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Efficiency Manitoba 2020/23

REVIEW OF EFFICIENCY PLAN

Jim Grevatt

January 14, 2020

Energy Futures Group

Areas of Expertise

- Energy efficiency
- Demand Response
- Renewable energy
- Electrification
- Building Codes
- Integrated Resource Plans
- Non-Wires Alternatives

Range of Clients

- Government
- Advocates
- Regulators
- Utilities

Clients in 36 states, 7 provinces, & overseas

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Focus of My Review of Efficiency Manitoba Plan

Assist Consumers Coalition:

- Assess the reasonableness of the projected savings in Efficiency Manitoba's 3-year plan;
- Examine Efficiency Manitoba's proposed plan to reach the savings target:
  - The appropriateness of the methodologies used by Efficiency Manitoba to select or reject demand-side management initiatives;
  - Whether the plan adequately considers the interests of residential customers;
  - The accessibility of initiatives in the plan to residential customers;

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High Level Observations on the Plan

Primary Observations

- Failed to include necessary details for comprehensive review
- General program categories are in-line with typical comprehensive portfolios - if budgeted and planned appropriately could provide significant benefits
- Unreasonably conservative in budgets and targets for residential customers
- Many things have to go right for Efficiency Manitoba to meet its projections
- The Plan does not provide evidence that they will

Strong focus on complying with framework letter issued by Minister of Crown Services

- *a leaner, more streamlined organization*
- *optimizing value for money*
- *a significantly smaller percentage of the cost and materially lower labour costs*

All critically important, but do not alone describe Efficiency Manitoba's mandate

Mandatory considerations 11(4) In reviewing an efficiency plan and making recommendations to the minister, the PUB must consider:

(c) whether Efficiency Manitoba is reasonably achieving the aim of providing initiatives that are *accessible* to all Manitobans;

Efficiency Manitoba Act

Mandate 4(1) The mandate of Efficiency Manitoba is to:

(b) achieve additional reductions in the consumption of electrical energy or natural gas — including resulting reductions in the demand for electrical power — *if the reductions can be achieved in a cost-effective manner*;

Cost-effective means:

benefits ≥ costs

Benefit cost ratio of 1.0 or greater denotes cost-effectiveness

Efficiency Manitoba Act

Use of the term "cost-effective"

"cost-effective" ≠ "lowest cost"

IRR CC/AMC – 2: *confirm that the use of the term "cost-effective" [in the evidence] does not refer to the extent to which Indigenous programs comply with statutory cost-effectiveness requirements*

Response: Confirmed that the term "cost-effective" [as used in the evidence] refers to program costs per unit of energy saved

Additional factors to be considered by PUB 11:

(d) whether the portfolio of demand-side management initiatives required to achieve the savings targets is cost-effective;

Efficiency Manitoba Regulation

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Lack of Transparency in the Plan

- Narrative describes ***that*** EM will meet mandate and make improvements over prior implementation
- Little detail about ***how*** it will do so
- Nothing to indicate measure assumptions and resulting prioritization
- Overwhelming focus on reducing costs, to the detriment of other critical objectives

Omission of measure-level detail in the Plan

Measure	A product (a piece of equipment), combination of products, or process designed to provide energy and/or demand savings. Measure can also refer to a service or a practice that provides savings. Measure can also refer to a specific combination of technology and market/customer/practice/strategy (e.g., direct install low income CFL).

HVAC – Central Air Conditioning
HVAC – Down Size ½ Ton
HVAC – Early Retirement of Central Air Conditioning
HVAC – Window AC Replacement (Retrofit)
HVAC – Air Source Heat Pump
HVAC – Ductless MiniSplit Heat Pump
HVAC – Early Retirement of Heat Pump Unit
HVAC – Central AC Quality Installation Verification (QIV)
HVAC – Heat Pump Quality Installation Verification (QIV)
HVAC – Mini Split Heat Pump Quality Installation Verification (QIV)
HVAC – Heat Pump Digital Check-up/Tune-up
HVAC – Duct Sealing
HVAC – Quality Installation with Duct Modification

Massachusetts Technical Reference Manual ("TRM"): Massachusetts Technical Reference Manual for Estimating Savings from Energy Efficiency Measures, 2016-2018 Program Years – Plan Version, October 2015, pdf p.434. http://ma-eeac.org/wordpress/wp-content/uploads/2016-2018-Plan-1.pdf.

