

Meeting Summary



OEB Smart Grid Working Group

Meeting Date: March 29, 2011 **Time:** 9:30 am – 4:45 pm

Location: 2300 Yonge Street, 25th Floor, ADR room

Board Staff: Russ Houldin, Ashley Hayle, Rachel Anderson, Stephen Vetsis

Meeting Topic: Customer Control Objectives identified in the Minister's Directive

The purpose of the third Smart Grid Working Group Meeting (SGWG) was to discuss each of the six customer control objectives identified in the Minister's Directive.

Objective i) Access

Key observations from the discussion:

- a) The level of detail, frequency, and latency of information that customers will want varies by customer class and is likely to change in the future as the cost of energy increases. Care should be taken when making assumptions about what customers want based on current behaviour. The Guidance should be careful not to limit options in the future.
- b) It is not yet clear whether it would be most cost effective and efficient to leverage smart meters to provide (real-time) access to data or if another route should be established instead. Access to real-time data should be provided to facilitate future needs of customers, even if real-time access is not required now.
- c) Ontario has both a base in AMI on which to build and challenges as a result of the particular way that AMI has been deployed. The provision of access should take these realities into account. For example, existing smart meters allow for a certain amount of behind-the-meter applications but proprietary protocols also limit the development of these applications.
- d) The provision of access should balance the needs of customers while avoiding obsolescence and promoting innovation.
- e) With customer permission third parties should have access to data.

Discussion notes:

Utilities	Residential Customers: <ul style="list-style-type: none">• Retailers may want to develop their own TOU schedule and therefore will likely desire the most granular information possible.• Acceptable latency (for access to data) depends on use. Where data is used for
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'post analysis,' a longer latency is acceptable. If data is to be used for 'direct control' purposes, real-time access is imperative.

- Until we determine what applications people really want, we don't know what detail in data will be needed (as well as latency). Perhaps useful to discuss as two stages developing market and full-state.
- In Ontario, LDCs are not obliged to store data so we should be careful about what assumptions we make about what will be available. There are two main types of data: meter data for billing, and telemetric data for operations. What data are we referring to? Raw data, VEE data, operational data?
- We cannot yet answer the question of whether residential customers will want access to real-time data. Prices are not yet high enough to drive consumers to want real-time data. Therefore we shouldn't draw a line in the sand now that we can't cross later. Should be open to the future.
- In terms of security, don't see how it is any different from providing communication to field devices or home devices for employees. There are not many additional risks from adding these portals. Same as current practice, LDCs are constantly checking and assessing risk to ensure security.
- In terms of interoperability (standards), meter companies cite resource development as an issue. Ontario is a small market on the global scale and in their view it's not worth devoting the resources to developing an industry standard. However, they may be willing to compromise with a gateway system.
- In terms of coordination, there is always a technical solution, but how much money do you want to spend, and if you are moving towards standards, if you pick a standard but it is not an industry standard, then you've got a problem
- With AMI, at the beginning Ontario was ahead of the pack, but US states are quickly catching up. Why mandate a standard when you don't know what the desired uses will be? It's tough to pressure meter providers (by mandating a standard) since Ontario is a very small part of their overall North American market. Now that the US has started implementing meters, vendors will concentrate on the bigger markets. Currently there is no standard and it will take a long time to develop. Canadian utilities have not participated in standards development in the US, yet those standards will drive the market here.
- Getting legacy systems up to speed with new standards will be difficult.
- AMI networks currently may not be able to accommodate additional volumes of information. A serial connection into home that doesn't impact the AMI network may be better solution.
- For uses such as preloading an energy management tool, historical data is fine. For other uses such as a retailer offering TOU rates, hourly data is required.
- If you are using a home management device and are plugged into your budget and want to know how you are using appliances and how they affect your budget, and you are looking the day after, you are trying to remember what you had on and off. If you have real time data available to you, you can be looking at it and that time and manage right then and there. These are the types of things that are coming. It's a matter of what the customer wants. If we are saying that we only need data a day after to properly manage their consumption, I disagree.
- Also need to think of the LDC regarding the proliferation of microgeneration. Are going to want to think of what is coming out of that house on real time to be able to manage the data.
- One of the issues that we have been struggling with on the Corporate Partners

