



Natural Gas

Contents

Appendix A. Natural Gas	156		
A.1 2014 Natural Gas Conservation Program Results	156		
Introduction	156		
Overall Natural Gas Savings	156		
Program Spending and Cost-Effectiveness	157		
2014 Highlights by Sector	157		
Commercial and Industrial Programs Produced Lower Savings	157		
Savings from Residential Programs Trending Upward	157		
Mixed and Modest Savings from Low-Income Programs (Single Family and Multi-Unit Dwellings)	158		
		Market Transformation Programs – Steady Progress with Homebuilders and Realtors	158
		Performance Against Targets	158
		A.2 Natural Gas Policy in 2015	163
		Transition to the 2015-2020 Regulatory Framework for Demand-Side Management	163
		DSM Budgets Increase to Begin Design of New Programs Under the New Framework	163
		Expansion of Natural Gas Distribution	164
		Endnotes	165

Appendix A. Natural Gas

A.1 2014 Natural Gas Conservation Program Results

Introduction

This appendix reviews the 2014 conservation savings program results for Ontario’s two large natural gas utilities, Enbridge Gas Distribution and Union Gas, which provide natural gas service to the majority of Ontario gas customers.¹ Enbridge and Union have delivered conservation programs to their customers since the 1990s. Gas utility conservation programs contribute to three goals: assisting gas consumers in reducing their gas consumption and managing their energy bills; creating a culture of conservation; and, avoiding costs related to future natural gas infrastructure investment.² Results are not yet available for 2015 due to the need for results to be verified and audited before being filed with the Ontario

Energy Board (OEB).³ Conservation programs from 2015 to 2020 will be delivered under a new conservation framework, discussed briefly in section A.2.

Enbridge and Union had mixed results in 2014 for their natural gas conservation programs. Positives included the continued cost-effectiveness of conservation programs, higher participation in the utilities’ home retrofit programs, and Enbridge’s extension of its programs for low-income customers into private sector multi-residential buildings. However, there was an overall decline in natural gas savings, due to fewer large-scale conservation projects undertaken by commercial and industrial customers.

Overall Natural Gas Savings

The projected lifetime natural gas savings⁴ (divided by sector) that each utility achieved through its 2012, 2013, and 2014 conservation programs is shown below in Figure A.1. Lifetime