2020 National Grid MA lighting projections

2020 Plan Retail Lighting Measures	Quantity	Measure Life	Incentive	EE: Gross Annual kWh Saved	Net to Gross
LED Bulb	2,574,279	5	$2.63	38.6	30.0%
LED Bulb (Specialty)	414,899	5	$3.00	42.6	40.0%
LED Bulb (Reflectors)	942,485	5	$7.50	52.1	40.0%
LED Bulb (Hard to Reach)	369,105	5	$3.33	38.6	30.0%
LED Bulb, Food Pantries	11,750	5	$1.46	36.2	100.0%
LED Bulb (School Fundraiser)	6,059	5	$4.79	36.2	30.0%
LED Bulb (Linear LED)	9,900	10	$12.00	11.9	40.0%
LED Fixture	796,637	5	$8.70	38.6	40.0%

PSCO 2019-20 Plan

Table 6b: 2019/2020 Electric Participation Estimates, Average Rebate and Savings by DSM Product

Product	2019 Estimated Participants	Average Rebate Per Customer	Average kWh Savings Per Customer	2020 Estimated Participants	Average Rebate Per Customer	Average kWh Savings Per Customer
Business Program						
Commercial Refrigeration Efficiency	55	$3,813.35	52,806	55	$3,813.35	52,806
Compressed Air Efficiency	64	$5,968.56	55,732	72	$5,588.49	52,065
Cooling	1,004	$1,899.41	8,683	1,000	$1,796.60	9,591
Custom Efficiency	7	$19,482.14	399,710	8	$19,482.13	399,710
Data Center Efficiency	48	$17,044.10	133,559	48	$17,889.21	150,830
Energy Management Systems	38	$8,524.65	131,738	37	$7,766.01	125,406
Heating Efficiency	58	$105.97	1,690	64	$97.84	1,621
LED Street Lighting	13	$0.00	204,472	13	$0.00	204,472
Lighting Efficiency	4,246	$2,616.17	40,269	4,339	$3,131.98	46,666
Lighting - Small Business	4,112	$758.37	8,578	3,755	$748.42	8,463
Motor & Drive Efficiency	131	$11,264.88	70,310	117	$12,545.91	78,305
Multifamily Buildings	1,036	$1,053.54	7,242	1,140	$1,040.93	6,944
New Construction	104	$77,910.31	379,712	96	$93,712.04	455,365
Recommissioning	46	$3,857.48	59,415	46	$3,707.80	62,382
Self Direct	3	$166,894.33	1,684,623	3	$166,894.33	1,684,623
Strategic Energy Management	74	$19,200.18	203,471	97	$14,195.73	187,862
Residential Program Total						
Energy Efficient Showerhead	2,366	$5.52	427	2,366	$5.52	427
Energy Feedback Residential	533,461	$0.00	38	524,475	$0.00	37
ENERGY STAR New Homes	2,790	$210.51	992	2,521	$210.91	1,042

- Efficiency Manitoba *"will provide rebates to homeowners on a variety of energy-saving measures and technologies with higher upfront costs such as insulation, windows, HRV controls, drain water heat recovery units, and geothermal systems."*
- Plan did not indicate assumed quantities of any of these measures
- Costs and savings can vary significantly by measure, both for the program and participants
- Measure detail would allow reviewers to assess whether EM portfolio is balanced

Efficiency Manitoba 2020/23 Efficiency Plan, Home Renovation Rebate Offers, pdf pp. 295-296, lines 349-351.

