Written Testimony of Philippe U. Dunsky
re. Manitoba Hydro's Demand-Side Management Plan

in the context of Manitoba Hydro's 2012/13 and 2013/14 General Rate Application

on behalf of Consumers Association of Canada (Manitoba) and Green Action Centre

~~*November 15th, 2012*~~
*November 30th, 2012**

Contents

* This version includes three changes to the original: on pages 5 and 10 (figures 1 and 4 are corrected to account for higher savings from Quebec); page 27 (BC Hydro conducts its evaluations internally); and page 36 (the number of new electrically-heated homes in MB was for a five-, not one-year period).

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Introduction

Please state your name, address and current and past occupations.

Philippe Dunsky, President of Dunsky Energy Consulting located at 50 Sainte-Catherine St. W., Suite 420, Montreal, Quebec, H2X 3V4. My firm is comprised of eight full-time staff in addition to several part-time associates, and is dedicated exclusively to supporting clients in the realms of energy efficiency and renewable energy. Prior to founding my firm in 2004, I was Executive Director of the Helios Centre for Sustainable Energy Strategies, an energy think-tank, from 1996 to 2004. Prior to that, I worked for five years in a variety of consulting and analytical capacities related to energy policy, including as a member of the Quebec government commission tasked with developing the province's energy policy.

In addition to my consulting practice, I served for 10 years as a governor of the Canadian Green Municipal Fund (approx. $700M in loans and other instruments for municipally-led projects). I have also been a member of a large variety of boards of directors, including in the for-profit (services and venture capital), not-for-profit, and government sectors (including boards and committees of the Quebec Energy Efficiency Agency, the Ontario Power Authority, and Enbridge Gas Distribution, among others).

Please summarize your experience with energy efficiency plans and programs.

I have been involved in the design and analysis of energy efficiency and related programs for over two decades. In my current consulting practice, I advise a wide range of clients – primarily utilities, government agencies and others responsible for setting and achieving DSM goals – on energy efficiency planning, program design, and evaluation. In Canada, my *government* clients have included the relevant agencies and departments in B.C., Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, as well as the federal government; my *utility* clients in Canada have included the likes of BC Hydro, Fortis BC (gas), Manitoba Hydro, Hydro-Quebec, Gaz Metropolitain, Nova Scotia Power, NB Power, Newfoundland Power, and Newfoundland and Labrador Hydro. I have a similar clientele in the U.S., including such organizations as the

New York State Energy and Research Development Agency (NYSERDA), Efficiency Maine Trust, Efficiency Vermont, New Jersey Board of Public Utilities, Northeast Energy Efficiency Partnerships, and others. My firm also works for non-profit groups, including both industry associations and public interest groups, as well as private sector solutions providers.

Please describe the relevant projects you are currently involved with.

My firm carries out a wide array of projects, all of which I manage or supervise. Current projects include developing a cost-effective DSM potential study as well as a three-year DSM plan for the province of New Brunswick and NB Power; providing a broad array of analytical and strategic support, in areas of planning, regulatory assistance, and program design, to Efficiency Nova Scotia; advising the Quebec government in the area of DSM policy and target-setting; assessing the cost-effective potential for demand response for Hydro-Quebec; providing technical and strategic support to Efficiency Maine as it prepares its coming three-year plan; evaluating the results of a large-scale innovative financing program for home energy retrofits; developing a similar innovative financing model with a large financial institution; and a host of other projects.

What is the purpose of your testimony?

I was retained to review Manitoba Hydro's electric DSM savings plan, with a view to determining the extent to which they may or may not be reasonably expected to address the full opportunity for reducing total provincial energy bills through cost-effective savings. It is important to note that I did not conduct a full-scale "achievable potential" study, but rather focused on an analytical benchmarking exercise, as well as relying on my own experience in this field.

How did you assess Manitoba Hydro's DSM efforts?

I took a two-step approach. The first step involved comparing Manitoba Hydro's current, program-related DSM savings against a broad array of jurisdictions (48 states and 4 provinces)

for which data is readily available. This allows us, at a high level, to qualify Manitoba Hydro's current DSM activities.

The second step involved a closer examination of Manitoba Hydro's *planned savings*, i.e. the savings it proposes to achieve in its latest Power Smart plan, including benchmarking them against a smaller cohort of five regions. The five regions were chosen from among a larger group of generally-recognized DSM leaders, with a view to including, in the aggregate, most of Manitoba Hydro's key characteristics. As a result, we deliberately did not choose the "top 5" but rather a reasonably representative sampling among a broader group of recognized leaders.

I then proceeded to examine possible exogenous factors that could reasonably explain significant differences in Manitoba Hydro's and the cohort group's relative planned savings. Finally, I discuss the implications of my findings.

Manitoba Hydro's 2010 Results

How can we qualify Manitoba Hydro's electric DSM efforts?

Historically, Manitoba has long been considered a strong region for DSM efforts. However, in recent years, regions throughout the continent have been systematically growing their DSM efforts as they increasingly recognize that resource's intrinsic value propositions: first and foremost a lower cost per kilowatt-hour compared with new supply options, in addition to improved customer satisfaction (due both to lower bills *and* related benefits such as improved comfort), local economic development, and environmental protection.

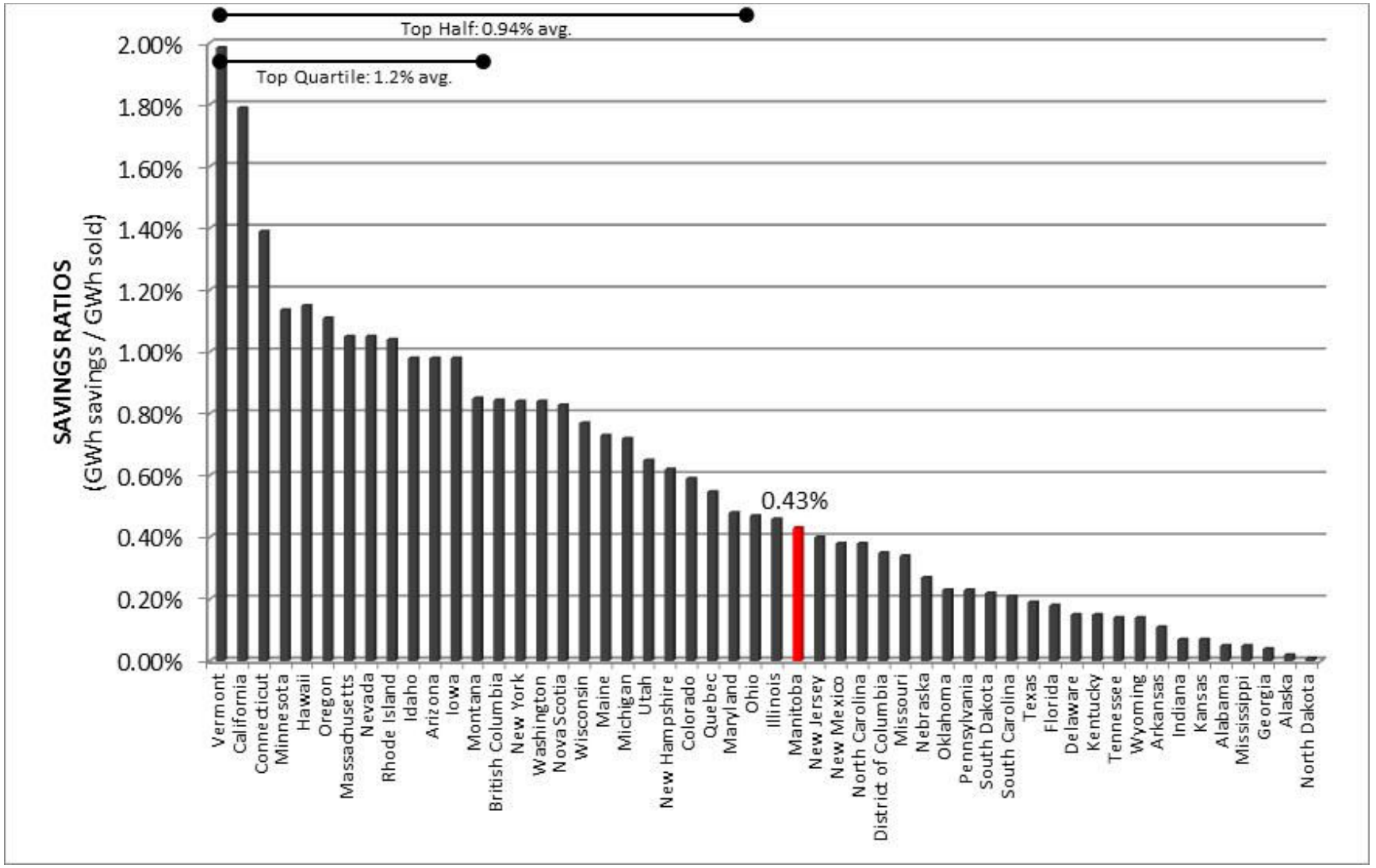
As a result, Manitoba Hydro no longer fares as well as it once did. Our benchmarking exercise assessed the utility's recent reported performance against those of 52 U.S. states and Canadian provinces. For the exercise, we used the now ubiquitous industry metric of "percent of sales", meaning incremental annual energy savings divided by total domestic energy sales.[1]

By this metric, Manitoba Hydro's 2010 performance, at 0.41 % for 2010, falls below the straight average (0.6%) of all other states and provinces. Looking only at the "leaders", we note that the three highest achieving regions obtain between 1.4% and 2.0%; another nine regions achieved between 1.0% and 1.1% (rounded to the nearest decimal). In all, the top quartile achieved on average 1.2% in 2010, or nearly three times more than Manitoba Hydro.

Figure 1 below illustrates the results of this initial benchmarking exercise.

[1] For analytical simplicity, and in keeping with industry standards, the denominator is based on current sales.

Figure 1. **CURRENT PERFORMANCE – 2010 Savings Ratios across North America**



Is this a fair metric?

No single metric is a perfect reflection of performance; however, over time "savings over sales" has become the standard metric used in the DSM industry to compare performance. Another metric, no longer commonly used, is the "share of forecast growth", in which we examine the extent to which DSM is expected to contribute to reducing projected demand growth.

The "savings/sales" metric we used provides arguably the most comprehensive picture; however, one might argue that it overstates the relative success of a region that is experiencing high load growth, since strong growth offers easier savings through increased new construction and natural investment cycle opportunities. On the other hand, the "share of forecast growth" alternative may tend to overstate the relative success of regions with low or no baseline load growth. This problem is more acute when comparing natural gas DSM than it is for electricity.

Overall, I believe the "savings over sales" metric provides the most reasonable data point for benchmarking purposes. On the whole, if the alternative metric were to have any impact, it is likely that it would portray Manitoba Hydro's relative performance in a dimmer light as compared to the standard industry metric we have chosen, given the current economic climate throughout much of North America.

One other thing that may be worth mentioning: the benchmarking presented in Figure 1 above accounts only for Manitoba Hydro's conservation programs (as opposed to also including codes and standards, the use of rate structures, or self-generation). This is appropriate, as the savings ratios of the benchmarked regions are also intended to reflect only voluntary programs. Due to reporting differences, however, I do note that it is at least *possible* that a small number of benchmarked regions' values also include some of these additional factors. However, this unlikely situation would not materially change the results; if we were to include all of the additional factors for Manitoba Hydro, its savings ratio would rise to 0.46%.

