



ISSN 1180-4327

**Legislative Assembly
of Ontario**

First Session, 41st Parliament

**Assemblée législative
de l'Ontario**

Première session, 41^e législature

**Official Report
of Debates
(Hansard)**

Wednesday 27 May 2015

**Journal
des débats
(Hansard)**

Mercredi 27 mai 2015

**Standing Committee on
Public Accounts**

2014 Annual Report,
Auditor General:

Ministry of Energy

**Comité permanent des
comptes publics**

Rapport annuel 2014,
vérificatrice générale :

Ministère de l'Énergie

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Room 500, West Wing, Legislative Building
111 Wellesley Street West, Queen's Park
Toronto ON M7A 1A2
Telephone 416-325-7400; fax 416-325-7430
Published by the Legislative Assembly of Ontario



Service du Journal des débats et d'interprétation
Salle 500, aile ouest, Édifice du Parlement
111, rue Wellesley ouest, Queen's Park
Toronto ON M7A 1A2
Téléphone, 416-325-7400; télécopieur, 416-325-7430
Publié par l'Assemblée législative de l'Ontario

LEGISLATIVE ASSEMBLY OF ONTARIO

ASSEMBLÉE LÉGISLATIVE DE L'ONTARIO

STANDING COMMITTEE ON PUBLIC ACCOUNTS

COMITÉ PERMANENT DES COMPTES PUBLICS

Wednesday 27 May 2015

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The committee met at 1231 in room 151, following a closed session.

2014 ANNUAL REPORT,
AUDITOR GENERAL
MINISTRY OF ENERGY
HYDRO ONE
INDEPENDENT ELECTRICITY
SYSTEM OPERATOR
ONTARIO ENERGY BOARD

Consideration of section 3.11, smart metering initiative.

The Chair (Mr. Ernie Hardeman): We'll call to order the Standing Committee on Public Accounts. We're here this afternoon to consider section 3.11, smart metering initiative, of the 2014 annual report of the Auditor General.

We have here a number of people in the delegation to talk to us this afternoon. We have people here from the Ministry of Energy, Hydro One, the Independent Electricity System Operator and the Ontario Energy Board. Rather than me introducing them all, since this is the first time we've met, it's likely better for Hansard to have you introduce yourselves. So whoever is speaking, just introduce yourself to Hansard.

We will have about 20 minutes for the presentation from the delegation this afternoon. We will then have rotation of questions from the three caucuses. We'll start with the official opposition in a 20-minute rotation. We'll go to the third party and then to the government, and then we will split the remaining time left over to take us to 2:45. We'll split that time equally among the three caucuses.

With that, thank you very much for being here, and we look forward to your presentation.

Mr. Serge Imbrogno: Thank you, Chair. My name is Serge Imbrogno; I'm the Deputy Minister of Energy. I'm joined at the table today by Bruce Campbell, CEO of the Independent Electricity System Operator; Brian Hewson, senior manager of strategic policy at the Ontario Energy Board; Carmine Marcello, CEO of Hydro One; and Laura Cooke, senior vice-president, customer and corporate relations for Hydro One.

I appreciate the opportunity to appear today to speak about the smart grid and smart meters. We understand

that there are lessons to be learned from how smart meters were implemented in Ontario, and we are acting on all of the recommendations from the Auditor General.

Like any investment in infrastructure, with smart meters, we incurred costs up front, and we will realize the benefits over time. This investment was necessary.

A story we often tell at the ministry is that Alexander Graham Bell would not recognize a modern phone, but Thomas Edison would feel right at home with a distribution system that hadn't changed much in a hundred years. Today we have an intricate network of generation and transmission in a smart grid. Distribution has to evolve in kind. Some LDCs have moved more quickly and effectively than others. We would like to see this gap addressed to see more universal benefits for all customers.

We asked LDCs late in 2014 about the benefits of smart meters, and we received broad responses. We heard examples that smart meter data helped with power restoration after the 2013 ice storm, helped reduce customer billing disputes, improved identification of meter tampering and fed a time-of-use web portal that allows customers to view their hourly energy use.

By using smart meters to pinpoint the exact location of an outage, LDCs can direct restoration crews more efficiently. Some LDCs have told us that they often know about an outage before their customer does. With smart meter data, LDCs can identify if transformers are overloaded and plan upgrades more effectively. Diagnostic information from smart meters, such as voltage level, helps LDCs rectify consumer inquires more efficiently, and can reduce the need to dispatch a truck. Smart meters are reducing the number of estimated bills, and enabling mobile and online tools like the Green Button, which help customers access their usage data in innovative ways.

The old model of distribution made it extremely difficult for ratepayers to access their own energy data, much less put it to good use. The potential of the smart grid to regular customers is still being realized.

Customers weigh benefits in more than just financial terms. They also consider improved service and reliability. Have we reduced the number of outages? Have we sped up restoration of service? Do people have easy access to their data and the tools to put that data to work?

On May 1 of this year, the OEB set time-of-use rates where the on-peak rate is more than twice the off-peak rate: 16.1 cents to eight cents. A greater gap in time-of-

use rates should drive more conservation and load-shifting, helping LDCs hit their targets under the new conservation and demand management framework. The OEB is planning a broader review of the regulated price plan and time-of-use pricing.

We expect to release a report in the near future by the third-party consultancy Navigant that will provide a detailed look at the potential long-term value that can be derived from the smart grid, as well as identifying the policy and planning challenges, and solutions to realize further potential.

Thank you, and I now ask Bruce Campbell to say a few words.

Mr. Bruce Campbell: Thank you. I'd also like to introduce to the committee Doug Thomas, who is the IESO's vice-president of information and technology services and chief information officer.

The first thing I'd like to do is to thank the committee for inviting me here today to discuss the Auditor General's report on the smart metering initiative. I'll start by outlining the IESO's role in the initiative and describing the steps the IESO has taken to address the recommendations in the Auditor General's report. Of course, I'll be happy to answer any questions you may have.

The IESO is Ontario's smart metering entity, which was a designation given to us in 2007 by the government of Ontario. As the smart metering entity, the IESO is responsible for operating the meter data management and repository, or MDM/R, as it's referred to. That is referred to throughout the Auditor General's report as the provincial data centre.

The provincial data centre receives meter data from the LDCs, processes this information according to provincial processing standards and delivers consistent billing quality data—that is, billing quantities by time-of-use period—to LDCs across the province, to enable them to bill their customers. The reliable and quality operation of the service has been well demonstrated, and is supported by an annual independent external audit of the operation of the service.

The Auditor General's report had several recommendations for the IESO. Recommendation 7 suggests that the IESO work with the ministry, OEB and distribution companies to re-evaluate options around operating the provincial data centre. In response to this recommendation, the IESO will, as required, work with the ministry and the OEB, including to encourage distribution companies' compliance with existing regulation and to avoid duplication of the functions that are the exclusive responsibility of the smart metering entity.

Also as required, the IESO will work with the ministry and distribution companies to identify and evaluate opportunities for leveraging existing investments and economies of scale of the provincial data centre in order to reduce the operating costs of distributors and costs to the ratepayers.

Recommendation 9 suggests that the IESO “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.” It also suggests that the IESO “educate the distribution companies about the proper business processes that have to be followed.”

The IESO provides classroom training sessions for all distribution companies on an ongoing basis, but we have also initiated the development of interactive web-based training modules for distributors. We feel that will give them more flexibility in training opportunities for their staff. These training modules will outline the different business processes of the provincial data centre and the respective processes that have to happen on the distributors' side.

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The IESO is also in the process of providing distributors with additional information to assist them in resolving common issues and answering common questions when working with the provincial data centre.

In addition, we've developed and are now testing enhanced data retrieval capability to support the increasing volume and variety of ad hoc query and data extract requests from the provincial data centre as people increasingly recognize the value of this resource.

Recommendation 10 suggests that the IESO work with distribution companies to improve their system and data security controls in order to prevent and detect unauthorized access to smart meter data. Privacy, of course, is always a concern to us, and subsequent to the audit fieldwork, the IESO introduced new capabilities to help distribution companies manage their users' access to the provincial data centre. We're also scheduling training sessions for distributors that will include discussion about data security controls consistent with the Privacy by Design principles of the Information and Privacy Commissioner of Ontario.

In conclusion, I should also note that in addition to addressing the Auditor General's recommendations, the IESO is currently working with its stakeholders and the Information and Privacy Commissioner to develop the necessary tools and protocols to facilitate broader access to the accumulating body of smart meter data. Combined with modern analytics and consistent with the government's open data policies, the data in the provincial data centre will provide new insights for the design of conservation and demand response programs, for system planning, for policy development and for academic research, and will support innovation across the sector in Ontario.

Thanks for your attention. I think Brian Hewson is up next.

Mr. Brian Hewson: Good afternoon, Mr. Chair, and members of the committee. I'd just like to point out, before I start, with me are Mary Anne Aldred, our general counsel; and Lynne Anderson, our vice-president of applications. Our chair, Rosemarie Leclair, apologizes, but she is unable to be here today.

In the next minute or two, I want to provide you with a brief overview of the OEB, its role in the smart metering initiative, and the steps we are taking in response to the auditor's recommendations.

The Ontario Energy Board is the province's independent regulator for both the natural gas and electricity sectors. Our broad public interest mandate is set out in legislation, and our primary objective is to protect the interests of consumers with respect to price, quality and reliability of service while maintaining a financially viable, sustainable and efficient energy sector. We exercise our mandate largely through setting rates and licensing.

As an independent, quasi-judicial tribunal, the OEB carries out its work through rigorous, open and transparent processes based on the principles of administrative law and natural justice.

The OEB also has an important role in implementing public policy, such as the smart metering initiative. In this regard, the OEB had several roles:

- assessing the costs of distributors' smart meter implementation;
- licensing and setting the fee for the smart meter entity; and
- ensuring that time-of-use billing was implemented, once smart meters had been installed.

All of these processes involved extensive consultation with consumer representatives and stakeholders before we took action.

The audit highlighted the issue of the cost of distributors' smart meter deployments. In order to recover its costs, a distributor was required to submit an application to the OEB and have its costs scrutinized through an open hearing process. Prior to the OEB's review of distributors' costs, the government had issued regulations which provided direction on the minimum functionality for smart meters, and requirements around the recovery of those prudent costs. The government also worked with distributors to establish procurement processes and gave the Fairness Commissioner a role in ensuring that those processes were followed.

The OEB's rate review process was rigorous and extensive. To ensure consistent treatment of all distributors, the OEB held a special hearing in 2007 for the 13 distributors who were early implementers. The findings from this hearing were used to develop guidelines for assessing distributors' costs, including cost benchmarking.

The application review process and the board-issued guidelines helped to ensure that distributors' costs, which were tested through the OEB's hearing process, were compliant with board and government policy. The OEB relied on the procurement processes that had been undertaken and the Fairness Commissioner's views that were provided during hearings, which made the hearings much more efficient. To date, the OEB has completed cost reviews for over 70 distributors.

A significant OEB role in the SMI, an ongoing role, is the setting of time-of-use electricity prices. TOU prices are intended to encourage consumers to shift their electricity use from peak periods to non-peak periods in order to increase system efficiency, which benefits all consumers in the province.

As the auditor noted, the setting of prices is governed by various regulations. The OEB uses a forecast of costs and considers the regulations as it sets TOU prices every six months. That reflects the forecast of prices and provides an incentive for customers to reduce their peak demand. Independent research has shown that consumer response to TOU has had a beneficial impact on the system by reducing peak demand by about 3%.

Given the transformation occurring in the sector, as the deputy has indicated, we are undertaking a major review of TOU to ensure that we look at how consumers are better able to use TOU. We have undertaken an extensive consumer research program, and the evidence so far shows that while there is a high awareness of TOU, there is more work to be done to help customers better respond to prices. This is the focus of our review.