	<p>Committee is that there are 3 major providers of AMI with 3 different protocols. We haven't spoken about open protocols regarding behind-the-meter capabilities. How do we get over this one?</p> <ul style="list-style-type: none"> • For behind-the-meter services and devices, providers need gateways to have standard protocols, but in today's discussion we heard that this may not be not a priority. The only way then to enable behind-the-meter technology is if the Board mandates an industry standard of some kind. If this is not a priority, development will not happen. The province spent \$1 billion to install smart meters they should be utilized to the fullest.
<p>Technology Vendors</p>	<p>Residential Customers:</p> <ul style="list-style-type: none"> • One important aspect of behind-the-meter services is access to real-time data but we must define what real-time is or what it should be. • What is the latency involved with real-time access to data? Third parties are seeking the minimum latency possible; this is best achieved with direct access to the meter. • It is possible to get access to the meter somewhat cheaply, and it doesn't necessarily have to be a cost that would be recovered by the LDC (to have third party access to real-time data). • Getting data from a distributor's collector system, as opposed to the MDM/R, does not address the latency problem, this scenario still involves at least a day-long time lag. • With in-home devices, one could use historical data to establish a profile and a general plan for consumption, but with real-time data, the device can continuously take information and manage the home accordingly. • An LDC in Ontario established a pre-pay program and found about 25% of customers participated and they conserved about 15% of their typical load because they were constantly monitoring their usage. • This relates to customer education. If data is visible people are constantly reminded of their consumption. If customers are only given a profile they tend to forget after a while. It's true that, like any new toy, people may lose interest after a while but customers enjoy real-time for many reasons. For example, visual cues can help teach children about consumption. This doesn't require access to the meter (necessarily) but why not leverage the smart meter? • It's about information and education. Going back to the phone plan analogy -- customers know at what time of day it's expensive to make a call; they don't necessarily need real-time to make those choices. • Trying to wear the consumer's hat, the only time there is a need for near real-time or real-time data is when a billing interval is so short that the load has to manage usage in a real-time pricing scenario. In TOU, usage is managed according to those time buckets. But with a peak-time rebate consumers might require real-time data at that point. • If you use a home energy management device and you have a budget and all your devices/appliances affect that budget, the following day when you get the data you may not remember what specific appliances you used at a given time. But with real-time you can see as you are using an appliance what the impact will be on your bill. • Broadband vs. broadcast. Broadband doesn't exist in all situations. Not always available as way of broadcasting data. Be careful of use of terminology.

	<p>Broadband should not be ruled out even though it isn't available throughout province.</p> <ul style="list-style-type: none"> • Interoperability is an issue. There are three main AMI providers in the province each with different protocols. Perhaps need to talk about open protocols for behind- the-meter activities. <p>Commercial Customers:</p> <ul style="list-style-type: none"> • Many smaller commercial applications have essentially the same meter as residential customer. There is a disparity in meter technologies in the class. Some LDCs may be willing to pay for the meter upgrade. Smaller buildings have less complex meters.
<p>Consumer Groups</p>	<p>Residential Customers:</p> <ul style="list-style-type: none"> • With customer permission and control, third parties should have access to data (not just retailers but also demand aggregators, essentially anyone with whom the customer wants to do business). In terms of issues related to 'real-time' access, we must look down the road and understand that today customers don't know what they will want if they don't understand what the opportunities and prices will be down the road. Therefore, we shouldn't prepare exclusively on current customer reaction to TOU and energy services and current TOU framework. When discussing real-time/latency, it all depends on the data path and we should stick with real-time as a requirement to provide benefits in the future – this foundation will create efficiency down the road. • Customers paid for smart meters and they should be able to use them to the fullest extent. • Whatever we say today will likely be wrong for tomorrow. It will be difficult to forecast how we will use data in the future. That's the purpose of the smart grid to enable the market to flourish. Some customers will want new services, others will not. How can the Board ensure this flexibility? By providing real-time data. Moreover, currently it is difficult to determine household consumption based on existing smart meter data, need real time to better understand usage at device/appliance level. • As discussed in prior sessions, in Ontario we don't have the smart meter functionality we had anticipated when the program started. Currently we're having a discussion about real-time data but we don't know the costs or benefits. If the benefits exceed costs than there is no problem with recovering the costs of providing real-time data through rates. We should be discussing functionality instead (cost/benefit out of scope) and figure out how best to deliver that functionality, whether it's delivered by 3rd parties providers, or the rate base. We will not get system-wide benefits out of smart grid if there are just a handful of applications out there that are used. We can't anticipate what things will be, for example, kids using Apple apps today. We can't imagine what functionality they will want. We don't know what functionality we're trying to enable but the Directive was clear that providing the information is key. Benchmarking data could be useful. • There is massive variation among consumers so let's not make too many assumptions. • With current prices/TOU pricing structure, existing devices such as timers will do fine for most customers but with real-time or critical pricing timers etc., this can be problematic. The customer's load is part of the system's resources and if load can be managed there will be benefits. The OEB has looked at pricing the distribution system for capacity – if customers can limit themselves to prearranged capacity