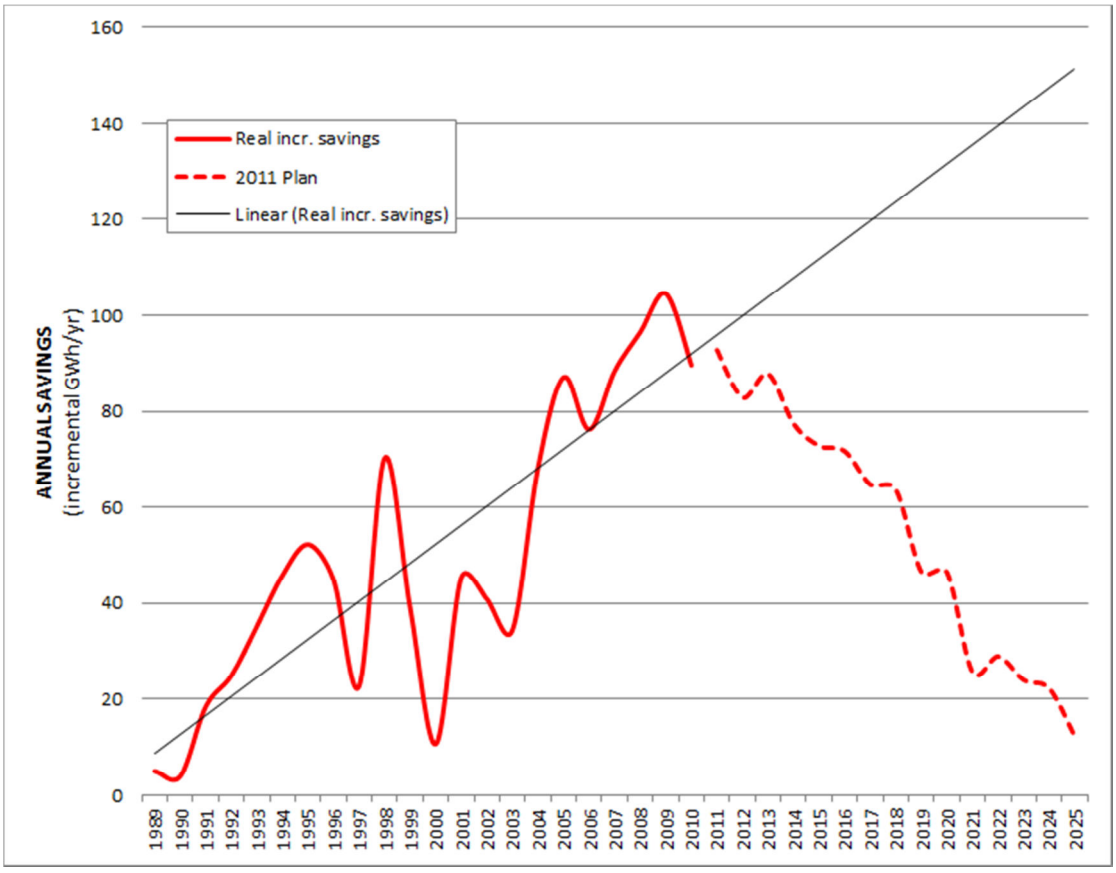
Manitoba Hydro's Planned DSM

We've looked at 2010, but what happens after that?

Over the past two decades, Manitoba Hydro has been growing its Power Smart effort and, as a result, achieving increased energy savings. 2009 marked a DSM high-water year for Hydro.

Looking forward, however, I was surprised to find that Manitoba Hydro is planning on a significant *decrease* in its savings targets. As can be seen in Figure 2, Manitoba Hydro's incremental savings decline steadily starting in 2010.[2] In 2025, annual savings from DSM would fall below 1991's savings, according to the 2011 Plan.

Figure 2. PAST & FUTURE: Manitoba Hydro's Savings History and Outlook (Programs Only)



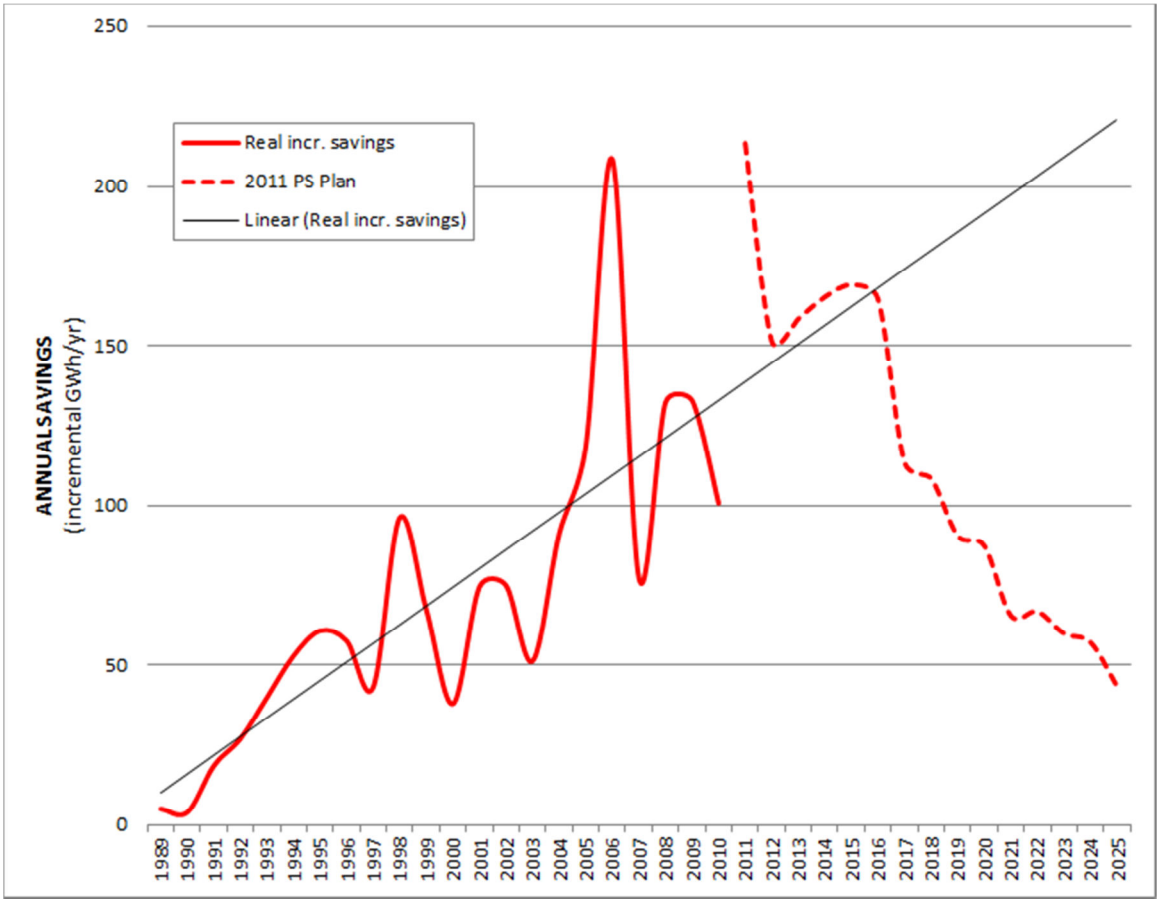
[2] These graphs present what can be termed "net annual incremental" savings, meaning that in theory, they account for both new savings in that year, as well as the loss of savings from previous years due to the end of a measure's useful life. While we would have preferred to report on incremental savings only, Manitoba Hydro was not able to provide the requisite information. I would expect the impact to be negligible for the 2015 horizon, and marginal for 2020, given that Manitoba Hydro's net savings analysis was reset in 2011, and that most measures have average lives that extend beyond 10 years (average plan-wide EULs are typically in the range of 15 years). However, it is worth noting that as they near 2025, Manitoba Hydro's reported incremental savings may be somewhat deflated due to the end of previous savings' lives.

This portrait lies in sharp contrast with most jurisdictions in North America, where more and more utilities and governmental agencies have been increasing their DSM efforts and associated targets. Many jurisdictions now have stringent goals, sometimes set by legislation, that are several multiples higher than Manitoba Hydro's forecasted DSM efforts.

Of course, DSM programs are only one side of the equation; codes and standards, as well as rate structure changes, can similarly lead to significant improvements in efficiency. Furthermore, it is possible that aggressive action on these other fronts could reduce the pool of efficiency opportunities that could be secured through programs (though there is an argument for the opposite conclusion as well). For that reason, I sought to recast the picture accounting for the utility's *overall* DSM savings forecast, including savings unrelated to programs.

Unfortunately, the overall picture – of growth in the past and dramatic decline looking forward – does not change significantly when accounting for these other savings, as we see in Figure 3.

Figure 3. PAST & FUTURE: Manitoba Hydro's Savings History and Outlook (incl. programs, C&S, self-generation)



As it was in the case for conservation programs only, the upward trend in achieved savings is followed by a significant downward trend of planned savings. Even with other sources of savings (codes and standards, self-generation), planned incremental savings in 2025 fall below levels achieved in the early 1990s.

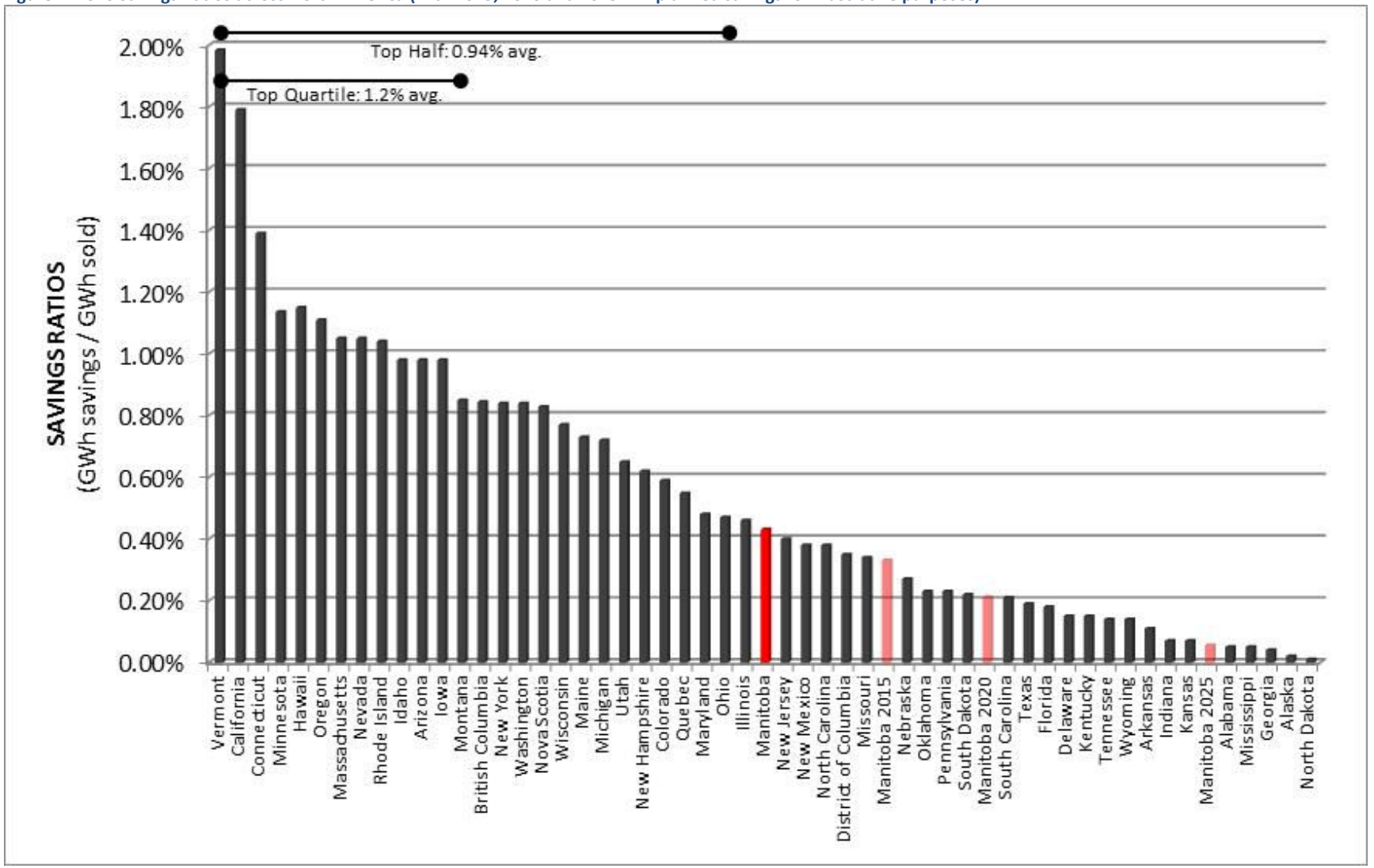
What would these planned savings do to Manitoba Hydro's current industry position?

