Application No. 1606102

**ALBERTA UTILITIES COMMISSION**

**IN THE MATTER OF the *Alberta Utilities Commission Act*, R.S.A. 2000, c. A-37.2;**

**AND IN THE MATTER OF Order-In-Council 93/210, respecting the Alberta Smart Grid Inquiry.**

# WRITTEN SUBMISSIONS OF CENTRAL ALBERTA RURAL ELECTRIFICATION ASSOCIATION and SOUTH ALTA RURAL ELECTRIFICATION ASSOCIATION

**June 24, 2010**

# 1. INTRODUCTION AND SUMMARY

## A. INTRODUCTION

The Central Alberta Rural Electrification Association ("CAREA") and South Alta Rural Electrification Association ("SAREA") (collectively, the "Joint Participants") are pleased to provide these submissions to the Alberta Utilities Commission ("AUC") or ("Commission") for the purposes of the Alberta Smart Grid Enquiry (the "Inquiry"). As noted in the Statement of Intention to Participate of the Joint Participants dated April 26, 2010, the Joint Participants and their respective members have a direct interest in the matters connected with the Inquiry and the Commission's investigations and reports related thereto.

In preparing these submissions, the Joint Participants have had the opportunity to receive and review the submissions of the Industrial Power Consumers Association of Alberta ("IPCAA"), as well as the submissions of Mr. Richard Cowburn. Except as indicated below, the Joint Participants concur with and support the submissions of IPCAA and Mr. Cowburn.

Set out below are additional submissions provided by the Joint Participants for the benefit of the Commission. In addition to these submissions, the Joint Participants are providing for the Commission the following documents as additional information for the purposes of this proceeding:

**a.** *Response to Alberta Energy Straw Model on Advanced Metering Infrastructure; and*

**b.** *Presentation to the Canadian Electricity Association by Eli Turk, Vice President, Canadian Electricity Association, October 15, 2009; "Smart Grid: National and International Developments".*

## B. SUMMARY OF SUBMISSIONS

CAREA and South Alta REA note that the world has yet to see its first completed smart-grid project. As such, there remain many unanswered questions concerning the viability, effectiveness and benefits of a smart grid program. Alberta is in grave danger of spending billions of dollars without ensuring that the money spent can be justified. We should not follow the latest 'fad' but rather think this through carefully and move when there is a model that is "tried, trusted, and true"

Fundamentally, we recommend two steps be taken with smart grid:

1. To ensure that consumers and voters are well represented in this process and get the best 'bang for their buck', we need a through cost-benefit analysis of the project; and

2. Alberta should not implement smart grid now, and should confirm and evaluate the results of smart grid implementation from other jurisdictions, and the implications of those results on Alberta.

## C. BACKGROUND INFORMATION ON RURAL ELECTRIFICATION ASSOCIATIONS

Alberta's rural interconnected electric distribution system is unique. There is no other interconnected distribution system in North America, or in any other country, as far as is known to CAREA and SAREA. Initially there was no integration of the rural system as those who lived in the country (in 1948, farmers) could not entice the investor-owned utilities ("IOUs") to build infrastructure to their homes and farming operations. With the government's assistance, rural electrification associations were formed and electrification of the rural region commenced.

The legal and business relationship between REAs and the IOUs, like the infrastructure they each own, is the integrated result of a series of government initiatives, application of legislation and contracts that span well over half a century. Those relationships commenced in 1948 and have evolved over time to the integrated system of today.

This unique integrated system creates additional challenges with Advanced Metering Infrastructure ("AMI") and Smart Grid technologies, and adds an entirely different element to the development and implementation of AMI and Smart Grid for REAs and for the rest of the rural system in Alberta. This cannot be underestimated or overlooked when the Commission is undertaking the study for Smart Grid. Consideration must be given to this unique relationship, and it is worthy of research during the Commission's study. Regulators (and other decision-makers) must be mindful of both short and long term effects on the REAs and on the rest of rural Alberta.

With this highly complex and integrated system, we believe the REAs should have been required to participate in this process, just as were the IOUs. As we believed we should be a necessary participant, we requested cost recovery from the AUC but were turned down. Even though we are receiving no cost recovery, CAREA and SAREA believe that the interests of the Province and of the electric industry are best served by our participation.

## 2. RESPONSE TO APPENDIX A QUESTIONS

### 1.0 Introduction

Much of the following submission is based on the submission of Mr. Rick Cowburn. In some cases, this submission will expand or have a different emphasis than Mr. Cowburn's submission. In other cases, we will simply indicate our agreement with Mr. Cowburn.

**1) Define smart grid.**

When people talk of “smart grid”, they are referring to unknown future advances in communicating with the electrical infra-structure. Many examples of what smart grid might be able to do in the future have been put forward, but a complete definition of what smart grid “is” remains lacking.

Some of these advances which are meant to typify smart grid may have cost-benefit; others may not. We cannot whole heartedly support or oppose “smart grid”. Support or opposition will be on a case-by-case basis. We believe that there must be a cost-benefit analysis for each of these cases as they appear.

