

2014 OAGO Annual Report Section 3.11 – Smart Metering Initiative

OAGO Recommendation	Summary of Action Taken/To Be Taken as at July 31, 2015	Summary of Action Taken/To Be Taken as at April 30, 2016	Summary of Action Taken/To Be Taken as at July 31, 2016
1. COST-EFFECTIVENESS OF NEW INITIATIVES			
To ensure that any future major initiative in the electricity sector is implemented cost-effectively and achieves its intended purposes, the Ministry of Energy should: 1.1. conduct cost-benefit analysis or business cases prior to implementing an initiative to assess costs, benefits and risks; 1.2. review the role of the Ontario Energy Board as an independent regulator when ministerial directives that impact electricity rates are issued; 1.3. consider different scenarios or alternatives as part of the planning process to assess possible risks and uncertainties; and 1.4. Re-evaluate and update the implementation plan periodically to identify and respond to changing conditions and unforeseen events in the electricity market.	RECOMMENDATION IS: [REDACTED] Implemented (by ENERGY) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u>N/A</u>	RECOMMENDATION IS: [REDACTED] Implemented { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u>N/A</u>	No update required
	MINISTRY'S COMPLETED ACTIONS: The Ministry's development, implementation and review of initiatives in the electricity sector embody the recommendations of the Auditor General on an ongoing basis. Two current examples of how the Ministry is implementing the recommendations of the OAGO in relation to the smart metering initiative include the MDM/R Data Access Platform (MDAP) business case and also the Ministry's Smart Grid Assessment and Roadmap report. <i>Re Recommendation 1.1</i>	MINISTRY'S COMPLETED ACTIONS: 1.1 The Ministry's development, implementation and review of initiatives in the electricity sector embody the recommendations of the Auditor General on an ongoing basis. Two current examples of how the Ministry has been implementing the recommendations of the OAGO in relation to the smart metering initiative include the MDM/R Data Access Platform (MDAP) business case and also the Ministry's Smart Grid Assessment and Roadmap report. <i>MDAP Example</i>	No update required

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	In line the trend of using Big and Open data to derive enhanced insight and added value, the Ministry considers that there may be an opportunity for Ontario to obtain further value in areas like conservation, system planning, consumer engagement and economic development by broadening access and analytics of electricity data. In particular the hourly consumption information recorded by 4.8 million smart meters and stored in the province's Meter Data Management and Repository (MDM/R). To this end the Ministry together with the IESO and the Advanced Energy Centre (AEC) is progressing a project to develop a business case which will assess the costs, benefits and implementation considerations of developing a solution to facilitate greater access and analytics of electricity usage data combined with other related data sets. The business case, which is to be completed later in 2015, is being informed by consultation with a wide range of energy stakeholders including Local Distribution Companies (LDCs), Agencies, academics and service providers. <i>Re Recommendations 1.3 and 1.4</i> Commencing with the smart meter initiative and further supported by Minister's Smart Grid Directive and ensuing guidance issued by the OEB, LDCs have made good progress in transforming the traditional distribution system	It has been widely recognized that the MDM/R warehouses an enormous amount of TOU information that, when combined with other data sets, could significantly contribute to energy policy and planning in Ontario. To this end the Ministry has worked with the IESO – Smart Metering Entity (SME) and the Advanced Energy Centre (AEC) to assess the costs, benefits and implementation considerations (including privacy and security) of developing a solution to facilitate greater access and analytics of electricity usage data combined with other related data sets. A business case has been developed in consultation with a wide range of energy stakeholders including Local Distribution Companies (LDCs), agencies, academics and service providers. The Ministry is assessing the business case and considering how it can integrate other recommendations from the 2014 Annual Report, including using Requests for Information and Requests for Proposals to further define the cost / benefit analysis. The SME is responsible the MDM/R, and in a recent licencing decision, the OEB asked the SME to enhance the MDM/R. This includes collecting additional information associated with each meter in Ontario by January 1, 2017, and creating an implementation plan to enable third party access to MDM/R data for its next licence application (the current licence expires on December 31, 2016).	

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	into a modern 21st century electricity grid. The ‘smart’ grid enables emerging technologies like electric vehicles, electricity storage and innovations to make Ontario homes smarter. To help ensure that our transition to a smart grid evolves in a way which maximises benefits for consumers and the system, in fall 2014 the Ministry commissioned a study to evaluate the current state of smart grid in Ontario and to develop a roadmap of alternate smart grid deployment scenarios for the future. This study, by evaluating outcomes to date and identifying optimal smart grid deployment scenarios and their barriers to achievement, will help the Ministry tailor its policy framework and tools to best support the development and adoption of smart grid in a way which maximizes benefits and minimizes risks for Ontario. <i>Re Recommendation 1.2</i> The OEB is an independent Crown corporation with objectives under the Ontario Energy Board Act 1998 which include: • protecting the interests of consumers with respect to prices, • promoting electricity conservation and demand management in a manner consistent with the policies of the Government of Ontario, including having regard to the consumer’s economic circumstances,	Significant work is required to implement these licence conditions. As that work proceeds, the MDAP project will be put on hold so the SME can focus its resources on implementing the OEB order. Since the order acts as a precursor to the MDAP, this break will enable more analysis on potential costs and benefits, as well as consideration of alternative approaches to data analytics. <i>Grid Modernization Initiative (Smart Meters, Smart Grid)</i> Commencing with the smart meter initiative and further supported by Minister’s Smart Grid Directive and ensuing guidance issued by the OEB, LDCs have made good progress in transforming the traditional distribution system into a modern 21st century electricity grid. The ‘smart’ grid enables emerging technologies like electric vehicles, electricity storage and innovations to make Ontario homes smarter. To help ensure that our transition to a smart grid evolves in a way which maximises benefits for consumers and the system, in fall 2014 the Ministry commissioned a study to evaluate the current state of smart grid in Ontario and to develop a roadmap of alternate smart grid deployment scenarios for the future. This study evaluated outcomes to date and analysed three different smart grid deployment scenarios going forward (2020 - 2035). It also identified potential barriers to achieving the full value of the estimated benefits. This report will inform the Ministry’s future policy considerations	

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	facilitating the implementation of a smart grid in Ontario. The Ministry expects that the OEB will continue to exercise its responsibilities under the OEB Act when acting further to Ministerial directives.	with regard to next steps in the development and adoption of smart grid, in a way which maximizes benefits and minimizes risks for Ontario. The report has been made publically available on the Ministry of Energy website (link). 1.2 The Ministry respects the Ontario Energy Board's (OEB) important role as the independent regulator of the energy sector in the public interest and recognizes the need to ensure that the OEB continues to independently regulate and fulfill its legislated mandate when implementing government policies and priorities. The Ministry is committed to a strong OEB that ensures ratepayers are protected. Amendments to the <i>Ontario Energy Board Act, 1998</i>, included as part of the <i>Strengthening Consumer Protection and Electricity System Oversight Act, 2015</i>, were proclaimed into force on March 4, 2016. These amendments strengthen the OEB's role to ensure that it continues to have a robust set of tools to protect ratepayers and regulate the sector. 1.3 The development of initiatives in the electricity sector embodies this recommendation on an ongoing basis. For example, to help ensure that our transition to a smart grid evolves in a way which maximises benefits for consumers and the system, in fall 2014 the Ministry commissioned a study to evaluate the current state of smart grid in Ontario and to develop a roadmap of alternate smart grid deployment scenarios for the future.	