The last area I wanted to address was the auditor's recommendations regarding consumer understanding of bills and addressing consumer issues. The OEB believes very strongly that consumers need to be equipped with tools and information to make informed decisions about energy matters. In fact, it has been a major focus for us as we expanded our consumer website and enhanced our community outreach. We are also implementing a consumer panel to directly engage with consumers. Lastly, we have implemented extensive and detailed processes for handling consumer issues.

The last item I wanted to mention is that there were concerns raised about billing accuracy in the auditor's report. I'd like to report that the board has recently implemented mandatory standards for no more than two estimated bills in a 12-month period and billing accuracy.

Thank you. I'd be happy to take any questions.

Mr. Carmine Marcello: My name is Carmine Marcello. I'm CEO of Hydro One. Good afternoon. Thank you for the opportunity to speak on behalf of Hydro One.

By way of quick background, Hydro One is a transmitter and a distributor. For the purposes of today's discussions, I'm going to confine my comments to our distribution business. It spans about 75% of the province and serves 1.3 million customers, largely in rural areas and smaller municipalities.

Given our vast service territory, Ontario being 650,000 square kilometres—and we operate in a geography covering about 60% of that—many of our customers are in areas where local distribution companies aren't able to serve them. We are the folks who serve them.

The smart meter program itself: We've installed 1.2 million smart meters. Because the territory is so vast and there was not a reliable telecommunications network in place, we had to also install 10,000 regional collectors and 40,000 repeaters in order to facilitate meter communications and time-of-use rates. This allowed 1.1 million of our customers to be moved onto time-of-use rates and time-of-use pricing. This allowed them and encouraged them to shift their consumption to lower off-peak prices, allowing for more efficient use of the grid infrastructure as well as generation assets.

Smart meter data also provides important asset-utilization information about the system that was not available previously. It allows us to predict and to manage power restoration, and it helps us in managing and reducing the number of estimates our customers experienced, from 60% down to less than 5%.

Other benefits include the detection of theft of power, saving Ontarians millions of dollars each year.

I think the most critical for our customers, though, is that smart meters have allowed them to leap forward into an age of information. I often refer to the smart metering initiative as being similar to taking Ontarians from a rotary dial phone to a smart phone: Both are very effective for making a telephone call, but a smart phone and a smart meter can do so much more. The convergence of the flow of electricity with the flow of information leads us to a big data picture that will provide opportunities to create new products and services for electricity consumers, help us to realize a vision of a smart grid and to also provide safe, reliable and cost-effective power.

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In terms of our response to the AG's recommendations, we have reviewed them and accepted them wholeheartedly. Of particular note were issues associated with technical problems associated with our billing information systems. We moved to a new system. It resulted in billing issues for numerous customers. We didn't appreciate the complexity or the scale of some of those problems. It was a very dynamic situation. We focused on fixing the technical issues; however, we had lost sight of the impact of some of these issues on our customers. We had let them down, and as I have stated in the past, we have taken ownership of that with our customers, apologized and been transparent in terms of everything we've been doing to remedy the situation.

In February 2014, we initiated a customer service recovery project. Since then, we have had a new customer service team in place, a new customer service provider in place, more rigorous training, tracking and monitoring, and major improvements have resulted. Our billing system is better than it has been under the previous system, but we still have more work to be done.

A second recommendation was made with respect to smart meter procurement practices. I remind the committee that the initial procurement took place in 2005. Since that time, we have changed our procurement processes. In 2009 and 2010, we brought our processes in line with the procurement directives issued by Management Board of Cabinet.

In closing, Hydro One supports the province's move to put a smart meter in every home and business in the province of Ontario because we see the ultimate benefit for our customers now and into the future. The world is changing, and we believe changes the smart meters can enable are positive and provide a foundation for future benefits.

Thank you for your time and your attention.

The Chair (Mr. Ernie Hardeman): Thank you very much, and that concludes your time. With that, we'll start

with questions and comments. We'll go to the official opposition. Mr. Yakabuski.

Mr. John Yakabuski: Thank you very much, folks, for joining us today. There's an awful lot we're going to have to try to get into in a very short period of time. I think I'll direct the questions to Mr. Imbrogno, and you can pass them on to whoever as appropriate, unless I direct it otherwise.

I did hear Mr. Imbrogno talking about the benefits of smart meters. I accept that technology has allowed us to do some things—back-and-forth communication that we didn't have before. I take exception to Mr. Marcello's remark that the smart phone and the rotary dial phone both make phone calls. We're not sure about the smart phone when it comes to smart meters and whether they do the basic job of making that phone call, because that's where we seem to have so many of the problems with smart meters, particularly in areas like where I live, in rural Ontario.

The auditor mentioned in her report that there was no cost-benefit analysis prior to the decision to implement smart meters, and I think that has brought on a lot of the problems.

The government maintained it was a \$1-billion bill to implement the smart meter program. The auditor's numbers said \$1.9 billion, so it's almost \$2 billion. When you do the analysis of the breakdown, it would be hard to look at that and say the auditor has got something wrong here. Would you not agree that the cost of engaging an external consultant at \$160,000 is a real cost; engaging experts for technical system and legal supports during the implementation stage at \$400,000 is a real cost?

We'll get up to some of the bigger stuff. Developing, implementing and operating a smart metering entity and a provincial data centre: That would be \$160 million. Implementing smart metering: \$1.4 billion. Scrapping the conventional analog meters: \$400 million. In spite of what the minister maintains, are those not legitimate costs associated with the implementation of a program? Is the auditor off base in having these in her report? Or are they in fact true costs of the smart meter program?

Mr. Serge Imbrogno: What I would say to that is that we've accepted that the costs of implementing the smart meters was higher than initially forecasted, so—

Mr. John Yakabuski: Do you accept that it's \$1.962 billion?

Mr. Serge Imbrogno: I'll just walk through—

Mr. John Yakabuski: I don't really want a walk-through. I just want to know, do you accept it? Because I have a problem with your minister. He keeps saying he doesn't accept it.

Mr. Serge Imbrogno: We acknowledge—

Mr. John Yakabuski: Who's in charge here, you or the minister?

Mr. Serge Imbrogno: Well, the minister is always in charge—

Mr. John Yakabuski: Okay. So what do you tell me today? Can I accept it or not? I'll give you a couple of minutes.

Mr. Serge Imbrogno: Okay. Thank you. We acknowledge that the cost of implementing smart meters is higher than what we originally forecast in 2005—

Mr. John Yakabuski: I'm looking for a number.

Mr. Serge Imbrogno: I think that what's important to note is that when the auditor released her report, it was a snapshot, a point in time. At that time, there were a number of costs that you list that were still not through the OEB review process. About \$500 million of the \$1.4 billion—that number you mentioned—still had not gone through the final OEB review process, so at the time there was some uncertainty how the OEB would rule on those, whether they'd be accepted or not. That's one part of it.

Mr. John Yakabuski: So the costs were there; it just hadn't been determined how they were going to be allocated and how the OEB was going to rule on them? Yet the minister basically told us, "No, these are the total costs: \$1 billion to implement smart meters." He must have been fully aware of what was happening with that other \$500 million. He couldn't have been completely in the dark. His meter was working, right?

Mr. Serge Imbrogno: I don't know if the minister's meter wasn't working, but of the \$1.4 billion, \$500 million was costs that the OEB had to review. The OEB does a prudency test, so if the outcome of that was that they found some of those costs to be imprudent, then they wouldn't be recovered in the rate base.

Not all the costs at the time of the report were finalized. There were also some of the sunk costs related to the smart meters that were estimated from 2005, and those have firmed up, so what we have now—

Mr. John Yakabuski: Where are we now?

Mr. Serge Imbrogno: Where we are now is that the actual costs are more certain.

Mr. John Yakabuski: And?

Mr. Serge Imbrogno: It went through the OEB process, and the OEB approved the \$500 million.

Mr. John Yakabuski: I'm listening. Do the math for me. I'm not very good at math.

Mr. Serge Imbrogno: We believe the sunk costs related to some of those smart meters have gone the other way. We think it's more in the \$200-million range, not \$400 million.

Mr. John Yakabuski: The total?

Mr. Serge Imbrogno: The total is in the \$1.7-billion to \$1.8-billion range.

Mr. John Yakabuski: Oh, \$1.8 billion, so now we're down to \$100 million—

Mr. Serge Imbrogno: It's \$1.77 billion if you want to be exact.

Mr. John Yakabuski: It's \$1.77 billion? Okay, so we're just under a couple hundred million shy here. By the time we get the whole story, we're probably going to get there. But that's good.

If the minister was to report to the House tomorrow, he would actually say that the cost of implementing smart meters in the province of Ontario was \$1.77 billion? Would he do that?

Mr. Serge Imbrogno: Well, I don't want to speak for the minister—

Mr. John Yakabuski: No, I know you can't speak for the minister, but if I asked this question, you're saying this is probably the answer I'd get?

Mr. Serge Imbrogno: What I'm saying today is that the actual costs that have gone through the OEB process and have been confirmed are closer to \$1.77 billion. But I would also say that there are benefits that have not been updated, so I think if you want to look at the full picture, we need to look at the net benefits. We would suggest that the net benefits are also something that you need to update. That's why we're doing this Navigant study: to update the benefits side as well as the costs side.

Mr. John Yakabuski: You mean net benefits like—I listened to Mr. Hewson, is it?

Interjection: Yes.

Mr. John Yakabuski: In your report it said—I almost had to chuckle a little bit, and I'm not one who's given to humour, to be honest with you—"helped reduce customer billing disputes." Smart meters.

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I direct this to Mr. Marcello: I know you weren't the CEO of Hydro One prior to smart meters, but do you think there were more billing disputes before smart meters or less billing disputes before smart meters? I know what people in Ontario are telling me. I know what people in my riding are telling me, and I know what people in every riding across this province and every member here are telling me about whether there are more disputes since smart meters. I'm just wondering about that statement where you say that "helped reduce customer billing disputes." Do we have some evidence to that effect, some numbers? We're having questions in the House every day, and we have stories in the newspapers about billing disputes across the province of Ontario. I'll turn that over to you, sir.

Mr. Carmine Marcello: Thank you for the question. A couple of things: Obviously we've had more billing disputes recently. I would suggest that they were associated with putting in our customer information system. Within the context of that customer information system, there were many things that went wrong. We would have had examples where, from a smart meter perspective, the serial numbers were in the wrong place, as an example—a manual error in the installation. Do you have a number?

Ms. Laura Cooke: Yes, 1,700.

Mr. Carmine Marcello: There were about 1,700 of that category. When you actually look at smart meters as a source of the billing issues and complaints, I think a lot of people attributed the problems to the smart meter because of the timing, but there were other issues largely tied to our customer information system going live. So I think that the short answer is, yes, there were more billing issues, but they weren't all tied to smart meters.

Mr. John Yakabuski: Not all tied to smart meters, but a significant number of them. Is it all your system, or is it incorrect meter readings? Is it all your system when someone gets a bill that is \$18,000 for a 1,100-square-

foot house? Is part of it a meter reading, especially when the people go back out and read a meter and confirm it?

Mr. Carmine Marcello: There were a number of issues that would have been at play. In many circumstances the meter itself operated perfectly.

Mr. John Yakabuski: Many.

Mr. Carmine Marcello: They're subject to independent quality assurance by Measurement Canada, and they all have to pass that certification. The meter itself and the collection of metering data are very accurate. How that data is used to generate a bill has come into problems in certain circumstances.

As an example, if a customer had a specific problem, and we were not able to issue a bill within a month, and it carried over into the next month, now you have two months of data and problems to resolve. It was in those sorts of processes that we let our customers down. When you actually are able to access the metering data and unbundle it, I won't say that it's easy, but you're clearly able to reconcile the data, demonstrate the amount of electricity that was used and recreate an accurate bill.

