li>Incidental and dedicated air sealing <b>*NEW</b></li> <li>Blower door testing (for determining equivalent air leakage) <b>*NEW</b></li> <li>Building component energy modelling for designing energy-efficient curtain wall and storefront systems</li> </ul>		
HVAC AND CONTROLS OFFERS	<b>Heating technologies</b> <ul style="list-style-type: none"> <li>Condensing gas boilers</li> <li>Condensing gas water heaters</li> <li>Unit heaters <b>*NEW</b></li> <li>Infrared heaters <b>*NEW</b></li> <li>Geothermal (ground-source heat pumps)</li> </ul>	Manitoba Hydro program with enhancements and new offers	Industry (installation)

BUNDLES	MEASURES	STATUS	DELIVERY
	<b>Cooling technologies</b> <ul style="list-style-type: none"> <li>Air cooled chillers <b>*NEW</b></li> <li>Geothermal (ground-source heat pumps)</li> </ul>	Manitoba Hydro program with enhancements and new offers	Industry (installation)
	<b>Ventilation technologies</b> <ul style="list-style-type: none"> <li>CO<sub>2</sub> sensors</li> <li>HRVs / energy recovery ventilators</li> </ul>	Manitoba Hydro program with enhancements and new offers	Industry (installation)
	<b>Other technologies</b> <ul style="list-style-type: none"> <li>Variable frequency drives</li> <li>Hotel occupancy sensors</li> <li>Hotel packaged terminal heat pumps (PTHPs)</li> </ul>	<b>New Efficiency Manitoba offer</b>	Industry (installation)
<b>NEW CONSTRUCTION &amp; HIGH-PERFORMANCE BUILDING OFFERS</b>	<b>New Buildings</b>	Manitoba Hydro programs with enhancements	Industry (modelling, construction)
	<b>Enhanced Building Operations</b>		Industry (studies, implementation)
	<b>Manitoba Race to Reduce <b>*NEW for school sector</b></b>		Contracted third-party (coordination)
	<b>Energy Scoping Audits</b>	Manitoba Hydro program with enhancements	Industry (audits)
	<b>Deep Energy Retrofits <b>*NEW</b></b>	<b>New Efficiency Manitoba offer</b>	Industry (modelling, construction)
<b>CUSTOM OFFERS</b>	<b>Industrial / Agricultural Custom</b>	Manitoba Hydro program with enhancements	Industry (studies, implementation)
	<b>Energy Manager Initiative</b>	Manitoba Hydro program with enhancements	Industry (studies, implementation)
	<b>Strategic Energy Management Cohorts <b>*NEW</b></b>	<b>New Efficiency Manitoba offer</b>	Contracted third-party (coordination, implementation)
	<b>Commercial Custom</b>	Manitoba Hydro program with enhancements	Industry (studies, implementation)
<b>LOAD DISPLACEMENT OFFERS</b>	<b>Load Displacement Program</b>	Manitoba Hydro program with enhancements	Industry (studies, implementation)

## Emerging Technologies

PROGRAM	MEASURES	STATUS	DELIVERY
EMERGING TECHNOLOGY PROGRAMS	Solar Energy Program	New Efficiency Manitoba offer	Industry (studies, implementation)
	Customer Sited Bioenergy Program	Manitoba Hydro program with enhancements	Industry (studies, implementation)

- c) Grouping programs, in part, by considering shared features, provides targeted customer segments with the information they need to make decisions to improve their home or businesses energy efficiency. This is accomplished through an improved customer journey which will increase participation and engagement with Efficiency Manitoba.

When grouping programs into bundles, consideration was given to similar technologies, or technologies that reside within the same trade and tradespeople in Manitoba. Such an example was the creation of the HVAC and Controls Offers program bundle. Contractors in Manitoba, as in other jurisdictions, will provide their business customers with products and services related to all areas of heating, ventilation, air-conditioning and controls as part of their company's product and service offers, very rarely choosing to specialize on only a portion therein.

An additional shared feature that was considered when creating program bundles, was assembling programs based on common customer decision points. Such an example was the creation of the Home Renovation Offers program bundle, which presents energy efficiency opportunities that closely align closely with the areas of a home that are typically addressed as part of a renovation project, such as new windows, doors, and appliances, as well as increased insulation levels.