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		This study, by evaluating outcomes to date and identifying three different smart grid deployment scenarios and barriers to realizing the full value of potential investments, will help the Ministry tailor its policy framework and tools to best support the development and adoption of smart grid in a way which maximizes benefits and minimizes risks for Ontario. With respect to planning for the energy sector on a broader scale, the Ministry of Energy has introduced legislation that, if passed, would replace the current electricity planning process – known as the Integrated Power System Plan process – with a Long Term Energy Plan (LTEP) process. The LTEP process is efficient, supported by robust stakeholder consultations, flexible, and responsive to an evolving energy sector. On October 28, 2015, the Minister of Energy introduced the <i>Energy Statute Law Amendment Act, 2015</i> (Bill 135) that, if passed, would establish this long term energy planning process in legislation. The proposed legislation requires the Independent Electricity System Operator (IESO) to develop a technical report to begin the energy planning process. The technical report would contain information on the adequacy and reliability of electricity resources with respect to anticipated electricity supply, capacity, storage, reliability and demand. After receipt of the technical report, the Ministry would be required to consult with the public, stakeholders and indigenous groups and communities, with the technical report serving as a common platform of understanding. The final	

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		LTEP would be developed by the Ministry of Energy, after thorough consideration of the technical report, different scenarios and risks, and feedback from the consultations. 1.4 The implementation of initiatives in the electricity sector embodies this recommendation on an ongoing basis. For example: On October 28, 2015, the Minister of Energy introduced the <i>Energy Statute Law Amendment Act, 2015</i> (Bill 135) that, if passed, would establish a long term energy planning process that is flexible and responsive to an evolving energy sector, including adapting to changing market, technology and economic conditions. The legislation proposes to have the government set goals and objectives for the energy sector in a Long Term Energy Plan (LTEP), following thorough consideration of information received from the IESO in its technical report, as well as feedback received through a robust consultation and engagement process with the public, stakeholders, indigenous groups and communities. Once the LTEP has been developed, the independent expertise of the IESO and the Ontario Energy Board (OEB) would be utilized to develop implementation plans setting out frameworks on how best implement the LTEP's goals and objectives. The legislation provides for a flexible planning process that would allow implementation of the	

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		LTEP to change as may be required as a result of an evolving sector.	
2. COMBINATION OF SMART METERS AND TIME-OF-USE PRICING			
To ensure that the combination of smart meters and time-of-use (TOU) pricing is effective in changing ratepayer electricity-usage patterns to reduce peak electricity demand and related infrastructure costs, and that ratepayers understand the impacts of TOU pricing on their electricity bills, the Ministry of Energy should work with the Ontario Energy Board and/or the distribution companies to: 2.1. evaluate TOU pricing design, including TOU rates, TOU periods and the allocation of the Global Adjustment across the three TOU rates; 2.2. monitor trends in ratepayer electricity consumption to evaluate the effectiveness of TOU pricing over time; and 2.3. Disclose the components of the TOU rates (electricity market price and Global Adjustment) separately on electricity bills so that the impact of the Global Adjustment is transparent to ratepayers.	RECOMMENDATION IS: ██████████ Implemented (by OEB for 2.1 and 2.2) ██████████ Substantially Implemented (at least 75%) (by ENERGY) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made ██████████ Will not be implemented (by OEB for 2.3) Expected date of completion: _____	RECOMMENDATION IS: ██████████ Implemented (For 2.2) ██████████ In the process of being implemented (For 2.1 and 2.3) { FORMCHECKBOX } Little or no Progress { FORMCHECKBOX } Will not be implemented Expected date of completion: _____	RECOMMENDATION IS (for 2.1 and 2.3): ██████████ Implemented (by OEB for 2.1) Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made ██████████ Will not be implemented (by OEB for 2.3) Expected date of completion: _____ (2.1 and 2.3) No update required for 2.2
	MINISTRY'S COMPLETED ACTIONS: <i>Re Recommendation 2.2</i> The Ministry is actively engaged in monitoring the work of the IESO and the OEB in conducting scientific analysis on how residential and small business customers have actually responded to Time-of-Use (TOU) pricing. The former OPA and the OEB released analyses on the impact of TOU in late 2013 and the OPA issued a further report	MINISTRY'S COMPLETED ACTIONS: 2.1 The matter is being evaluated by the OEB as part of its RPP Roadmap. 2.2 On March 22, 2016, as part of the Ontario Energy Report, the IESO posted the final <i>Analysis of Ontario's Full Scale Role-out of TOU Rates</i>, which outlines how consumers have responded to the TOU pricing since its implementation. The full report is available at	No update required for 2.2 MINISTRY'S COMPLETED ACTIONS (2.1 and 2.3): Re Recommendation 2.1: The OEB is undertaking a comprehensive multi-year review of the RPP, which includes TOU pricing. The Ministry is actively engaged with the OEB as it continues its review of the RPP. A

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	in December 2014. The Year 3 TOU analysis is expected at the end of this year. <i>Re Recommendation 2.3</i> In December 2013, the Minister of Energy asked the OEB to undertake a review of Part II of the Energy Consumer Protection Act, 2010. The OEB has examined the presentment of the Global Adjustment (GA) on customer bills as part of this review. In June 2015, the OEB issued its report, which further to expert, industry and consumer consultation, does not propose any changes to the presentment of GA on consumer bills. OEB COMPLETED ACTIONS: <i>Re Recommendation 2.1</i> The OEB has undertaken its review and evaluation of the current TOU pricing structure and methodology. The evaluation has included an assessment of the impact of the Global Adjustment on the overall pricing and the 3 periods. The Report on this assessment will be public in the Fall of 2015 <i>Re Recommendation 2.2</i> As part of the TOU evaluation of the current pricing structure and methodology the OEB has commissioned a study of consumer response to the TOU prices. That report was issued in 2013. The OEB established a data base of consumer usage for the purpose of undertaking the study and has maintained that data base. The OEB as part of its TOU review has also undertaken	http://www.ieso.ca/Documents/reports/Final-Analysis-of-Ontarios-Full-Scale-Roll-Out-of-TOU-Rates.pdf. We are encouraged to see continued evidence of load shifting behaviour among residential customers. As part of this ongoing review of the RPP, the OEB, in collaboration with LDCs, will undertake pilot programs for alternate pricing structures over the next 18 months. 2.3 As part of its RPP Roadmap, the OEB will explore opportunities to improve the communication of TOU pricing through improvements to the electricity bill including: • Re-naming the TOU time periods. • Re-designing the TOU time period visuals. • Modifying the presentation of the electricity bill. Providing better information on different appliances, such as the amount of electricity used, the cost of that electricity, and how use and cost can be managed under TOU pricing. MINISTRY'S OUTSTANDING ACTIONS:	decision on any changes to TOU rates will be made as part of the RPP review. As part of its review, the OEB plans to conduct pilot programs from 2017 to 2018 to assess the impact of alternative pricing structures. On July, 18, 2016, the OEB issued a guidance document for price and non-price RPP pilots and has invited distribution companies to submit pilot proposals. Results from these pilots will help inform any future decision on changes to TOU rates as part of the RPP review process. OEB RESPONSE: On November 16, 2015 the OEB published its Regulated Price Plan Roadmap, setting out a multi-year plan that ensures the Regulated Price Plan, including TOU pricing, is able to meet the challenges of the future. The Report is available on the OEB's website at: http://www.ontarioenergyboard.ca/oeb/_Documents/EB-2004-0205/RPP_Roadmap_Report_of_the_Board_20151116.pdf The Roadmap sets out a five-point plan to be implemented over the course of the next 3 to 5 years. Through this plan, the OEB will redesign the RPP, including TOU pricing, to better respond to policy objectives, improve system efficiency, and give greater consumer control. The five components of the Roadmap are: 1. Renewing the RPP objectives 2. Empowering Consumers: Enhancing energy literacy and non-price tools