(already exists at transmission level). But this requires load control which in turn requires real-time data. Also, it's unclear how to get there especially in terms of who pays.

- Look at a future where in order to keep utility cost down the utility can charge customers based on the capacity delivered to a particular household or the time at which peak is delivered. The customer is biggest driver of what resources are required. If you give the customer information about what they are doing and the impacts, smart grid enables customers to manage their relationship with the LDC. As prices increase, customers will become more and more engaged.
- We should be careful we don't get undesired consequences moving forward. Customers want more information but don't want to lose what they already have. Some smart meters don't provide pulse outputs but we want to maintain that functionality.
- With respect to coordination, have to be careful of consequences. Don't want to forget that the customer still wants to get the information they are getting now. They want more information but they don't want to lose what they already have. Concern is that some of the smart meters are not providing pulse items.

Commercial Customers:

- Most comments related to residential customers apply to Commercial and Industrial sectors as well. The utility meter data is always correct (in any dispute), which is why data should come from utility meter. Having this point of access is critical. Also, meters can provide more than consumption data. Should the customer so choose (and at their cost), the LDC should provide a meter with additional features provided it still meets the LDC's needs.
- Some issues may be institutional. Municipalities, for example, have a high number of bills to manage. Finding data is very difficult, tracking accounts as well. These customers may want assistance to aggregate their data.
- Would argue that customer owns their data. Had an unfortunate situation with the utility, had a policy where they said they weren't going to provide this, had to go to OEB and utility eventually capitulated. OEB has to be very clear in terms of definitions. Customer who are paying for it, they are the ones who need the data, they need to have access to it.
- Commercial/industrial split may not be relevant. The discussion should be focused more on consumption.

Industrial Customers:

- Canada Green Building council believes that 50% of energy in large buildings can be saved. Where does agricultural industry fit in? Not small farms but larger entities.

Objective ii) Visibility

Key observations from the discussion:

- a) The Board cannot forecast what customers will want in the future and therefore the Guidance should be careful not to limit options regarding visibility. For example, visibility is already available through a number of channels, namely home displays, internet, and smart phones. As such, the Board’s guidance should facilitate consumer choice for visibility for these and other potential future options.
- b) Visibility would be useful if it provided the customer with the ability to compare usage with previous consumption, peer usage, and that of the average consumer.
- c) Visibility requirements will vary based on what the data is used for: billing and settlement, education, demand response, or system optimization.