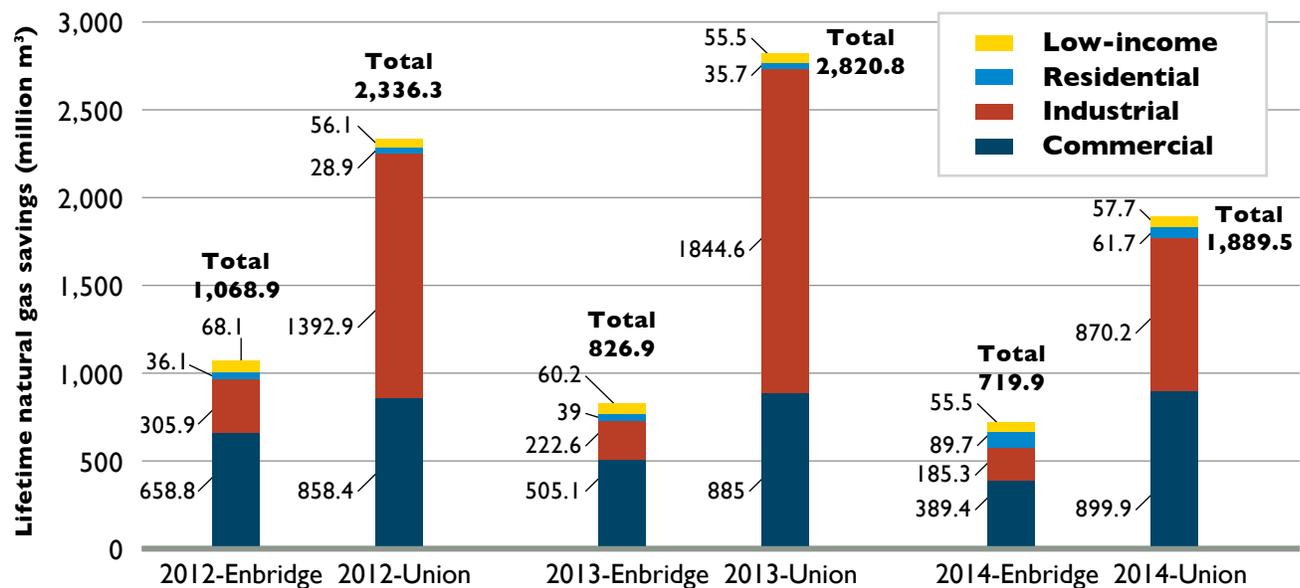


Figure A.1: Lifetime natural gas savings from 2012-2014 gas utility conservation programs by sector

Note: Only savings from large-volume industrial customers (rate classes T1, T2, and I00) are included in the “industrial” category for Union Gas. Savings for smaller industrial customers are included in the “commercial” category.

Source: Enbridge Gas Distribution, 2012, 2013, and 2014 Annual DSM Reports; Union Gas, 2012, 2013, and 2014 Annual DSM Reports

natural gas savings is the primary metric the OEB uses to measure the success of most natural gas conservation programs, because it incentivizes utilities to capture as much conservation as possible within a given budget, and gives greater value to long-lived conservation projects that will deliver savings for many years (e.g. building envelope improvements).⁵ Union has traditionally had higher overall savings because it serves more large industrial gas consumers, who are often able to undertake larger conservation projects with very high energy savings.

Program Spending and Cost-Effectiveness

Enbridge and Union spent approximately \$66 million on gas conservation programs in 2014 (\$32.5 million by Enbridge, and \$33.7 million by Union Gas), about 10 per cent higher than in 2013. The conservation initiatives funded by Enbridge and Union continued to offer good value for society. Each dollar spent on energy efficiency yielded approximately \$2.67 in benefits (largely through savings on gas costs) for Enbridge's conservation programs, and \$1.75 for Union's programs, as measured using the Total Resource Cost test, which compares the costs and benefits of a program from a societal perspective. These results differ from previous years, in which the programs offered by Union Gas were typically more cost-effective than those offered by Enbridge. This reflects the reduction in energy savings in 2014 of Union's programs for large-volume industrial customers, which are typically the most cost-effective conservation projects of all customer classes.

2014 Highlights by Sector

Commercial and Industrial Programs Produced Lower Savings

Conservation projects undertaken by large industrial and commercial (including institutional

and multi-residential) customers have traditionally accounted for the lion's share of overall energy savings from natural gas conservation programs, with utilities offering financial incentives and technical assistance. However, savings from these larger projects declined in 2014, and this appears to be a trend, at least for Enbridge, whose overall savings peaked in 2011 and have declined in each of the three following years. Enbridge identified low natural gas prices as one contributing factor that inhibited customer interest in conservation projects. Gas conservation may become more attractive to all natural gas customers if Ontario's future carbon cap-and-trade system increases customer gas costs.

To offset the decline in natural gas savings, the utilities are increasing their efforts to market to smaller customers that have not been as active in conservation programs to date. While efficiency projects for larger customers are often customized, programs for smaller customers are more likely to focus on standardized efficiency measures (e.g., space heating, water heating, and commercial kitchen technologies). While there is great untapped potential for energy savings among these smaller customers, the savings per project will be lower and administrative costs will likely be higher.