For select hard-to-reach customer groups including income qualified, Indigenous, and small business, energy efficiency opportunities were consolidated across program bundles to ease and accelerate customer decision making, while also allowing for the deployment of innovative delivery models such as contracted third-party engagements.

**REFERENCE:**

Sections 3.2.3 through 3.2.7, pdf pages 83-87 of 591.

**PREAMBLE TO IR (IF ANY):**

This section includes tables that list program bundles for each customer category: Residential (Table 3.3), Indigenous (Table 3.4) and Commercial/Industrial/Agricultural (Table 3.5). Each activity listed in the first column to the left (highlighted in green) is accompanied by a description, however, it is not clear if these activities are programs, program bundles or measures.

**QUESTION:**

Request: Please provide a version of each of the tables cited above that shows the list of measures corresponding to each of the activities in the first column on the left.

**RATIONALE FOR QUESTION:**

To assess the impact of the Plan at the measure versus the program level.

**RESPONSE:**

Below please find a consolidated version of the tables cited above including the list of measures corresponding to each of the activities.

RESIDENTIAL OFFERS	MEASURES
DIRECT INSTALL OFFERS	Online Home Energy Questionnaire Home Energy Check-Up Free basic energy-efficient upgrades: · Up to two energy-efficient showerheads (5.7 LPM)

	<ul style="list-style-type: none"> <li>· Up to two energy-efficient bathroom aerators (5.7 LPM)</li> <li>· Up to five LED bulbs</li> <li>· Tier 2 advanced power strips</li> <li>· Window insulating kits</li> <li>· Weatherstripping</li> <li>· Outdoor car plug timers</li> </ul> <p>Incentive-based energy-efficient upgrades:</p> <ul style="list-style-type: none"> <li>· Heat recovery ventilator (HRV) controls</li> <li>· Smart thermostats</li> </ul>
<p>PRODUCT REBATE OFFERS</p>	<p><b>Retail Rebates</b></p> <ul style="list-style-type: none"> <li>· ENERGY STAR® certified LED bulbs</li> <li>· ENERGY STAR certified integrated LED fixtures</li> <li>· Lighting controls</li> <li>· Outdoor car plug timers</li> <li>· Smart plugs</li> <li>· Energy-efficient showerheads (5.7 LPM)</li> <li>· Tier 1 advanced power strips</li> <li>· Weatherstripping</li> <li>· Window insulating kits</li> <li>· ENERGY STAR certified clothes washers &amp; washer/dryer pairs</li> <li>· ENERGY STAR certified refrigerators</li> <li>· ENERGY STAR certified dishwashers</li> <li>· ENERGY STAR certified smart thermostats</li> <li>· Clotheslines (giveaways at select events)</li> </ul> <p><b>Appliance Recycling Program</b></p> <ul style="list-style-type: none"> <li>· Refrigerators</li> <li>· Freezers</li> <li>· Dehumidifiers</li> <li>· Window air conditioners</li> <li>· Bar fridges</li> </ul>
<p>HOME RENOVATION OFFERS</p>	<p><b>Home Energy Audit</b></p> <p><b>Rebates:</b></p> <ul style="list-style-type: none"> <li>· Insulation (attic, wall, foundation)</li> <li>· Air Sealing</li> <li>· Doors</li> <li>· Windows</li> <li>· Drain water heat recovery</li> <li>· HRV Controls</li> <li>· Smart thermostats</li> </ul>