Coalition electronic request to Efficiency Manitoba dated November 4, 2019

- "a listing of the measures that result in the projected savings, by year, including:
  - Assumed quantity of each measure
  - Assumed gross and net savings of each measure
  - Assumed estimated useful life of each measure
  - Assumed program incentive cost of each measure
  - Assumed customer cost of each measure"
- Measure level data were not provided to the Coalition until IRR were received on November 27, 2019—and then were incomplete and difficult to interpret.

CHANGING PARTICIPATION NUMBERS

TABLE A5.1 INCOME QUALIFIED ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of houses/suites (electric)	3,420	3,160	3,180
Annual electric savings (GWh) (at generation)	2.53	2.70	2.65
Annual capacity savings (MW) (at generation)	0.94	0.95	0.93
No. of houses/suites (natural gas)	3,600	2,500	2,400
Annual natural gas savings (million m^3)	1.08	1.07	1.09
Annual GHG emission reductions (tonnes CO_2e)	2,000	2,000	2,000

Note. Refer to *Attachment 3 – Technical Tables* for additional program details.

COALITION/EM I-102

REVISED TABLE A5.1 INCOME QUALIFIED ENERGY & GREENHOUSE GAS EMISSIONS SAVINGS SUMMARY

	2020/21	2021/22	2022/23
No. of retrofits (electric)	3,420	3,990	3,950
No. of houses/suites (electric)	500	500	490
Annual electric savings (GWh) (at generation)	2.53	2.70	2.65
Annual capacity savings (MW) (at generation)	0.94	0.95	0.93
No. of retrofits (natural gas)	3,240	3,700	3,900
No. of houses/suites (natural gas)	1,300	1,280	1,270
Annual natural gas savings (million m^3)	1.08	1.07	1.09
Annual GHG emission reductions (tonnes CO_2e)	2,000	2,000	2,000

Highlighted sections have been revised.

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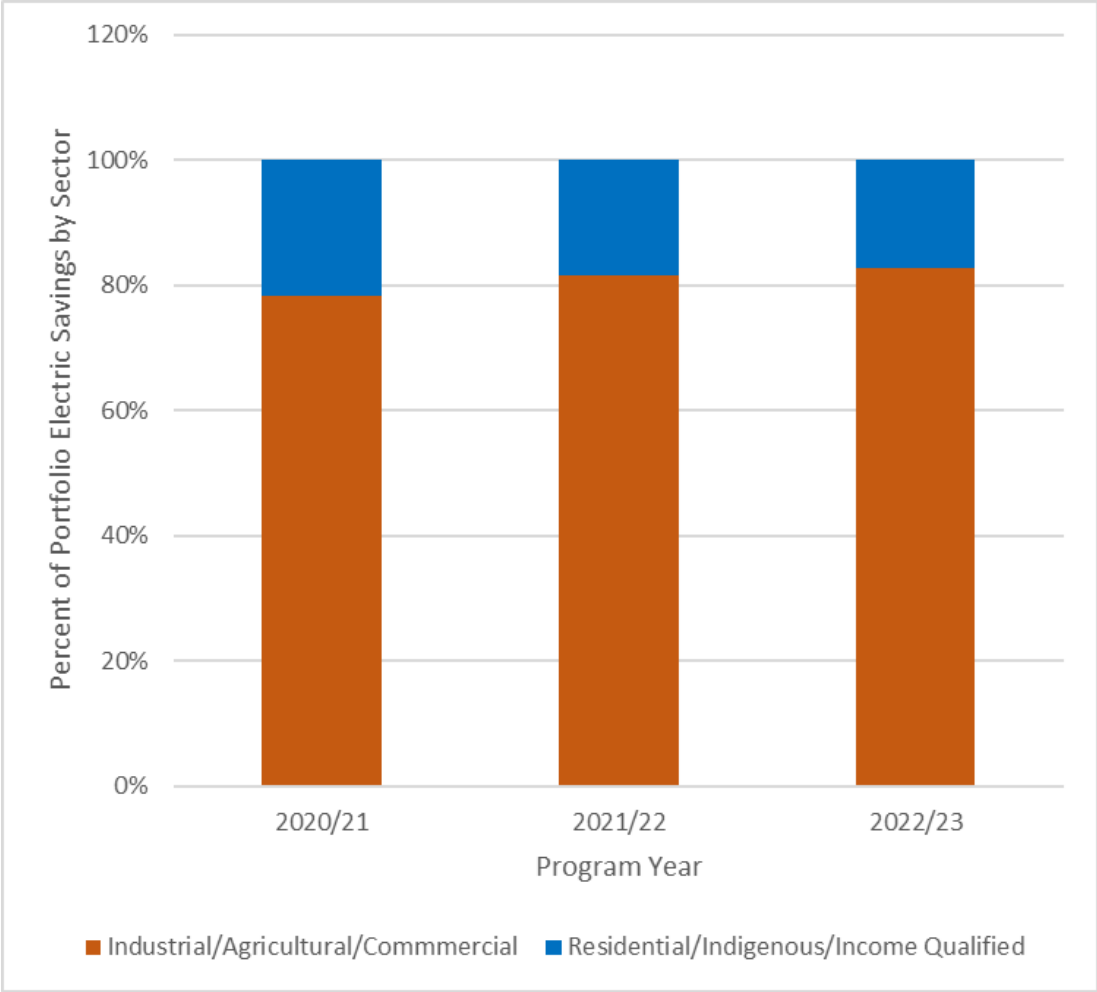
Lack of Opportunities for Residential Customers in the Plan