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	extensive consumer research to understand how consumers respond to the current TOU pricing structure and how changes may affect consumer response. The OEB's report will be issued in the Fall 2015 along with all of the research reports. <i>Re Recommendation 2.3</i> As part of its review of the Energy Consumer Protection Act the OEB received input from stakeholders and experts on the idea of separately showing information about the Global Adjustment on bills for standard supply consumers. The OEB did not recommend this as one its recommended actions in its report to the Minister of Energy in July 2015. MINISTRY'S OUTSTANDING ACTIONS: <i>Re Recommendation 2.1</i> The Ministry welcomes the OEB's review of the TOU pricing as part of its Regulated Price Plan (RPP) review which, building on the robust analysis of the actual impacts of TOU pricing in Ontario, will evaluate the factors suggested in the OAGO's recommendation. The OEB is expected to release a RPP Review Draft Policy Report in Summer 2015. Over 2015 to 2017, the OEB will seek out LDCs and other partners to propose design and implement pilots on price and non-price interventions to improve RPP/TOU. The OEB is expected to release its final RPP policy document in 2017.		3. Implementing price pilots 4. Engaging with low volume business consumers 5. Working with government to reduce barriers To inform its review, the OEB undertook analytical research, consumer research and a jurisdictional review to explore how the RPP has performed, how it is serving consumers and how others have implemented electricity pricing models. To help determine future policy directions, the OEB commissioned studies that looked backward – to explore how the RPP has performed and how consumers perceived the RPP; and studies that looked forward – exploring potential changes in pricing and consumer information to help determine future policy directions for RPP. These reports were published on the OEB's website along with the Regulated Price Plan Roadmap. The research reports are available on the website at: http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory%20Proceedings/Policy%20Initiatives%20and%20Consultations/Regulated%20Price%20Plan The OEB is now in the process of implementing the Roadmap through a series of initiatives and has already revised the RPP Manual to reflect the new objectives. With respect to enhancing literacy, the OEB is working with a newly established Consumer Panel to develop a benchmark on literacy and assess gaps and information needs that would better inform and empower customers. The OEB will also use the consumer panel to help assess non price tools and different billing models.

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			The OEB has also issued an RFP to retain a consultant to assist with a redesign of its consumer facing web site. The new design will improve the look and feel, as well as enrich available content to ensure that it provides useful information and tools to help consumers' better respond to pricing signals and manage their energy consumption. The OEB has also engaged an internationally recognized expert to assist it in setting up pricing pilots to be run over the next 18-24 months to assess options for dynamic pricing. The pilots will include requirements for rigorous data collection and evaluation of consumer response to the different pricing and non-price treatments as well as gathering additional data on those consumers who remain on current TOU as part of the control group for each pilot. Following evaluation of the pilots the OEB will determine the most appropriate pricing mechanisms to achieve the objectives for the RPP and implement those in the Province. Re Recommendation 2.3: The OEB has considered the recommendation of the Auditor General, which it understands was made with a view to providing consumers with information about the impact of Global Adjustment on their bills. However, for the reasons outlined below, after consideration the OEB does not believe the recommendation should be implemented, as the information that would be provided were the recommendation to be implemented would not provide clarity in

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			pricing for consumers. The OEB has undertaken research into consumer attitudes on billing and from this research has concluded that consumers are looking for information on bills that will assist them in making decisions about how to manage their electricity costs. The research we have done for the RPP Review confirmed that consumers are focused on their TOU usage in order to make decisions about how to reduce their electricity bills. Providing a breakout of HOEP and GA in the TOU prices would not assist consumers in understanding their price or how to manage their electricity costs. TOU prices are established through a process set out in the OEB's RPP Manual. They are developed using the forecasts of HOEP and Global Adjustment costs. However in setting the TOU prices the OEB allocates the forecast costs to the different TOU periods in a manner that attempts to match the costs of the particular type of supply (i.e. peaking generation) which correspond most closely to supply that is used at a particular time of day (i.e. peak TOU period). The allocation of costs to different time periods reflects the determination of the OEB of how best to achieve the objectives for the RPP and TOU, which include providing a price signal to consumers that will encourage shifting consumption to off-peak times. GA is recovered as a \$/MWh charge and does not have any time variation to it. The OEB's allocation of HOEP and GA to the different time periods in order to accomplish the objectives for

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			RPP makes any comparison to the provincial GA rate meaningless. Breaking out the components of each of the TOU prices would provide consumers with information they cannot use for the purpose of making decisions about consumption. As well these allocations may, and generally do, change with each RPP price-setting due to changes in the supply mix. As we understand the intent of the recommendation may be to ensure consumers have access to information about the cost of the Global Adjustment, we note that consumers have access to this information published by the IESO on its website. The OEB also publishes its forecast of GA costs in the RPP Price Reports which are issued whenever the OEB sets RPP prices. However the OEB is committed to finding ways to improve consumer literacy regarding pricing. In developing its Roadmap for the RPP the OEB commissioned work and research (IPSOS Reid and BEWorks' reports addressed above) that suggested a number of ways to improve the structure and presentation of customers' bills: • Making TOU information more salient on the bill increases peoples' comprehension of TOU pricing and improves recall of information. • Changes to the naming schema, TOU period clock, electricity consumption graphs, benchmarks, and the way pricing information is presented, can potentially influence consumers likelihood to align with TOU

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			schedules and reduce consumption compared to what exists today. The OEB believes that the bill is one of the primary communication tools for consumers. In 2015 the OEB issued new rules requiring all electricity distributors to provide monthly billing, to ensure consumers have access to timely and accurate information for purposes of making decisions about their electricity use and managing costs. Over the next 12 to 18 months, the OEB will explore opportunities to improve the communication of TOU pricing through improvements to the electricity bill including: • Re-naming the TOU time periods. • Re-designing the TOU time period visuals. • Modifying the presentation of the electricity bill. • Providing better information on different appliances, such as the amount of electricity consumed, the cost of that electricity, and how use and cost can be managed under TOU pricing. The OEB intends, as part of the pilots, to assess consumer understanding and response to new approaches to presenting price information in different formats. The OEB has also engaged in discussions about bill presentation with its Consumer Panel, to gather advice on how to make the bills more useful for consumers. Through discussions with the Panel we have heard

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			requests for bills that are more concise with easy to understand information about the charges.
3. ISSUANCE OF TIMELY AND ACCURATE BILLS			
To ensure that ratepayer concerns are addressed properly and in a timely manner, and that clear, timely and accurate bills are issued to ratepayers, the Ministry of Energy should work with the Ontario Energy Board, Hydro One and other distribution companies to: 3.1. improve tracking of the nature and details of ratepayer enquiries and complaints to identify and monitor common or recurring concerns; 3.2. better educate ratepayers about the impacts of time-of-use (TOU) pricing and other factors on electricity bills, as well as the root causes of potential metering or billing issues and what is being done to address them; and 3.3. Identify and fix any problems with their billing systems and local communication systems on a timely basis, and monitor the performance of those systems over time to reduce ratepayer complaints triggered by these problems.	RECOMMENDATION IS: ██████████ Implemented (By Hydro One and OEB for 3.1) ██████████ Substantially Implemented (at least 75%) (By ENERGY and OEB for 3.2) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u>March 2016 (for 3.2 by OEB)</u>	RECOMMENDATION IS: { FORMCHECKBOX } Implemented ██████████ In the Process of being Implemented (for 3.2) { FORMCHECKBOX } Little or no progress { FORMCHECKBOX } Will not be implemented Expected date of completion: _____	RECOMMENDATION IS (3.2 and 3.3): ██████████ Implemented (By ENERGY for 3.2, OEB for 3.3) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) ██████████ In the process of being implemented (By OEB for 3.2) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented No update required for 3.1
	MINISTRY'S COMPLETED ACTIONS: <i>Re Recommendation 3.1</i> The Ministry continues to support the work of the OEB in fulfilling its mandate to protect the interests of customers with respect to prices and the adequacy, reliability and quality of electricity service. The OEB has already taken action to help improve the way in which LDCs deliver service to	MINISTRY'S COMPLETED ACTIONS: The Ministry defers to the OEB to update on this recommendation (For 3.1 and 3.3) 3.2 On November 16, 2015, the OEB issued its RPP Roadmap, setting out a five-point plan to be implemented over the course of the next 3 to 5 years: 1. Renewing the RPP objectives	No update required for 3.1 MINISTRY'S COMPLETED ACTIONS (3.2 and 3.3): As part of its multi-year RPP review, the OEB is continuing to work towards better educating ratepayers about TOU pricing. The Ministry is actively engaged with the OEB as it continues its review of the RPP.