	<ul style="list-style-type: none"> <li>· Geothermal</li> <li>· Pool pumps</li> <li>· Air source heat pumps</li> <li>· Clothes washers &amp; dryers</li> <li>· Refrigerators</li> <li>· Dishwashers</li> <li>· Bonus incentive (with Home Energy Audit)</li> </ul>
NEW HOMES & MAJOR RENOVATION OFFERS	<p><b>Loans:</b></p> <ul style="list-style-type: none"> <li>· Building envelope, space and water heating, ventilation, emerging technologies, custom energy efficiency projects</li> </ul> <p><b>New Homes</b></p> <ul style="list-style-type: none"> <li>· Individual measures</li> <li>· Prescriptive Path</li> <li>· Performance Path</li> </ul> <p><b>Major Renovation</b></p>
HOME ENERGY EFFICIENCY KITS & EDUCATION OFFERS	<p><b>Energy Efficiency Kits</b></p> <ul style="list-style-type: none"> <li>· Up to two energy-efficient showerheads (5.7 LPM)</li> <li>· Up to two energy-efficient bathroom aerators (5.7 LPM)</li> <li>· Shower timer</li> <li>· Up to five LED bulbs</li> <li>· Tier 2 advanced power strip</li> <li>· Window insulating kit</li> <li>· Weatherstripping</li> <li>· Outdoor car plug timer</li> </ul>
INCOME QUALIFIED OFFERS	MEASURES
INCOME QUALIFIED	<p><b>Single/Semi Detached</b></p> <ul style="list-style-type: none"> <li>· Home Energy Check-Up (includes air sealing)</li> <li>· Energy-saving and water-saving devices (no LED's)</li> <li>· Air sealing measures (included in Home Energy Check-up)</li> <li>· LED's</li> <li>· Insulation upgrades</li> <li>· Additional basement upgrades (requiring extra assistance)</li> <li>· Gas Furnace Upgrade - from a standard efficient furnace</li> <li>· Gas Furnace Upgrade - from a mid efficient furnace</li> <li>· Boiler Upgrade</li> <li>· Front Load Clothes Washer</li> </ul>

	<ul style="list-style-type: none"> <li>· Smart Thermostat</li> </ul>
	<b>MURBS</b> <ul style="list-style-type: none"> <li>· Home Energy Check up, including airsealing</li> <li>· Energy-saving and water-saving devices</li> <li>· LEDS</li> </ul>
<b>INDIGENOUS OFFERS</b>	<b>MEASURES</b>
<b>INSULATION AND DIRECT INSTALL OFFERS</b>	<b>Home energy efficiency upgrades:</b> <ul style="list-style-type: none"> <li>· Insulation</li> <li>· 1.5 GPM Bathroom Aerator</li> <li>· 1.5 GPM Kitchen Aerator</li> <li>· 1.5 GPM Showerhead standard</li> <li>· 1.5 GPM Showerhead handheld</li> <li>· LED Lamps</li> <li>· Air sealing safety caps (1 pack)</li> <li>· Air sealing socket gaskets (12)</li> <li>· Air sealing window kits (3)</li> <li>· Pipe wrap</li> <li>· Smart thermostats</li> <li>· ENERGY STAR® certified clothes washers</li> </ul>
<b>SMALL BUSINESS OFFERS</b>	<b>Product rebates:</b> <ul style="list-style-type: none"> <li>· Kitchen aerators</li> <li>· Bathroom aerators</li> <li>· Pre-rinse spray valves</li> <li>· A-line LED bulbs</li> <li>· Dimmer switches</li> <li>· T8 ballasts</li> <li>· LED T8 linear lamps</li> <li>· T8 energy-efficient lamps</li> <li>· T8 tandem fixtures</li> <li>· Specialty LED lamps</li> <li>· Exit signs</li> <li>· Showerheads</li> <li>· Smart thermostats</li> <li>· Cross promote HVAC and controls offers</li> <li>· Cross promote renovation offers</li> </ul>
<b>COMMUNITY GEOTHERMAL</b>	<b>Geothermal heat pumps</b>
<b>METIS INCOME QUALIFIED</b>	<b>Home energy efficiency upgrades:</b> <ul style="list-style-type: none"> <li>· Home Energy Assessment</li> </ul>

	<ul style="list-style-type: none"> <li>· Insulation</li> <li>· Natural gas furnace or boiler</li> <li>· Energy-saving and water-saving devices</li> <li>· LED's</li> <li>· Air sealing measures</li> <li>· Smart thermostats</li> <li>· ENERGY STAR certified clothes washers</li> </ul>
<b>COMMERCIAL, INDUSTRIAL &amp; AGRICULTURAL OFFERS</b>	<b>MEASURES</b>
<b>SMALL BUSINESS &amp; APPLIANCE OFFERS</b>	<p><b>Commercial kitchen appliances</b></p> <ul style="list-style-type: none"> <li>· Steamers</li> <li>· Fryers</li> <li>· Convection ovens</li> <li>· Dishwashers</li> <li>· Griddles</li> <li>· Hot food holding cabinets</li> </ul>
	<p><b>Commercial refrigeration equipment</b></p> <ul style="list-style-type: none"> <li>· New vertical display case with standard doors</li> <li>· New vertical display case with special (heat free) doors</li> <li>· Anti-sweat heater (ASH) controls</li> <li>· Night covers</li> <li>· High-efficiency compressor</li> <li>· ECM evaporator fan motors</li> <li>· Strip curtains</li> <li>· Automatic door closers</li> <li>· LED display case and walk-in box lighting</li> <li>· Door gaskets</li> <li>· Evaporator efficiency controller</li> </ul>
	<p><b>Small Business</b></p> <ul style="list-style-type: none"> <li>· Kitchen aerators</li> <li>· Bathroom aerators</li> <li>· Pre-rinse spray valves</li> <li>· A-line LED bulbs</li> <li>· Dimmer switches</li> <li>· T8 ballasts</li> <li>· LED T8 linear lamps</li> <li>· T8 energy-efficient lamps</li> <li>· T8 tandem fixtures</li> </ul>