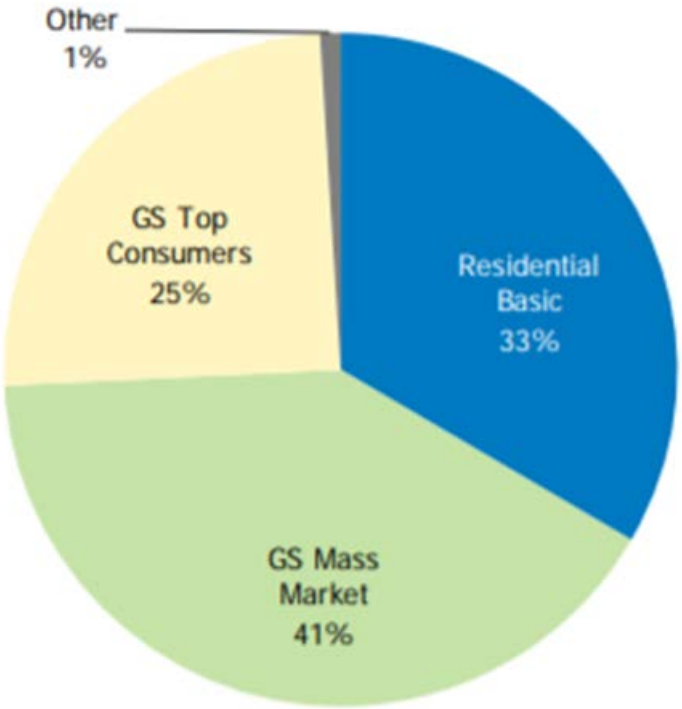
Proposed Programs

- Direct Install
- Product Rebates
- Home Renovation
  - Rebates
  - Loans
- New Homes and Major Renovation
- Kits and Education