Discussion notes:

Technology Vendors	<ul style="list-style-type: none"> • In terms of visibility for the customer, there are a variety of windows such as in home displays, internet/computers, and smart phones. So it’s really a consumer’s choice how they interact with information. The key is providing pricing information. They may want to set a budget for the month, so did we provide them with information that allows them to manage to that budget? • The market should determine access methods so should the Board try to pin them down now? • With regard to comparative data, there are three main types customers would likely wish for: comparison to self (previous consumption), to neighbourhood, as well as to average consumer. • Visibility requirements vary based on the goal of the data, is it for education, billing and settlement, demand response, system optimization etc.?
Consumer Groups	<ul style="list-style-type: none"> • Most large (C&I) customers have meters that can provide power quality information but do not use it. Customers shouldn’t have to rely on LDCs to provide information. If an LDC gave sector comparisons for large users it may inadvertently break privacy laws. • It is not the OEB’s role to mandate what customers can and cannot see. Instead the Board should just enable customers who want to see extra information and allow larger customers to change to meters with extra features, at their own cost, as long as the new meter still meets the LDC’s requirements. • Commercial users want usage, prices, kVA, essentially want to match what the utility is billing them. So needs visibility within 5 minutes, because that is how the ISEO bills them. if the customer is watching the 5 minute price, then the customer can take action with the customer price. • Most of power quality issues are often on the customer side of the meter. If we build something that is flexible, this could go in a number of different directions. • Large industrials all have meters that can measure power quality, so leaning on the utility to provide that information to provide that kind of data doesn’t seem to make sense. • There are already too many requirements to keep on top of, so simpler the guidance around visibility, the better

Objective iii) Control

Key observations from the discussion:

- a) Different customers will have different needs for control, and these needs may change in the future, particularly as prices for electricity change. It may be necessary to provide customers with the option of having high levels of control so that the control is available should they desire it.
- b) The foundation of customer control is information, so in order to ensure customer control, one must determine the most cost effective way for customers to have access to the energy information that they need.
- c) Any Guidance should be sensitive to the need for a balance between providing information for current and future uses and between current and future data capabilities of the AMI systems.

Discussion notes:

Utilities	<ul style="list-style-type: none"> • Customer needs will change consistently. Gasoline is a perfect example of price signals controlling behaviour. • Can't say that a certain % want a certain type of control, it will always change based on the prices. • There are 5 AMI platforms in Ontario. As the market evolves, the Board should only require the level of performance that meets the current five platforms. In other words, the Board should take a minimal approach for now (stabilize metering platforms) as market evolves towards a standard. • Control analogy could be the telephone jack. Function to use telephone is there, but you can buy different capabilities of phones based on your preferences. You need a standard dial tone for the smart grid, e.g. this may be smart energy profile over ZigBee. Once this is provisioned, anything can be plugged into this. • Ontario AMIs cannot really handle bi-directional communication yet. Let us only specify the minimum data to be provided and let the market do the rest. • In relation to demand response, nothing precludes an AMI network from communicating directly with devices in the home without going through the meter. The device itself could act as a node directly on the network. • With regard to privacy and security, depending on how unauthorized parties 'snake' their way into the system, unauthorized control could be a problem (such as remote disconnect), knowledge of when residents are at home and away etc is another. • Question (regarding level of control required) is similar to what type of food do customers want? What I want is not what anyone else wants necessarily. You build it for them (control) so that they can take it and use it as much as they want to. E.g. set and forget, hourly basis management, no CDM at all.
Technology Vendors	<ul style="list-style-type: none"> • Not all customers will want the same level of involvement but it is important to enable any level of involvement through infrastructure, processes, etc. • It all boils down to the access point. Access provides visibility. Fundamentally access feeds into all the other areas and is the main requirement. • Type of control required depends on whether or not one wants the meter to be the gateway in to home. It's possible to get the benefits into the home without using the

	<p>meter (with proper instrumentation). But, do you leverage investment in smart meters to enhance customer benefits, etc.? If that is the goal then you will require some investment in the gateway. If we separate investments from the meter we may not see all the desired benefits. If the Board were to go the consumer funded (rates) route then other policy decisions need to be made.</p> <ul style="list-style-type: none"> • This venue is not appropriate to determine if the meter must/should be the gateway.
<p>Consumer Groups</p>	<ul style="list-style-type: none"> • We should try to follow the principle that ‘if you are going to use data for multiple purposes, capture it once and capture at the source’. The source is the meter and there is no way around this. Getting raw consumption data directly from the meter is the obvious solution. As far as customer equipment needing data input and using it, it’s consumption data that’s required. This may be the only data that’s required. • Most demand response programs have been designed with a simplified approach and we tend to think of DR as peak capacity. But if we conceptualize it locally we can use it to derive other benefits such as reducing congestion etc. Are there opportunities to have control of customer equipment? • Some larger LDCs are already providing historical usage data for their customers (web-based). Are the small ones also doing it? Is this a service that all utilities should provide at a minimum? (Given provincial variability). • Demand response may be thought of as a substitute for capacity. You can actually think about it on a more local basis in terms of dealing with congestions, transformer basis. If I think about this regarding a meter, are there options by which you would have control of customer equipment? What I am seeing with these questions are more about do customers have a right to override; much broader questions than just looking at the meter and the data. There are other options to increasing the functionality to the meter. • Smart grid is coming. We all want to enable it to happen. We don’t know what people want, we want to have a menu out there so that the benefits will come.