In the following section, I present the results of a benchmarking exercise of Manitoba Hydro's *planned* savings against those of a smaller cohort of five regions: British Columbia, Minnesota, Massachusetts, Vermont and Nova Scotia.

While this will address the projected savings against a smaller subset, for illustrative purposes, I also examined how Manitoba Hydro's future savings targets would compare with the 2010 savings levels that I previously presented from the broader group of North American jurisdictions.

Figure 4 below reproduces the same chart as in Figure 1, while adding the relative savings that Manitoba Hydro is planning to achieve in five-year increments. Unsurprisingly, we see that the planned decline in savings pushes Manitoba Hydro further and further to the low end of the scale. Of course, it may be that the other regions are also planning on reducing their savings accordingly, in which case this would be an unfair comparison, and indeed it should be retained for illustrative purposes only. Again, the following section will look more closely at the comparable *planned savings* of the smaller 5-region cohort.

Figure 4. 2010 Savings Ratios across North America (with 2015, 2020 and 2025 MH planned savings for illustrative purposes)



Benchmarking Manitoba Hydro's Planned DSM

Please describe the process you took to benchmark Manitoba Hydro's planned DSM savings?

To complement the earlier high level benchmarking exercise, and to further drill down on Manitoba Hydro's DSM efforts, I compared them with a cohort of five selected North American leaders bearing similar characteristics in terms of climate, geographical location, and other factors.

The five selected provinces/states are British Columbia (BC Hydro), Massachusetts (all utilities), Minnesota (Xcel Energy), Nova Scotia (Efficiency NS), and Vermont (Efficiency Vermont). These jurisdictions were chosen because, on the whole, they cover a reasonably large set of desirable characteristics:

- Leadership: Each region selected is *among* recognized leaders in the field, without necessarily representing the top 5 per se. In terms of 2010 savings, the cohort represents #1 (VT), #5 (MN), #7 (MA), #14 (BC), and #17 (NS).
- Nations: The group includes 2 Canadian provinces and 3 U.S. states.
- Climate: Each region has either cold or very cold climates; we specifically excluded cooling-dominated regions such as California or Nevada.
- History: The cohorts include three regions with a long history of DSM (BC, MA, VT); one with a medium history (MN), and one with very little DSM history (NS).
- Size: The cohorts represent a mix of sizes, both somewhat smaller and somewhat larger than Manitoba; we specifically excluded very large states to ensure comparability.
- Organizational types: The cohorts include one Crown Corporation (BC), two utilities (MA, MN), and two third-party delivery agents (VT, NS).
- Rates: The cohorts include regions with both high and mid-to-low electricity rates, although none are as low as Manitoba's.

It is important to recall that these jurisdictions are chosen because they are among the leaders in energy efficiency. By selecting leaders for this benchmarking, our goal is not to appraise Manitoba Hydro's efforts related to average DSM plans, but rather to have a glance at what could be done in terms of goals and savings to join the best in class.

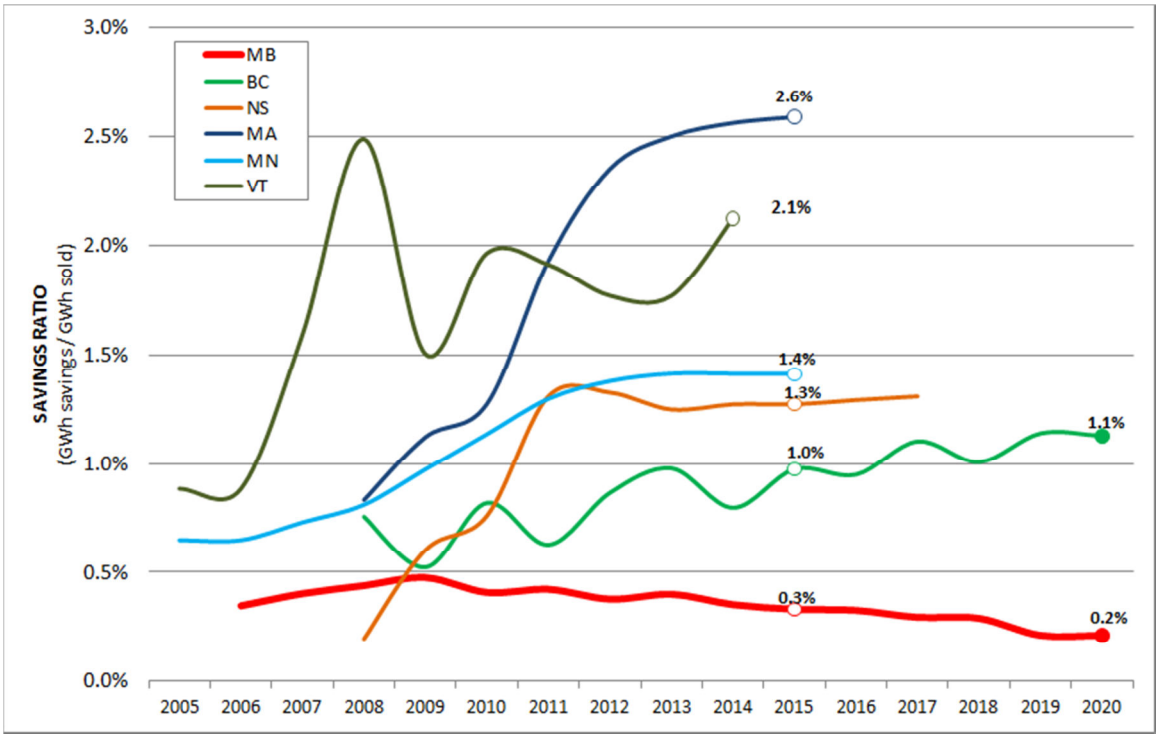
How does Manitoba Hydro compare to the cohort?

As we saw previously, Manitoba Hydro's most recent savings are lower than those of most other jurisdictions. But the most significant difference appears looking forward, as most leaders seek to maintain or increase their DSM efforts in the coming years.

For example, when we look three years out (a common plan timeframe) to 2015 (2014 in the case of Vermont), we find that the cohorts plan on achieving annual savings targets ranging from 1% to 2.6% of current sales.[3] For those with a longer planning cycle, savings continue to ramp slightly upward in the ensuing years. Meanwhile, Manitoba Hydro is planning on savings of a mere 0.3% in 2015, declining to 0.2% by 2020, as indicated in Figure 5 below.

[3] In the case of British Columbia, values are taken from its most recent *draft* plan.

Figure 5. FUTURE: Planned Savings of Manitoba and Five Cohorts (Programs Only)



To put this into context, Manitoba Hydro's 2015 planned savings ratio is less than one-third the equivalent savings planned for in B.C. (less than one-fifth by 2020); is less than a quarter the savings planned for in Nova Scotia and Minnesota; and is below one-seventh those planned for in Massachusetts and Vermont.

Planned Savings Benchmarks: Explanatory Variables

The differences you've noted seem dramatic. Could they be explained by any exogenous factors?

Each region is unique, just as each region shares common characteristics with others. I chose our five cohorts with a view to minimizing exogenous factors. However, I also examined the most important of these in greater detail. The factors I examined include:

1. *Other Savings* – is it possible that Manitoba Hydro's program-related savings are being crowded out by a uniquely aggressive set of other provincial initiatives, such as codes, standards, rate structures and self-generation?
2. *Climate* – is it possible that a cold Manitoba climate can explain the lower savings?
3. *Sectors* – is it possible that Manitoba's loads are distributed differently across sectors, and that such a distributional difference could explain the lower planned savings?
4. *Size* – is it possible that Manitoba's relatively small market can make it more difficult to achieve savings compared with others?
5. *Rates* – is it possible that Manitoba Hydro's low power rates could explain the results?

For the first variable above, I examined the degree of non-program savings activities in the cohort regions. For each of the other variables, I sought to examine the relationship between the variable and each region's savings ratios.

Can the differences be explained by non-program savings?

Manitoba is generally proactive when it comes to energy efficiency related codes and standards, and is further doing work in the area of self-generation. So this raises the question of whether and to what extent the lower program-related savings may be the natural result of a "crowding out" effect from activity in these other areas. This would only occur if the other cohorts did not pursue similar levels of such *other* savings.

To answer this, I examined the extent to which the cohort regions also pursue savings from these other areas. Indeed, more and more utilities and governmental agencies are including or plan to include other sources of energy savings into their plans, for example new codes and standards, changes to the electricity rate structure, or "upstream" energy efficiency projects (generation, transmission, distribution, combined heat and power).

To my knowledge, the three Canadian provinces in this review all report such sources of savings explicitly in their plans (though we netted these values out in our previous analysis), while the U.S. States are allowed to do so but for the most part have not yet included them. Figure 6 below summarizes the nature of non-program DSM savings pursued in each region, and of their inclusion within their respective plans.

Figure 6. Alternate DSM Savings: Sources and Inclusion in Benchmark Results

Jurisdiction	Sources of alternate savings	Note re. Planning
British Columbia	Codes and standards, Rate structures	Included in Plans (see Figure 7)
Manitoba	Codes and standards, Customer self-generation	Included in Plans (see Figure 7)
Massachusetts	Combined heat and power, Generation/Transmission/Distribution	*not included in plans*
Minnesota	Combined heat and power, Generation/Transmission/Distribution, Codes and standards, Rates	*not included in plans*[4]
Nova Scotia	Codes and standards	Included in Plans (see Figure 7)
Vermont	Combined heat and power, Transmission/Distribution	*not included in plans*

Given that the three Canadian provinces do explicitly report planned savings from non-program sources, I revisited the benchmarking on that more holistic basis, to see if it would materially change the portrait. Figure 7 below compares planned savings including from both programs *and codes and standards,* while Figure 8 accounts for these *and* additional savings related to rate structures and self-generation.