Residential vs Non-Residential Electric Portfolio Savings

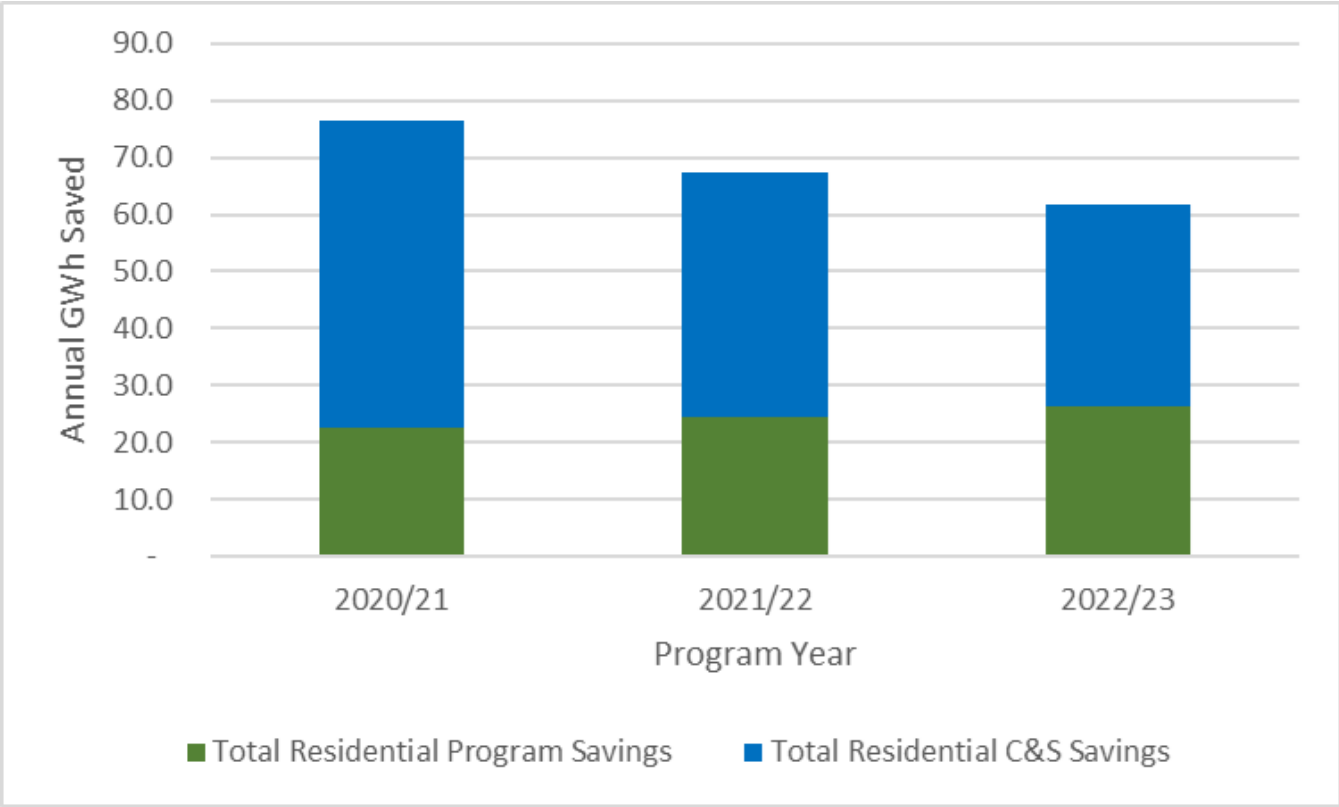


Components of Manitoba Electricity Use

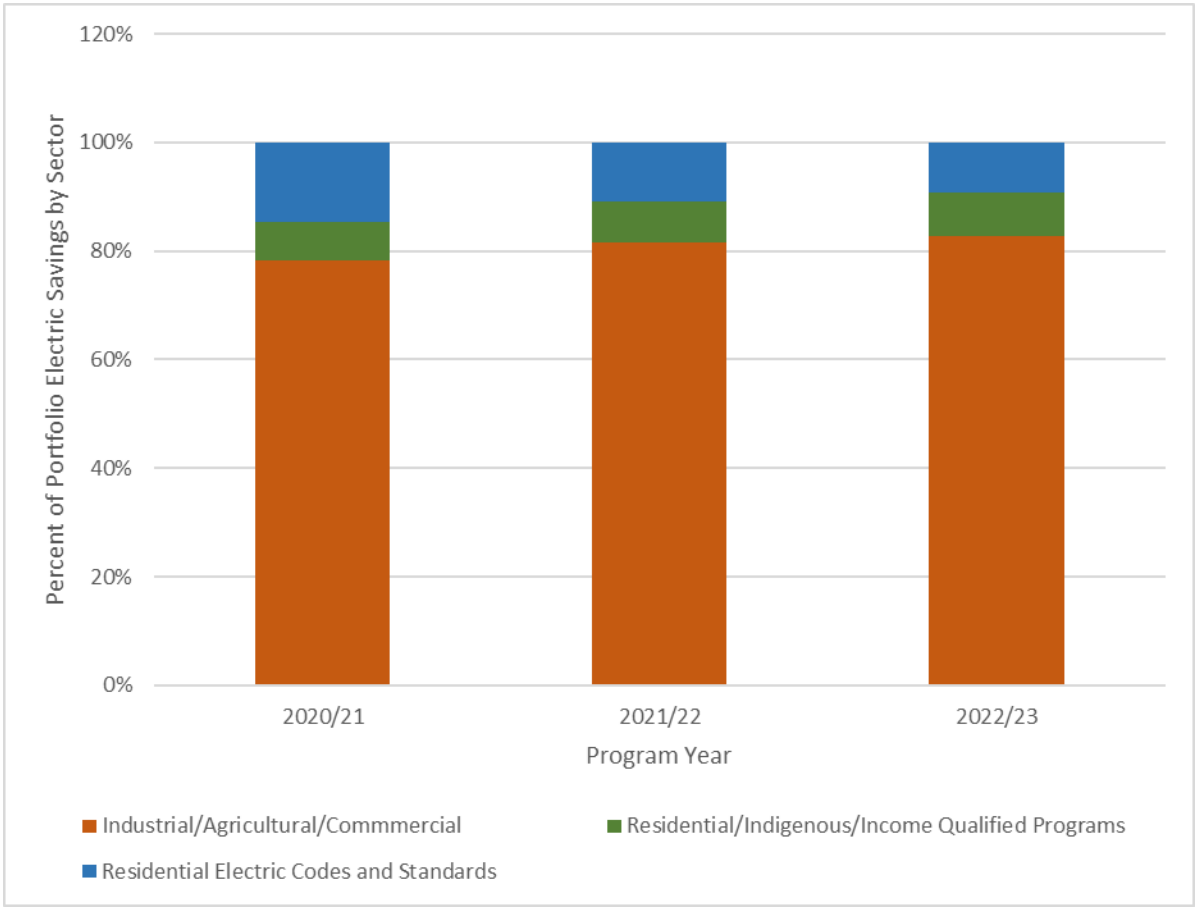


Reproduced from Manitoba Hydro 2019/20 Electric Rate Application, Appendix 15, pdf. p. 14.

Projected Residential Electric Savings Programs vs. Codes and Standards



Residential vs Non-Residential Electric Portfolio Savings



Who Benefits from Codes and Standards?

- Savings from Codes apply to customers who build a new home or undertake major renovations
- Savings from Standards apply to customers who purchase covered appliances
- Not accessible to all residential customers

- General Service lighting standards are more broadly beneficial, but are diminishing - and are modest at the individual customer level

	Electric savings					
	2020/21		2021/22		2022/23	
	MW	GWh	MW	GWh	MW	GWh
Residential General Service Lighting Standards	7.2	17.1	~~11.0~~ 3.8	~~26.1~~ 9.1	~~13.1~~ 2.1	~~31.1~~ 5.0

Independent evaluator may find that even these estimates are too high

PUB/EM I-39 (Revised)

Who Benefits from Codes and Standards?

- CC/AMC – 3: Please explain whether savings that EM plans to capture through Codes and Standards would meet a horizontal equity test.
- "In theory, yes, but in practice, not necessarily. For example, building codes on First Nation reserves are often non-existent or not adequately enforced…Over time, the improvement in provincial building codes, for instance, could potentially increase the gap between the energy efficiency of on and off reserve housing."