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OAGO Recommendation	Summary of Action Taken/To Be Taken as at July 31, 2015	Summary of Action Taken/To Be Taken as at April 30, 2016	Summary of Action Taken/To Be Taken as at July 31, 2016
	their customers and to ensure that ratepayers receive clear, timely and accurate bills. In April this year, the OEB issued amendments to its Distribution System Code (DSC) for LDCs in relation to billing frequency, the use of estimated billing and billing accuracy. The amendments to the DSC are the result of the OEB's policy review of LDCs' billing practices and performance which commenced in June 2014. The new requirements of the DSC will require LDCs to: • transition non-seasonal residential and small business customers to mandatory monthly billing no later than December 31, 2016 • add descriptions of their estimated billing practices to their Conditions of Service to ensure transparency • issue bills to residential and small business customers with smart meters or interval meters based on actual meter reads ○ To account for exceptional circumstances, LDCs can bill based on estimated consumption ○ no more than twice every 12 months. • adhere to the OEB's standard of 98% billing accuracy These new requirements related to billing frequency and accuracy are expected to	2. Empowering Consumers: Enhancing energy literacy and non-pricing tools 3. Implementing price pilots 4. Engaging with low volume business customers 5. Working with government to reduce barriers As part of this ongoing review of the RPP, the OEB, in collaboration with LDCs, will undertake pilot programs for alternate pricing structures over the next 18 months. On March 22, 2016, as part of the Ontario Energy Report, the IESO posted the final <i>Analysis of Ontario's Full Scale Role-out of TOU Rates</i>, to help us understand how consumers have responded to the Time-of-Use system since its implementation. We are encouraged to see continued evidence of load shifting behaviour among residential customers and are eager to engage further with all customers on how we can improve on success to date. The OEB's RPP review is timely in that it will build on the robust analysis of the actual impacts of TOU prices in Ontario that have been completed by the OEB and IESO.	Through the RPP review, the OEB plans to conduct pilot programs for non-price tools that will be used to help make TOU pricing more easily understood by consumers. The OEB plans to conduct these pilots from 2017 to 2018. On July, 18, 2016, the OEB issued a guidance document for RPP pilots and has invited distribution companies to submit pilot proposals. OEB'S RESPONSE 3.2: In developing its Roadmap for the RPP the OEB commissioned work that suggested a number of ways to improve the structure and presentation of customers' bills: • Making TOU information more salient on the bill increases peoples' comprehension of TOU pricing and improves recall of information. • Changes to the naming schema, TOU period clock, electricity consumption graphs, benchmarks, and the way pricing information is presented, can potentially influence consumers likelihood to align with TOU schedules and reduce consumption compared to what exists today. The OEB believes that the bill is one of the primary communication tools for consumers. In 2015 the OEB issued new rules requiring all electricity distributors to provide monthly billing, to ensure consumers have access to timely and accurate information for purposes of making decisions about their electricity use and managing costs. Over the next 12 to 18 months, the OEB will

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2014 OAGO Annual Report Section 3.11 – Smart Metering Initiative

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	encourage energy literacy and make it easier for customers to identify the drivers that influence energy use and allow them to better anticipate and manage payments and respond to pricing signals. The Ministry also welcomes the introduction of specific metrics related to Customer Satisfaction as part of its Scorecard to measure and benchmark LDC performance on an annual basis. Starting last year, LDCs are required to report to the OEB on their 1) effectiveness at addressing customer complaints; 2) customer satisfaction surveys results and 3) performance with respect to targets for billing accuracy. The Ministry and the OEB actively track the nature of inquiries or concerns from customers who get in touch, in fact the OEB publishes a list of if its 10 most frequent types of inquiries on an annual basis on its website. <i>Re Recommendation 3.2</i> The Ministry has supported or undertaken numerous initiatives to educate customers about their electricity pricing and other factors which impact their electricity bills.		explore opportunities to improve the communication of TOU pricing through improvements to the electricity bill including: •Re-naming the TOU time periods. •Re-designing the TOU time period visuals. •Modifying the presentation of the electricity bill. •Providing better information on different appliances, such as the amount of electricity consumed, the cost of that electricity, and how use and cost can be managed under TOU pricing. The OEB intends, as part of the pilots to be conducted over 2017 and 2018, to assess consumer understanding and response to new approaches to presenting price information in different formats. The OEB has also engaged in discussions about bill presentation with its Consumer Panel, to gather advice on how to make the bills more useful for consumers. Through discussions with the Panel we have heard requests for bills that are more concise with easy to understand information about the charges. 3.3: The OEB implemented new requirements for all licensed electricity distributors to improve billing accuracy and to move to more timely billing information by mandating monthly billing for all residential consumers by December 30, 2016. Information relating to this policy change and the resulting Code amendments is available at: http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory%20Proceedings/Policy%20Initiatives%

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2014 OAGO Annual Report Section 3.11 – Smart Metering Initiative

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	The Ministry is currently supporting a program to gain better insights into what information will best help the average citizen and encourage them to take action. Research is underway right now by the Energy Exchange program run by Pollution Probe. Its findings can help everyone – the Ministry, its agencies, local utilities and other educators – to customize their education materials to better resonate with the audiences we’re trying to help. Over a year ago, the Ministry also launched a new educational web feature that was built partly on learnings from public consultations across Ontario. The site is called emPOWERme, and it features a series of videos, interactive tools and infographics to help explain the energy system. The videos, for instance, start with the fundamentals. Do people understand the difference between transmission and distribution? Do they know how all the components of their electricity bill? Do they know what the smart grid is? As of the end of May 2015, the emPOWERme site has had 39,006 page views and the 5 videos together have had 28,831 views. emPOWERme also links to existing customer education resources including those specific to TOU pricing and billing such as the IESO’s 10 Smart Meter Lane which allows customers to plug in		20and%20Consultations/Customer%20Billing%20Practices%20%28EB-2014-0198%29 The OEB has implemented processes for tracking and monitoring consumers concerns on all energy matters as part of its responsibility for protecting the interest of consumers. The OEB reports on these trends as part of its consumer website: http://www.ontarioenergyboard.ca/OEB/Consumers/Energy+Contracts/Supplier+Complaints+by+Company The OEB is in the process of developing and implementing new requirements for utilities to address consumer complaints on a timely basis (within 10 business days or less) and to maintain records of complaints. This information will allow the OEB to make assessments of the distributor’s practices and service levels in responding to consumer concerns. These requirements will be put in place through enforceable licence conditions. Information regarding this initiative can be located at: .http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory%20Proceedings/Policy%20Initiatives%20and%20Consultations/Complaint%20Response%20Process%20%28EB-2016-0179%29

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2014 OAGO Annual Report Section 3.11 – Smart Metering Initiative