[4] With the exception of a peak shifting rate that incidentally produces a negligible amount of energy savings.

Figure 7. FUTURE: Planned Savings (incl. Programs *and C&S*)

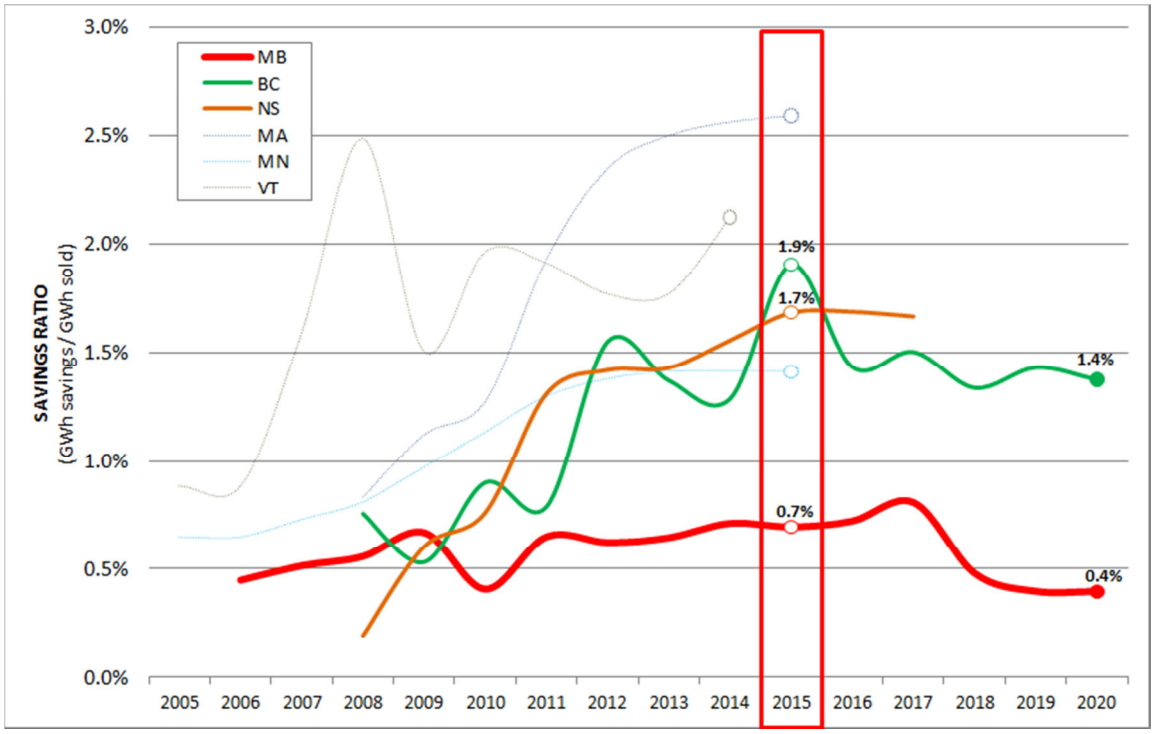
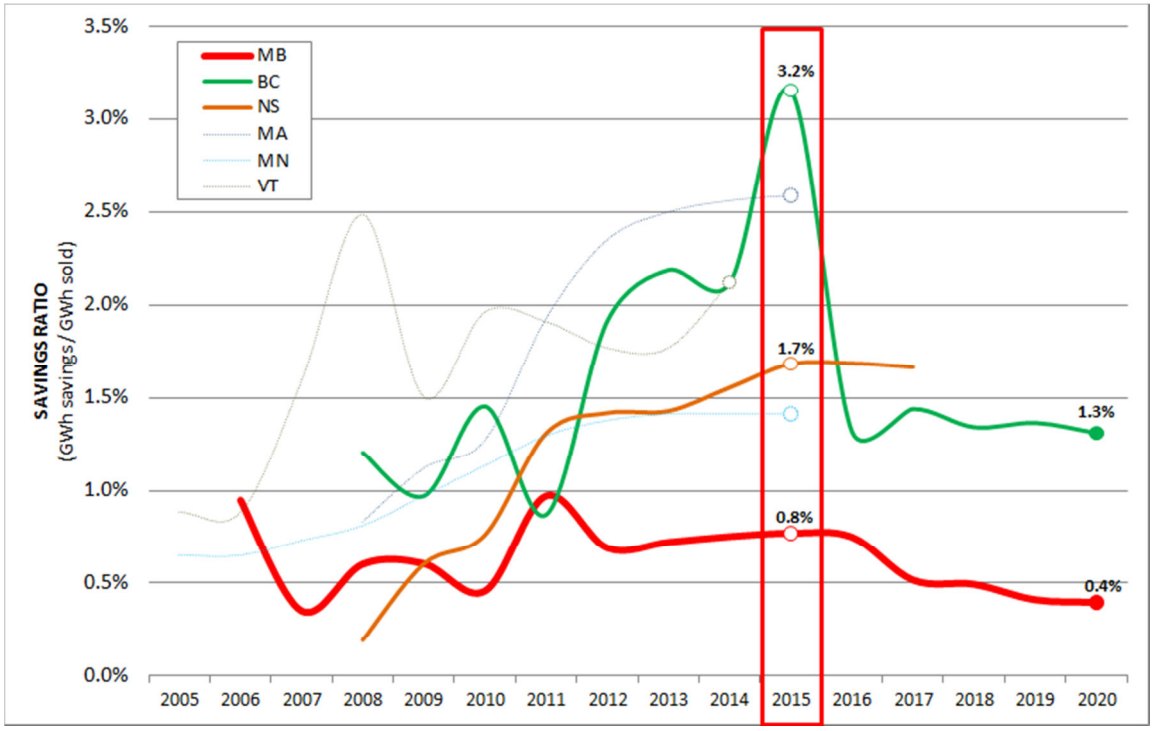


Figure 8. FUTURE: Planned Savings (incl. Programs, C&S, Rates and Self-Generation)



As we see in Figure 7, the additional savings attributed to Manitoba Hydro, BC Hydro and Efficiency Nova Scotia change the specific values, but not the overall portrait. Nova Scotia's savings ratio increases by 0.4% in 2015 compared to what it was in Figure 5 (page 13), while Manitoba Hydro's similarly increases by 0.4% in the same year. The impact in British Columbia is more volatile, with a 0.9% increase in 2015; however, that impact quickly settles at an average of about 0.4% as well. From this perspective, the impact of codes and standards adoption in Manitoba appears to have the same "crowding" effect as in the other regions, rendering the factor moot.

Figure 8, which adds the impacts of both rate structure changes and self-generation, shows a somewhat similar picture, except insofar as the impact on BC Hydro's planned savings could be seen to be more detrimental in the medium term.

By and large, none of these factors seems to lead to a significantly different picture as was seen in Figure 5: even when accounting for all possible savings, Manitoba's ratio is still less than half that of Nova Scotia, and one quarter that of B.C. in 2015; by 2020 it is less than one-third that of British Columbia.

In other words, the explicit non-program savings from the Canadian cohorts suggest no significant difference with Manitoba, with the sole exception of B.C.'s initial years (which if anything argues for an opposite impact, i.e. that B.C.'s *program-only* savings are far *more* challenging (crowded out) than Manitoba's). This is all the more surprising since I understand that at last year's hearings, Manitoba Hydro indicated its intent to benchmark itself against BC Hydro.

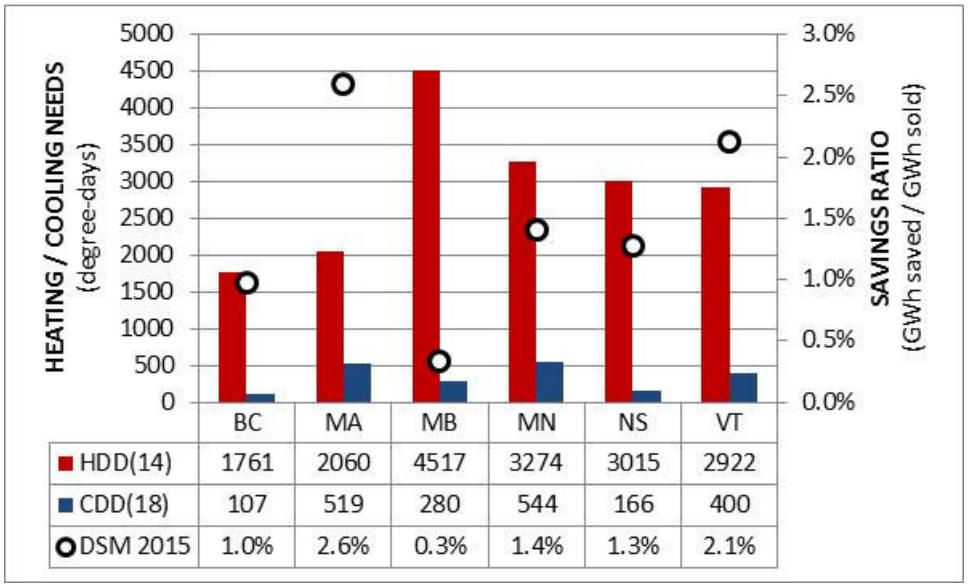
On the U.S. side, while I was not able to test the variable quantitatively, I do know that at least two of the regions are particularly aggressive on building codes (Massachusetts has arguably the most advanced building code in the nation). More importantly, whereas the general purpose lighting standard is only planned to come into effect as of 2014 in Manitoba (and Nova Scotia), it has already been in effect for nearly a year in each of the U.S. cohorts, again suggesting that, if anything, the "crowding out" effect may be creating a larger challenge for them than for Manitoba.

Can the differences be explained by Manitoba's harsher climate?

All five cohorts were chosen in part because their HVAC loads are driven by heating, not cooling needs. Indeed, all six regions have high heating degree-days (HDDs) and very low cooling degree-days (CDDs).[5] Of them, Manitoba is certainly the coldest, but the climates of Minnesota, Nova Scotia and Vermont are also significantly colder than most. Cooling needs are broadly similar.

Climate doesn't appear to be a determining factor as far as planned DSM savings are concerned, as we see in Figure 9, below. For instance, while it is true that Manitoba, with the harshest climate, has the lowest savings ratio by far, B.C., with the *mildest* climate in the group, has the second-lowest savings ratio. On the other hand, Minnesota, Nova Scotia and Vermont have fairly cold climates, yet also plan for much larger energy savings, in the range of 1.4 % to 2.1 % of GWh sales.

Figure 9. Exogenous Factors: Climate (Heating and Cooling Degree-Days vs. Savings Ratios)



[5] A "degree-day" is a measure of the amount of heating or cooling needs in a given region, irrespective of the space (number and size of homes and buildings) that require the heat or cold. It specifically measures the sum of the deltas, for each hour of the year, between the real outdoor temperature in a given region, and the typical building balance point (outside temperature at which heating or cooling systems begin to operate to ensure occupant comfort). For comparison, whereas Nova Scotia requires 3,015 HDDs of heat (but only 166 CDDs of cooling), California needs only 197 HDDs of heat (but 354 CDDs of cooling). This is one of the reasons we excluded California from our benchmarks.