Savings from Residential Programs Trending Upward

Both utilities were able to significantly increase participation and energy savings from their home retrofit programs in the residential sector. The programs offered by Enbridge and Union are similar, with both programs attempting to deliver deep retrofits that decrease a home's overall natural gas use by 25 per cent or more, by providing incentives for measures such as insulation and more efficient space and water heating equipment. Enbridge more than tripled participation in its program, delivering retrofits to more than 5,000 homes. There is clearly further scope for program expansion, as Enbridge had

not fully rolled out this program throughout its service territory – 99 per cent of 2014 program participants came from the Greater Toronto Area. In 2014, Enbridge was able to meet the higher than anticipated demand for its residential retrofit program by shifting some of its budget from other program areas. However, in 2015, it was not able to do this, and unfortunately had to temporarily freeze this program once its budget limit was reached. This was an unfortunate consequence of the delay in approving utilities' 2015-2020 conservation plans. This obstacle has now been overcome, and residential retrofit programs will be a key component of both utilities' 2015-2020 plans.

Mixed and Modest Savings from Low-Income Programs (Single-Family and Multi-Unit Dwellings)

Enbridge and Union deliver programs for low-income households, in both single-family homes (free efficiency upgrades) and multi-residential buildings (higher incentives for building owners for efficiency upgrades). Results for single-family homes were similar to 2013, with Enbridge and Union retrofitting about 2,700 homes in total. For multi-residential buildings, Union delivered approximately 40 per cent higher savings, while Enbridge experienced disappointing results for the second year in a row, due in part to a continuing freeze by Toronto Community Housing in implementing energy efficiency projects, an issue that has now been resolved. In 2014, Enbridge expanded eligibility for its low-income multi-residential program beyond the social housing sector, to include privately owned buildings with a high proportion of low-income occupants. This may increase savings in future years.

Market Transformation Programs – Steady Progress with Homebuilders and Realtors

Market transformation programs are intended to facilitate a change in the marketplace towards

more energy efficient products. Performance is measured by metrics other than the acquisition of overall gas savings. The metrics are specific to the program and the type of change it is trying to achieve, and are shown in Table A.1 and Table A.2. In this category, both Union and Enbridge offer programs to develop the capacity of homebuilders to build new homes to higher energy performance levels than required by the Ontario Building Code. These programs led to 1,424 high-performance homes being built by participating builders in 2014. Enbridge also offers a similar program for larger buildings (which saw the participation of many new condominium projects in 2014) and a program to encourage home energy ratings at time of sale, with the end goal of transforming the resale market so that a home's energy performance rating becomes a standard condition of sale. This program delivered better results in 2014 (662 ratings, versus 138 ratings in 2013), although this is still a very small portion of the resale market.

Performance Against Targets

Utility performance on conservation is measured by the OEB against a complicated "scorecard" of targets. The targets were previously proposed by utilities, and adjusted and approved by the OEB as part of the Board's review of the utilities' 2012-2014 conservation plans. Each utility is eligible for performance incentives scaled to their performance against targets, paid for by ratepayers through natural gas rates. The most important targets for utilities are the lifetime natural gas savings achieved from their combined suite of resource acquisition⁶ programs in the industrial, commercial and residential sectors. However, the scorecards also include additional targets for progress on more specific conservation program goals.

Based on the 2014 results, the utilities will be eligible for \$16.5 million in incentives (\$7.6 million for Enbridge Gas Distribution and \$9.0 million for Union Gas). Enbridge is eligible for about

70 per cent of its maximum incentive payment, and Union just over 80 per cent.⁷ The OEB has not yet approved these incentive payments.⁸ The Board has the option of adjusting the incentive payments if it believes there have been inaccuracies by the utilities in measuring their progress against targets, including their methodology for measuring energy savings. The Board approved the incentive payments for Enbridge and Union's 2013 conservation

results with no changes (in contrast to previous years), despite some concerns raised by Board staff.⁹

The 2014 conservation results for Enbridge Gas Distribution and Union Gas are shown in Table A.1 and Table A.2, respectively.¹⁰ For each utility, actual 2014 program results are shown in comparison with the targets that were established in their three-year plans.¹¹

Table A.1: Summary of 2014 Performance Against Conservation Targets – Enbridge Gas