Mr. John Yakabuski: So on the data of these—I'll call them smart meter tax machines, because that's what a lot of people in my riding refer to them as. Now, at the time of the auditor's report, and you can update me on the new numbers, Mr. Marcello, out of 4.8 million smart meters, 812,000—this is not all you, and Mr. Imbrogno, you may want to weigh in on this. But of the 4.8 million, 812,000 have not transmitted data, including 112,000 Hydro One meters, but they still have to pay, totalling \$42.1 million up to October 2018. Where are we today with actually being able to communicate with those meters?

Mr. Serge Imbrogno: Maybe I can start and then I'll ask Carmine to talk about the Hydro One issue. The bulk of that, over 700,000, relates to Toronto Hydro. Toronto Hydro was one of the first movers and implemented its own system. We have an agreement with Toronto Hydro that they would move into the IESO-centralized system by 2017. So they have smart meters, they're transmitting data, but not to the IESO. They're transmitting data to Toronto Hydro. That's a special situation. The smart meters are working, they're transmitting data, and we have an agreement that by 2017 they would become part of the IESO system.

For Hydro One, I think there are more technical issues related to their geography that affect 100,000 or so meters. Maybe Carmine or Laura can talk to that.

Mr. Carmine Marcello: In effect, we've got the vast geography, and we were talking about the ability to access meters through a communication network in a reliable fashion. There are in the order of a hundred and—

Mr. John Yakabuski: Twelve—

Mr. Carmine Marcello: No—170,000 meters that it would be cost-prohibitive to put in all of the telecom backbone, for lack of a better word, for them to talk in a fashion that would be considered reliable. For those meters, they are not on time-of-use rates. The meter itself

still collects data. The information is still there; it just can't be extracted easily.

Mr. John Yakabuski: So those Ontario electricity consumers, in spite of the ballyhoo around time-of-use rates and how this is going to save the environment and save our electricity system and blah, blah, blah that we get from the successive Ministers of Energy—170,000 of our customers are denied access to time-of-use rates. Is that correct?

Mr. Carmine Marcello: Within the Hydro One territory, 170,000 customers would be on—

Interjection: Two-tier.

Mr. Carmine Marcello: —a two-tier rate class, not time of use.

Mr. John Yakabuski: Right.

Mr. Carmine Marcello: That's correct. Of the 4.8 million customers, I can only speak to Hydro One customers.

Mr. John Yakabuski: I understand, but those people, even if they wanted to participate in time of use, are not allowed to because the technology does not allow them to participate.

Mr. Carmine Marcello: What Hydro One did was a cost-benefit analysis on what it would cost for those meters to communicate—

Mr. John Yakabuski: I understand; that's not my question. That's not my question. My question is, those 170,000 people, regardless of what their personal choice would be, are denied access to time-of-use pricing?

Mr. Carmine Marcello: Their meters could not participate as part of the time-of-use program.

Mr. John Yakabuski: Right. Okay. Thank you very much.

I'm going to move on a little bit to some of the other stuff in the—how much time do I have left? Two minutes? I think the smart meter is running that clock. It's defective.

I'm going to just concentrate on one thing for the time being. I might come back to it, then. We found in the auditor's report that rural customers, through their higher distribution costs and everything, but also—while we couldn't absolutely determine it, are they paying more for a smart meter than urban customers because of the additional costs of the geography and everything else? Are they paying more—we're talking about one that actually operates. Of course, these other people who can't participate in time-of-use pricing, they still pay for that smart meter even though they are no different than if they would have been on an analogue meter before; correct?

Mr. Carmine Marcello: The rates are determined by the Ontario Energy Board and for each local distribution company. For Hydro One, you would take what it costs us to run our business—

Mr. John Yakabuski: No, no, I don't need—those 170,000 people have got a smart meter, but it doesn't talk back and forth, basically, because of geography—the communications aren't there. Do they pay on their bills a smart meter charge? They're your customers. Is it billed? Are they paying for a smart meter?

Ms. Laura Cooke: Our smart meter costs are all wrapped into a cost to serve—

Mr. John Yakabuski: I understand, but their smart meter is useless.

Mr. Carmine Marcello: No, the meter is not useless. The meter is used in a different mode. It's used—

Mr. John Yakabuski: But they don't get the benefits of the technology.

Mr. Carmine Marcello: They get the benefit of a meter—

Mr. John Yakabuski: A digital readout as opposed to four dials; right.

Mr. Carmine Marcello: And the costs of managing all of the Hydro One smart meters are part of Hydro One's tariff and rates. So Hydro One's tariffs are different than Toronto Hydro's tariffs, and—

Mr. John Yakabuski: I think I have my answer. Okay, of your 1.3 million customers across Ontario, do rural people end up paying more for a smart meter than someone in a more concentrated area who is a customer of Hydro One?

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Mr. Carmine Marcello: Rural people pay a different distribution tariff than—

Mr. John Yakabuski: I understood that. Do they pay more for the smart meter that is part of that? Are they paying more for the smart meter?

Mr. Brian Hewson: I'm not understanding the question.

Ms. Laura Cooke: I think maybe we could ask the Ontario Energy Board to take the question.

Mr. Brian Hewson: The best answer for that is that all of Hydro One's costs are considered and then allocated to the residential rate classes, so there wouldn't be a specific increased charge to rural customers for smart meters.

Mr. John Yakabuski: Can you confirm that for me? Can you please confirm that to me in a chart form—written information—the breakdown of what the cost of the smart meter is in those billings?

Mr. Serge Imbrogno: I think we have the OEB here that's answering that question.

Mr. John Yakabuski: I understand that, but I'll forget that. I've got a bad memory. But if you send me all the papers, I'm going to be able to read it, or I'll find somebody who can read it.

The Chair (Mr. Ernie Hardeman): I just noticed, with the memory—it has gone past the two minutes.

Mr. John Yakabuski: Okay, thank you very much.

The Chair (Mr. Ernie Hardeman): Thank you very much. We'll go to the third party: Mr. Tabuns.

Mr. Peter Tabuns: Thank you, Mr. Chair. I'll start my questions with Mr. Imbrogno. Do you have a sense of how many expenditures have still not gone through the OEB rate review, so they are still out there waiting to be factored into people's rates?

Mr. Serge Imbrogno: I don't have a sense, but I'm sure Brian, from the OEB, does.

Mr. Brian Hewson: I don't have an exact figure for you. There are, I believe, three to four smaller utilities that have not gone through the rate review process, and their costs are estimated to be between a few hundred thousand and maybe a million dollars in total.

Mr. Peter Tabuns: Okay. Do you have, on your horizon right now, other expected investments or costs related to the smart meter system?

Mr. Serge Imbrogno: What we have on our horizon—we have the Navigant study, that's a draft right now. Based on that study and further cost-benefit analysis, I think there could be additional rollout of smart metering information, Green Button, other initiatives that we would roll out.

We're not anticipating a major expenditure related directly to it, but to make better use of it, we think there will be things that we want to move on. But that will be following more of a cost-benefit analysis.

Mr. Peter Tabuns: Do you have a scale of further costs that you're looking at, at this point?

Mr. Serge Imbrogno: No, not a scale of further costs. It's more what the potential benefits are, and how we can tap into those benefits.

Mr. Peter Tabuns: Okay. What do you project as the return on investment of this 1.8 billion bucks that we have put into smart meters?

Mr. Serge Imbrogno: Again, I think that's hard to quantify at this point. You make that major investment—at the time, in 2006 and 2007, we had a study done that tried to quantify the benefits. They said it would be \$1.6 billion versus what they forecast at the time, a cost of \$1 billion.

We're now in 2015. We've updated the cost estimate, and we believe that that benefit of smart meters is untapped. We've tapped some of it, but there's a lot more for us to move forward with. I think when we do this Navigant study, when we release it, you'll see the quantum of the potential benefits based on the initial investment in smart meters.

Mr. Peter Tabuns: Navigant did the earlier study, correct?

Mr. Serge Imbrogno: Yes, they did.

Mr. Peter Tabuns: And they said we would save \$1.6 billion over 15 years, so about \$100 million a year on the system. We put in \$1.8 billion. I'll use the lower fee—no offence, Auditor General. I'm just being cautious in this. If we had actually saved roughly \$100 million a year, it would have taken 18 years to get payback on this system, correct?

Mr. Serge Imbrogno: Based on keeping the benefit constant and changing the cost—

Mr. Peter Tabuns: Assuming that the benefit—

Mr. Serge Imbrogno:—I don't think I would agree with you. You have to look at both sides of that equation.

Mr. Peter Tabuns: Are you telling me that the savings are greater than what Navigant had projected?

Mr. Serge Imbrogno: I'm saying that was at a time—we had a forecast of what the benefits would be, back in 2007. It's now 2015. There is a lot more potential, using

the smart meter—more innovations—and we can talk a bit more about that, how the different agencies view the smart meters and the potential benefit, and how much we've tapped and how much we can tap going forward.

Mr. Peter Tabuns: Okay. So what we've been told so far is that there hasn't been a reduction in the distribution companies' operating costs. In fact, most LDCs said that their operating costs went up. Is that different from your understanding of what's happened?

Mr. Serge Imbrogno: Well, again, on the cost side, what we're trying to say is—

Mr. Peter Tabuns: No, I'm talking about the savings side. A reduction in distribution companies' operating costs: That's what Navigant projected. They said it would be worth about \$400 million over the 15 years.

Mr. Serge Imbrogno: And those numbers haven't been updated. I'm just trying to make the point that we now have actual costs today. The benefits are still based on previous forecasts. We need to bring that up to the same point in time, and then with our other study, we're saying, what additional things can we do that will increase the benefits?

We made this major investment in smart meters. Now we need to make sure that we get all the benefits out of those smart meters.

Mr. Peter Tabuns: Did we see a reduction in rate-payers' energy costs of \$400 million over the 15 years?

Mr. Serge Imbrogno: I don't know if we have documented each and every one of those and updated them. I think that's what we are moving forward with now.

Mr. Peter Tabuns: It's 2015 now. It's been eight years. As this has been rolling out, the ministry has not actually been tracking whether or not the savings have existed?

Mr. Serge Imbrogno: We are tracking the benefits as we get—some LDCs are moving faster than others. For example, PowerStream is one of the more advanced LDCs that make full use of the smart meter information and infrastructure. Other LDCs are further behind. What we want to do is make sure everyone is using the smart meters to their full potential.

Mr. Peter Tabuns: So just going back, right now, we don't have a number that shows the rate of return on this investment.

Mr. Serge Imbrogno: Like I said, we've done a study to update the benefit side of it, and that will be released shortly.

Mr. Peter Tabuns: Okay. What are your plans for privacy protection and cyber security for the system, and what are the projected costs for that?

Mr. Serge Imbrogno: Maybe I could ask IESO or OEB to respond.

Mr. Peter Tabuns: I'll start with IESO. That's fine.

Mr. Bruce Campbell: On the privacy side, we have worked very closely with the Information and Privacy Commissioner's office to set out a privacy and security framework for the provincial data centre—I'm speaking to the data centre part of it. Of course we also, as we do

with all our facilities at the IESO, do have cyber security protection in place.

These kinds of controls are looked at each year. Specifically, in the case of the provincial data centre, it's part of an annual audit that gets done. I spoke to it briefly in my statement. We have an audit done each year, and part of the control framework that is considered in that audit is the control framework around both privacy and security.

Mr. Peter Tabuns: I understand from the auditor's report that, as of the time she reported, 85% of the LDCs had not done privacy impact assessments. Who is responsible for ensuring that they will actually do those privacy impact assessments? It's nice to talk to the privacy commissioner, but if even a rudimentary step hasn't been done in most cases, it strikes me that the privacy protection is not there.