This is not surprising, since a cold climate can work both ways in terms of DSM potentials. On one hand, an increased heating load can hinder DSM efforts because baseline building envelopes may be more efficient to begin with, or because some measures like appliances and lighting create stronger (negative) interactive effects through reduced heat losses. On the other hand, the colder the climate, the larger the savings for a given heating-related measure. For example, an additional inch of insulation will lead to far more savings in Winnipeg than in Vancouver or Victoria, for roughly the same cost; similarly, a more efficient heat pump will also produce far more savings the colder it is.

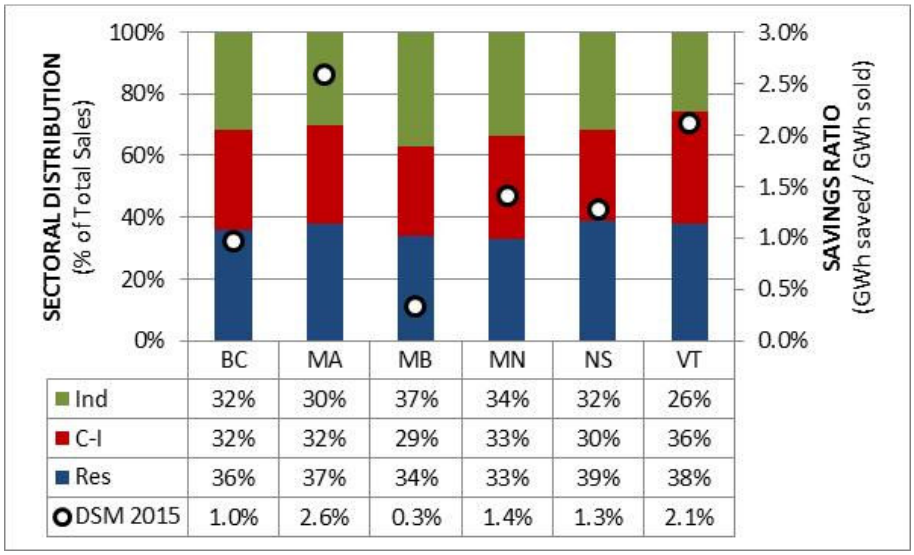
It is my experience with designing DSM programs that working in a cold climate region often helps to open the span of available retrofit and new construction measures, although again, interactive effects can have the opposite effect for certain lighting and appliance measures.

Can the differences be explained by Manitoba's large industrial loads?

We also examined market segmentation as an exogenous factor that may explain varying DSM efforts and targets. More specifically, a disproportionately large industrial load might be perceived as offering less energy efficiency potential, although this sector has large opportunities of its own.

I examined the sectoral distribution of electricity sales in each region, compared with each region's savings ratios. Figure 10 below presents the results.

Figure 10. Exogenous Factors: Industrial Loads (Sectoral Sales Distribution vs. Savings Ratios)



	BC	MA	MB	MN	NS	VT
Ind	32%	30%	37%	34%	32%	26%
C-I	32%	32%	29%	33%	30%	36%
Res	36%	37%	34%	33%	39%	38%
DSM 2015	1.0%	2.6%	0.3%	1.4%	1.3%	2.1%

As we see above, while there are some relatively minor variations across the six jurisdictions, the same pattern of sales segmentation appears. Manitoba has the highest share of industrial sales (37 %) but with the exception of Vermont, all other regions' industrial loads also account for more than 30% of total loads. Overall, the variations here are small, and it is extremely unlikely that these deltas could explain a significant difference in terms of GWh saved as a percentage of sales.

For example, the share of industrial load in Minnesota, whose savings ratio is nearly 5 times that of Manitoba, is 34%, whereas Manitoba's is 37%. For argument's sake, if we adjusted Minnesota's industrial loads to equal those of Manitoba, and further made the unrealistic assumption that the additional industrial loads procured *zero* additional energy savings, the state's overall savings ratio would decline from 1.4% to 1.35%, still some 4.5 times more than Manitoba Hydro's planned savings.

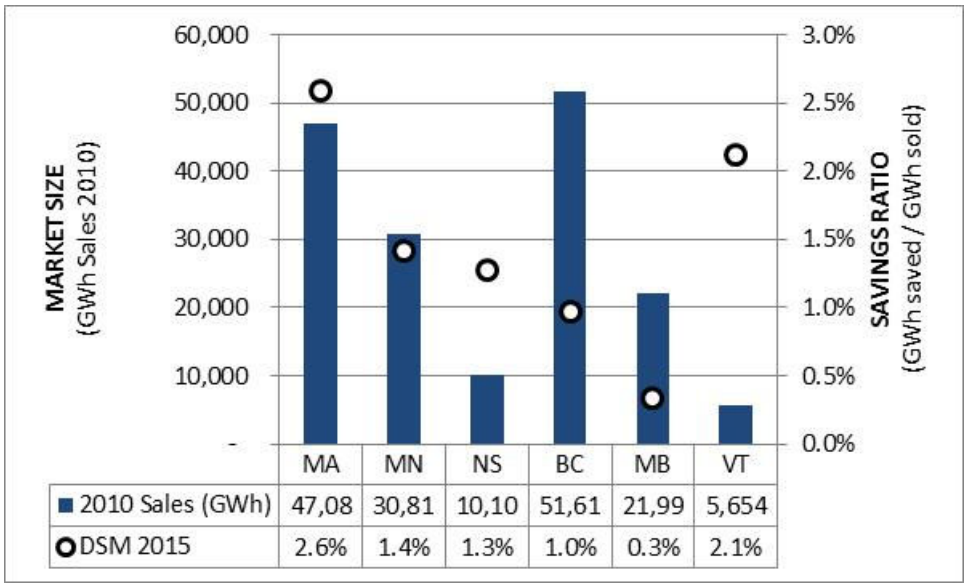
In reality, Manitoba Hydro's somewhat larger share of industrial load has a far lesser impact on achievable DSM. According to the 2011 Plan, industrial programs will contribute 229 GWh of cumulative energy savings in 2025, or 28 % of the cumulative conservation savings. While this share of savings is a bit lower than the corresponding share of industrial load on energy sales, the difference is far too thin – a fraction of a percent difference – to explain Manitoba Hydro's lower DSM targets.

Can the differences be explained by Manitoba's relatively small market size?

One could argue that, being a smaller province, Manitoba Hydro does not have the market power needed to influence the decisions of key market actors including large product distributors, retailers and service providers. Indeed, this is one of the reasons for our choice of cohorts – we deliberately sought to ensure that we had markets both larger and smaller than Manitoba's, and furthermore specifically excluded the very large sized markets like California or New York.

Nonetheless, I sought to examine the relationship between market size (as measured by total GWh sales volumes) and each region's savings ratio.

Figure 11. Exogenous Factors: Market Size (Total Electricity Sales vs. Savings Ratios)



As we can see in Figure 11 above, there would appear to be no relationship whatsoever. For example, the two largest regions in the cohort – B.C. and Massachusetts – have diametrically opposite savings ratios within the spectrum of the cohort (respectively the smallest and largest savings, Manitoba notwithstanding). Similarly, the smallest region of them all, Vermont, has the second-highest planned savings ratio.

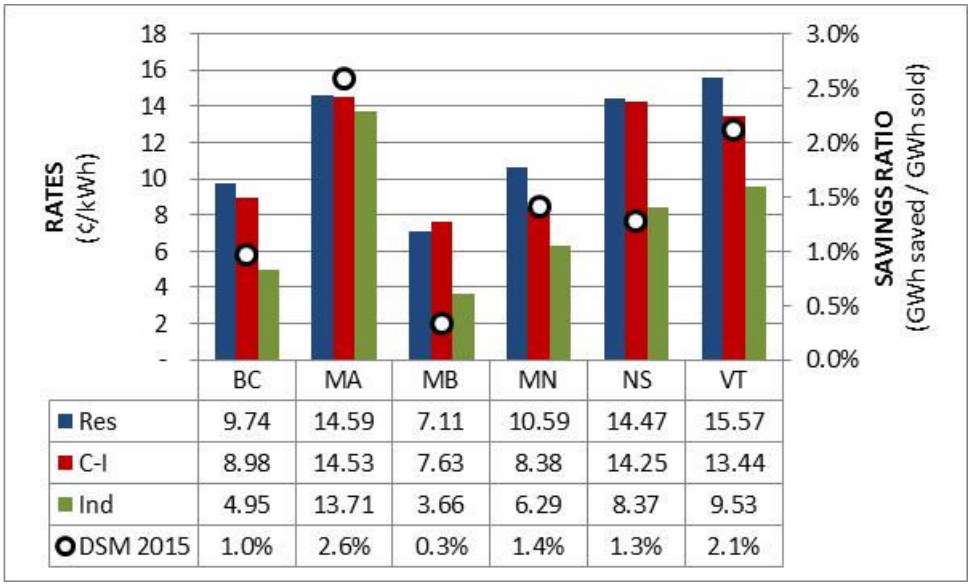
It is also worth noting that while Manitoba is not a large province, it should be able to benefit from a unique organizational strength: Manitoba Hydro is, among the cohorts, the *only* fully-integrated (electricity and gas) energy efficiency program administrator (most others, except for MA, only cover electricity), whose monopoly covers the entire region (MA's is made up of a patchwork of utilities and service territories).

Can the differences be explained by Manitoba's low electricity rates?

Manitoba Hydro has the lowest electricity rates of all six regions. Low rates may hinder energy efficiency initiatives to the extent that customers have a lower initial incentive to participate in DSM programs. While this may be true, the corollary is that remaining DSM potentials are also higher because natural market adoption of energy efficiency measures, outside of DSM programs, will tend to be lower for the same reason.

Nonetheless, we sought to examine the relationship between rates and savings ratios in the cohort regions. The results are presented in Figure 12 below.