	<ul style="list-style-type: none"> <li>· Specialty LED lamps</li> <li>· Exit signs</li> <li>· Showerheads</li> <li>· Smart thermostats</li> <li>· Cross promote HVAC and controls offers</li> <li>· Cross promote renovation offers</li> </ul>
<b>IN-SUITE EFFICIENCY</b>	<p><b>Energy-efficient upgrades installed at no charge include:</b></p> <ul style="list-style-type: none"> <li>· Up to two energy-efficient showerheads (5.7 LPM)</li> <li>· Up to two energy-efficient bathroom aerators (5.7 LPM)</li> <li>· Up to nine LED bulbs</li> </ul> <p><b>Energy-efficient upgrades eligible for incentives:</b></p> <ul style="list-style-type: none"> <li>· Heat recovery ventilator (HRV) controls</li> <li>· Thermostats</li> </ul>
<b>RENOVATION OFFERS</b>	<p><b>Lighting products</b></p> <ul style="list-style-type: none"> <li>· LED lamps (screw-in T8, T5)</li> <li>· LED specialty lamps (HID ballast, line voltage)</li> <li>· LED fixtures</li> <li>· Backlit signage</li> </ul> <p><b>Lighting controls</b></p> <ul style="list-style-type: none"> <li>· Occupancy sensors &amp; Control Systems</li> <li>· Control systems</li> </ul> <p><b>Building envelope products and systems</b></p> <ul style="list-style-type: none"> <li>· Surface and cavity insulation for roof, attic, wall, and foundation applications; incidental and dedicated air sealing, blower door testing</li> <li>· Window systems including punched, in-fill, curtain wall, and storefront; glazed doors including overhead, single-swinging, sliding, and garden; building component energy modelling for designing energy-efficient curtain wall and storefront systems</li> </ul>
<b>HVAC &amp; CONTROLS OFFERS</b>	<p><b>Heating technologies</b></p> <ul style="list-style-type: none"> <li>· Condensing gas boilers</li> <li>· Condensing gas water heaters</li> <li>· Unit heaters</li> <li>· Infrared heaters</li> <li>· Geothermal (ground-source heat pumps)</li> </ul> <p><b>Cooling technologies</b></p> <ul style="list-style-type: none"> <li>· Air cooled chillers</li> <li>· Geothermal (ground-source heat pumps)</li> </ul> <p><b>Ventilation technologies</b></p> <ul style="list-style-type: none"> <li>· CO<sub>2</sub> sensors</li> <li>· HRVs / energy recovery ventilators</li> </ul>

	<p>Other technologies</p> <ul style="list-style-type: none"> <li>· Variable frequency drives</li> <li>· Hotel occupancy sensors</li> <li>· Hotel packaged terminal heat pumps (PTHPs)</li> </ul>
NEW CONSTRUCTION & HIGH-PERFORMANCE BUILDING OFFERS	<p>New Buildings</p> <p>Enhanced Building Operations</p> <p>Manitoba Race to Reduce</p> <p>Energy Scoping Audits</p> <p>Deep Energy Retrofits</p>
CUSTOM OFFERS	<p>Industrial / Agricultural Custom</p> <p>Energy Manager Initiative</p> <p>Strategic Energy Management Cohorts</p> <p>Commercial Custom</p>
LOAD DISPLACEMENT OFFERS	Load Displacement Program
EMERGING TECHNOLOGY OFFERS	MEASURES
EMERGING TECHNOLOGY PROGRAMS	<p>Solar Energy Program</p> <p>Customer Sited Bio-energy Program</p>

**REFERENCE:**

Section 2, pdf pages 68 of 591.