Importance of Residential Programs

"Efficiency Manitoba will do a better job lowering energy consumption, cutting emissions and reducing costs for Manitoba ratepayers"

October 18, 2018 Letter from Premier of Manitoba to Minister of Crown Services

Providing bill savings for customers by ensuring that sufficient energy efficiency programs are accessible is critical to "reducing costs for Manitoba ratepayers"

Residential Electric Programs are Cost-Effective

- Residential Direct Install electric BC 1.53
- Product Rebates electric BC 1.74
- Home Renovation electric BC 2.90
- New Home and Major Renovation electric BC 6.56

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Startup Challenges and The Need for Project Management

Several risks identified in evidence:

- Staff hiring and transition from Manitoba Hydro
- Procurement of program implementers and contractors
- Program ramp-up
- CRM development and launch
- Online Home Energy Questionnaire
- Codes and Standards savings
  - Attainment of goals
  - Budget adequacy

Codes and Standards provide a legitimate source of program savings

- Valuable tool for increasing efficiency
- Magnitude of savings can be large due to far-reaching effects
- The cost per unit of savings can be low
- Adoption of EE codes and standards requires technical, analytical, strategic, and logistical support

Codes and Standards

- Precise attribution of savings is challenging
- Varying approaches in different jurisdictions
- Manitoba has been unique in allowing the full amount of estimated savings to be attributed to Manitoba Hydro
- Market forces are at work and will reduce the amount of savings that can reasonably be attributed to programs
  - Industry advances and innovations lead to market-driven efficiency gains independent of C&S

Codes and Standards Savings Risk

- Even if the Board allows Efficiency Manitoba to report savings from Hydro's prior programs towards goals, it is not clear how much savings they should report
- Efficiency Manitoba acknowledges that C&S savings need to be determined through evaluation
  - "Efficiency Manitoba will be relying on the third-party assessor to recommend the appropriate net savings and attribution rates for the savings achieved through codes and standards initiatives."

Rebuttal evidence of Efficiency Manitoba, p.6

Codes and Standards Budget Risk

- If projections are overly optimistic, there will not be budget headroom to increase other programs

Adjustments under approved plan 12(5):

(b) do not result in Efficiency Manitoba's total costs exceeding the total costs specified in the approved efficiency plan.