Mr. Brian Hewson: If I could speak to that, one of the minimum functional requirements that all meters in all automated metering installation systems were required to meet was all privacy obligations under any legislation that affected the utility. As well, our licence obligations require the utilities to take steps to make sure that any of their data systems are protected and comply with, again, FIPPA or MFIPPA or whatever the appropriate legislation. It was a built-in requirement of the procurement of the meters that they have an appropriate data protection system built into them to make sure that when the data was transmitted, it was encrypted and double-encrypted appropriately to ensure that there was no way that the meter data could be lost during that process.

Mr. Peter Tabuns: So why is it, then, that 85% of the LDCs are reported not having done a privacy impact assessment, if it's a requirement on your part for them to proceed?

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Mr. Brian Hewson: Well, no, I'm sorry. I wasn't trying to suggest that it's a requirement for the utilities to undertake a privacy impact assessment. It was part of the procurement process so that when they accepted the bids by different metering services, they looked through and assessed them at that time to make sure that the privacy/data security was dealt with, and that was part of the obligation they had at that time. They didn't undertake a privacy impact assessment because they were already evaluating the system to make sure that it had good security and data encryption.

Mr. Peter Tabuns: Mr. Imbrogno, is it your ministry that makes sure that all the privacy protections and cyber security protections are in place?

Mr. Serge Imbrogno: We would have drafted the regulation that required that up front, and I think that what the OEB is saying is, in order for them to move forward, they would have had that as part of the smart meter infrastructure.

I think on cyber security, as the IESO said, there's always, on their functionality and system, the cyber security check.

Mr. Brian Hewson: I guess one thing to add on cyber security generally: The OEB has made it part of its

implementation of a smart grid. It's required all utilities to report to it on the steps that they've taken to adopt good cyber security practices within their utility. We're gathering that information now from utilities.

Mr. Peter Tabuns: You're gathering it now in 2015?

Mr. Brian Hewson: Well, as I said, with the smart meter implementation, it was part of the up front requirements that the meters and the entire automated metering installation system have an appropriate data protection and privacy system in place, and that that was a criterion in terms of going through the procurements which were then assessed, as I mentioned, by the Fairness Commissioner to make sure that they met all the appropriate requirements.

Mr. Peter Tabuns: So you would say that they all have it now? They all have top-level cyber security and privacy protection?

Mr. Brian Hewson: Well, I think that's why we're undertaking a review: because as was mentioned, these are things you have to regularly check on. So we are gathering information from the utilities to see what steps they've taken to increase cyber security protections and make sure that they are keeping up with all the current best practices.

Mr. Peter Tabuns: When was the last time you checked with them on this?

Mr. Brian Hewson: This is the first time that we've actually undertaken a detailed review. We started it, I think, in the fall.

Mr. Peter Tabuns: Just going to the IESO, I understand that you fund some pilot projects. I think it's N-Dimension that's doing a cyber security pilot project for you in the GTHA?

Mr. Bruce Campbell: I'm not familiar with the name.

Mr. Peter Tabuns: Okay. Interesting.

We have a situation where we have a central data repository with the IESO and most LDCs running their own data systems. So we've got the 79-cent charge per month to customers for the IESO system and apparently another charge for the local distribution systems. Why was this duplication allowed to develop?

Mr. Serge Imbrogno: I can start, and I think the IESO can explain their part of the picture. But there is no duplication. There are different charges for different purposes. There are different uses of the data. Part of the data is used for billing. Part of the information from the smart meters is used for operations of the LDCs. There are two distinct pieces of it. I'll let Bruce talk to his component of collecting the data.

Mr. Bruce Campbell: In our component, what we do is, the LDCs gather up the data from all the meters to collectors and then into metering computers that amass all of that data. Then it is transferred to the IESO to be processed to ensure that we get consistent province-wide quality on the quantities that are provided to LDCs for billing. We want that to be fair across the province, and that's part of what the MDM/R—the provincial data centre—ensures.

When we get that data, it goes through a number of business processes. It's validated that we're getting all

the right information. If there happens to be a glitch and we're missing, say, one interval in a day, it estimates in that interval according to defined business rules, and where there's an issue—say around a meter—then we do a report back to the LDCs so that they can investigate, figure out what the issue is with that meter data and then replace it in the MDM/R with the correct information.

We go through that whole process to make sure all of the data that goes back out to LDCs is billing-quality data. That's quite different from simply gathering that information from the meters, which may be—and is—very useful, as I understand it, to LDCs for their operational purposes. But that authority, to establish provincial standards for setting those quantities for billing data is a regulated authority to the smart meter entity that is exclusive to the IESO.

I think it's worth noting, as pointed out in the OEB response to the recommendations, that as part of the review of the distributors' smart meter-related applications, the OEB required all distributors to confirm that they had complied with the regulation and had not duplicated the activities or services of the MDM/R, the provincial data centre.

So they've been very clear that their uses of the data—the functions they put it to—are different from what the IESO's facility is doing.

Mr. Peter Tabuns: They may use it in a very different way from you but in fact do we not have a data centre run by you that collects essentially all the same information as the LDCs do?

Mr. Bruce Campbell: I think with the really important additional step that we take that data and ensure that when it goes out for billing, it's all treated and the business rules for ensuring the quality of that data are applied generally province-wide. That's one of the important advantages of doing it through the MDM/R: You can be confident in the quality of the data.

If you think about the amount of work that's got to be done to get there, we're talking about 24 hours a day, 24 billing periods a day, four million meters: It's just under 100 million data transactions a day. You want to be sure that, across the province, they're being treated similarly, that the rules for estimation, for editing and for validation are all being applied. That's the work that's being done that is well above and distinct from the work that's being done in the operational data centres that are also providing value—but a different value—to the LDCs.

Mr. Peter Tabuns: So effectively you're saying that you run a supervisory data centre.

Mr. Bruce Campbell: We take all of the data to an appropriate level of quality for billing. That doesn't happen at the LDC level.

Mr. Peter Tabuns: To Mr. Imbrogno: The question of smart meter fire risk has been raised by the Auditor General. There doesn't seem to be any centralized tracking of fires related to smart meters. What is your ministry doing about this?

Mr. Serge Imbrogno: The ESA, which is an agency of a different ministry, is the lead on safety issues.

Recently, the ESA took action when there were issues raised in Saskatchewan about certain meters. The ESA reviewed it and determined—I guess to be very cautious, they identified some smart meters that were of a particular model that were also in Ontario that could potentially cause problems. So the ESA moved quickly to have all the LDCs remove those meters. It is something that the ESA monitors. It's something that we monitor. But I think we've taken the appropriate action, and the ESA has moved quickly to remove those meters.

Mr. Peter Tabuns: Are you monitoring the performance of other meters to see if there in fact is potential for a problem?

Mr. Serge Imbrogno: The LDCs would report in if they had any issues. They would report in both to the OEB and to the ESA.

Mr. Peter Tabuns: And do they do a cause-of-fire assessment after every electrically related fire in their jurisdiction?

Mr. Serge Imbrogno: I believe the ESA would move in and determine, if there was an issue, what that issue was.

Mr. Peter Tabuns: How do they work with the fire marshal—

The Chair (Mr. Ernie Hardeman): Hold that thought for the next round. Thank you very much.

We'll move to the government side, Mr. Potts.

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Mr. Arthur Potts: Thank you, gentlemen and lady, for coming in today and sharing your thoughts on this.

I'm one of the new people in town. I wasn't around as we were putting in the program years ago, but from the outside looking in, as someone who's an entrepreneur in the energy and waste management field and as a consultant, we have to have a smart grid program in Ontario. A smart meter is absolutely one of the most important pieces. Getting into a smart grid, you have to have smart meters, and working with sustainable technology in the field, we were all looking at all the great opportunities.

What I'd like to do is to direct questions in a more forward-thinking manner to what some of the opportunities are to realize some of the additional ROI value that we can get from our smart meter and smart grid economy, particularly in the abilities for net metering and utilizing storage: battery storage in cars that are charged up at night, you drive to your office, plug them in; and now you're running computers in high-peak demand periods and such.

So maybe, if you would for a moment, talk about some of that forward-thinking and how critical it was to get the smart meters in place because analog meters just would not take us there.

Mr. Serge Imbrogno: Sure. I think I can start. We also have a Smart Grid Fund. That's \$50 million that the province put in many years ago to take advantage of the smart meters. I can have someone come up and just take you through some of what the province has done to make better use of the smart grid, enabled by the smart meters.

I think probably each of the agencies could talk in turn about the benefits to their particular agency and stakeholder group as well. Maybe I'll have one of our ministry people come up and just walk you through some of the benefits that we see from the smart meter investment—

Mr. Arthur Potts: Because in the long run, this goes to the long-term return on investments that may not have been able to be quantified at this date in time, but we know are on the horizon and about to realize incredible benefits to Ontario.

Mr. Serge Imbrogno: Absolutely. I was at a conference this morning on CanSIA talking about solar, the move towards net metering, all possible because we have the smart meter investment. There are a number of those examples, and I'll ask Michael Reid, ADM within the ministry, to come and just say a few words and give you some examples of what the ministry's doing.

Mr. Arthur Potts: Sure.

Mr. Michael Reid: I'm Michael Reid. I'm an assistant deputy minister at the Ministry of Energy in the strategic, network and agency policy division.

As the deputy mentioned, I'll just speak a little about our Smart Grid Fund because it was a fund that was set up in 2009 to help the province take advantage of some of the benefits of smart meters by looking to help sponsor innovative projects, help commercialize technology and also get the local distribution company sector directly plugged into innovation.

As the deputy mentioned, the Smart Grid Fund is a \$50-million fund that was initially announced in the 2009 budget. The fund supports projects that fall into six new innovative and emerging technology categories.

The first of that is what we call grid automation projects, and that's where you can use either a combination of software or hardware to help system operators, or local utilities in this case, to automatically control and manage electricity flows, which has important investment ramifications, where they can make sure they are making proper investments where the system most needs it.

The second area is what we call behind-the-meter solutions. That's really giving consumers—customers—more control over their power supply, as well as enabling better two-way communications between consumers and local distributors.

The third key function is data analytics. As has been mentioned here today, there's just now a huge wealth of data from smart meters. So how do we actually take advantage of that data and use it for either policy development or investment decisions?

Distributed energy storage is another emerging area, so the Smart Grid Fund has helped support, again, innovative projects in that space.

Electric vehicle integration is another one of these “where is the puck going” sort of issues. We want to make sure that we understand how electric vehicles could be integrated into the system, again without causing undue interference at the local distribution company sector.

Then, lastly, the sixth area is what we call micro-grids. That's again just looking at new and unique ways of

combining storage, generation and whatnot to help function autonomously from the main grid.

In terms of the Smart Grid Fund itself, just by way of a little bit of history, the Smart Grid Fund has had two main calls for applications. The first funding call focused on innovation with respect to the first three areas that I mentioned. In this round, there were nine projects that we ended up funding, and I can give you some specific examples in a few minutes. That includes the N-Dimension project that Mr. Tabuns referred to earlier on.

The second funding call: What the ministry did was, after the first funding call, it went back out to the local distribution company community, the vendors of smart grid technology, just to see whether or not there were areas that were missed or ways that we could improve the second round of the Smart Grid Fund.

There were two key things that we learned and integrated into the second call for funding. The first was that we expanded the range of eligible projects. The smart storage, micro-grids and whatnot were areas that we expanded to in the second round of funding.

As well, in the second round of funding, we enabled local distribution companies. Some of their costs became eligible for the Smart Grid Fund. I think that was a key change, in that we have talked a lot about the local distribution companies being key partners in terms of innovation and taking advantage of the benefits. So that was a way of allowing local distribution companies to feel a little bit more ownership and get a little bit more excited about these projects. We think that functioned very effectively.

Mr. Arthur Potts: I'd be very interested to hear how Hydro One is responding to these opportunities, particularly in the generation that metering opportunities—as a distribution utility, that will take away from the number of kilowatt hours you'd be billing for. But how would that fit into your long-term plans?