Figure 12. Exogenous Factors: Electricity Rates (Average Rates vs. Savings Ratios)

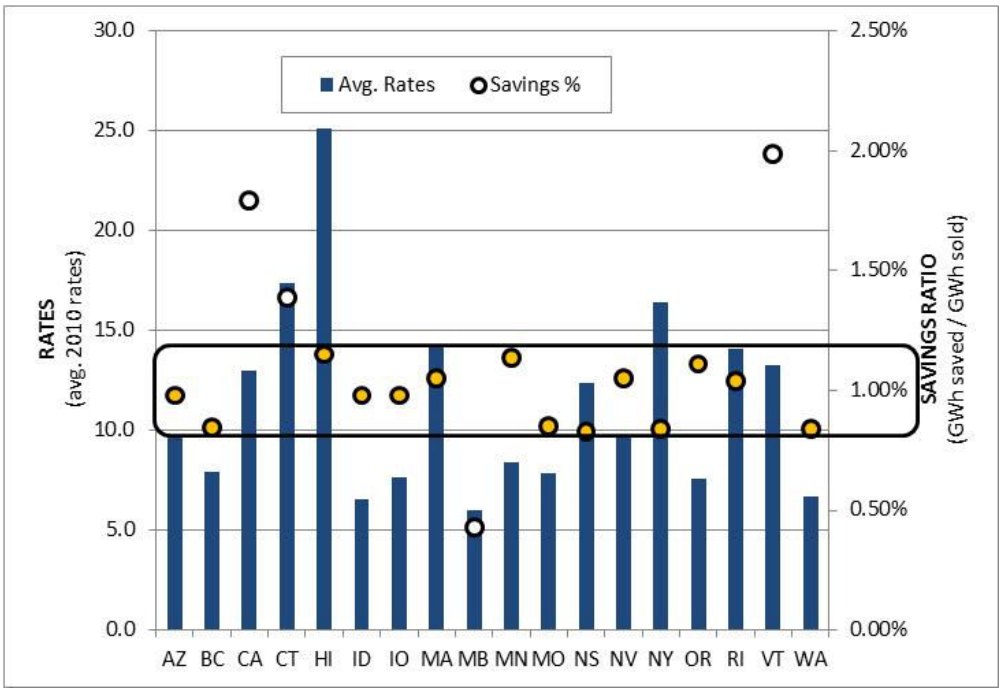


	BC	MA	MB	MN	NS	VT
Res	9.74	14.59	7.11	10.59	14.47	15.57
C-I	8.98	14.53	7.63	8.38	14.25	13.44
Ind	4.95	13.71	3.66	6.29	8.37	9.53
DSM 2015	1.0%	2.6%	0.3%	1.4%	1.3%	2.1%

Here we do find a relationship: the two regions with the highest savings ratios are also those with the highest rates, whereas the two regions with the lowest savings ratios (notwithstanding Manitoba) also have the lowest rates. Nova Scotia is an exception here, since its rates are similar to those of Vermont and Massachusetts, while its savings ratio is roughly at the same level as those of Minnesota and BC.

Given this result, I sought to examine the relationship more closely by expanding the size of the cohort group. You will recall that, in terms of 2010 savings, our five cohort regions placed #1 (VT), #5 (MN), #7 (MA), #14 (BC), and #17 (NS). To broaden the scope of the analysis, I chose to "in-fill" the cohort group by including all the interval regions, thereby temporarily expanding the group threefold, from 6 to 18 cases (including Manitoba), to see whether and to what extent, in the broader group of leaders, the relationship between rates and DSM savings ratios may hold.[6]

Figure 13. Exogenous Factors: Electricity Rates Across a Broader Spectrum of Cohorts



As we can see in Figure 13 above, the link between rates and DSM does not appear to hold when looking at the broader group of "leaders". For example, regions with savings ratios in the range of 1% (circles with orange infill) include states with high rates (e.g. Rhode Island and

[6] Because I do not have the planned savings of each of these 18 regions, I assessed rates against their 2010 savings.

Massachusetts at 14¢/kWh, Hawaii at 25¢), and states with low rates (e.g. Missouri at 8¢, Iowa, Oregon and Washington at 7¢/kWh, Idaho at 6¢/kWh), as well as a host of states and provinces in between.

As I mentioned previously, low rates can lead in two, opposite directions: they can make energy efficiency investments a harder sell (lower returns, all else being equal), and they can make energy efficiency investments an easier sell (lower baseline efficiency should translate to larger savings, all else being equal). I don't discount entirely the possibility that rates have an impact, but I do not find a compelling argument that rates require Manitoba Hydro to achieve savings multiples lower than its counterparts elsewhere.

Manitoba Hydro has been doing DSM for some time now. Is it possible there's simply less left to do here?

It is true that sustained high levels of savings are a challenge. Independent program evaluations, for instance, often revise achieved savings somewhat downward notably due to freeridership and other factors.[7]

Still, most jurisdictions are increasing or maintaining goals in the future, not decreasing them. At the same time that codes and standards are being adopted and the potential of some *existing measures* are being depleted, new technologies and program approaches are creating new opportunities to replenish the DSM pool. For instance, while the potential for traditional water heater measures (blankets, insulation, low-flow showerheads) have largely dried up due to the success of past DSM programs and standards, new measures are taking their place, including gray water heat recovery, heat pump water heaters, and solar water heaters. These situations, where new technologies replace old ones and create new DSM potentials, can be found for nearly all end uses. Ultimately, this story is no different than for innovation in general; one need look only to oil and gas extraction as examples.

[7] The same is often true for codes and standards, which all too often assume 100% compliance, rarely borne out by in-field evaluations.

The same is true for program approaches. With time, DSM administrators have gained valuable knowledge as to what works – and doesn't work – in terms of motivating markets to adopt more energy efficient options. For this reason, we are now able to more effectively "mine" the energy efficiency resources available to us. Indeed, it is no coincidence that those regions with the most aggressive *planned savings* ratios include many of the same regions that have most aggressively exploited savings opportunities in the *past*. Far from depleting their savings opportunity, the Vermonts, Massachusetts, Californias, British Columbias and others of North America have become experts in finding, and then efficiently exploiting, the energy savings resource. It is no surprise then that these regions continue to maintain or even increase their longstanding and strong savings expectations.

Might there be other factors that limit the value of your benchmarking?

Each region is unique, just as each region shares common characteristics with others. Manitoba's unique characteristics must be considered in developing a benchmarking exercise, in particular by choosing multiple comparison points and by choosing them appropriately and with appropriate analyses to back up the findings. I have tried to do so, although there may be other factors – tangible or intangible – that could influence results in one way or another.

That being said, it is equally important not to exaggerate differences. My experience is that political will and a supporting regulatory environment are far more important to achieve high levels of DSM savings than the various regional specificities. The analytics presented previously tend to bear that experience out.

What is your general conclusion regarding the examination of potential exogenous factors?

My conclusion is that, notwithstanding some relatively minor exceptions, none of these exogenous factors can explain the very large gap between Manitoba Hydro's and the other leaders' planned DSM savings. Indeed, some of the factors we examined would seem to have no

impact whatsoever (climate, market size), while others may have a *marginally* detrimental impact (industrial loads, rates) or a marginally beneficial impact (inclusion of non-program savings) to Manitoba Hydro's position in the group.

On the whole, however, nothing can explain deltas that point to Manitoba Hydro's planned savings ranging between 70% and 88% lower than the cohorts, on a relative basis. This is not entirely surprising, since the cohorts were chosen in the first place to minimize, to the extent possible, significant contextual differences.

Planned vs. Real Savings

It's nice to set a target, but can the "planned" savings be counted on?

In many jurisdictions, including most in our cohort group, planned savings not only can but *are* counted on for planning purposes. In fact, in many cases the planned savings are not so much voluntary targets as hard requirements. As we can see in Figure 14, in most cases, achieving planned targets is highly-incentivized, to the point where under-performance could put either managerial or organizational survival at risk.

Figure 14. Incentives to Meet Planned Targets

Region	Goal Setting	Reporting	Incentive to Succeed	Notes re. incentive
Vermont	Regulator	Independent evaluations	**Financial + Survival**	Incentives for meeting or exceeding targets, as well as penalties when targets are not met. Organization's survival also hinges on ability to deliver. Regulator closely monitors and inspects results.
Nova Scotia	Regulator	Independent evaluations	**Survival**	Organization's survival hinges on its ability to deliver planned DSM savings; regulator closely monitors and inspects results.
Minnesota	Government	Independent evaluations	**Financial**	Incentives for utilities that meet or exceed targets.
Massachusetts	Regulator	Independent evaluations	**Financial**	Strong financial incentives to meet or exceed targets. Strong management incentive to deliver for shareholders. Regulator closely monitors and inspects results.
British Columbia	Government	Internal evaluations	**Reputational**	Management has "moral" incentive to achieve quantified, government-defined targets.
Manitoba	Manitoba Hydro	Self	**Reputational**	Management has "moral" incentive to achieve *internally-defined* goals.

In fact, while high savings targets certainly increase the risk of failure, experienced program administrators know that the risk is strongly mitigated by the very nature of DSM: a highly diversified portfolio, it offers managers multiple levers to work with.

In any given month, quarter or year, there is a strong likelihood that one or more programs will underperform, while others may overperform. When a program underperforms, managers can

use levers at their disposal to either correct or compensate. For example, if a commercial lighting program is not doing as well as planned, the program manager (or contactor) may add another sales person to the staff to generate more leads; may add a time-limited bonus incentive to participation; may increase its participation and presence in key industry events; or may choose from any number of other "levers" at its disposal. Alternatively, senior management may choose to direct more resources into other programs within the commercial sector – ones that their program managers are indicating can outperform – or into programs in other sectors for that matter. New measures can also be added to the mix. The clients I work with are constantly monitoring DSM "sales" data, and adjusting their portfolios as needed to ensure that targets are met.

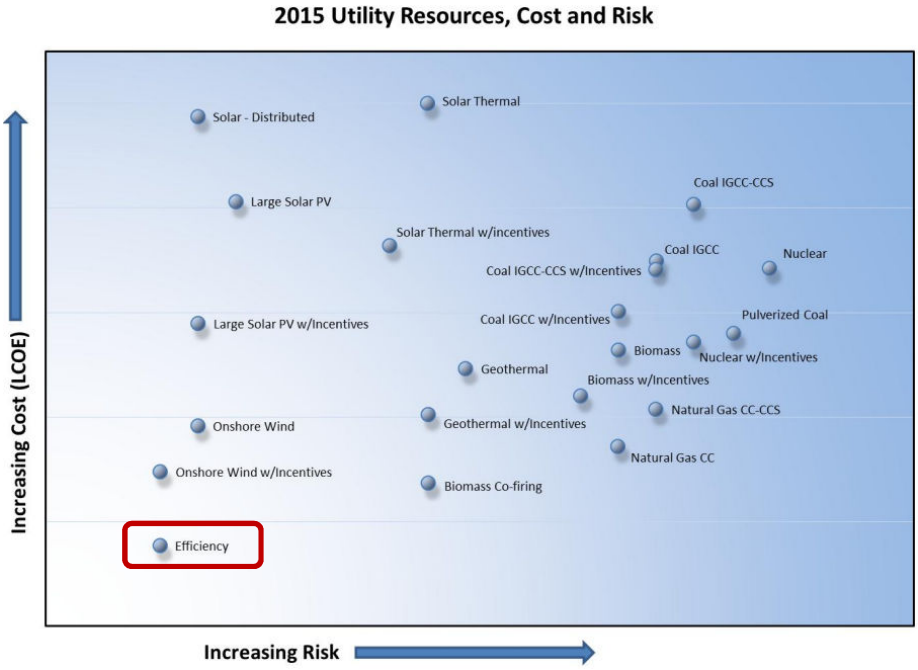
It may also be worth noting that while DSM managers are strongly enabled to "manage to goals", the DSM resource itself also inherently adjusts to loads. For example, if load growth is slower than anticipated, the DSM resource will, all else being equal and notwithstanding program manager actions, be lower as well; inversely, where load growth is higher than anticipated, the DSM opportunity too will be larger. That's because load growth tends to involve stronger construction *and* renovation activity, both of which generate energy savings opportunities. This matching of DSM to load forecast risk further enhances the ability to deliver when it matters most.

Is this just anecdotal, or do regulators recognize the low risk of DSM?