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	information on when and how much they use selected appliances to see how the cost of running these appliances changes at different times of the day and week and the OEB's online Bill Calculator which allows customers to estimate their total bill by inputting data about how much electricity they typically use during on-peak, mid-peak and off-peak periods. Related to emPOWERme is the Ministry's effort to use social media to educate people. For instance, last October, the Ministry used a Halloween-themed campaign to drive awareness of phantom power from household appliances and its impact on electricity bills. Thanks in part to this campaign, this twitter feed created over 122,000 impressions. New technological innovation that could only have been made possible by our smart grid allows us to introduce educational tools we couldn't have even imagined five years ago. For example, today more than 60% of Ontario residential and small business electricity customers are served by a utility that allows them to directly download their electricity use data in the Green Button format to better understand their personal electricity consumption habits. Work is underway to launch the next phase of Green Button, called Connect My Data, which allows a customer to tell their utility to share their electricity, natural gas and water data with an App		

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	that they can view on their computer or smartphone. <i>Re Recommendation 3.3</i> The Ministry notes that some aspects of the OAGO's recommendation are themes of the ongoing investigation by the Ombudsman of Ontario into the transparency of Hydro One's billing practices and the timeliness and effectiveness of its process for responding to customer concerns. The Ontario Ombudsman has completed his investigation into Hydro One's billing practices and released his report on May 25, 2015. The Ministry understands that Hydro One has accepted the Ombudsman's recommendations and is working hard to address the concerns raised by the Ombudsman. HYDRO One COMPLETED ACTIONS <i>Re Recommendation 3.1</i> The technical issues present at the time of the new system's implementation have been largely resolved but the Company will focus on new and on-going system and service improvements. The company now tracks significantly more service measures in order to monitor and improve the experience of its customers. Specifically, with respect to billing system performance, management reports that as of July 2015:		

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	• The timely issuance of accurate bills is the highest it has been in the history of Hydro One at a success rate of 99.8%. • 85% of customers surveyed year-to-date said they were “satisfied” or “very satisfied” with their experience with the call centre. • Customer issues resolved at the first point of contact with Hydro One rose to 82% in June 2015 from 69% in April 2015. This is as a result of increased discretion provided to our call centre customer service Agents to be able to resolve issues directly; further improvements with this important metric will continue to be pursued. • The number of customers currently experiencing delayed billing has been reduced to 340 as of June from the peak of over 50,000 during the height of the billing issues in 2013/2014. While this is a relatively small number in the context of the 1.4 million overall customer base of Hydro One, management has established a zero tolerance objective in this regard going forward. Also, in June 2015, the company implemented a new customer service quality assurance program for its call centre operations. Under this program, the company now records 100% of call activity for quality assurance purposes. Both the outsource service-provider and the company constantly survey calls at random in order to monitor handling and performance. Weekly quality calibration meetings now take place between		

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	Hydro One management and the provider of outsourced call centre services to monitor and improve performance. These initiatives, in turn, will support efforts to improve training and service Agent coaching as well as oversight of the service provider with a view to elevating the call centre to best-in-class service levels. Customer service will be a standing item on the Agenda of every Board meeting and thereby command the full attention of all directors as well as Hydro One's senior management team on a permanent and on-going basis. OEB'S COMPLETED ACTIONS: <i>Re Recommendation 3.1</i> The OEB has implemented processes for tracking and monitoring consumers concerns on all energy matters as part of its responsibility for protecting the interest of consumers. The OEB reports on these trends as part of its consumer website. The OEB implemented new requirements for all licensed electricity distributors to improve billing accuracy and to move to more timely billing information by mandating monthly billing for all residential consumers by December 30, 2016. <i>Re Recommendation 3.2</i> The OEB has made changes to its website that provides consumers with information about their bills and about TOU prices. The OEB has		

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	implemented changes to requirements for licensed electricity distributors with regard to billing accuracy which impose targets and possible sanctions for not meeting the targets. MINISTRY'S OUTSTANDING ACTIONS: <i>Re Recommendation 3.1</i> The Ministry continues to support the work of the OEB in fulfilling its mandate to protect the interests of customers with respect to prices and the adequacy, reliability and quality of electricity service. The OEB is focused on ensuring customers are well served by their distributors and is making increasing efforts to understand customer concerns and preferences. As part of its new consultation framework announced in 2014, in the fall 2015 the OEB will establish a Consumer Panel comprising of a large and diverse group of consumers from all parts of Ontario, including residential and small business consumers. The panel will be used to discuss issues identified as important to consumers, to gather ideas and provide feedback on the solutions and tools the OEB is developing, and to help assess the effectiveness of its consumer-centric approach. The OEB also plans to establish a Consumer Charter/Consumer Bill of Rights in 2015. HYDRO One OUTSTANDING ACTIONS		

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	A search for Hydro One Ombudsperson is well underway. The Company will work with the government's appointee, Mr. Denis Desautels, to ensure that terms of reference for the position are appropriate, adequate resources will be provided and that the successful candidate has the requisite skills and experience to successfully perform this important role. The Ombudsperson will report directly to the Board of Directors in order to ensure independence and provide strong support for any recommendations made. OEB OUTSTANDING ACTIONS: <i>Re Recommendation 3.2</i> The OEB is looking at new methods of providing more information to consumers both about electricity prices and information that would support their usage and cost management. As part of its 2015 Business Plan the OEB is preparing a consumer charter that sets out in plain language consumers' rights and expectations for service. The OEB is also considering as part of its TOU Review new tools to assist consumers in managing their bills. The OEB has also taken steps to implement a Consumer panel that will provide an opportunity to obtain feedback from consumers on billing and service issues.		
4. REVIEW OF DISTRIBUTION-COMPANY COSTS			

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To ensure that the unanticipated costs incurred by distribution companies in implementing the Smart Metering Initiative are justified, and that any significant cost variations among distribution companies are adequately explained, the Ontario Energy Board should perform detailed reviews of distribution-company costs, including an analysis of cost variations for similar services among different distribution companies.	RECOMMENDATION IS: Implemented (by OEB) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: _____	No update required	No update required
	OEB COMPLETED ACTIONS: The OEB reviewed all distributors' requests for recovery of smart meter costs in accordance with the Regulations and its policy guidelines. Two very small distributors have yet to have their costs reviewed. Any new or added costs that distributors incur over time will be assessed through the OEB's rate hearing process.	No update required	No update required
5. COST-EFFICIENCY OF DISTRIBUTION COMPANIES			
To improve cost-efficiency of the distribution companies and reduce variations in distribution companies' costs, the Ministry of Energy, in conjunction with the Ontario Energy Board, should formally conduct a cost-benefit analysis into consolidating distribution companies as	RECOMMENDATION IS: { FORMCHECKBOX } Implemented Substantially Implemented (at least 75%) (by OEB)	RECOMMENDATION IS: { FORMCHECKBOX } Implemented { FORMCHECKBOX } In the process of being implemented { FORMCHECKBOX } Little or no progress	No update required

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2014 OAGO Annual Report Section 3.11 – Smart Metering Initiative