Mr. Carmine Marcello: From a smart grid perspective, what Hydro One has tried to focus on in the short term, while a lot of these technologies play out, are operational savings that we can pinpoint right now. The simplest example would be that someone's lights are out, and they call into a call centre to get your dispatch. You now have the ability to ping the meter, speak to it and geographically isolate where the problems are.

Within our service territory, Hydro One being largely rural, we have a lot of long, radial feeds. It's not meshed together like a network. A lot of utilities in urban areas—I'm not going to speak for them, but they're looking at opportunities to put in switches. You'll hear the term "self-healing grid." You can anticipate problems, because you have the information, and automatically start to switch, through software, in order to keep lights on. Two things happen in that scenario: improved reliability, and reduced costs associated with going out and finding the problem. You're no longer patrolling a feeder through three or four kilometres of bush, trying to find the problem. You can isolate it between this house and that house, and you can really pinpoint it. So you have those sorts of operational benefits that are in place.

The big data—and I think Mr. Reid touched on a concept of analytics. You now have the ability to look at the condition of your assets, the geographic spread of your customers, and start to predict failure modes. If this tree impacts this transformer, how many customers are impacted? And you start to make risk-adjusted investment decisions. On any individual case you look at, it's very hard to assess, but when you sit back and you look at a program of trimming trees on a provincial level, and you're trying to optimize the spend, you really have some new tools that allow you to do these macro-analyses. Clearly, the use of storage and renewables on a system that was built for one-way power flow is going to be further enhanced when you have the ability to layer in communications and telecommunications.

A lot of those things, I think, are in the somewhat-more-distant future, and that's why you have an innovation fund to develop those initiatives. But we're really looking at short-term operational benefits that we can get over the next one, two and three years.

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Mr. Lou Rinaldi: Chair, if I may: I guess my question is more of a general nature and a bit of a higher level. Smart metering is not unique to Ontario. I'm sure there are a lot of other jurisdictions not only in Canada but North America and probably the world. Do we—when I say "we" I mean Ontarians—do any sort of comparison of how well we measure against other jurisdictions or the type of services that smart meters were able to improve on? Can you give us some sense? I'm not sure who wants to tackle that.

Mr. Michael Reid: I think Ontario was a leader in terms of rolling out smart meters. There are certainly other jurisdictions that are following. There are other jurisdictions that have rolled out smart meters across their systems as well. So we're definitely aware and monitoring progress there.

We also try, through things like the Smart Grid Fund that I was talking about, and some of the projects we're funding—making sure we're aware of some of the best-in-class, unique technologies that are being developed as well so that we can deploy them on the Ontario system.

Mr. Lou Rinaldi: So we're not working in isolation, I guess is my point.

Mr. Serge Imbrogno: I think the OEB can provide some rigour to some of what's happening in other jurisdictions as well.

Mr. Brian Hewson: As part of our comprehensive review of time-of-use prices, we engaged a number of experts to look at what's going on in other jurisdictions, in terms of different price options, where they've implemented smart metering either through pilot programs or on an ongoing basis, to try to give us ideas about new types of price plans that could be put in place in Ontario to help customers take control of their electricity costs and provide greater benefits to the system, looking at things like more value-based pricing, critical peak pricing, all of which relies on the smart metering infrastructure and, in particular, the MDM/R in many ways as well.

Having that technology in place, we've been able to look at what they've done in California, what they've done in Australia, what they've been doing in the UK, as they're starting to roll out those things. But we're quite a ways ahead of many other jurisdictions.

In fact, other than one or two jurisdictions in the world, nowhere else is it that everyone is on a time-of-use-type pricing mechanism, a dynamic pricing scheme, which is actually providing customers the real opportunity to be able to make changes to the way they use the system, gain benefits from that, take advantage of that, but also provide real benefits to the electricity system in terms of reducing the peak demand and avoiding infrastructure build etc.

Mr. Lou Rinaldi: Thank you.

The Chair (Mr. Ernie Hardeman): Mr. Fraser.

Mr. John Fraser: Thank you, Mr. Chair. Thank you very much for being here today. I appreciate it. My first comment is, I'm glad, Mr. Marcello, that you brought up energy storage and how we're no longer a one-way—power is not flowing one way; it will flow back and forth. Over the next 30 years, that's going to change. Technology is going to change. Storage is going to change. It may not be upon us right now, but I don't believe it's that far away, in terms of how things are developing, especially in renewables.

I had a question that followed up with regard to the 170,000 meters. Just so I understand it, there's a smart meter on those locations that can't transmit because of remoteness and the connectivity. So how do you actually read those meters?

Mr. Carmine Marcello: It can't transmit reliably on a continuous basis. In some cases, we still download the data, and it might be downloading multiple days in batches. In some cases, we'll have to go and do a meter read. In some cases, we use technology where we will download—we're not actually reading the meter, but we're driving through the community and downloading the data via a truck. But the reality is, the ability to communicate on a continuous basis is needed for that data to get downloaded and then brought to the MDM/R, which I think Bruce spent some time explaining.

Mr. John Fraser: So in terms of utility for the customer of a different meter, are there any differences for the customer in terms of the costs or their ability to—

Mr. Carmine Marcello: No. In effect, you have a meter that you're just operating in a different mode. The data it's collecting is just being used differently.

Mr. John Fraser: Okay, it's being used differently. Is there a two-pricing component or is there a different pricing component for those customers?

Mr. Carmine Marcello: Well, for those customers, they'll be on two-tiered seasonal rates as opposed to time-of-use rates that change in a dynamic fashion.

Mr. John Fraser: You had mentioned that; I didn't quite understand what that meant.

I have a question with regard to time-of-use pricing. I know that coming out of the report, the Auditor General recommended a combination of time-of-use pricing; that

all the bodies—the ministry, the IESO, the OEB and the LDCs—work together to look at time-of-use pricing and how effective that is in terms of use by the consumer. I know there's work being done right now because you've just mentioned that as well, and there has been a change in pricing on May 1, where it's a 2-to-1 ratio.

I guess my question to Mr. Hewson is: Can you talk a little bit about that in terms of the rationale behind making that decision, and was that as a result of the recommendations that came out of the report?

Mr. Brian Hewson: Well, certainly, in moving to the 2-to-1 ratio, what the OEB was recognizing was that there have been a number of studies in other jurisdictions that have shown that there are benefits to larger ratios. In fact, when we did an analysis and had an expert do this analysis back in 2011, I believe, there was a recommendation that we increase the ratio. At that time we didn't because of the fact that we were very early on in the time-of-use period and we didn't really have a lot of data to do a lot of analysis.

I think the 2-to-1 change is part of the OEB constantly looking at customer information, customer data, system data and trying to make sure that it keeps the pricing model up to date with the realities of the system and provides a little bit more of an incentive to customers, giving them more opportunity to actually manage and save some of their electricity costs by making changes. It was a good thing to do at this time.

As I said, we are undertaking a very major review, where we've undertaken extensive consumer research, focus groups, experimentation with customers to understand different types of pricing options and information that would help them more significantly embrace dynamic pricing. So it's something that we're constantly building. We've made changes like the 2-to-1 ratio. We've made changes like that in the past, where we recognized that things need to be updated to take account of the way the system has evolved and the way consumers have changed their behaviour—because, as I was talking about, we've seen a shift where customers have reduced their peak demand, so that has an impact on the overall forecast and cost structure, and we need to take that into account. Otherwise, we'd end up with prices becoming far more compressed than would be appropriate in a time-of-use structure.

Mr. John Fraser: How much—

Mr. Serge Imbrogno: Sorry, I was just going to add to that. I think the other thing that we now have is a wealth of data and experience with time-of-use pricing. With that number of years of experience, I think it allows the OEB to do a more rigorous analysis of what the most effective pricing is. There are different ways of doing that. It could be some critical peak pricing where people could volunteer to go into a very steep differential between peak and off-peak.

Mr. John Fraser: I have 30 seconds left, so you won't have a chance to answer this, but I'll follow up on it later on. I know the motivator is the price. That's the major motivator, right? People recognize rewarding for

using off-peak hours. But I want to know, in the next follow-up, what else you are doing to create a level of consumer awareness, because I know there are people who are very aware and other people who are not very aware. That's my 30 seconds.

The Chair (Mr. Ernie Hardeman): Thank you very much. We'll now go to the official opposition again. This time around, it will be 17 minutes for each party. Mr. Yakabuski.

Mr. John Yakabuski: Thank you very much, Chair. It's good to be back. For a moment there, I thought I was tuned in to the Shopping Channel and I was getting a 20-minute infomercial, but we're back live here now, folks. Here we go.

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Let me start on a couple of things. This data Mr. Tabuns had asked about—we were getting to that—you had different entities getting their own data and then somehow melding some of that information with the IESO and we come up with something that's supposed to be somewhat reasonable or congruent.

I think it was Bill 100 or whatever that mandated smart meters. Why would it not have been mandated that all data would be collected by a central agency or entity from the start? Why were they left to collect their own data and then feed it to the IESO?

Mr. Serge Imbrogno: I think the regulation was in place initially, when we did the smart meters, that clarified, for billing purposes, that there would be only one provider of that and that would be the IESO, but we recognized with some of the LDCs that they each needed to collect the data—but not for billing purposes—for their system needs; for doing verification of—

Mr. John Yakabuski: So that's the way it's always going to be, then? They're going to collect the data and send it to the IESO? There's never going to be one truly central database, then?

Mr. Serge Imbrogno: For billing purposes, it's the central provider that does the verification and quality control on billing. That has always been the case.

I don't know if you want to expand—OEB. If you'd want more verification of that or—

Mr. John Yakabuski: Well, I'm going to wait for the verification I get from that last question I got about—when I wanted that paper chart.

But I do want to correct my record. I did attribute a comment—when I said the meters helped reduce customer billing disputes after the 2013 ice storm, I attributed that to the address from the gentleman from the OEB, and in fact, sir, it was yours.

Mr. Serge Imbrogno: Oh, thank you.

Mr. John Yakabuski: So you get full credit for it now.

But let's talk about the global adjustment because that's part of the auditor's report too. My goodness, it's really wonderful that the auditor comes out every once in a while and clears the air so that we actually understand what is going on. She has come up with a figure that the global adjustment—which essentially is the difference

between the cost of the electricity and the prices guaranteed under contract to producers—that the difference amounts to the global adjustments on people's bills. In 2013, it was \$7.7 billion. Since 2006 till 2015, it's calculated to be \$50 billion. Do you agree with those figures?

Mr. Serge Imbrogno: The global adjustment is part of the commodity cost of electricity.

Mr. John Yakabuski: I understand that, but do you agree with those figures—\$50 billion?

Mr. Serge Imbrogno: The figure is really—people pay a set price for electricity.

Mr. John Yakabuski: Oh, I understand that.

Mr. Serge Imbrogno: Part of that is made up of the hourly energy price. Part of that is made up of—

Mr. John Yakabuski: I understand that.

Mr. Serge Imbrogno:—electricity that we pay, regulated rates, contracted rates, and that goes into the electricity price.

Mr. John Yakabuski: Right.

Mr. Serge Imbrogno: So it is part of our system. We have a \$20-billion-a-year electricity system. Part of that is transmission and distribution and part of that is the commodity cost, which has two components. So it's really like saying: What is—

Mr. John Yakabuski: But it didn't exist at one time.

Mr. Serge Imbrogno: No, it existed in the sense that we paid for electricity. We just paid for it in a different way. We had the old Ontario Hydro that used to set rates, and you paid that rate. It then went into a separate—

Mr. John Yakabuski: What was that rate back in 2003?

Mr. Lou Rinaldi: When it was frozen?

Mr. John Yakabuski: Excuse me. Be careful. You might be frozen there, Lou.

Mr. Lou Rinaldi: Chair, point of order.

Mr. John Yakabuski: No point of order. What was that rate?

Mr. Lou Rinaldi: Point of order.

The Chair (Mr. Ernie Hardeman): Okay. You have a point of order?