Program Type	Target Description	Progress on Target	Target Weight¹²
Resource Acquisition (58 per cent of total budget)	992.06 million m ³ of lifetime natural gas savings, due to 2014 conservation programs (excluding low-income programs and market transformation programs)	664.37 million m ³ of lifetime natural gas savings (67 per cent of target)	92 per cent
	Residential deep savings - 747 houses completing deep retrofits with at least two major conservation measures, and achieving natural gas savings of 25 per cent or more (on average)	5,213 houses completed deep retrofits (698 per cent of target)	8 per cent
Low-Income (23 per cent of total budget)	23.6 million m ³ of lifetime natural gas savings in single family homes, due to 2014 low-income conservation programs	25.67 million m ³ of lifetime natural gas savings (109 per cent of target)	50 per cent
	64.2 million m ³ of lifetime natural gas savings in multi-residential buildings, due to 2014 low-income conservation programs.	29.8 million m ³ of lifetime natural gas savings (46 per cent of target)	45 per cent

(continued)



Table A.I: Continued

Program Type	Target Description	Progress on Target	Target Weight ¹²
	40 per cent of multi-residential buildings that participate in low-income conservation programs also participate in Building Performance Management program	74 per cent of multi-residential buildings that participated in low-income conservation programs also participated in Building Performance Management program (185 per cent of target)	5 per cent
Market Transformation (19 per cent of total budget)	Commercial Savings by Design program - 12 new developments enrolled in program for higher-performance design of new commercial/industrial/multi-residential buildings	19 new developments enrolled (158 per cent of target)	20 per cent
	Residential Savings By Design program – 16 new residential homebuilders enrolled in program for higher-performance design of new low-rise residential buildings	23 new builders enrolled (144 per cent of target)	31 per cent
	Residential Savings By Design program – 1,000 new homes built to energy efficiency levels 25 per cent higher than Building Code	1,059 new homes built to energy efficiency levels 25 per cent higher than Building Code through program (106 per cent of target)	20 per cent
	Home Labelling program - commitment from realtors collectively responsible for at least 5,000 listings to include data field for energy rating information on home sale listings	Realtors collectively responsible for 40,040 listings committed to including data field for energy rating information (801 per cent of target)	20 per cent
	Home Labelling program – 1,500 home energy ratings performed	662 ratings performed (44 per cent of target)	9 per cent

■ Results < 75 per cent of target; ■ Results between 75 and 125 per cent of target; ■ Results > 125 per cent of target

Source: Enbridge Gas Distribution, report, 2014 Demand Side Management Annual Report, October 19, 2015.

Table A.2: Summary of 2014 Performance Against Conservation Targets – Union Gas

Program Type	Target Description	Progress on Target	Target Weight¹²
Resource Acquisition Programs (52 per cent of total budget)	788.1 million m ³ of lifetime natural gas savings, due to 2014 conservation programs (excluding low-income programs, market transformation programs, and programs for large-volume customers)	961.6 million m ³ of lifetime natural gas savings (122 per cent of target)	90 per cent
	Residential deep savings - 254 houses completing deep retrofits with at least two major conservation measures, and achieving natural gas savings of 25 per cent or more (on average)	996 houses completed deep retrofits (392 per cent of target)	5 per cent
	Commercial/industrial deep savings – 9.97 per cent reduction in customer gas consumption (on average) due to commercial/ industrial custom conservation projects, compared with customer baseline	7.88 per cent reduction in gas consumption for participants (79 per cent of target)	5 per cent
Low-Income Programs (25 per cent of total budget)	26 million m ³ of lifetime natural gas savings in single family homes, due to 2014 low-income conservation programs	36.1 million m ³ of lifetime natural gas savings (139 per cent of target)	60 per cent
	17.6 million m ³ of lifetime natural gas savings in multi-residential buildings, due to 2014 low-income conservation programs	21.6 million m ³ of lifetime natural gas savings (123 per cent of target)	40 per cent

(continued)