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recommended by the Ontario Distribution Sector Review Panel.	{ FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented (By ENERGY) Expected date of completion: <u>March 2016 (by OEB)</u> OEB'S COMPLETED ACTIONS: The OEB has made changes to its policies regarding the assessment of applications by distributors to consolidate, including making changes in March 2105 to the rate-making policies and through recent decisions giving guidance to the sector. OEB'S OUTSTANDING ACTIONS: The OEB is undertaking further analysis of the possible challenges and barriers to further consolidation and or increased efficiency due to regulatory requirements. This review will be completed during the OEB's 2015/16 fiscal year. Ministry Rationale: In April 2014, the Premier's Advisory Council on Government Assets was engaged to review options for maximizing the value of government assets, including Hydro One. The Ministry worked actively with the Council staff. In November 2014, the Council completed the Phase I review and provided its initial Report to the government including potential options for Hydro One. The Council completed Phase II of its review and	{ FORMCHECKBOX } Will not be implemented (By ENERGY) MINISTRY'S COMPLETED ACTIONS: The Minister of Energy has committed that government will not legislate or force consolidation within the distribution sector but will work to create incentives for voluntary consolidation. Consequently, starting January 1, 2016, changes in tax policies have been implemented to encourage consolidation. Over the next two years, Municipal Electric Utilities (MEU) and private sector will have a reduced transfer tax rate (from 33% to 22%) while MEU's with fewer than 30,000 customers will be completely exempt from paying transfer taxes. There also will be a 2 year exemption from Payments-in-Lieu taxes (PILs) on deemed capital gains that could arise upon the sale of a MEU. Any change of ownership in the local distribution sector is subject to Ontario Energy Board (OEB) approval. The OEB does a cost benefit analysis on a transaction-by-transaction basis. As part of its review, the OEB looks at impacts of the proposed transaction on price and quality of service to customers, and the cost effectiveness, economic efficiency and financial viability of the	

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	provided its final report to the government in April 2015. On April 16, 2015, Premier Wynne announced that Ontario intends to broaden the ownership of Hydro One through an initial public offering (IPO). The funds generated from broadening Hydro One's ownership would be dedicated towards infrastructure investments. This is part of our plan to unlock the value of certain public assets to help support unprecedented investments in transit, transportation and other priority infrastructure projects through the Moving Ontario Forward plan. In addition, the government intends to merge Hydro One Brampton with three other large utilities – Power Stream, Enersource and Horizon. Merging these three strong performing utilities with Hydro One Brampton will create the second largest electricity distributor in Ontario by number of customers. The new, merged utility will deliver efficiencies and economies of scale while continuing to provide safe, reliable and clean electricity. The government also intends to provide a time-limited relief on taxes pertaining to transfers of electricity assets for all municipal electricity utilities (MEUs), including transfers to the private sector. The transfer tax will be eliminated for a time-limited period (from January 1, 2016 to December 31, 2018) for MEUs with fewer than	electricity distribution sector.	

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	30,000 customers. These small LDCs make up about 60% of LDCs in Ontario. For the remaining larger LDCs, the government will reduce the transfer tax from 33% to 22% for the same period of time. This is expected to provide a balanced approach to incent consolidation for all LDCs and additional incentives for the smaller LDCs. Additionally, the Ontario Energy Board (OEB) undertook a review of its policies related to service area amendments and rate-making associated with MAADs (merger, amalgamation, acquisition, divestiture) transactions. This was a follow-on of a review that the OEB undertook in 2013 regarding 'Encouraging Electricity Distributor Efficiency'. After considering the results of the consultations, the government's policy expectations, and the OEB's own expectations, the OEB concluded it would amend its rate-making policy associated with electricity distributor consolidation to encourage efficient and beneficial consolidation transactions. These changes demonstrate the government's commitment to promoting and incenting LDC consolidation for the benefit of Ontario electricity ratepayers.		
6. COST-EFFECTIVE PROCUREMENT ACTIVITIES			
To ensure that any future project is implemented cost-effectively and in compliance with sound business practices, Hydro One should review and	RECOMMENDATION IS: ██████████ Implemented (by Hydro One)	No update required	No update required

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improve its contracting and procurement activities, such as retaining adequate documentation to justify vendor selection and evaluation and acquiring enough knowledge about a project's business requirements before issuing a Request for Proposal, to minimize the risks of significant contract-cost increases.	{ FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u> N/A </u>		
	HYDRO One COMPLETED ACTIONS: The actions noted in the response have been under taken and completed. <i>The Response from the OAGO report: The Request for Proposal (RFP) process for Hydro One's smart-metering project was completed in April 2005. Subsequent to the RFP process and the Auditor General's audit on Hydro One's Acquisition of Goods and Services in 2006, Hydro One developed an evaluation guideline, which requires documentation of detailed notes to substantiate the evaluation scores.</i> <i>Hydro One Agrees that it is subject to the government's procurement directives. Hydro One has complied with such directives and associated amendments since the first directive was issued in July 2009. In 2009 and 2010, Hydro One also changed its internal policies to comply with the government's travel and</i>		

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	expense and procurement directives. For example, Hydro One no longer reimburses its consultants for meals, hospitality or incidentals, and continues to reimburse expenses related to flights, train and car travel and hotel rooms only if such expenses are Agreed to in the contracts and pre-approved by Hydro One. Hydro One also Agrees that a Request for Information (RFI) process is a useful tool to assess the market, determine business requirements, and/or estimate project costs. Responses to RFIs contribute to the content of an eventual RFP document. The RFI is a procurement tool that Hydro One now employs.		
7. AVOID DUPLICATION OF SYSTEMS AND COSTS			
To ensure that ratepayers are not burdened with the duplicated and ongoing costs of system development and integration, the Ministry of Energy should work with the Independent Electricity System Operator (IESO), the Ontario Energy Board (OEB) and the distribution companies to re-evaluate options around operating the provincial data centre and/or having separate local systems at individual distribution companies in order to determine the cost-effectiveness of various options and avoid continued duplication of systems and costs.	RECOMMENDATION IS: ██████████ Implemented (by Ministry and OEB) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u> N/A </u>	RECOMMENDATION IS: ██████████ Implemented { FORMCHECKBOX } In the process of being implemented { FORMCHECKBOX } Little or no progress made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u> N/A </u>	No update required
	MINISTRY'S COMPLETED ACTIONS:	MINISTRY'S COMPLETED ACTIONS:	No update required

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	As part of the OEB's review of smart meter related rate applications, it has been confirmed that LDCs had complied with regulations and had not duplicated the functions of the MDM/R. The Ministry is engaged in a project to investigate opportunities to evolve the MDM/R to deliver even greater value to consumers and the industry. In line the trend of using Big and Open data to derive enhanced insight and added value, the Ministry considers that there may be an opportunity for Ontario to obtain further value in areas like conservation, system planning, consumer engagement and economic development by broadening access and analytics of electricity data, in particular MDM/R data. To that end the Ministry together with the IESO and the Advanced Energy Centre (AEC) have commenced a project to develop a business case which will assess the costs, benefits and implementation considerations of developing a solution to facilitate greater access and analytics of electricity usage data combined with other related data sets. The business case, which is to be completed later in 2015, is being informed by consultation with a wide range of energy stakeholders including Local Distribution Companies (LDCs) agencies such as the OEB, academics and service providers.	With respect to processing of smart meter data, under the <i>Electricity Act</i>, the Smart Metering Entity (SME) has exclusive authority to collect, manage and store data related to the metering of electricity use in Ontario for residential and small business customers. In other words, utilities are not authorized to undertake this work. An important step to eliminate overlap is the government's work with Toronto Hydro and the SME to Agree on when the former will begin using the Meter Data Management and Repository (MDMR) to process TOU bills. This transition will enable the SME to collect, manage and store data for all of the over 4.8 million residential and small business customers with smart meters. This is expected to happen in Q3 2017. The OEB reviews rate applications from utilities, which includes detailed review of all forecast costs. In its review, the OEB considers whether the costs are reasonable and justified. Any costs related to activities that do not comply with relevant legislation and regulations are not recoverable through rates to customers. The Ministry of Energy is satisfied that the OEB has the appropriate processes in place to ensure that costs associated with duplication are not borne by ratepayers. As part of the OEB's review of smart meter related rate applications, it has been confirmed that LDCs had complied with regulations and had not duplicated the functions of the MDM/R.	