We agree with Mr. Cowburn’s comments that much of what is currently referred to as smart grid has been around for some time. We also agree that the term is being drastically over-used in order to “hype” market product and to convince people that the need to ‘keep up with the Jones’’ - or (at least) to keep up with the policies of the current American administration.

The term ‘smart grid’ has only been in existence for only approximately four (4) years; and the term is, therefore, in a constant state of flux.

We also agree that the electricity industry is huge and is interconnected in very complex ways. It will not be possible to change it quickly; nor should it be considered desirable to change it quickly. It has adequately served our needs for a long time; and extreme care needs to be taken before making changes that have not been entirely thought out. Again, we don’t want ‘keeping up with the Jones’ to be too expensive an undertaking.

We definitely agree with Mr. Cowburn that “benefits should exceed costs”. *In fact, that is the underlying theme of our entire submission.*

We need to recognize, as Mr. Cowburn suggests, that Alberta enters the smart grid debate with real differences from other jurisdictions: “its power system already runs with a more efficient load factor (~80%) than almost any other jurisdiction in North America, we have no material electric heating or cooling loads for demand management, and we have decided to deal with transmission deficiencies by building for the long term, not by seeking to squeeze more out of what we already have. The major customer savings opportunities simply do not exist here.”

Indeed, since the demand side of the industry in Alberta is so ‘flat’; we believe that any technological advances (which may be called ‘smart grid’) should be utilized on the transmission side of the business - as is being done in Manitoba and Quebec. If any savings could be found in line-loss, for example, those savings would far outweigh any savings that may be scrounged from consumer demand!

We believe that the same government that has gone to such extensive efforts to create “competition” and a “level playing field” in the retail energy sector, must give equally serious consideration to ensuring competition and a level playing field in the distribution portion of the industry. Small utilities such as REA’s and small town/city systems must be given at least as much protection in the wires sector as small retailers are given in the retail sector of the industry.

In Ontario, 320 of their 400 electricity distributors have gone out of business with their implementation of AMI metering and their move towards “smart grid”! We would hope that Alberta does not want to move towards an oligopoly of a small handful off distributors?

**2) Define the functionality and applicability of the smart grid in the context of Alberta’s electricity market by the following system segment:**

We agree with Mr. Cowburn that with the definition of smart grid being so vague, it is not productive to contemplate the functionality and applicability of an unknown term to the different segments of the industry.

**3) What are the principles and criteria that should guide the provincial deployment of a smart grid? Why?**

We agree with Mr. Cowburn that economics should play the largest role in deploying any government program, particularly one that promises to be as expensive as smart grid promises to be!

Customer (and voter) choice is also critical. The economics of the program need to be made explicit to the public, so that the public can make a rational decision. Other factors such as privacy and perceived environmental advantages also need to be made explicit, and not “assumed” to either favour or disfavour smart grid.

As mentioned above, because of the higher potential savings on the transmission side of the industry, we believe that smart grid should be deployed there first!

In British Columbia, they seem to have recognized that the cost of implementing AMI and smart grid in remote geographic areas is not advantageous. They have developed different requirements for urban versus remote rural. We believe that if Alberta proceeds in this direction at all, they should follow this same principle.

**4) Rank the importance of the following characteristics of a smart grid and explain the rationale for this ranking:**

**a.** **<u>Cost effectiveness</u>. –** Cost effectiveness must be the cornerstone of this (or any other) initiative. To spend money without a rationale expectation to get a larger return is irrational in the extreme! Each initiative, whether or not it is labeled ‘smart grid’ must be economically justified.

An added complexity here is that there are not any smart-grid projects in the world that have been completed! It is difficult to accurately anticipate results when you are on the leading edge. We wonder why Alberta needs to go first in this endeavour. Could we not wait until there are proven successes (or failures) and learn from them? Must we run the risk of being on the 'bleeding edge'?

**b. <u>Increased use of digital information and controls technology to improve and maintain the system reliability, security, and efficiency of the electric grid.</u>**

Again, the improvements that are expected need to be quantified in terms of "how much will it cost to implement them?" and balanced by "what savings/benefit can be reasonably expected?" We don't want to follow the Ontario example where the average consumer spends $4.00 per month on their AMI meters; and gains approximately 29 cents per month! The 'break-even point' on that calculation is approximately 15 years!

Security of the grid is a huge issue with smart grid development. Again, because it is new, there have been no proven and effective security systems yet developed! Security from terrorism is certainly an issue; as is security from theft or fraud when one's electricity consumption patterns can be 'hacked' from the automated systems.

At a recent conference in Toronto, the head of IT security for Toronto Hydro, Mr. Kshamit Dixit said, "AMI will never be 100% secure". He went on to say that there are 267 "vulnerabilities" in Toronto Hydro's AMI system, and that the average number of days to detect a breach in any of them would be 347 days!" Does Alberta really need to be on the cutting (bleeding) edge of that technology?

**c. <u>Dynamic optimization of grid operations and resources (e.g., self-healing), with full cyber security.</u>**

At which price? What is the potential benefit? As stated above, "full cyber security" does not exist at this point in time!