Mr. Lou Rinaldi: I thought we were talking about smart meters.

Mr. John Yakabuski: It's the auditor's report. The global adjustment is in it. Maybe you should have read the report, Lou.

Mr. Lou Rinaldi: I did read it.

Mr. John Yakabuski: Well, you should read it again.

The Chair (Mr. Ernie Hardeman): It's not a point of order. Every party gets their time allotted, and we would not like to use their time for your questions.

Carry on.

Mr. John Yakabuski: You might have missed the briefing this morning, Lou. You know how your ministers like to say, "Come to a briefing"? We had one this morning.

Okay. So back to the global—

Mr. Lou Rinaldi: I was here.

Mr. John Yakabuski: Well, maybe you were sleeping. Back to the global adjustment.

Interjection.

Mr. John Yakabuski: Back to the global adjustment, which is part of the auditor's report and was part of the briefing this morning, Lou. It didn't exist at one time. The price of electricity was 4.3 cents a kilowatt hour. Now we have a price of 16.1 cents a kilowatt hour for on-peak electricity, and the global adjustment does exist. Correct? Did I say anything wrong in that?

Mr. Serge Imbrogno: The 4.3 cents: I'm not going to verify that because I think that was a frozen price after restructuring.

Mr. John Yakabuski: Whatever it was.

Mr. Serge Imbrogno: But you pay a commodity cost; you're just paying for it in a different way now. Part of that commodity cost is captured in the hourly energy price. Part is captured in the global adjustment, but those together go to your—

Mr. John Yakabuski: Would it be correct in saying that the global adjustment, as the auditor has said—she worked in the Manitoba hydro system for 10 years. Did you know that?

Mr. Serge Imbrogno: I did know that, yes.

Mr. John Yakabuski: I think Bob Chiarelli forgot about that.

Anyway, she has said in her report that the global adjustment is essentially the difference between the price of the commodity and the amount that the government—or the IESO or the OPA at the time—has agreed to pay, through contracts, to generators. Is that essentially correct?

Mr. Serge Imbrogno: It's agreed to pay for contracted generation through the IESO, also regulated rates for OPG—

Mr. John Yakabuski: Is it essentially correct?

Mr. Serge Imbrogno: Essentially, yes, it is correct.

Mr. John Yakabuski: Thank you very much. So \$50 billion, prior to these contracts, really didn't exist. The global adjustment: The auditor has talked about it until 2015. I might have to call on Mr. Campbell and the IESO. Based on any new contracts that, as we've seen—we've seen the growth in the global adjustment from where it was a minuscule amount to \$7.7 billion in 2013. What is the projection of that global adjustment going forward to, say, 2030? What can the people expect to be paying on their bills 15 years from now? Do you have an estimate on that?

Mr. Serge Imbrogno: We have our long-term energy plan that has a forecast of the cost of electricity to 2032. All those numbers are available. We have schedules that are—

Mr. John Yakabuski: Is the expectation of what the global adjustment will cost in that?

Mr. Serge Imbrogno: The commodity prices are forecasted, so that is a major component of it.

Mr. John Yakabuski: It's a major component of it, but not everything.

Mr. Serge Imbrogno: All that is available on the IESO website. There are all the modules with all the details in our LTEP—they're provided.

Mr. John Yakabuski: Would you be so kind as to get us that information?

Mr. Serge Imbrogno: I can provide you with a link to where it is, if that would help.

Mr. John Yakabuski: Okay. That would be wonderful, because I think what people are always asking is, "I'm paying this much for my hydro today. I paid this much for my hydro three years ago. I need to have some kind of certainty as to what I'm going to pay for my hydro over the next five or 10 years." That would certainly be helpful.

Any member of the public could, if they're willing to experience the shock, go to that website and find out what the global adjustment is calculated to be?

Mr. Serge Imbrogno: The 2013 long-term energy plan is very clear. It has a chart that shows a residential price forecast going forward. It shows an industrial price forecast going forward. Like I said, all the details behind that are on the website as well.

Mr. John Yakabuski: Thank you very much. The other thing that was part of this report from the auditor was that the net loss for power sold to other jurisdictions at lower than true value, over the last few years, has been \$2.6 billion—from 2006 to 2013: \$2.6 billion. The cost of producing that power was \$2.6 billion more than the revenue Ontario received from exporting that power. We've seen the stories in the newspapers where you saw Ontario lost X number of dollars that month because they were selling power to Quebec, sometimes at negative pricing on some nights, because they had a surplus of it. Quebec was being paid to take that power, storing their hydro system up for the demand of the day, essentially taking advantage of the mistakes that Ontario made. Would that \$2.6 billion be an accurate figure?

Mr. Serge Imbrogno: I'm going to start and then I'm going to ask Bruce to give you more detail, because we have a different perspective. When Ontario builds its system, it builds to meet Ontario needs so we have the capacity in place to meet our peak needs. That's how we build our system. If we have extra power we would export that to gain revenues. Those would be used to offset our fixed costs.

Our view is that the export revenue that we get is offsetting the fixed costs that we have in place. Maybe I'll let Bruce give you a little bit more on that.

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Mr. John Yakabuski: I get the plan.

Mr. Serge Imbrogno: The IESO does that calculation of what the benefit is.

Mr. John Yakabuski: I get the plan, and why you do it. You're hoping that the system actually turns into a money-maker for you.

Mr. Serge Imbrogno: No, but I think it's important to understand that we don't build to export our power. We build to meet Ontario needs.

Mr. John Yakabuski: I understand that.

Mr. Serge Imbrogno: And then once that system is in place, it's economic for us then to sell our power.

Mr. John Yakabuski: But when we sign contracts that are guaranteed and we have a surplus of power, we also have to get rid of that power. There's no option.

Mr. Serge Imbrogno: There's an opportunity for us to export it. We're an integrated market. We have revenues coming in. We import and export.

Mr. John Yakabuski: I'd consider it an opportunity if the market was actually paying me a profit for it. I'd call that an opportunity. But if I'm selling at a loss, I think that's an opportunity for those other guys.

But would you confirm the numbers, Mr. Imbrogno? Would you confirm the number, \$2.6 billion?

Mr. Serge Imbrogno: Our number that we're saying, the net benefit to the Ontario system, is \$320 million from our ability to export that power. I'd like the IESO to give you a bit more detail on that number.

Mr. John Yakabuski: So the auditor is wrong, then?

Mr. Serge Imbrogno: I'm saying that our view of the fixed system is that we have costs that we incur to support the Ontario load—

Mr. John Yakabuski: I read the auditor's report—

Mr. Serge Imbrogno: And what we export, it offsets our costs.

Mr. John Yakabuski: —and I was led to believe that the auditor's report was correct. So the auditor's report is wrong?

Mr. Serge Imbrogno: I'm commenting on our view of exports and when we build capacity in Ontario and how that offsets our costs.

Mr. John Yakabuski: Okay. How much time have I got left? Lots of time.

The Chair (Mr. Ernie Hardeman): About six minutes.

Mr. John Yakabuski: You talked about: The plan was to see the benefits I heard in some of the conversations—you'll see a reduction in demand for on-peak electricity. That was prior to the changes to the Electricity Act, Bill 100 and the smart metering initiative and everything else. Do you recall or do you know what the forecast or the expectation at that point in time was, what this initiative and all of the other initiatives were going to lead to as a reduction in on-peak demand here across Ontario?

Mr. Serge Imbrogno: The studies that have been done by the OEB and the former OPA talk about a 3% reduction in peak demand.

Mr. John Yakabuski: That's what in fact has happened.

Mr. Serge Imbrogno: Yes.

Mr. John Yakabuski: But are you going to tell me that we went through all of this and that was the expectation? The expectation was a 3% reduction?

Mr. Peter Tabuns: On the residential.

Mr. John Yakabuski: Yes, on the residential. A 3% reduction? This was the goal?

Mr. Serge Imbrogno: There are two parts of putting in smart meters. One is, you are able to put time-of-use rates in, and the other is the system benefits. You have to think of both together. We didn't just go forward just to do time-of-use pricing. It's also for those other system benefits.

Mr. John Yakabuski: I remember Dwight Duncan talking about how much this was going to lead to conservation and reduced demand for electricity. A simple question: Was the goal 3% and are you satisfied with 3% for all we've gone through?

Mr. Serge Imbrogno: We think the 3% is a significant change. That's a lot of customers who have switched. What we're doing with the OEB study now is saying, "What do we need to do differently to get more people to take advantage of time-of-use rates?" I'd say that it's significant. But we can do better, and that's what we're doing.

Mr. John Yakabuski: So how much would we have to spend in this province to get, say, a 10% reduction? How many more billions of dollars?

Mr. Serge Imbrogno: It's not necessarily spending more but giving people the ability to say, "Maybe we want to sign up for critical peak pricing."

Mr. John Yakabuski: But you said you're happy with 3%. You're happy with 3%.

Mr. Serge Imbrogno: I'm saying that it's significant, the 3%. We can do better, and we believe that giving people more options on time-of-use pricing, for example, is one of the things that we can do. It doesn't cost us more; it just gives people more choice.

Mr. John Yakabuski: So the auditor said on this time-of-use pricing that one of the challenges—and the Environmental Commissioner also commented upon the gap between on-peak and off-peak. So some of that was addressed in the recent changes where the gap has widened. The on-peak went up by 2.1 cents per kilowatt hour, whereas the off-peak, I think, was 0.8 cents or something like that.

What is the expectation with respect to the average increase on bills as a result of that, not just through the residential but almost particularly for the small business sector that runs during the daytime? What is the expectation for the increase on their costs because of the widening of the gap between off-peak and on-peak electricity?

Mr. Serge Imbrogno: When the OEB released their update to the RPP, they would have provided in that news release the anticipated increase for residential and other customers. That information is out there. I don't have it handy; I don't know if you do—

Mr. Brian Hewson: I'm just checking.

Mr. Serge Imbrogno: We did release that information at the time when we updated the rates, so that would be in the public domain.

Mr. John Yakabuski: I guess we'd have to look for it, because I don't think somebody came over and handed it out to us.

So you're going to tell me you got the information as to how you expect a small business's bill is going to be affected by the changes in that regard?

Mr. Serge Imbrogno: We'll look at the OEB press release that broke down some of that information.

Mr. John Yakabuski: Okay. I'll be looking forward to that, because that's one of the things I hear about from

small businesses: When you make a change like that, that has a significant, more than 3%, impact on them—say, if you're a restaurant that caters to the lunch crowd.

The Chair (Mr. Ernie Hardeman): I would hope that information arrives in a timely manner—

Mr. John Yakabuski: Because I'm out of time.

The Chair (Mr. Ernie Hardeman): —because we've run out of that.

Next, to the third party.

Mr. Peter Tabuns: You had a good run, Yak.

A question for Hydro One: Have you done an analysis of the cost savings from the smart meters?

Ms. Laura Cooke: Sorry, I don't have that information with us today. I know that a few years ago, we looked at what the different behaviours might be in different sectors of our customer segments, whether it was farmers, residential customers or rural customers. I don't have that information with us.

Mr. Peter Tabuns: I would appreciate it if you could get us the information.

But just to be very clear, have you done an analysis of how much you've been able to reduce your operating costs through the implementation of the smart meter system?

Ms. Laura Cooke: I apologize; I understood the question to be about how customers—

Mr. Peter Tabuns: That's coming.

Ms. Laura Cooke: Right. Again, I don't have the figure with respect to the reduction in operational costs with me, as well.

Mr. Peter Tabuns: Okay. Have you done an assessment of the increase in operational costs coming from smart meters?

Ms. Laura Cooke: Carmine, do you want to speak to the finances? I don't have that information.

Mr. Carmine Marcello: I was just going to say, in terms of the cost of the smart meters and implementing them, that that was all part of the implementation. I think the Auditor General had documented that quite well. Our number was, I believe, \$660 million over the span of the entire program, and that was subject to the Ontario Energy Board and a prudency review.