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	This work is supportive of the OEB's 2013 Smart Grid Report which, in recognition of the wealth of electricity data held by the MDM/R, recommended that the IESO investigate opportunities for providing access to depersonalized, generic usage data to third parties for planning, research and customer benchmarking purposes. OEB'S COMPLETED ACTIONS: The cost recovery requirements set out in both Regulations and OEB policy do not allow recovery of costs for duplication of systems. The OEB required all distributors as part of their smart meter cost recovery applications to confirm that they were not duplicating costs and services provided by the Provincial MDMR. The OEB is engaged with the IESO and Ministry on a variety of projects looking at the opportunities for greater use of the provincial data system.		
8. MINIMIZE THE COSTS AND RISKS FOR SYSTEM DEVELOPMENT			
To ensure that any future province-wide project involving the complex electricity distribution sector is implemented cost-effectively, the Ministry of Energy should work with the relevant electricity sector organizations to set appropriate and reasonable implementation targets and timelines in order to minimize the costs and risks associated with system development and integration for numerous distribution companies.	RECOMMENDATION IS: ██████████ Implemented { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented	RECOMMENDATION IS: ██████████ Implemented { FORMCHECKBOX } In the process of being implemented { FORMCHECKBOX } Little or no progress { FORMCHECKBOX } Will not be implemented Expected date of completion: <u> N/A </u>	No update required

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<i>OAGO Recommendation</i>	<i>Summary of Action Taken/To Be Taken as at July 31, 2015</i>	<i>Summary of Action Taken/To Be Taken as at April 30, 2016</i>	<i>Summary of Action Taken/To Be Taken as at July 31, 2016</i>
	Expected date of completion: <u> N/A </u> MINISTRY'S COMPLETED ACTIONS: The Ministry's development, implementation and review of initiatives in the electricity sector embody the recommendations of the Auditor General on an ongoing basis. The Ministry will ensure that projects in the electricity distribution sector are rolled out in a prudent, collaborative and cost effective manner – a current example of this is Ontario's ongoing transition to a smart grid. Commencing with the smart meter initiative and further supported by Minister's Smart Grid Directive and ensuing guidance issued by the OEB, LDCs have made good progress in transforming the traditional distribution system into a modern 21st century electricity grid. The 'smart' grid enables emerging technologies like electric vehicles, electricity storage and innovations to make Ontario homes smarter. To help ensure that the province's transition to a smart grid evolves in a way that is cost effective and maximises benefits for consumers and the system, in fall 2014 the Ministry commissioned a study to evaluate the current state of smart grid in Ontario and to develop a roadmap of alternate smart grid deployment scenarios for the future.	MINISTRY'S COMPLETED ACTIONS: The Ministry's development, implementation and review of initiatives in the electricity sector embody the recommendations of the Auditor General on an ongoing basis. The examples listed in comments above demonstrate how the Ministry of Energy has been applying planning, analyses, and consultations to develop electricity sector initiatives. In particular, the proposed Long Term Energy Planning process, under Bill 135, will incorporate this recommendation fully, from consulting with stakeholders to support developing the process, to developing implementation plans for major initiatives.	No update required

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	This study, by evaluating outcomes to date and identifying optimal smart grid deployment scenarios and their barriers to achievement, will help the Ministry tailor its policy framework and tools to best support the development and adoption of smart grid in a way which maximizes benefits and minimizes risks for Ontario.		
9. SMART-METER DATA			
To ensure the accuracy, quality and usefulness of smart-meter data, the Independent Electricity System Operator should: 9.1. work with the distribution companies to review the limitations and the billing problems associated with the provincial data centre and the distribution companies' business processes, including improving the procedures of processing smart-meter data during meter replacements and power black-outs, as well as enhancing the data retrieval and querying capability of the provincial data centre; and 9.2. Educate the distribution companies about the proper business processes that have to be followed.	RECOMMENDATION IS: { FORMCHECKBOX } Implemented { FORMCHECKBOX } Substantially Implemented (at least 75%) (by IESO) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u>December 31, 2015</u>	RECOMMENDATION IS): { FORMCHECKBOX } Implemented (by IESO) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented	RECOMMENDATION IS): { FORMCHECKBOX } Implemented (by IESO) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented
	IESO COMPLETED ACTIONS: The IESO provides classroom training sessions for all distribution companies on an ongoing basis, including for the processing of meter replacements and power blackouts within the provincial data centre.	IESO COMPLETED ACTIONS: The IESO has provided training sessions for all distribution companies on processing meter replacements and power blackouts within the provincial data centre.	No update required

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	Year to date, the IESO has conducted 9 training sessions; classroom taught as well as webinars. In total, 58 participants from 19 LDCs participated in those sessions. The IESO has published the training schedule for Q3 2015. In addition to the regularly scheduled training sessions, the IESO initiated the development of interactive web-based training modules for LDCs to complement the classroom training sessions. These training modules will outline the different business processes of the provincial data centre and the respective processes that the LDCs should follow. Delivering this training content as interactive on-line modules allows LDCs to review the training modules at their own convenience from any location. The IESO will continue to encourage LDCs to suggest training content that would be useful to them. The IESO in the process of providing LDCs with enhanced information to assist LDCs in resolving common issues and answering common questions when working with the provincial data center. In Q2 2015, the IESO conducted a survey to seek input from LDCs on the current operational reports issued to LDCs. The IESO is currently in the process of making changes to some of the reports based on the LDCs' feedback. The IESO has developed and is testing enhanced data retrieval capability to support the increasing	Subsequent to the audit, the SME developed an LDC MDM/R Metrics Dashboard. The Dashboard contains near real-time summarized statistics on Synchronization, Meter Read Processing, Billing Requests and Web Service Requests. A number of LDCs tested the Dashboard prior to its release and have confirmed that this provides a business process advantage to LDCs that helps them identify, and correct any issues in near real-time. The SME has provided training sessions for LDCs on how to use the Dashboard. In addition, the SME initiated a project to develop the "SME Academy"; a repository of interactive web-based training modules for LDCs to complement the classroom training sessions currently being offered. These training modules outline the different business processes of the provincial data centre and the respective processes that the LDCs should follow. The IESO will continue to encourage LDCs to suggest training content that would be useful to them. Since the SME Academy was introduced (less than 12 months ago), 19 courses were created and accessed more than 200 times by more than 60 unique LDC users. The SME has received favourable feedback from LDCs on this initiative as well as the course contents. The SME continues to reach out to all LDCs to coordinate on site visits. The objective of these outreach visits are to provide an opportunity for the LDCs to provide feedback to the SME and for the SME to provide updates to the LDCs. These meetings and discussions often result in	

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	volume and variety of ad-hoc query and data extract requests from the provincial data centre. The Ministry of Energy, the Advanced Energy Centre, and the IESO continued work on the project for developing a business case for a data access platform that will support the evolving needs for data access and retrievals for research and analysis purposes. IESO OUTSTANDING ACTIONS: The IESO will expand its training including offering additional sessions and assistance to those distribution companies that need such training to improve their procedures for the processing of smart-meter data. Initial interactive web-based training modules will be launched this summer 2015, with additional modules added by year-end. Additional training topics will be developed based on feedback from LDCs. The enhanced information is scheduled to be made available to LDCs by the end of the year. This enhanced data retrieval capability is scheduled to be deployed by the end of the year.	improvements to either or both of the SME's and LDC's processes. The SME has developed and is testing the MDM/R Data Mart – an enhanced data retrieval capability to support the increasing volume and variety of ad-hoc query and data extract requests from the provincial data centre. Through the Data Mart, LDCs will be able to retrieve data for longer periods and farther back in time along with the 24/7 availability of web services. The Data Mart is designed for high performance querying of very large volumes of data. LDC data extraction requests that previously took days or weeks to execute in the MDM/R will take seconds or minutes in the Data Mart. Furthermore, as demand increases for the energy consumption data collected and stored in the MDM/R, the Data Mart will be able to handle the load, allowing the MDM/R to continue to fulfill its primary functions at optimum performance. In addition to implementing the Auditor's recommendations, the IESO is taking steps to further enhance the value of the MDM/R. An important new initiative stems from the recent OEB order to the SME (OEB File EB-2015-0297 – Licence Renewal and LDC Agreement) that requires the SME to collect new information associated with each meter by January 1, 2017. This includes postal code, distributor rate class, commodity class and occupant change data. An IESO/LDC working group will work with the Office of the Information and Privacy Commissioner of Ontario to further enhance the value of this and	