Budget projections are remarkably low

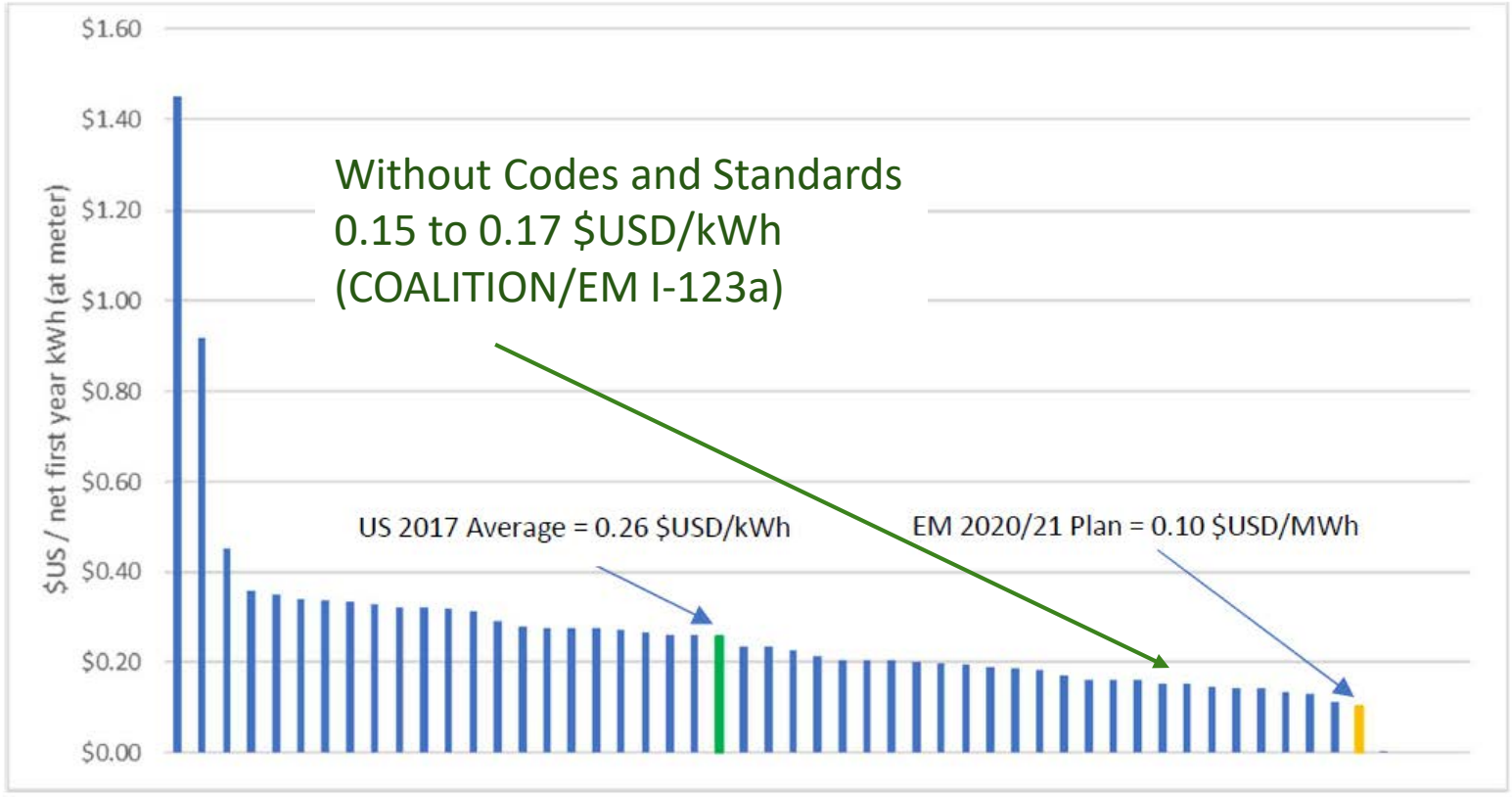

Figure 5 Electricity program savings acquisition costs, by US State (data source: ACEEE 2018 State Energy Efficiency Scorecard)

Efficiency Manitoba Plan pdf p. 533

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Four Principal Recommendations

1. Provide a project management plan that demonstrates risk assessment and mitigation strategies
2. Independent review of Codes and Standards savings assumptions
3. Increase residential and income-eligible budgets, savings, and participation targets
4. Improve the level of detail provided in future filings to allow thoughtful review

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Options for the Board

If the Board decides to approve the Plan despite its shortcomings to allow EM to launch on schedule, I recommend it only do so provisionally and that it include the following caveats:

1. Only approve the first year of the Plan programs as filed
2. Require EM to file its project management plan and risk mitigation strategy within 30 days of Board approval to demonstrate that it will appropriately manage launch and implementation

Require EM to file an amended Efficiency Plan for 2021/22 - 22/23 that contains:

1. Updated codes and standards savings projections based on review by the independent evaluator
2. Increased savings for programs as required to *at-least* meet targets
3. Increased detail for all programs regarding proposed measures, measure quantities, incentive amounts, and expected savings

4. Increased residential, LICO-125, and Indigenous budgets, savings, and participation estimates, with a focus on long-lived measures that support provincial climate objectives, including:
   - Increased penetration of building shell improvements regardless of whether electric or gas is the primary heat source
   - Increased promotion of cold-climate heat pumps for homes that currently have electric resistance heating

ENERGY FUTURES GROUP

Jim Grevatt

MANAGING CONSULTANT

jgrevatt@energyfuturesgroup.com

(802) 482-4086

energyfuturesgroup.com