Mr. Peter Tabuns: Sorry, you're talking about \$660 million for installation?

Ms. Laura Cooke: Program costs.

Mr. Carmine Marcello: The program costs, yes.

Mr. Peter Tabuns: So \$660 million are the increased program costs that you are going to bear as a result of the smart meters?

Mr. Carmine Marcello: I think there are some places where the costs would be higher and there are some places where the costs will be lower. On the costs of meter reading, it would be significantly lower. There are places where we're going to leverage the technology to do things that are new, to provide additional benefit. Those will be incremental costs. For example, we were talking about the use of the data in new and different ways. Those would be subject to individual business cases, going forward.

Mr. Peter Tabuns: I'm assuming, since there have been all these claims about reducing operating costs from the smart meters—I'd like to know how much of a savings Hydro One realized from its operations following the implementation of smart meters, and the increase in the cost of operations from the smart meters. I'd like to see both sides of the equation.

Have you done an assessment of how much peak demand has been reduced with your residential customers because of the implementation of smart meters?

Mr. Carmine Marcello: We've done some small reviews looking at the experience, very much like the examples that the OEB had demonstrated. Depending on the individual consumer, it was in the low single digits, the 2% and 3% type of range.

Mr. Serge Imbrogno: I think the studies that were done were by the OPA and the OEB.

Mr. Carmine Marcello: We participated within their studies.

Mr. Serge Imbrogno: Those are available. Maybe Brian can give you a bit of a sense of—

Mr. Peter Tabuns: Just before that, I would like to know the aggregate. Did you see in Hydro One a reduction in residential consumption at peak in the 3% area, overall?

Mr. Carmine Marcello: You're asking how the data was disassembled, and when you look at our system, between transmission, distribution and every individual sector, there's no way to just unbundle the data that simply. So that's why we would have participated in some broader assessments. What we seem to have been able to surmise, when you look at the data, was that for residential consumers it was in that range that the OEB was discussing.

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Mr. Peter Tabuns: And the range, again, was?

Mr. Brian Hewson: During the summer peak period, we saw on average about a 3% reduction in peak demand. In the winter, it was somewhere around a 1.8% to 2% reduction in peak demand. That study involved Hydro One, all of the other large distributors and quite a large number of smaller distributors spread out across the province.

Mr. Peter Tabuns: Can we ask you to table that study for us?

Mr. Brian Hewson: It's on our website.

Mr. Peter Tabuns: Could you give the Clerk the exact location? I've gone through some websites; some are harder to follow through than others. So if you could give the committee the exact link, we would appreciate that.

Mr. Brian Hewson: Yes.

Mr. Peter Tabuns: Going to the Ministry of Energy: I've been asking questions about cyber vulnerability, in part because last fall in the UK they were reviewing their smart meter rollout. KPMG talked about the finding of major cyber vulnerability in Spain. The UK had had problems a few years ago with people essentially faking a hydro card that people were putting into their meters so

they could get free power. So there are substantial cyber vulnerability issues.

Have you looked at the experience in Spain, and do you have a sense as to whether or not their finding of vulnerability is relevant here in Ontario?

Mr. Serge Imbrogno: I think the OEB has said that they're now reviewing the cyber issue. The IESO has their own cyber security, and when we did implement the smart meters initially, we made sure that they had the protection in place.

Mr. Peter Tabuns: So we're safe from any of the vulnerabilities that were found with the Spanish smart meters?

Mr. Serge Imbrogno: Well, I would think that in the OEB review they would look at what's happening in other jurisdictions and how that might impact Ontario.

Mr. Peter Tabuns: And when will that review be available?

Mr. Brian Hewson: As I said earlier, we are gathering the information from the utilities. The exercise, to be clear, is focused on making sure that we understand what utilities in Ontario are doing to make sure that they are adopting best practices for dealing with cyber security. It's not an investigation to try to determine how other jurisdictions have dealt with cyber security; it's focused to make sure that the utilities in Ontario are taking all the appropriate steps, and we have gotten responses back from most of them. I'm not exactly certain of the timing.

Mr. Peter Tabuns: You've done the answer—and I'll go back to you, Mr. Imbrogno. Apparently, we're not looking at the experience in other countries.

Mr. Brian Hewson: I apologize. I just wanted to make clear that the intent of the study is to make sure that we understand what's going on in Ontario and make sure that utilities are doing their best practices. Of course, once we get the results, we'll be looking at what the practices are in other jurisdictions, and through that we'll be able to learn what we might need to do with the utilities in Ontario to basically ensure that they're all applying the best practices.

Mr. Peter Tabuns: Is there a reason you can't do them both at the same time? Generally speaking, if I think there's a vulnerability or a potential liability for my political party, I look at what's happening with others at the same time as I try to get a sense of what my party is doing.

Mr. Brian Hewson: As I said, what we've asked the utilities in Ontario to do is to report how they have adopted and adapted to the best practices in cyber security. We provided them a link, information that they were expected to look at in terms of what national organizations have required for cyber security. The IESO was involved in helping us design this survey, so that we were able to be well informed in terms of getting the right questions, getting the right information from the utilities. So the focus was on making sure that the utilities were thinking about cyber security and adopting best practices in cyber security.

Mr. Peter Tabuns: I actually was able to find this on your website, so there are some things that are findable:

Cyber-security Questionnaire for Ontario Electricity Distributors. I gather that you first sent it out in July of last year, and what you had to say here is that there was a very poor response. I note that they were supposed to respond earlier this year. Has everyone responded to this questionnaire?

Mr. Brian Hewson: I'm sorry; I'm not prepared with that piece of information.

Mr. Peter Tabuns: Okay.

Mr. Brian Hewson: It wasn't part of our thinking, in terms of smart meters specifically, to report on that.

Mr. Peter Tabuns: Do we not now have a code in place that requires a certain level of audit and analysis of cyber security systems for all the LDCs?

Mr. Brian Hewson: We're undertaking this survey to gather information so we understand what we should put in place. Based on the information we received from the utilities early on, it was clear that distributors in the province have taken very significant steps to ensure that their systems are protected and meeting best practices for cyber security. We haven't decided we're going to create new codes or rules when there is already guidance and other requirements out there that utilities are following.

Mr. Peter Tabuns: I suggest to you that managements change, and that in one year or one decade you'll have very alert, sharp, capable management that will pay attention to these things. Managements change. You get one that may not think that cyber security is that important—generally speaking, that's why we have regulations and rules.

Are you going to be bringing forward regulations and rules to ensure that there is proper cyber security and privacy protection in this sector?

Mr. Serge Imbrogno: What we're trying to say is that when we put in place the regulations for the smart meters, those codes and regulations were in place and those standards were in place. The OEB is gathering that information to see if we need to change. I think that coming out of that OEB review there could be additional requirements, or they could find that they've taken all the appropriate steps, so—

Mr. Peter Tabuns: Well, one of the questions to the LDCs was, "Do you use cyber-attack detection and reporting capabilities?" which says to me that this is an optional thing. Obviously, if it's in a regulation they should have it, should they not?

Mr. Serge Imbrogno: The way the data is transmitted, as Brian was saying initially, is encrypted. That's part of that security—"Is that enough? Do we need to do more?"—and I think that study that the OEB is undertaking will hopefully provide us with information, so that either we change or we say we're satisfied.

Mr. Peter Tabuns: Can you tell us when you expect that data, the results of that study, to be available?

Mr. Brian Hewson: I believe we've had all the responses in and that we are in the process of analyzing the data right now. I would hope that it would be done soon, but I can't tell you exactly what that date is.

Mr. Peter Tabuns: Okay. Just a quick technical question: Can these smart meters function as net meters as well?

Mr. Serge Imbrogno: We are working with the industry stakeholders to determine what infrastructure we need in place to move from where we are now with the microFIT program, if we want to move to self-consumption net metering. That's one of the things we'll be looking at: whether the smart meter is enough or if we need to augment it with another meter. Those are questions that we need to look at going forward.

Mr. Peter Tabuns: Are you saying the existing meters can't function as net meters?

Mr. Serge Imbrogno: I'm saying we're looking at that. That's one of the important questions we'll need to address, because it is a different type of system, where you need to self-consume. Whether you need two meters for that particular purpose, that's something we're exploring with the industry and other stakeholders.

Mr. Peter Tabuns: At this point, I'm going to assume, then, from your response that we don't know if the smart meters can function as net meters.

Mr. Serge Imbrogno: I think it depends how you roll out the net metering. So I don't want to give you an answer that, yes, for sure they can do it. It may be different, depending on what net metering program you put in place and how you do it.

Mr. Peter Tabuns: I ask because if we're going to have two meters, it's going to be a lot more expensive. So I look forward to the outcome of that review. It's pretty pricey to have two meters.

A question for the IESO: How has the smart meter initiative changed our electricity system's vulnerability to cyber-attack?

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Mr. Bruce Campbell: Apart from the fact that it's obviously one more facility, I don't think it has increased our vulnerability at all. We have good cyber-protection in place. We have good privacy protection in place.

As I mentioned earlier, the control framework that we have in place was reviewed with the Information and Privacy Commissioner. I'll just read what she had to say at that time: "The IESO's smart metering entity control framework demonstrates a commitment to the standard of Privacy by Design by taking a systemic and principled approach to embedding privacy within its controls."

Mr. Peter Tabuns: Bruce, I appreciate what you've just read to me, but I'm not thinking just of what you control at the IESO. There are all kinds of LDCs that are plugged into the system. The Auditor General noted that there were people who had access in the LDCs whose passwords didn't get changed on a prompt basis. I'm talking about the system as a whole. You've got four million hackable little computers out there keeping track of power consumption. How has that changed your assessment of the vulnerability of our electricity system?

Mr. Bruce Campbell: As I say, we take a look at the risk that that presents, at least on our side of the business, and we believe we're mitigating that risk to an appropriate level.

Mr. Peter Tabuns: Who's looking out for the whole system? I understand the IESO, but the LDCs are another component.

Mr. Bruce Campbell: We're all looking at this jointly. In response to the Auditor General's report, we have increased our level of conversation with the LDCs about explaining the need for controls. We have put more emphasis on and we've changed our business processes around permissions for LDCs and their agents to have access to smart meter data in the provincial data repository, so we've moved on that recommendation. For instance, instead of simply taking the fact that it's the obligation of the LDC to report a change in access control to us, we actually query them manually to make sure: "Are there any changes that have happened? What's the control that's now in place?" So we have, as I say, increased our conversations, discussions and our business processes with the LDCs to mitigate that risk.

Mr. Peter Tabuns: I appreciate that. Is the question of ensuring that the LDC security standards are consistent with yours something that's going to be part of regulation in the future, so that we don't have to depend, necessarily, on the management's feeling about security at any given time?

Mr. Bruce Campbell: I can't speak to whether it's going to be part of specific regulation. I can tell you that it is part of the framework of our relationship with the LDCs to regularly review and, where necessary, improve that. It's part of every business these days. Every business has a responsibility to mitigate its exposure to cyber-risks.

The Chair (Mr. Ernie Hardeman): Thank you very much for that.

We'll now go to the government. Mr. Fraser.

Mr. John Fraser: Thank you very much, Mr. Chair. I do want to say, before I start my questioning—I beg your indulgence for a second—that my colleague Mr. Rinaldi was here this morning. The point of order that I was raising—in deference; I understand we don't usually have points of order here—is that it's not part of how we do things around here to comment that a member is absent. I wanted to point that out. He was here this morning. I thank you for your indulgence for that.

I hope our questions meet the approval of our colleague across the way. He certainly helped me out in my line of questioning coming up.

I do want to ask a question with regard to the last point I made in terms of education, but more importantly, right now I want to talk about the long-term energy program. Deputy, this is probably to you and anybody else who wants to answer this. I just want a bit of background on the long-term energy program. When was our first long-term energy program?