**PREAMBLE TO IR (IF ANY):**

This section states (at lines 373-375) that 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.

**QUESTION:**

- a) What are the unique barriers to implementing energy efficiency for each of these customer groups?
- b) Is this a reference to the need to address these groups for the first time or if these groups were already included as target participants under existing conservation programs.
- c) What types of measures will be developed / are already available specifically to address these hard to reach customers?

**RATIONALE FOR QUESTION:**

Understand how program savings targets will be achieved.

**RESPONSE:**

- a) Lower income customers may be hard to reach due to a variety of demographic, cultural, social, and economic factors. For a complete description, please see PDF pages 315-316 (lines 56-82) of the Plan. As per Appendix A – Section A6 PDF page 355, First Nations on reserve land customers may face barriers such as geographic location, lack of home ownership, less disposable income to perform upgrades, and there may be multiple competing resources within the First Nation. Other customers such as renters, seniors and rural customers may be considered hard-to-reach. In addition to Income

Qualified Offers and Indigenous Programs, there are strategies within Residential Programs to target other hard-to-reach customer groups. For further information, please see the response to PUB/EM I-3a.

- b) Both of income qualified and Indigenous customers were considered as target participants of existing conservation programs.
- c) The below tables identify the offers that have been developed to best target these hard to reach customers. Please see page 85 of the Plan

**Income Qualified**

PROGRAM	MEASURES	STATUS
<b>INCOME QUALIFIED OFFERS</b>	<ul style="list-style-type: none"> <li>• Home Energy Check-Up</li> <li>• installation of free energy-saving and water-saving devices</li> <li>• air sealing measures</li> <li>• insulation upgrades</li> <li>• a gas furnace or boiler upgrade</li> <li>• a front load clothes washer <b>*NEW</b></li> <li>• a smart thermostat <b>*NEW</b></li> <li>• guidance and support to facilitate installation of qualifying measures and implementation of energy-efficient upgrades <b>*NEW</b></li> </ul>	Manitoba Hydro program with enhancements

**Indigenous**

PROGRAM	MEASURES	STATUS
<b>INSULATION AND DIRECT INSTALL OFFERS</b>	<b>Home energy efficiency upgrades:</b> <ul style="list-style-type: none"> <li>• Insulation</li> <li>• Direct install measures</li> <li>• Smart thermostats *NEW</li> <li>• ENERGY STAR® certified clothes washers *NEW</li> </ul>	Manitoba Hydro program with enhancements
<b>SMALL BUSINESS OFFERS</b>	<b>Product rebates:</b> <ul style="list-style-type: none"> <li>• Aerators and showerheads</li> <li>• Lighting</li> <li>• Smart / programmable thermostats</li> </ul>	<b>New Efficiency Manitoba offer</b>
<b>COMMUNITY GEOTHERMAL</b>	<b>Geothermal heat pumps</b>	Manitoba Hydro program with enhancements
<b>METIS INCOME QUALIFIED</b>	<b>Home energy efficiency upgrades:</b> <ul style="list-style-type: none"> <li>• Insulation</li> <li>• Natural gas furnace</li> <li>• Direct install measures</li> <li>• Smart thermostats</li> <li>• ENERGY STAR certified clothes washers</li> </ul>	<b>New Efficiency Manitoba offer</b>

**REFERENCE:**

Appendix A – Section A2, pdf page 207 of 591, Line 61 – 68.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba utilized electric customer segments information from Manitoba Hydro for designing proposed 2020/23 energy efficiency plan.

**QUESTION:**

- a) Please provide customer count and annual energy consumption and annual peak demand (for the latest year available) for each customer segment served by Manitoba Hydro.
- b) Please provide customer count and annual energy consumption annual peak demand (for the latest year available) for each rate class served by Manitoba Hydro

**RATIONALE FOR QUESTION:**

To understand the breakdown of customer types and rate classes of Manitoba Hydro and the design of Efficiency Manitoba's electric energy efficiency plan.