Table A.2: Continued

Program Type	Target Description	Progress on Target	Target Weight ¹²
Market Transformation Programs (5 per cent of total budget)	4 residential homebuilders newly enrolled in Optimum Home program for higher-performance design of new low-rise residential buildings	3 new builders enrolled (75 per cent of target)	40 per cent
	60 per cent of builders participating in Optimum Home program have built at least one prototype home to high efficiency levels (>20 per cent above Ontario Building Code)	86.4 per cent of participating builders have built at least one prototype home to high efficiency levels (>20 per cent above Ontario Building Code) (144 per cent of target)	40 per cent
	6 per cent of new homes built in 2014 by participating builders are built to high efficiency levels (>20 per cent above Ontario Building Code)	14.7 per cent of new homes built in 2014 by participating builders are built to high efficiency levels (>20 per cent above Ontario Building Code) (365 high-efficiency homes built, 246 per cent of target)	20 per cent
Large Volume Customer Programs (17 per cent of total budget)	208.7 million m ³ of lifetime natural gas savings from rate T1 customers, due to 2014 conservation programs	81.6 million m ³ of lifetime natural gas savings (39 per cent of target)	60 per cent
	1,060.1 million m ³ of lifetime natural gas savings from rate T2/100 customers, due to 2014 conservation programs	788.6 million m ³ of lifetime natural gas savings (74 per cent of target)	40 per cent

■ Results < 75 per cent of target; ■ Results between 75 and 125 per cent of target; ■ Results > 125 per cent of target

Source: Union Gas, report, *Final Demand Side Management 2014 Annual Report*, December 4, 2015.

A.2 Natural Gas Policy in 2015

Natural gas policy development in 2015 exceeded the level of activity typical of past years, as several initiatives were launched to support the new regulatory framework for distributors' demand-side management activities. The OEB also received direction from the Minister of Energy to incorporate carbon emissions into its work and regulatory procedures for demand-side management (DSM). Enbridge and Union Gas submitted their 2015-2020 DSM plans for approval by the Board in accordance with the framework. The Board began a technical study to examine future amounts of conservation savings. Among supply policy developments, both utilities were invited by the Board to apply to provide service to regions of the province currently unserved by natural gas.

Transition to the 2015-2020 Regulatory Framework for Demand-Side Management

The OEB established the regulatory framework for natural gas demand-side management for the period 2015-2020 in late 2014, just days prior to the start date of the regulatory scheme. This policy was launched as a result of a 2014 directive from the Minister of Energy. Among new rules and procedures, the framework stipulated that 15 per cent be added to the calculation of the monetary benefits of conservation when the Board approves the cost-effectiveness of conservation programs. In effect, this additional amount is meant to monetize some of the environmental benefits provided from gas conservation's reduction of carbon dioxide emissions, as well as other non-energy benefits like employment.

The same 2014 ministerial directive required the OEB to study the achievable potential for natural gas efficiency every three years – with the first study to be completed by June 2016. The study will estimate the amount of savings that can feasibly be acquired assuming certain technical, budgetary and other influencing factors. (A similar study is being conducted for electricity). The first study is now underway.

In February 2015, the minister further instructed the OEB on carbon emissions. In the achievable potential study, the Board is to consider how the benefits of carbon reduction should be used when screening programs for cost-effectiveness approval, and when setting utility budgets for DSM programs.

DSM Budgets Increase to Begin Design of New Programs Under the New Framework

2014 was intended to be the last year of natural gas conservation program delivery under the old 2012-2014 framework rules.¹³ Since the new regulatory framework for 2015-2020 (aligned with the time period of the new electricity framework) was not finalized until late December 2014, the two gas distributors were late in developing and submitting new DSM plans for approval. The 2015-2020 DSM plans did not receive Board approval until early 2016, following an extensive hearing.¹⁴ Given this delay, the utilities were ordered by the Board to roll over their programs, budgets and targets from 2014 into 2015. The Board allowed them to increase overall spending by up to 15 per cent to begin developing new initiatives to address some key priorities in the new DSM framework (e.g., pursue long-term savings and comprehensive solutions, maximize participation, and minimize lost opportunities).