Objective iv) Participation in Renewable Generation

Key observations from the discussion:

- a) Technical constraints on the electricity system result in customers in Ontario having different levels of access to participation in renewable generation. Some SGWG members believed that investments in smart grid integration should be prioritized to maximize opportunities for participation, while others believed that DG should be promoted in high growth areas where future capital expenditures will be the highest (as capacity is high and equipment is in most need of replacement).
- b) Customer value drivers for participating in renewable generation are varied and could include financial (selling power back to the grid or reducing power purchased from grid), marketing (building brand, public relations issues), self-sufficiency, and environmental.

Discussion notes:

<p>Utilities</p>	<ul style="list-style-type: none"> • Not all Ontario customers have the same opportunity to participate in renewable generation because of system/capacity constraints. We have to determine where we invest (prioritize) to ensure the largest number of customers have the opportunity to participate. • To get the greatest benefit of DG, it should be promoted in the high growth areas of the province to defray the capital expenditures in those areas. • The rules for FIT and microFIT are consistent across the province so is provincial consistency really an issue? • Is the standard generation account charge enough given all the work the distributor must do to connect these customers? These customers should be charged the same as a load customer. Why are generators charged less because the power is flowing a different way? • Should anybody who connects, whether a generator or load, be treated the same to connect? From LDC perspective, a connection is a connection and as long as LDC remains whole for facilitating the connection, it doesn't matter. • Caution about implementing requirements that mean changing work processes. Requiring these changes for all LDCs because one or two customers complain may not be desirable, be sure to look at the total picture and ensure there is balance against overall LDC sector. • Be careful. If we let the market set up DG anywhere, we need to account for worker safety. Workers are at risk because they are working on electrical systems they are not completely familiar with. • A value driver of DG is the 82 cents that electricity from DG can be sold at. • Regarding interoperability, if it is an interpretation issue, all we need is some sort of guidance. When you look at the work that the utility needs to do with AMI, etc., the utility is not getting enough. • Rate should be based on a similar size load across the utility. Why is there a huge variance based only on which direction the power is going? • Are their efficiency systems in place so that whatever the customer is producing, could we ensure that they are using their own power first, rather than just sending it out to the grid? This could result in fewer assets, lower fixed costs, etc. • In terms of value drivers, financial and other. Brand benefits for private sector to use DG. Walmart Canada would not be putting solar panels on its roof just to get benefits from microFIT. Either comes down to financial or social. • Standard guidelines could encourage renewable generation by allowing consumers to consume what they are producing, as long as the utility is still mandated to provide safe and reliable situation. • If the decision that everything stays as is (regarding FIT and microFIT) and each utility has its own condition of service for DG, just for customer benefit, if OEB is not going to mandate either way, the industry needs some guidance on clarity on what the technical requirements are (across utilities).
<p>Technology Vendors</p>	<ul style="list-style-type: none"> • One value driver is self-sufficiency.
<p>Consumer</p>	<ul style="list-style-type: none"> • Real-life example: an anaerobic digester produces excess heat which the school

Groups	<p>across the road could use but there is regulatory red-tape preventing this. There are cases where efficiency can be improved with things such as CHP (and allowing it to serve more than one building) etc.</p> <ul style="list-style-type: none"> Does the Directive require the OEB to look at customers as generators differently from generators as generators? There is a difference between the customer who is already paying for the distribution system vs. a foreign company who paid nothing toward the system yet currently they're both being treated the same. Should this difference be reflected in the guidance?
Agencies	<ul style="list-style-type: none"> From customer questions it is apparent that the LDCs have different technical requirements. Could LDCs standardize their technical requirements for processing DG connections? Some utilities are asking for disconnects with view windows, some aren't. Some utilities are not permitting certain inverters connection configuration, some are permitting it etc.