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		other data in the MDM/R by enabling third party access.	
10. DATA SECURITY CONTROLS TO PREVENT UNAUTHORIZED ACCESS			
To ensure that smart-meter data is processed and stored securely, the Independent Electricity System Operator should work with the distribution companies to improve their system and data-security controls in order to prevent and detect unauthorized access to smart-meter data.	RECOMMENDATION IS: { FORMCHECKBOX } Implemented { FORMCHECKBOX } Substantially Implemented (at least 75%) (by IESO) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u>December 31, 2015</u>	RECOMMENDATION IS: { FORMCHECKBOX } Implemented (by IESO) { FORMCHECKBOX } Substantially Implemented (at least 75%) (by IESO) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented	RECOMMENDATION IS: { FORMCHECKBOX } Implemented (by IESO) { FORMCHECKBOX } Substantially Implemented (at least 75%) { FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented
	IESO COMPLETED ACTIONS: As part of its ongoing activities, the IESO requested LDCs to review their users' access permissions to the provincial data center. Where requested by the LDC, the IESO made the necessary changes to LDC users' access permissions In November 2014, the IESO received its fifth consecutive annual clean audit by an independent external audit firm that examined the Meter Data Management and Repository's (MDM/R) operations, processes and procedures. This audit describes controls in place at the IESO	IESO COMPLETED ACTIONS: Subsequent to the audit, the IESO introduced new capabilities to help distribution companies manage their users' access to the provincial data centre. Specifically, the SME introduced a two-factor authentication, through a mandatory challenge-response mechanism, for the process of creating new LDC users within the MDMR graphical user interface, significantly strengthening system and data-security controls. In addition, as part of its ongoing activities, the SME requests LDCs to review their users' access permissions to the provincial data center on an annual basis and based on that review, makes any necessary	No update required

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	and the controls that should be in operation at the distribution companies to prevent and detect unauthorized access to smart meter data. IESO OUTSTANDING ACTIONS: Annual audit for 2015 is in progress and to be completed by November 2015. The IESO is scheduling training sessions for LDCs to review the scope of the annual external audit , including the controls described in the joint paper published by the IESO and Information and Privacy Commissioner of Ontario. This is to be completed by the end of the year.	changes requested by the LDC. The reliable and quality operation of the service has been well demonstrated, supported by an annual external audit of the operation of the service. In November 2015, the IESO received its sixth consecutive annual clean audit by an independent external audit firm that examined the MDM/R's operations, processes and procedures. This audit describes and confirms that appropriate controls are in place at the IESO and describes the controls that should be in operation at the distribution companies to prevent and detect unauthorized access to smart meter data. Subsequent to the audit, the IESO conducted two webinars, open to all LDCs in the province, whereby the scope of the annual audit as well as the LDCs' responsibilities for establishing security controls within their own organizations to complement those in place at the IESO were reviewed. Those webinars have been recorded and are available at any time to LDCs through the SME Academy.	
11. MONITOR INFORMATION ON SMART METER-RELATED FIRE INCIDENTS			
To ensure that potential fire risks of smart meters are addressed appropriately and in a timely manner, the Ministry of Energy should work with relevant entities, such as the distribution companies, the Office of the Fire Marshal and the Electrical Safety Authority, to track and monitor information on smart meter-related fire incidents	RECOMMENDATION IS: ██████████ Implemented (by ENERGY) { FORMCHECKBOX } Substantially Implemented (at least 75%)	RECOMMENDATION IS: { FORMCHECKBOX } Implemented (by ENERGY) { FORMCHECKBOX } Substantially Implemented (at least 75%)	No update required

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so as to identify and understand their causes in Ontario.	{ FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u> N/A </u>	{ FORMCHECKBOX } Some Progress Made (less than 75%) { FORMCHECKBOX } No Progress Made { FORMCHECKBOX } Will not be implemented Expected date of completion: <u> N/A </u>	
	MINISTRY'S COMPLETED ACTIONS: As part of its due diligence review of the smart meter incidents in Saskatchewan, the Electrical Safety Authority (ESA) identified some possible risks with 5,110 Census 3.2 meters with remote disconnect that were being used by some Ontario LDCs. This specific type of meter shares the same interior component design as the meters used in Saskatchewan and was thus susceptible to the same type of failure. While no serious safety incidents have been reported in Ontario involving the Census 3.2 with remote disconnect meters, all of these meters have now been removed as a preventative measure in accordance with a direction issued by the ESA in January. This is a case of a product meeting all necessary requirements to be used in Ontario, only to find later that it has a potential risk. The ESA played an essential role in identifying and addressing this risk by monitoring developments in other	MINISTRY'S COMPLETED ACTIONS: As part of its due diligence review of the smart meter incidents in Saskatchewan, the Electrical Safety Authority (ESA) identified some possible risks with 5,110 Sensus 3.2 meters with remote disconnect that were being used by some Ontario LDCs. This specific type of meter shares the same interior component design as the meters used in Saskatchewan and was thus susceptible to the same type of failure. While no serious safety incidents have been reported in Ontario involving the Sensus 3.2 with remote disconnect meters, all of these meters have now been removed as a preventative measure in accordance with a direction issued by the ESA in January 2015. This is a case of a product meeting all necessary requirements to be used in Ontario, only to find later that it has a potential risk. The ESA played an essential role in identifying and addressing this risk by monitoring developments in other	No update required

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	jurisdictions and taking prompt action to protect the public. The Ministry of Energy fully supports the ESA's action and believes it is a clear example of the safety system working to keep Ontarians safe. At the end of July 2015 the ESA issued the final conclusions of its due diligence review and the Ministry is pleased that ESA found no systemic safety risks with any other meter model or design used in Ontario. The ESA will continue to monitor and assess incidents involving meters and related equipment on an ongoing basis. The ESA also plans to make changes to processes and requirements that will improve the sharing of information among LDCs, the OEB and the Office of the Fire Marshal (OFM) and ensure that potential concerns reach the ESA's attention as quickly as possible. Further, the ESA will continue to work with the Standards Council of Canada to create and implement a Canadian standard for electricity meters which builds on current North American standards while also accounting for experience in product use and technology changes. The Ministry of Energy appreciates the steps the ESA has taken to investigate meter safety in Ontario and are confident in their ongoing efforts to enhance electrical safety.	jurisdictions and taking prompt action to protect the public. The Ministry of Energy fully supports the ESA's action and believes it is a clear example of the safety system working to keep Ontarians safe. At the end of July 2015 the ESA issued the final conclusions of its due diligence review and the Ministry is pleased that ESA found no systemic safety risks with any other meter model or design used in Ontario. The ESA will continue to monitor and assess incidents involving meters and related equipment on an ongoing basis. It is also moving forward on its recommendation for mandatory reporting of smart meter incidents by utilities – consultations are underway to understand the potential impacts.	

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