**RESPONSE:**

a)

Sector	Electric Customer Count	2018/19 Energy (GWh)	% of Total Energy
Residential (Non First Nation)	494,157	7,453	33%
First Nation On Reserve Homes	17,978	574	3%
Commercial (Non First Nation)	57,863	6,122	27%
Agricultural (Non First Nation)	4,040	811	3.6%
Industrial (Non First Nation)	6,656	7,502	33%

<b>First Nation On Reserve Commercial/Industrial/Agricultural</b>	2,473	272	1%
<b>Totals</b>	<b>583,166</b>	<b>22,734</b>	<b>100%</b>

Manitoba Hydro can only provide information for accounts that are located on First Nations. Manitoba Hydro's information system does not contain any information on customer income levels or whether they are Indigenous. In addition, the information system cannot provide annual peak demand information for customer segments served.

Income levels and Self-Declared Indigenous ancestry can be approximated using information contained in Manitoba Hydro's 2017 Residential Energy Use Survey. Please see the response to PUB/EM I-8 for a copy of this document.

b)

<b>Electric Rate Class</b>	<b>Electric Customer Count</b>	<b>2018/19 Energy (GWh)</b>
<b>Residential Basic</b>	492,124	7,904
<b>Residential Seasonal &amp; Flat rate</b>	19,427	88
<b>Residential Diesel</b>	598	9.2
<b>GS Small Non-Demand</b>	53,224	1,746
<b>GS Small Demand</b>	12,873	2,157
<b>GS Medium</b>	2,110	3,207
<b>GS Large 750V-30KV</b>	328	1,757
<b>GS Large 30-100KV</b>	43	1,833
<b>GS Large &gt;100KV</b>	18	4,026
<b>GS Diesel</b>	177	6.3
<b>GS Seasonal &amp; GS Flat Rate Water Heat, Sentinel, Street, SEP</b>	2,247	113.8
<b>Totals</b>	<b>583,169</b>	<b>22,848</b>

**REFERENCE:**

Appendix A – Section A2, pdf page 207 of 591, Line 61 – 68.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba utilized natural gas customer segments information from Centra Gas for designing the proposed 2020/23 energy efficiency plan.

**QUESTION:**

- a) Please provide customer count and annual natural gas consumption for each customer segments served by Centra Gas.
- b) Please provide customer count and annual natural gas consumption for each rate class served by Centra Gas.

**RATIONALE FOR QUESTION:**

To understand the breakdown of customer types and rate classes of Centra Gas and the design of Efficiency Manitoba’s electric energy efficiency plan.

**RESPONSE:**

a)

Sector	Natural Gas Customer Count	2018/19 Nat. Gas Consumption (million cu.m.)	% of Total Consumption
Residential			
First Nation On Reserve Homes			
Commercial			
Agricultural			

2b



<b>Industrial</b>	
<b>First Nation On Reserve</b>	
<b>Commercial/Industrial/Agricultural</b>	
<b>Totals</b>	

Manitoba Hydro can only provide information for accounts that are located on First Nations. Manitoba Hydro’s information system does not contain any information on customer income levels or whether they are Indigenous. Income levels and Self-Declared Indigenous ancestry can be approximated using information contained in Manitoba Hydro’s 2017 Residential Energy Use Survey. Please see the response to PUB/EM I-8 for a link to this document.

b)

<b>Natural Gas Rate Class</b>	<b>Natural Gas Customer Count</b>	<b>2018/19 Nat. Gas Consumption (million cu.m.)</b>	<b>% of Total Consumption</b>
<b>Small Residential</b>			
<b>Small Commercial</b>			
<b>Large General Service</b>			
<b>High Volume Firm</b>			
<b>Main Line Firm</b>			
<b>Interruptible</b>			
<b>Totals</b>			

2b

**REFERENCE:**

Appendix A – Section A3, Figure A3.2, pdf page 250 of 591.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presented electric annual program bundle savings by customer segment.

**QUESTION:**

- a) Please provide further breakdown of annual energy savings, in digital excel format, by portfolio, DSM bundle, DSM program, and measure (technology) types.
- b) Please provide further breakdown of annual energy savings, in digital excel format, by portfolio, DSM bundle, DSM program, and end-use technology type.

**RATIONALE FOR QUESTION:**

To assess how programs are designed across different measure groups and end-use technologies.

**RESPONSE:**

- a) With respect to the portfolio and DSM program bundle breakdown of annual energy savings, Efficiency Manitoba has provided the corresponding electric portfolio summary electronic workpapers that contains the Figure A.3.2 (2020/23 Efficiency Plan, Section A3.1.2, p. 250 of 591) to both DAYMARK and Consumers COALITION.