Conservation budgets for 2015-2020 will increase to approximately \$60 million per year for each utility, in order to meet the Ministry of Energy's objective of achieving all cost-effective conservation.¹⁵ Union and Enbridge's 2016 natural gas savings targets for resource acquisition programs are roughly 25 per cent higher than their average results from 2012 to 2014.¹⁶ The distributors proposed programs that respond to some of the trends seen in 2014 program results. For example, funding for the residential retrofit programs will be scaled up to meet a clear market demand. The Ontario government will provide \$100 million in additional funding from its Green Investment Fund to enable these programs to reach an additional 37,000 households.¹⁷ To address the problem of attracting hard-to-reach small business customers, direct install¹⁸ programs will provide a turnkey service for some common efficiency technologies, such as commercial kitchen ventilation. This program structure makes participation cheap and simple for customers, and has been used successfully in electricity conservation programs to install efficient lighting. Programs under the new framework will begin to roll out in 2016.

Expansion of Natural Gas Distribution

The government signaled in the 2013 Long-Term Energy Plan that it would pursue options to expand natural gas infrastructure to service more communities in rural and northern Ontario. In February 2015, the OEB invited parties interested in distributing natural gas to currently unserved areas to apply to provide service. Shortly after, the government announced a \$200 million Natural Gas Access Loan and a \$30 million Natural Gas Economic Development Grant for the purposes of economic development and energy diversification in these communities.

The Board provided initial guidance on how the utilities should identify and address issues of economic prudence, and recover the costs of the service expansion. The OEB also commissioned cross-jurisdictional research on how others had addressed system expansion (e.g., performing economic tests, prioritizing industrial or institutional consumers). In November 2015, the Board issued guidelines on how to: secure a municipal franchise agreement to serve an area of the province; undertake an environmental assessment and reporting; gain Board permission for leave to construct facilities; and, acquire Board approval of distribution rates to charge customers for regulated service. Union Gas applied for approval to connect up to 30 rural and First Nation communities to the gas grid.

Endnotes

1. Enbridge provides service to much of the Greater Golden Horseshoe, greater Ottawa, and the Niagara region, while Union services much of the rest of the province. Kitchener Utilities, Utilities Kingston, and Natural Resource Gas Limited are other Ontario natural gas providers with small service territories, but do not offer conservation programs.
2. Ontario Energy Board, EB-2014-0134 report, *Demand Side Management Framework for Natural Gas Distributors (2015-2020)*, section 1.4, December 22, 2014. www.ontarioenergyboard.ca/oeb/_Documents/EB-2014-0134/Report_Demand_Side_Management_Framework_20141222.pdf
3. Typically, results are provided to the Board by utilities in fall of the calendar year following the year in which the results were achieved (e.g., 2014 results were filed with the Board in October to December 2015). The OEB then consults utilities and interested parties, conducts a hearing to scrutinize the results, and approves the incentive payments to utilities, typically 4-6 months after the initial filing. As of May 2016, the OEB had not yet approved the 2014 results discussed here.
4. “Lifetime natural gas savings” is as the amount of natural gas that is reasonably expected to be saved due to the energy conservation measures taken in a given year (through utility conservation programs), over the lifetime of these conservation measures. For example, a high-efficiency water heater might deliver 200 m³ of gas savings for a lifetime of 20 years, a lifetime savings of 4000 m³, compared to a less efficient water heater.
5. Savings can also be reported as “first year savings” – the reduction in gas consumption in the first year that a conservation measure is in place. Enbridge’s 2014 programs delivered 43.5 million cubic metres of first year gas savings, about 0.4 per cent of the total gas consumed by Enbridge customers in 2014. Union’s first year savings in 2014 were 133 million cubic metres, about 0.9 per cent of the total gas consumed by Union customers.
6. Resource acquisition programs are programs that seek to achieve, direct measurable energy savings. The primary metric used to evaluate the success of these programs is the lifetime amount of natural gas savings the programs deliver.
7. Incentives are capped at \$10.9 million for Enbridge, and \$10.8 million for Union Gas. Utilities must do more than reach the 100 per cent level on their targets in order to be eligible for their maximum incentive, as incentives continue to accumulate up to 150 per cent of the target level.
8. The Board’s review of 2014 natural gas conservation results is through cases EB-2015-0267 (Enbridge) and EB-2015-0276 (Union).
9. Cases EB-2014-0277 (Enbridge), EB-2014-0273 (Union). Board staff concerns were regarding the utility’s treatment of free-ridership rates, baselines, and measure lifetimes, for large custom projects. Board staff suggested reducing the claimed gas savings for these projects by 20-25 per cent. The Board did not agree and approved utility incentive payments with no reduction in claimed savings.
10. A full description of the natural gas conservation programs offered and 2014 results can be found in Enbridge and Union’s 2014 demand side management annual reports, which are filed with the Ontario Energy Board (cases EB-2015-0267, EB-2015-0276):