Objectives v) Customer Choice

Key observations from the discussion:

- The smart grid has the opportunity to provide customers with a wider range of options and choices. However, as LDCs currently have varying capabilities, customer choice available from smart grid will vary by LDC. (E.g. EVs may be a problem for LDCs with limited extra capacity, but not a problem for rural LDCs).
- Commercial and industrial customers will likely want to take advantage of smart grid enabled services related to reliability.

Discussion notes:

Utilities	<ul style="list-style-type: none"> Commercial and industrial customers will likely want services that can be enabled by smart grid such as auto-re-closing to increase reliability. Some enablers have to happen to get you on this path of choice. Visualization of the network is a must before we have any options of doing anything with it. Urban LDCs have different options from rural ones due to the physical nature of their respective networks. This must be balanced with different expectations among different customer types (not just class but also location, geographic variation has an impact). Issues such as EVs will have different impacts on different distributors (a big problem for large urban LDCs but not for rural ones). LDCs must share information.
Technology Vendors	<ul style="list-style-type: none"> If smart grid could allow customers to behave proactively and in real-time opt in and opt out of DR programs (e.g. peaksaver), it might help to increase uptake.
Consumer Groups	<ul style="list-style-type: none"> What about a scenario where a new subdivision or a neighbourhood might want to pay a premium for a self-healing grid? Is there an opportunity for premium pricing for increased reliability etc.? While the Board shouldn't necessarily stop LDCs from offering higher quality services (because smart grid enables it) the Board should be cautious of regulating provision of services that are not natural monopolies. Reliability is not a monopoly – a customer can take care of reliability independently (without going through the LDC). Customers can provide value by optimizing use of assets on grid itself. Or by

	<p>allowing LDC to use assets optimally. The idea of coordinating resources other than renewable generation could be used to manage the whole system. Services that connect customer resources to grid resources could be beneficial to both sides.</p> <ul style="list-style-type: none"> • How to mediate learning from others and balance with not duplicating efforts but acknowledging different issues for different LDCs. • Commercial customers are interested more in smart grid type initiatives on positive side, deep lake cooling. Commercial customers want to participate in new options; smart grid has the opportunity to do that. • Board should be cautious about regulating services that may not be natural monopolies.
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Objective vi) Education

Key observations from the discussion:

- a) Distributors may be well-suited to educate customers about many issues (such as billing) since distributors are the primary point of contact for most customers. However, as it is important that a consistent message is promoted, customer education related to provincial energy policy and other cross-cutting issues may be best handled by a central body (such as the OPA). This highlights the importance of balancing the need for provincial consistency with the need to address variation among distributors in education and messaging.
- b) Past experience (within and out of Ontario) has shown that it is important that the benefits of any new project are accurately portrayed to the public, particularly to avoid unrealistic expectations of the benefits of smart grid. For example, messaging around smart meters related to their costs savings, which is not the main benefit of smart meters.

Discussion notes:

Utilities	<ul style="list-style-type: none"> • Customer education should start in schools. A distributor worked with local school boards on a program but it is drying up due to lack of funding. However, apparently there may be some provincial initiative underway (Ministry of Education) to address this? • How much responsibility should the OPA have for this? They already handle the marketing of CDM programs etc. • The main message should be that equipment needs to be replaced regardless so why not replace it with something smarter? • We should be careful about how much information we provide to customers, what information do customers really want? Most customers only care about what has a direct impact on them, they want to save money. • However, when prices do rise customers will care more so isn't it better to get ahead of the curve now? • Perceived value is an important issue – utility bills are almost viewed as a tax by many consumers. • To temper the expectation of a single message, what about if the message is simple at the top end (a key foundation message) and from there LDCs can tailor it based on their individual customer bases. With smart grid there are two anchoring points:
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	<p>where is the LDC starting from and what direction are they heading? Existing LDC variation will impact what smart grid 'is' for each distributor and its customers so there should be some flexibility in the education and messaging to reflect that.</p> <ul style="list-style-type: none"> • May want to train electricians to help people understand their energy bill to take the load of LDCs • Interesting idea regarding training electricians, but am concerned about them sending the wrong messages. • Smart metering program would not have flown if it had been marketed that way (based on the fact that consumers are paying for the true cost of electricity). New messages should be based on fact that we have aging infrastructure that needs to be replaced, and if we are going to go forward, it makes more sense to replace it with smart equipment than like for like. Let's acknowledge where we are. • There are generational components to every issue. There are differences between conservation and smart grid. Grade 5 students may not understand smart grid and all its components. Customers want to learn about something in terms of how it benefits them. Therefore we need to nail down the benefits before we nail down the education program. What the public is struggling with is that they don't get the benefit of smart meters. Consumers immediately understand benefits from a pocketbook perspective, secondly, for cost avoidance. What we need to nail down as a province is how do we show customers that a smart grid is going to benefit them. • Individual messages from different LDCs would cause confusion. For example customers in Whitby may listen to Toronto radio and hear messages from THESL which do not apply to them.
<p>Technology Vendors</p>	<ul style="list-style-type: none"> • Educating kids on smart grid may not need to be the main focus because they are comfortable with technology. It's actually the adults who need help. • We should get back to basics: consumers want to know about something based on the benefits they will receive. We need to nail down the benefits (first from pocketbook perspective and secondarily societal perspective) before we start educating. • With smart meters, the message was wrong from the start – smart meters in and of themselves do not equal cost savings. There is an important difference between costing less and avoiding costs. • Education is also about managing what information is shared with customers – in other words, do not want to provide too much information that might be confusing to customers. • If we were to interview people on energy principles, the vast majority would have no idea what we are talking about. The problem with this is that CDM depends on an understanding of the energy principles. WE should ensure that concepts are made understandable to the layperson. Maybe on the bill, or somewhere else. It is important to give the vast majority of people an understanding that could lead to success. • The entire education issue is the crux of getting all of us to the next stage. There are so many examples around world based on education. How many people actually know what they are paying for on their bill or not? Whether it gets used or not, you have to pay for assets. LDCs, government itself, have to consider using customers that we have converted to be emissary's of smart grid. GE, Siemens, etc. are using mobile education trailers on a road show where people get to walk in and understand smart grid. Museums around energy can move the needle for the

	<p>masses. We have to be very creative on so many levels to understand what is going on. Take gasoline for an example. Customers certainly know when the price of gasoline goes up. They understand supply and demand but do consumers really know what is going on in China and India and the impacts etc?</p> <ul style="list-style-type: none"> • The message around smart meters was initially wrong. It should never have been said that customers are automatically going to save money. The message should have been that customers will be paying true cost of electricity. and if customers shift their load, they could avoid increasing costs.
<p>Consumer Groups</p>	<ul style="list-style-type: none"> • Proposal that LDCs be responsible for education and mandating them to deliver is concerning as LDCs are currently being squeezed with too many tasks considering limited resources. • There are two types of education: bill component issues (if a customer can't understand their bill they will go to the person who sent it and the LDC is in the best position to explain its bill to its customers) but outside of that, for issues relating to policy etc. Perhaps it would be better to have the OPA primarily responsible customer education. We wouldn't want to see the LDCs try to message conservation and SG individually since the result would be 80 different messages, but regarding bills that makes sense. • Commercial customers sometimes deal with multiple LDCs and there are different LDC interpretations/explanations of things such as the global adjustment which is problematic. Commercial customers do not want 80 different versions of smart grid because each LDC 'educates' differently. This is especially important for property managers with locations across the province. • Messaging and education needs to be properly thought through -- PR campaigns vs. actual education. Education has numerous components and should be coordinated. • Industrial customers may not need much education in that their bills are high enough they've taken it upon themselves to learn.

Next Scheduled Meeting:

- April 12, 2011