With respect to measure annual energy savings Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK. It is unclear within the context provided within the question what is being considered as differentiating characteristics for the measure/technology type (requested in part a.) versus end-use technology type (requested part b.). Efficiency Manitoba has provided all measure level electronic workpapers to DAYMARK.

b) See DAYMARK/EM I-97a above.

**REFERENCE:**

Appendix A – Section A3, Figure A3.4, pdf page 253 of 591.

**PREAMBLE TO IR (IF ANY):**

Efficiency Manitoba presented natural annual program bundle savings by customer segment.

**QUESTION:**

- a) Please provide further breakdown of annual natural gas savings, in digital excel format, by portfolio, DSM bundle, DSM program, and measure (technology) types.
- b) Please provide further breakdown of annual natural gas savings, in digital excel format, by portfolio, DSM bundle, DSM program, and end-use technology type.

**RATIONALE FOR QUESTION:**

To assess how programs are designed across different measure groups and end-use technologies.

**RESPONSE:**

- a) With respect to the portfolio and DSM program bundle breakdown of annual energy savings, Efficiency Manitoba has provided the corresponding natural gas portfolio summary electronic workpapers that contains the Figure A.3.4 (2020/23 Efficiency Plan, Section A3.1.4, p. 253 of 591) to both DAYMARK and Consumers COALITION.

With respect to measure annual energy savings Efficiency Manitoba has provided the corresponding electronic workpapers to DAYMARK based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK. It is unclear within the context provided within the question what is being considered as differentiating characteristics for the measure/technology type (requested in part a.) versus end-use technology type (requested part b.). Efficiency Manitoba has provided all measure level electronic workpapers to DAYMARK.

b) See DAYMARK/EM I-98a above.

**REFERENCE:**

Workpapers "3-Year Plan Electric Portfolio Summary 21Oct2019 v1.4.xlsx and "3-Year Plan NG Portfolio Summary 21Oct2019 v1.4.xlsx

**PREAMBLE TO IR (IF ANY):**

Each of these spreadsheets provides a "Bundle Summary" tab and a tab entitled "ATT4-TableSummary", but it is not clear which tab (or external spreadsheet) is the source for all the metrics presented in these spreadsheets.

**QUESTION:**

- a) Are there electric and gas spreadsheets corresponding to these spreadsheets that provide the same data but at the measure level?
- b) Please provide a mapping of all measures in the electric and natural gas programs between measures and programs / program bundles.
- c) Please provide a clear explanation of the difference between a program and a program bundle, using an example of a program bundle -- that maps to more than one program -- that shows the aggregation from the measure level to the program / program bundle level and finally up to the portfolio level.
- d) Please also explain why many program bundles correspond to only one program in the spreadsheets referenced above.
- e) How are the program bundles marketed to the customer?
- f) How are the program bundles marketed to the delivery partner?
- g) Are there program bundles that are marketed only direct to the customer?
- h) Please explain the meaning of "Segment Participation" equal to 100% (Col E in the Bundle Summary tab).

**RATIONALE FOR QUESTION:**

Understand how program bundles work to help enhance marketing.

**RESPONSE:**

- a) All measure level electric and natural gas spreadsheets have been provided by Efficiency Manitoba to Daymark based on the Non-Disclosure Agreement executed between Efficiency Manitoba and DAYMARK. The referenced “Bundle Summary” tab and tab entitled “ATT4-TableSummary” are program and program bundle summaries that were prepared at the portfolio analysis level only and contained within the Workpapers “3-Year Plan Electric Portfolio Summary 21Oct2019 v1.4.xlsx” and “3-Year Plan NG Portfolio Summary 21Oct2019 v1.4.xlsx” referenced in the preamble. The individual measure spreadsheets provided to DAYMARK have a distinct form and function and do not summarize the measure level data in the same format as within these portfolio level spreadsheets.
- b) The table provided on p.19 of 591 of the 2020/23 Efficiency Plan (“Plan”) provides a mapping of each of the program bundles within each of the customer segments. Further, the table provided in PUB/EM I-33b provides a detailed mapping of which specific measures or technologies are being offered within each program bundle. The program bundles are separated into each customer segment within this table.
- c) The below chart outlines an example of a program bundle that maps to different programs, and different measures. This bundle is a part of a larger customer segment, and various customer segments make up the portfolio within the Plan.