Enbridge Gas Distribution, report, *2014 Demand Side Management Annual Report*, October 19, 2015. www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/502999/view/Ex%20B-I-I_EGDI_DSM2014%20accounts_20151030.PDF

Union Gas, report, *Final Demand Side Management 2014 Annual Report*, December 4, 2015. http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/509017/view/UNION_APPL_2014_DSM%20Deferrals_20151209.PDF
11. The types of targets and the formulae for setting these targets are set out in the utilities’ three-year plans. The exact numerical target for a given year may be dependent in part on the previous year’s results.
12. A proxy for the importance of each target is the maximum incentive that utilities can achieve by reaching the target. This maximum incentive is proportional to the budget for that category of programs, multiplied by the target weight.

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- 13.** Plans developed for the 2012-2014 framework by Enbridge and Union describe the suite of conservation programs offered, the allowable budgets for each program, and the utility performance targets and incentives. These plans were developed by the utilities using the policy guidance of the Ontario Energy Board (Ontario Energy Board, EB-2008-0346 report, *Demand Side Management Guidelines for Natural Gas Utilities*, June 30, 2011. www.ontarioenergyboard.ca/oeb/_Documents/Regulatory/DSM_Guidelines_for_Natural_Gas_Utilities.pdf) and were subsequently approved by the Board (cases EB-2011-0327, EB-2012-0337 (Union); EB-2011-0295, EB-2012-0394 (Enbridge)).
- 14.** New policy framework: *supra*, note 2.
- Board decision approving Union and Enbridge's 2015-2020 Plans: Ontario Energy Board, EB-2015-0029/EB-2015-0049 Decision and Order, *Applications for approval of 2015-2020 demand side management plans*. January 20, 2016. www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/513656/view/Decision_and_Order_Enbridge_Union%20_DSM_20160120.PDF
- 15.** Minister of Energy, directive to the Ontario Energy Board, untitled, March 26, 2014. www.ontarioenergyboard.ca/oeb/_Documents/Documents/Directive_to_the_OEB_20140326_CDM.pdf
- 16.** The Ontario Energy Board set these targets by increasing the targets originally proposed by Union and Enbridge by 10 per cent, believing that the targets originally proposed were not aggressive enough. Targets for later years (2017-2020) will depend in part on 2016 results.
- Ontario Energy Board, EB-2015-0029/EB-2015-0049 Decision and Order, *Applications for approval of 2015-2020 demand side management plans*, p. 66, January 20, 2016. www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/513656/view/Decision_and_Order_Enbridge_Union%20_DSM_20160120.PDF
- 17.** Ministry of Energy, news release, *Ontario Investing \$100 Million to Create Jobs and Help Homeowners Save Energy*, February 4, 2016. It is not yet clear how this funding will affect utility targets, or whether it can be used to support retrofits for households outside of Enbridge and Union service territories.
- 18.** Direct install programs typically involve proactive utility installation of standardized high-efficiency technologies (usually at low or no cost to customers), as opposed to custom solutions.