In the northwest U.S., where the Northwest Power and Conservation Council conducts one of the most sophisticated power planning exercises in North America, DSM is afforded a 10% risk mitigation bonus when being assessed against new supply options. This is because the NWPCC, charged with ensuring reliable power supply across four states, has determined that DSM presents a lower risk profile than equivalent generation options. The state of Vermont applies a similar 10% risk bonus. The ISO New England, responsible for keeping the lights on across six States, now accepts not only generation but also DSM to be bid into its forward capacity market. Savings are very much counted on.

A recent paper, co-authored by the former chairman of the Colorado Public Utilities Commission (retired in 2011), examines the risk issue more closely. Figure 15 below, taken from this work, illustrates the outcome of that analysis which considered a set of resource options assuming an in-line target date of 2015.[8]

Figure 15. Assessment of the Costs and Risks of Various Resources[9]



By and large, because it is comprised of a vast array of measures, programs and sectors; because its performance can be influenced by a broad spectrum of market strategies; because these strategies can be modified by nimble managers; and because DSM opportunities themselves grow and shrink alongside loads, energy savings are generally viewed as a very reliable resource, with equal or lower risk than new generation.[10]

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[8] The analysis examined an array of risk factors. Unfortunately, it failed to examine large hydropower, which would be more relevant to Manitoba, nor did it assess the risk associated with renewable energy supply (real vs. forecast rainfall, wind, or sunlight). Nonetheless, the results confirm other assessments insofar as the low-risk profile of energy efficiency is concerned.

[9] Ron Binz and Dan Mullen, "Risk-Aware Planning and a New Model for the Utility-Regulator Relationship", published in 2012 online at www.electricitypolicy.com.

[10] New generation risks are of several types: prior to coming online, siting issues, permitting concerns and construction issues can all lead to in-service delays that can deprive a region of a significant amount of planned power (in addition to cost escalation). In the operational phase, fossil-fired power plants can bring significant risk related to fuel price fluctuations, while renewable energy projects create significant risk related to the natural environment

Main Findings and Concerns

Please summarize your findings.

While Manitoba Hydro has worked hard to increase its energy efficiency and savings performance over the years, I was surprised to find that it is now planning for a steep *decline*. When considering conservation programs only, targets decline steadily from 2009 onwards, such that savings by 2025 fall by some 85%. When adding codes, standards, and self-generation, targets are maintained until 2015, but then proceed to decline sharply afterwards, with a similar reduction by 2025.

This is in contrast to much (though not all) of North America today. Compared with our five cohorts, Manitoba Hydro's near-term planned savings ratios fall short by multiples of between 3 and nearly nine. None of the variables I explored could explain these discrepancies.

What can you conclude from these findings? What are your concerns?

From this exercise, it seems apparent that Manitoba Hydro is pulling back from its past DSM efforts and successes. In fact, barring a significant course change, its planned savings will likely place it among the laggards in North America within a few short years.

This is unfortunate for a number of reasons. First, it means forfeiting years of experience and improvements. Broadly speaking, Manitoba Hydro has a track record of reasonably good programs and in-house expertise. In past years, the utility has variously been at or near the forefront of DSM in Canada, leading the way in some notable areas with innovative approaches and programs. From what I have seen, they have a very skillful staff, and contribute positively to Canada's broader energy efficiency goals and efforts. The steep planned decline announced in their Power Smart plan, if it is to be realized, will invariably mean that Manitoba will forfeit this

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(variability in wind, rainfall, or sunshine). Both of these are buttressed by regulatory risk (new regulations to minimize emissions or protect fish and wildlife). These operational risks are largely or entirely out of the hands of plant managers.

position, especially as other provinces – not nearly as active as Manitoba was in the past – now move into the area with more aggressive new plans and targets.

For ratepayers, this is also a loss. DSM is invariably the lowest cost resource for balancing supply and demand. With a total utility cost in the range of 2-4¢/kWh, there is simply no generation option that can compete. And while one could conceptually argue that if new opportunities arise the utility will seek to secure them, in practice reducing the level of *planned for* DSM is a self-fulfilling prophecy, as Manitoba Hydro will have to commit itself and its resources to the (earlier) construction of more expensive (and longer lead-time) generating stations.[11] The signal that Manitoba Hydro will send to the market will only further reinforce this, as fewer solutions providers seek to market their products or services to the utility. As a result, *planning* for less savings is likely to lead to considerable missed opportunities and higher overall costs for Manitoba ratepayers.

Finally, it is my understanding that Manitoba Hydro is currently in a capital investment phase that is expected to require a relatively constant stream of rate increases. This may be necessary to ensure the financial health of the utility (I have not examined this and thus do not have an opinion on the matter one way or another). It is important to note that reasonably aggressive energy savings programs can also create upward pressure on rates in the short run. However, energy savings programs are the *only line item* investment that also offers assistance to customers to offset such increases by helping them secure far more significant *reductions* in consumption. From a consumers' standpoint, it would be arguably unfortunate if a systematic increase in rates were not accompanied by a more aggressive effort to help ratepayers offset this and actually reduce their bills.

Instead, it would appear that Manitoba Hydro is planning to *decrease* this critical assistance at the same time as rates are set to increase.

[11] This is the case where new power plants are simultaneously being planned. Indeed, DSM programs need to be planned ahead to effectively be put into a resource plan, and decision-makers must have all the information in due time on anticipated DSM savings in order to properly plan new electric generation (and to a lesser extent transmission and distribution investments). If DSM savings opportunities are not built into the planning process, they will be replaced with more expensive power plants for which commitments must be made years in advance.

Why do you think Manitoba Hydro is abandoning energy efficiency?

First of all, I would not say that they are "abandoning" it per se, although it is clear that the planned savings would require a large-scale reduction in their current efforts. Several reasons may explain this direction, though they are speculative:

One possibility is that Manitoba Hydro is feeling cost pressures, especially at a time when they plan on requesting frequent rate increases. In such times, many utilities instinctively turn to "discretionary" spending, which is often considered anything not directly related to generation, transmission, distribution, and customer service functions. However, for the reasons I described earlier, this would be a textbook case of "penny wise and pound foolish", as a reduction in DSM spending invariably – mathematically in fact – involves increases in net costs for the province's ratepayers as a whole, and further deprives consumers in the short-run of a solution to offset the effect of such increases.

It is also possible that Manitoba Hydro is merely being (extremely) conservative in its planning process, either as a way to ensure success (if measured by meeting or exceeding objectives), or with a view to leaving open the possibility of pursuing more aggressive savings at a later date. This is a common, and understandable, strategy for management to pursue: promise less and deliver more. But while conservative planning assumptions may be useful or at least innocuous in many situations, with DSM it is not: as noted earlier, because of the very different planning cycles (DSM investments yield results almost immediately, while investments in building generating assets must begin years before they begin to produce power), low planned savings are a self-fulfilling prophecy where new supply-side investments are expected. This is even moreso the case where the supply-side alternative involves large-scale hydropower, whose planning and construction lead times are particularly long.

Of course, in addition to the problem of over-building, lowering expectations tends to lower the drive to perform, especially in an area like DSM where managers can "push harder or lighter" as need be. It is my experience that where goals are seen to be easy, managers do not seek out better ways to deliver savings, nor do they give much consideration to alternative options or approaches to achieve far greater savings. In other words, they quite naturally can become complacent. My experience also strongly suggests that managers who are required to achieve

challenging goals search outside of the box, give serious consideration to new possibilities, take a nimble approach to delivery, and almost invariably achieve their targets.

A third possibility involves Manitoba Hydro's DSM screening policy. I note that the utility claims to use "all" screening tests in its process. It is not clear from this which (if any) tests are used as primary pass/fail screens, as opposed to those that are used as a secondary screen in limited circumstances. I do recall that in previous plans, Manitoba Hydro tended to use some combination of the very restrictive "RIM" test, and the more common (but increasingly contested) "TRC" tests as the primary screens. If the RIM continues to play a significant role in screening out DSM opportunities, this could be excluding otherwise cost-effective savings. It may be worth noting that in North America, almost no one uses the RIM test as a primary screen (in the latest review of 44 regions, only 1 still used the RIM). Of the five cohorts presented earlier, one uses the Utility Cost Test[12] as its primary screen; one uses the Societal Cost Test (SCT); two use a Modified Total Resource Cost (MTRC) test; and one uses the TRC (applied at the program level only). It is also possible that Manitoba Hydro is using the test results improperly, for example by using B/C *ratios, as opposed to net present values,* to consider different incentive scenarios. Again, this is only speculative. While it is unclear whether Manitoba Hydro's cost-effectiveness screening may be unduly limiting DSM measures, I do note that ultimately, managerial interest in achieving targets is a more important *internal* driver than cost-effectiveness tests.

Finally, it is possible that Manitoba Hydro simply believes that there are few or no substantial new DSM savings opportunities available. While surprising, I have seen indications of this, if only in the written interrogatory process, in which Hydro indicated that it has rejected a number of important opportunities that are very actively pursued elsewhere (I discuss this in the following pages). Based on my experience, I have no doubt that Manitoba Hydro, with the opportunities available to it and the internal expertise it has developed, could secure significantly more savings than currently allowed for in its plan.

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[12] For reasons I am unaware of, Manitoba Hydro does not make reference to the Utility Cost Test (UCT, also commonly known as the Program Administrator Cost test, or PACT). In the past few years, the TRC has come under increasing scrutiny, in particular being criticized for its inherent bias (it accounts for all costs but for only a portion of benefits). As a result, a number of regions have been or are in the process of moving toward one of three solutions: an MTRC, an SCT, or the UCT/PACT. This was notably the subject of considerable discussion at the two largest DSM industry conferences this past summer (ACEEE, AESP), as well as in subsequent webinars focused on the topic.

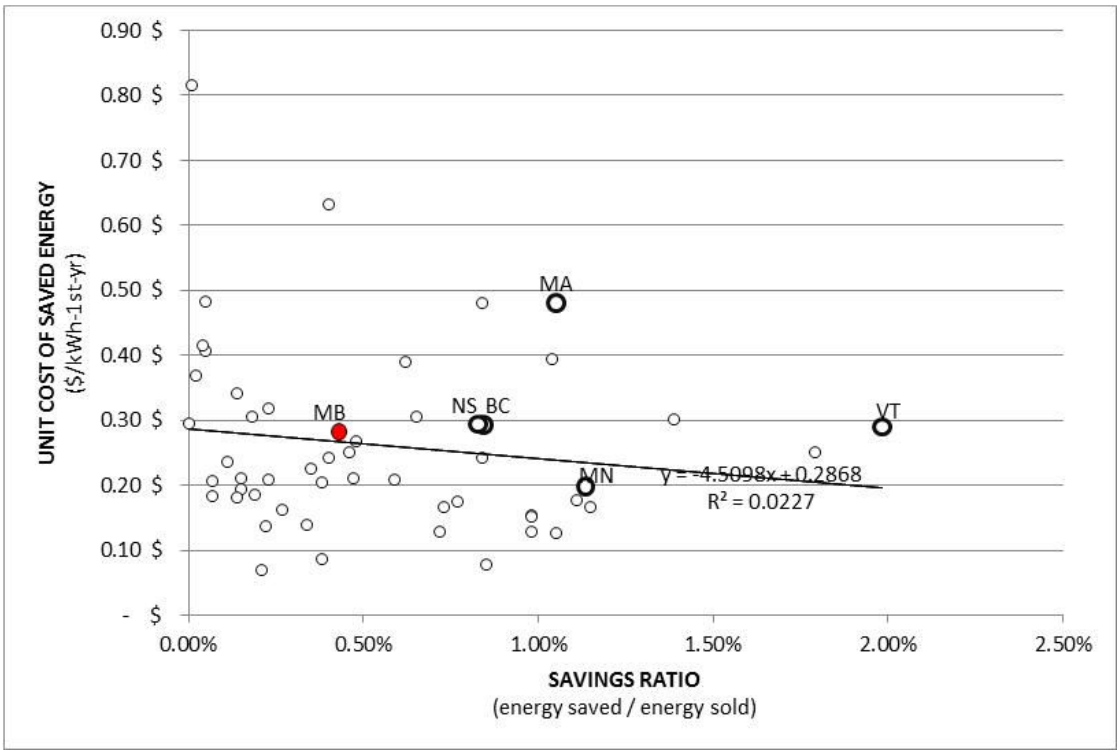
Moving Forward

Would it be possible to ramp up Manitoba Hydro's efforts with reasonable costs?