PORTFOLIO	CUSTOMER SEGMENT	BUNDLE	PROGRAM	MEASURES
EFFICIENCY MANITOBA THREE YEAR PLAN	COMMERCIAL, INDUSTRIAL & AGRICULTURAL	RENOVATION OFFERS	LIGHTING	<b>Lighting products</b> <ul style="list-style-type: none"> <li>LED lamps (screw-in T8, T5)</li> <li>LED specialty lamps (HID ballast, line voltage)</li> <li>LED fixtures</li> <li>Backlit signage</li> </ul>
				<b>Lighting controls</b> <ul style="list-style-type: none"> <li>Occupancy sensors</li> <li>Control systems</li> </ul>
			BUILDING	<b>Building Envelope Products and Systems</b> <ul style="list-style-type: none"> <li>Surface and cavity</li> </ul>

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PORTFOLIO	CUSTOMER SEGMENT	BUNDLE	PROGRAM	MEASURES
			<b>ENVELOPE</b>	insulation for roof, attic, wall, and foundation applications <b>*NEW for foundation</b> <ul style="list-style-type: none"> <li>Window systems including punched, in-fill, curtain wall, and storefront</li> <li>Glazed doors including overhead, single-swinging, sliding, and garden</li> </ul>
				<b>Building Envelope Financial Assistance</b> <ul style="list-style-type: none"> <li>Incidental and dedicated air sealing <b>*NEW</b></li> <li>Blower door testing (for determining equivalent air leakage) <b>*NEW</b></li> <li>Building component energy modelling for designing energy-efficient curtain wall and storefront systems</li> </ul>
				<ul style="list-style-type: none"> <li>Variable frequency drives</li> <li>Hotel occupancy sensors</li> <li>Hotel packaged terminal heat pumps (PTHPs)</li> </ul>
		<b>LOAD DISPLACEMENT OFFERS</b>	<b>LOAD DISPLACEMENT PROGRAM</b>	<b>Customer Sited Load Displacement</b>

d) Some program bundles only reference one program, which is evident in the case of the Load Displacement Program and seen in the chart responding to part c of this question. Program bundles are intended for offerings that share features and comparable delivery models. No other programs or measures share the unique characteristics of load displacement; therefore, it is its own program within its own bundle. This is similarly encountered for the Community Geothermal offer for Indigenous customers.



- e) Energy efficiency offers will be promoted to customers based on their needs, not necessarily as bundles but as a group of opportunities. An example would be a business customer who wants to renovate their space and is not sure where to start. This customer will be presented with the typical renovation opportunities which have been grouped in the renovation bundle to enable a thorough review of what options exist.
- f) Since delivery partners generally work in a specific trade or market sector, they will not see marketing of bundles as much as a customer. To ensure maximum support from industry, Efficiency Manitoba will have ongoing relationships with various associations to promote offers that are appropriate for their customers.
- g) An example of program bundles that are only marketed to the customer are the Load Displacement and Community Geothermal program bundles, which are focused offers that do not apply to all customer segments.
- h) The column heading “Segment Participation” found in Column E within the Bundle Summary tab in the “3-Year Plan Electric Portfolio Summary 21Oct2019 v1.4.xlsx” electronic workpaper was used to separate out participation by customer segment for programs that were targeting more than one individual customer segment. This approximately was accomplished by using historical customer participation values. For clarity, this allocation does not alter the overall program participation values completed through measure level analysis but was simply used to separate by customer segment to better illustrate the targeted programs by customer segment.

Therefore, with respect to the values within this column, each program would have a total of 100% participation if that program was only targeting one customer segment. Similarly, if a program was targeting multiple customer segments, the sum across customer segment of the “Segment Participation” values for that program would sum to 100%.

By way of example, consider the Lighting Program within the Commercial, Industrial and Agricultural customer segments all captured within the Renovation Program bundle. Examining the “Segment Participation” column for this program bundle would yield the following:

<b>DSM Program</b>	<b>DSM Bundle</b>	<b>Sector</b>	<b>Segment Participation %</b>
<b>Lighting Program</b>	<b>Renovation</b>	<b>Commercial</b>	<b>76%</b>
<b>Lighting Program</b>	<b>Renovation</b>	Industrial	16%
<b>Lighting Program</b>	<b>Renovation</b>	Agricultural	8%
<b>TOTAL</b>			100%