Mr. Serge Imbrogno: In 2010, the Ministry of Energy put forward its first long-term energy plan, and then in 2013 we updated the long-term energy plan. We've been doing it on a three-year cycle, so we may do it in 2016 or early 2017, which would be the next update to the long-term energy plan.

Mr. John Fraser: That was the first long-term energy plan that we've had in this province that was a public document?

Mr. Serge Imbrogno: It was a public document. There were consultations that took place. It was posted where people could provide input. So, yes, that was a public document.

Mr. John Fraser: My point in raising this, for the sake of the committee—and I'm sure that many of us understand this—is that the information around energy in terms of things like pricing and anticipated costs was made clear and apparent to the public. Many of you have cited websites where the information that the opposition has requested is available, and I think that's a very good thing.

The second question that I have to ask—we've talked about this previously with regard to the Auditor General's report, and my colleague from Renfrew-Nipissing brought it up—is in relation to the \$2.6 billion over 10 years, which was the cost of having to, for lack of another term, dump electricity to markets. We didn't recoup the cost we had of generating that.

I see that number there, but there are numbers that I haven't seen there that would help me understand that. It's about \$350 million or \$360 million annually. I guess it varies from year to year. I know it's a challenge because I think we operate in two peaks here. I'm not an engineer, so balancing the system is not an easy thing for me to understand.

My question is, how much electricity do we export annually, roughly? The second question is, in terms of energy that is produced and sold domestically and internationally or interprovincially—I should say outside of our jurisdiction—what's the value of that? Those two numbers would be very helpful for me in understanding. Take it down to an annual number.

Mr. Serge Imbrogno: I think I'll let the IESO's Bruce Campbell give you that and a bit of context, too, about how our markets are interconnected and how it relates to the exports that I was talking about previously.

Mr. Bruce Campbell: We are interconnected with a number of jurisdictions around us—Quebec, New York, Michigan—and we do substantial trade across those jurisdictions. That's a very good thing for the reliability of the system. If you have a small, isolated system and something happens, you don't have much resilience. What those interconnections give you is a great deal of resilience. If we have a generator that has to trip offline, for instance, the first and immediate thing that happens, almost instantaneously without any operator action, is we get an inrush of power from surrounding jurisdictions, and that holds our system together. So to have strong interconnections, particularly from the viewpoint of a system operator, is a very good thing.

When you look at it on the market side, if I could go back to some of the earlier discussion, at the huge risk of using analogies, which sometimes fall flat on their face, I'm going to try a little analogy here. You have a house on which you pay a mortgage. You're paying that mort-

gage night and day, no matter what. When you go away for the weekend, there is the opportunity for someone to use a room in your house and pay you some money for the use of that house. You're not using it. You own it, and you're paying the mortgage all the time. When you go away, there's the opportunity for someone to use the room, to use your house for the weekend.

Say your mortgage cost for that weekend was \$300, but somebody was willing to pay you \$25 to use all or part of that house for the weekend. Are you better off financially by saying, "No, I don't want to do that. I built the house for my purposes"? Do I just want to keep it like that, or do I want to actually put \$25 in my pocket, and that will offset some of the costs that I'm paying for the house?

The analogy I'm making is that the power system market is exactly like that. We build facilities in Ontario to meet Ontario needs. We don't build for export; we build to meet Ontario needs. We have this asset sitting there, and you can decide. If someone is prepared to pay me \$20—and that's more than my costs of production—to use that asset at times when I don't need it on the system, then that's \$20 that comes into Ontario that wasn't there before.

Does that necessarily cover all of the costs of—if you simply took the total costs and divided them by the energy production, does that number cover all of those costs? No. But it is still saving money for Ontario consumers.

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In Ontario what happens is, we have a peak in the summer and we have a smaller peak in the winter. We've got almost all of our generation running, plus a reserve margin which is adequate for the summer; we're not excessive, but we're adequate. But then what happens when it cools off in the fall and all those machines don't need to run for Ontario purposes but you still have to pay the cost of them? It's still the mortgage. As the deputy was saying earlier, we've always paid these costs one way or the other. What happens in Ontario is those plants can run where they can more than cover their operating costs and bring some extra money into Ontario as a result of those assets being there. That figure for 2014, if I recall correctly, is \$320 million.

The key to this is, we're building for Ontario and we take advantage of the investment that we've made when we have the opportunity to do so.

Mr. John Fraser: I understand that, and I appreciate that better understanding of it.

I was just looking for some numbers. I'm talking about the market in terms of how much retail electricity do we sell? Do we export? How much do we produce domestically?

Mr. Bruce Campbell: We produce domestically about 140 terawatt hours, and I think—

Mr. John Fraser: Can you convert that into dollars?

Mr. Bruce Campbell: Can I have the indulgence of the committee? I'm going to give a number but then I'm going to go right back to the office and check, and if it's

wrong I'm going to write you a little note saying it was wrong.

Mr. John Fraser: Just write your note, that's fine.

Mr. Bruce Campbell: Because I think we're around 14 terawatt hours of energy.

Mr. John Fraser: That would be helpful for me to get that information. Or if there is a place where I can find it, I do want to follow up.

Interjection: You've only got one more minute.

Mr. John Fraser: We only have one more minute?

Interjection.

Mr. John Fraser: No, I've got time.

The Chair (Mr. Ernie Hardeman): I think you've got seven minutes left.

Mr. John Fraser: In terms of our capacity, obviously we built with a certain planned capacity in mind. You were speaking about energy security in terms of interconnectivity, and that's important, but I want to go back to energy security and ask a question with regard to having your own generation and having some reliability in the system so that you don't have to import power at a higher price, because that's the risk that's on that side.

What I'm driving at with those numbers and why I'd like to get them—and I appreciate that's money that is coming into the system, but it's also money that mitigates a risk—is to understand how that relates to that risk of, "If we don't have this, then this is what our costs are going to be at peak."

Mr. Bruce Campbell: If you don't have it, then you have a choice: You can either not supply, which obviously doesn't work, or you import in order to supply, and if you look at the markets around us, at peak times that would be a considerably more expensive proposition than what we've invested in our own generation.

Mr. Serge Imbrogno: Bruce, maybe just another part of that is that there are certain requirements that, because Ontario is interconnected, we need to plan and meet our peak load and a certain reserve above that, so everyone needs to make sure that they contribute to that. Maybe, Bruce, you can talk a bit about our system requirement and what we need to build in Ontario to satisfy Ontario needs and our international requirements.

Mr. Bruce Campbell: Yes. The obligation on every system is to ensure that it has plans in place to meet that load reliably, and in doing that, you're not allowed to do what's called lean on the ties. You can't take unpaid account of external jurisdictions. You can, in some places, contract outside your jurisdiction to get a firm supply, but that's the kind of situation I talked to you about that's very expensive. The reliability standard for long-term planning—18% to 20% over the capacity that you expect—seems to produce a level of reliability that people find acceptable by the time you actually get out there.

Mr. John Fraser: Is that a common planning tool? Is that common across utilities?

Mr. Bruce Campbell: That is a very common benchmark, yes.

Mr. John Fraser: One last thing, and then I know my colleague here has a question: You spoke about two peaks, a high peak and lower peak in the winter. Inside the industry, in terms of utilities—I know it is up here, once you get past 52—how does it change as you go south, in terms of planning?

Mr. Bruce Campbell: Well, most of the states now, at least the states on the eastern interconnection, would be summer peaking like us. Quebec is still winter peaking.

Just to go back to something that Serge mentioned, these planning things: Yes, that's a common understanding of what it makes sense to plan for, but there is a positive obligation. Because you're interconnected, the rules, the NERC standards require that we plan and demonstrate to our neighbours that we have enough arrangements in Ontario to meet those kinds of reliability requirements. So it's a very rigid requirement.

The Chair (Mr. Ernie Hardeman): Mr. Potts.

Mr. Arthur Potts: Thank you. At the risk of getting a groan, because I've used this analogy here before, my godfather, Larratt Higgins, was a chief forecaster for Hydro through the 1960s and 1970s. When he talked about the forecast for hydro growth, just like John A. Macdonald's gin, a little bit too much was just about the right amount. I wanted to get that on the record in recognition of my godfather.

I want to go back to the net metering questions. Particularly in rural Ontario in my role as PA, the opportunities that we have with the global adjustment portion that's on those bills and the opportunities for them to reduce their hydro bills through time-of-use and other things—my guess is that much of the reduction will come through net metering and opportunities in generation in a cost-effective, sustainable way in rural Ontario to help get those bills down. That's a major focus for us.

Can you maybe comment on the programs we may be looking at to help rural Ontario reduce its hydro bills, particularly in the global adjustment part of it, which is such a large segment of a rural Ontario bill?

Mr. Serge Imbrogno: I'll start, and maybe others can jump in.

There are a couple of things that the government has indicated that it wants to move forward on. One of the things is helping rural customers move off electricity and hook up to natural gas. That would be a major benefit for rural customers who currently have high electricity bills for winter heating. MEDI has a program. It's a \$200-million fund through Infrastructure Ontario to provide financing, and there's a \$30-million grant program that MEDI will be rolling out. They'll be consulting with municipalities and other stakeholders. That's an important initiative that will help rural Ontario move away from winter peaking electricity.

The Net Metering Program is again something that we'll fully roll out. Right now, people are eligible for microFIT, where you can put solar panels on your house and you receive a price for that power that's fed directly into the grid. You can use that revenue to offset your

costs, which can include your electricity costs. But we are moving away from that system in 2017-18 to a system where it would be more self-consumption. So rather than you selling the power directly to the grid, you would self-consume. That would save you money as well and that would be more of a conservation-type initiative. Again, that is being rolled out in consultation with stakeholders, with CanSIA, with municipalities and other individuals.

The other major thing that the government has done is their Conservation First initiatives. Over the next six years, we'll be moving forward with our CDM framework. We have a new CDM framework where we've empowered LDCs to develop more of their own programs. We think that by doing that, it allows them to address their specific customer needs. Rural Ontario customers will have different needs than southern Ontario customers, and that allows their local LDCs to provide those conservation-type programs. Those are starting to roll out as well.

Those are some of the things that the government is doing directly and through its agencies to support reduced electricity bills and more conservation. I don't know if—

Mr. Arthur Potts: And Hydro One, as an LDC, would be totally on board with that and rolling out, through customer service opportunities, opportunities to—

Mr. Carmine Marcello: Absolutely. I think that if you look at the success of the microFIT programs that have gone before us, a lot of them are largely rural Ontario initiatives connected to our distribution system. We've learned a lot in terms of integrating distributed

solar. We have pilot storage products being tested as well.

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I do think the next iteration of this will be—and we've all seen it in the media, when we're talking about the new Tesla products. I think there is a way to go until those price points come down, but when you start to see the ability to integrate local, renewable and storage in a cost-effective manner with net metering, I think that will really transform the landscape. Right now, we're spending a lot of time and effort in terms of very targeted conservation and demand management programs for our customers.

The Chair (Mr. Ernie Hardeman): I think that's a wonderful place to end it, and thank you very much for your presentation. That concludes all the time. Thank you for coming in this afternoon and sharing with us—

Mr. Bruce Campbell: Mr. Chair, if I could—because I have it right in front of me, and I like to get rid of undertakings as soon as I can, after I take them—I was right on one number and wrong on one number. Ontario market demand: 139.8 terawatt hours. Exports in 2014: 19.1 terawatt hours.

The Chair (Mr. Ernie Hardeman): I'm sure batting five hundred is not that bad.

Mr. Bruce Campbell: It's not nearly good enough in our business, I'll tell you.

The Chair (Mr. Ernie Hardeman): Thank you very much.

Interjections.

The Chair (Mr. Ernie Hardeman): If we could, we're going to go in camera to discuss the report writing.

The committee continued in closed session at 1445.

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