Yes. The cost of achieving DSM savings has remained relatively constant over the past couple of decades, and evidence strongly suggests that while achieving additional savings may require somewhat higher incentives, those higher incentives are commonly offset by economies of scale.

An examination of the actual savings and unit costs from both our five cohorts and the broader range of states and provinces, provided below, bears this out. In Figure 16 below, I compare the first-year kWh cost of savings, on the vertical axis, with the 2010 savings ratios of each of the same states and provinces previously examined in Figure 1 and Figure 4. For clarity, the five cohort regions used previously in our benchmarking exercise are identified by larger, thicker circles, while Manitoba Hydro is identified by a red-coloured circle.

Figure 16. Cost of Savings vs. Depth of Savings



As we can see from the data, there is only a small relationship between unit costs and depth of savings, and that relationship is negative, meaning that if anything, increasing savings (horizontal axis) may lead to a decrease in the cost of savings (vertical axis). This is wholly consistent with my experience across a broad array of program administrators.

While the data presented above only examines the first-year kWh cost, it is very likely that the picture would remain largely unchanged had we been able to examine the cost of levelized lifecycle kWh savings.[13] I note that if we were to assume a typical 15-year effective useful life of savings, and apply a discount rate of 6.5%, the average cost of energy saved among all of these programs would amount to 2.8¢/kWh on a lifecycle basis. The vast majority of regions appear to be producing at a levelized cost (using the same assumptions) of between 1.1¢/kWh (10¢ on a first-year kWh basis) and 4.3¢/kWh (40¢ on a first-year kWh basis), all of which remains substantially lower than Manitoba Hydro's avoided costs. I also note that Manitoba Hydro's unit costs appear to be in line with the others, irrespective of the fact that its savings are below average. This is not to say that unit costs will not *necessarily* increase with higher savings, but that there is no reason, *prima facie*, to expect that to be the case.

Could you give us some examples of new opportunities that could be integrated to the DSM Plan?

I did not conduct a comprehensive plan review. However, at a glance I immediately see some missed opportunities.[14]

For example, the utility seems to suggest that going forward, no additional savings are available from compact fluorescent bulbs.[15] Yet while market penetration levels have certainly increased,

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[13] The difference between first-year cost/kWh and lifecycle cost/kWh is that the former divides costs by a single year's savings, and the latter by a discounted stream of savings over the measure's effective useful life (EUL). Across states and provinces, I have never seen a marked difference in average, plan-wide EULs; typical average EULs are in the range of 15 years.

[14] None of this should negate the excellent work that Manitoba Hydro has – and no doubt continues to do – in its DSM programming. Rather, these point to additional opportunities, among others, that the Power Smart team could use to help Manitoban consumers further reduce their consumption and associated power bills.

[15] From Manitoba Hydro's response to CAC-GAC/MH II-7(b): "The 2011 Power Smart Plan does not claim for savings

I would be extremely surprised if CFLs have saturated the market (they have done so nowhere else). Furthermore, the new general purpose lighting standards (a lumens/watt intensity requirement), set to come into effect in 2014, *do not* reflect a performance level anywhere near that of CFLs (though they are an improvement over traditional incandescents). For this reason, CFLs will continue to provide a tremendous savings opportunity both before *and after* the new general purpose lighting standard comes into effect. Indeed, most leading DSM program administrators are planning on continued promotion of CFLs (and LEDs) despite the coming implementation of the general purpose lighting regulation.

Similarly, Manitoba Hydro states that it has no intention of considering the promotion of ductless heat pumps (DHPs).[16] Yet these systems, and in particular newer inverter-driven models that have vastly improved performance, notably in colder climates, offer a significant savings opportunity at a fraction of the cost of ground-source heat pumps. This is true in particular for the roughly 60,000 Manitoba households that currently heat with baseboard electric heaters (DHPs require no ductwork), as well as a strong portion of the 2,750 new electrically-heated homes that are built every year in the province (i.e. nearly 14,000 new households every five years). A preliminary analysis conducted by my firm, and based on the measured performance results for commercially-available DHP models, suggests that a typical Manitoban home could save upwards of 35% of its total heating load by installing DHPs.

These two measures alone represent substantial energy savings opportunity gaps. Again, these are only examples, as I have not endeavoured to do a measure-level gap analysis.

Beyond specific measures, I notice other significant opportunities. For example, the utility does not make any mention in its plan of benchmarking and other feedback mechanisms that are increasingly a hallmark of leading North American DSM programs. For example, in the residential sector, independent evaluations from a variety of locations in both the U.S. and Canada consistently point to large savings from feedback tools, in the range of 1-9% of total loads (the variation is a function of the different types of approaches, each with different

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associated with the promotion of CFLs or LEDs. CFLs are deemed to have been transformed in the Manitoba market and the performance level will be a regulated standard nationally by 2014."

[16] From Manitoba Hydro's response to CAC-GAC/MH II-7(c): "The 2011 Power Smart Plan does not include savings related to the promotion of ductless (air source) heat pumps."

costs).[17] In Canada, B.C., Alberta, Ontario, Quebec and Nova Scotia are all launching initiatives in this field, while many U.S. states are actively adopting or expanding similar approaches, given positive evaluation results. Similar approaches are generating substantial savings in the commercial sector as well, and the forthcoming arrival in Canada of the U.S.-based Energy Star Portfolio Manager tool will offer important new opportunities in this realm as well.[18]

If Manitoba Hydro pursued those four opportunities, could they be expected to achieve maximum cost-effective savings?

No. First of all, the example above are only that – examples of *some* of the cost-effective opportunities that Manitoba Hydro's Power Smart team could pursue *if* it were directed to increase, rather than decrease, its planned energy savings.[19]

More to the point, it is important to keep in mind that the success of a DSM program portfolio is not merely a function of the number of measures or program tools offered, but is more vitally the result of how hard program managers are asked to drive for savings; in other words, how motivated they are to "sell" DSM. So while filling gaps in the list of measures and tools may be a pre-requisite to maximizing cost-effective savings, it by no means ensures that outcome. Rather, the ability to "manage to goals" means that if the goals are set low, any combination of measures and strategies – whether a limited set or the full suite – can achieve them as well.

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[17] There are several types of feedback tools, the most common (and least expensive) of which involves direct mailings that provide customized benchmarking of a household's energy consumption against that of similar (comparable) homes in the province. The most renowned version of this is offered by a firm called Opower.

[18] Natural Resources Canada has been working for the past couple of years at adapting ESPM to Canada. It is expected to be launched formally by the federal government in June of 2013.

[19] Another, raised by one of my clients in this case, involves target marketing to high users.

If Manitoba Hydro changed course, should we be concerned about equity among ratepayers?

Cost-effectiveness tests may tell the story in aggregate, but equity among ratepayers remains an important consideration.

Equity concerns arise where DSM, which may increase unit rates but decreases overall bills, is not broadly accessible. Access may be restricted, usually inadvertently, for any number of reasons: If the incentives are designed for an "average" household with some disposable income, for example, it may *de facto* exclude low-income customers who do not have capital of their own to put up. Or if the program fails to address the unique split incentives and other barriers that affect multi-family housing, tenants may not be able to benefit. In the commercial sector, small businesses typically have little to no time to dedicate to energy savings opportunities, and so may be excluded if a program is designed for larger clients with more resources and/or sophisticated analytical capabilities. There are some of the most common areas in which program designs may inadvertently exclude certain customer segments.

Given this, there are two ways to improve equity among ratepayers. Some utilities choose to minimize their DSM efforts to ensure that there are no rate impacts in the first place. This is akin to using the RIM test as the primary screen, an approach that is no longer commonly used in North America. However, most regions with significant DSM experience understand that limiting DSM efforts tends to have the opposite effect: by limiting the scope and reach of the DSM portfolio, they increase the number of customers and customer segments that cannot access the benefits of energy savings DSM.

That is why a growing number of regions choose instead to maximize DSM efforts in order to ensure that, inasmuch as possible, all or the vast majority of ratepayers can participate, and can benefit from lower net utility bills (*despite* upward pressure on rates). This is seen not only in programs dedicated to lower income customers, which Manitoba Hydro has a long-standing tradition of pursuing, or to small business customers, but as importantly, in a comprehensive and aggressive set of market offerings that both address the full suite of DSM opportunities, and do so through a broad array of tools and strategies.

Ultimately, it is my opinion that equity is both important and best served by seeing to it that DSM activities are carried out aggressively enough to ensure that ratepayers across the board can experience its benefits.

What is your main conclusion?

As we have seen, Manitoba Hydro's planned DSM savings, far from continuing their historic progression, are now scheduled to significantly decline. There is no doubt in my mind that this decline will imply considerable lost economic opportunities for the province and Manitoba Hydro ratepayers, and that as a result, both total cost of service and customer utility bills will unduly increase. It will also lead to loss of valuable expertise within Manitoba Hydro. Furthermore, this cannot be corrected on an ongoing basis, because Hydro's planned investment in new hydropower facilities – if even partly a result of the low DSM savings forecast – will be too difficult to defer, despite whatever opportunities for additional, cost-effective DSM appears. Nor is it likely that such opportunities, in the absence of management or regulatory pressure to achieve higher savings, will emerge.[20] Ratepayers will be left with the already planned rate increases, but with insufficient assistance to help offset those increases with more efficient consumption.

Going forward, with the proper motivation, I have no doubt that Manitoba Hydro could reverse course, and ultimately join the ranks of other North American leaders, including Canadian counterparts BC Hydro and Efficiency Nova Scotia, with annual savings ratios in the range of 1% of domestic sales or greater. I would urge the Public Utilities Board to consider that level of savings – one that is being achieved or surpassed by BC Hydro, Efficiency Nova Scotia and many U.S. regions; indeed, one that is approximately equal to the *average 2010 savings* of the top *half* of regions presented in Figure 1 and Figure 4 –, as a minimum required to ensure that cost of service, and associated load forecasts, are not unreasonably high.

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[20] A natural function of management is to manage to goals. My experience with a broad array of clients finds this to be true: where goals are set low, opportunities fail to appear (and efforts shift to justifying their absence); where goals are set higher, new opportunities are consistently discovered. This is in no way unique to DSM, nor to utilities more broadly.

Does that conclude your testimony?

Yes, it does.