**d. <u>Deployment and integration of distributed resources and generation, including non-traditional (i.e. renewable) resources.</u>**

The value of deploying and integrating renewable resources needs to be analyzed. What is the cost of wind and solar? What are the benefits when the wind does not always blow and the sun does not always shine? Are the present investment dollars justified? Are future investments going to be justified? These are all questions that need to be answered before "smart grid" is deployed for the purpose of integrating renewable resources into the system. We believe that there has been no wind projects yet completed in western Canada that would have been profitable had it not been for carbon credits! Do we want to continue to subsidize this industry? If we do (or do not) that will have a major impact on smart grid. We believe that we cannot make an intelligent choice regarding smart grid without first having made a conscious decision about future subsidization of wind and solar projects.

**e. Development and incorporation of demand response, demand-side resources, and energy efficiency resources to reduce overall usage (especially peak usage) and shift usage.**

As mentioned above, Alberta already utilizes approximately 80% of its electrical system. This percentage is significantly higher than anywhere else in North America. Only the remaining 20% is susceptible to "demand response". Even if we get a 5% improvement here, that means 5% of 20%- which is 1%! How much money and effort are Albertans prepared to spend for a 1% improvement in our system?

Mr. Steve Brossart, U.S. Department of Energy, National Energy Technology Laboratory recently reported on a case-study of smart grid in West Virginia. His conclusion was that there is a high cost at first, but then 'benefits come with demand response'. However, as we have indicated previously, Alberta is in a significantly different position regarding demand response because our prices are more reflective of supply than of demand; and we already have an 80% utilization rate. There is much less potential for demand response here!

**f. <u>Deployment of so-called smart technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications concerning grid operations and status, and distribution automation.</u>**

As above, improvements here are only improvements to a tiny portion of the market. Whatever gains are made here need to be measured as percentages of the 20% that is available for improvement.

**<u>Integration of smart appliances and consumer devices to enable active consumer participation.</u>**

See previous answer. In addition, if we may assume that giving consumers accurate, up to date information on their electricity consumption is an advantage, then we need to explore the most cost-efficient way to do that. Is building a multi-billion infrastructure the best way? Or is pointing out to interested people that they can purchase a $100.00 kits from Canadian Tire a better alternative? Or, could similar money be spent to encourage people to turn in older and less efficient appliances in favour of newer, more efficient appliances. We believe that this may be a more efficient and effective way to lower consumer consumption than the expensive construction of a 'smart grid' system!

**g. <u>Deployment and integration of advanced electricity storage and peak-shaving technologies, load-shifting programs and plug-in electric and hybrid electric vehicles.</u>**

Each case needs to be analyzed separately, keeping in mind the above-mentioned points of how much of our market is susceptible to these influences. In addition, we need to keep in mind what will happen to peak demand when hundreds of thousands of commuters potentially all plug in their hybrid vehicles at the same time after a long drive home from work!

**h. <u>Provision to consumers of timely information about energy consumption, costs, and control options.</u>**

See above- "smart appliances and consumer devices".

**i. <u>Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving grid.</u>**

See above. It is noteworthy that there are currently no national nor international standards for "smart grid" or its various components. These are being worked on by the federal government, the Canadian Standards Associations and others; but they are a long ways from completion. There is a real danger that any product and/or process decisions that are made now would have to be reversed when standards are finalized!

**j. <u>Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.</u>**

We are unclear as to what is meant by "unreasonable and unnecessary barriers to adoption of smart grid". Any barriers that are established definitely need to be reasonable and necessary. If high cost becomes a barrier to smart grid, then that should not be seen as "unreasonable and unnecessary".

Rural areas bring their own significant challenges to smart grid implementation as communication protocols are very challenging. In an REA service area there are additional challenges because of the shared service area with Fortis or ATCO; greater physical distances between services; and fewer services over which to spread the 'overhead' costs of the I.T. framework.

We also believe that, just as there should not be 'unreasonable and unnecessary barriers to the adoption of smart grid', neither should there be 'unreasonable and unnecessary' rush towards implementing smart grid! We need to be aware that we are currently being 'hyped' to a very large degree to adopt a concept that is relatively new, undefined, and untested! We believe that the utmost caution must be exercised before taking any large and expensive steps in this direction.

### 1.1 Transmission Facility Owners- N/A

### 1.2 Electrical Distribution System owners

**12) What smart grid activities and investments have you undertaken to date in your role as electric distribution system owner?**

Given the vagueness of the term "smart grid", we cannot easily answer that question. We have implemented AMR meters in South Alta REA. Although most people do not consider AMR meters to be "smart grid", it is important to note that these meters, coupled with in-home devices that can be purchased for approximately $100.00 at Canadian Tire or similar retailers, are capable of giving the home-owner hour-by-hour consumption information!

**13) Provide the approximate length (in kilometres) of distributions lines within your service area.**

| CAREA/South Alta Distribution Line (includes OH and U/G Primary) | Total |
|---|---|
| Total | 6775.87 KM |
| **CAREA/South Alta Secondary Line** | **Total** |
| Total | 3.46 KM |

**14) Provide the number of distribution substations within your service area.**

| Number of Substations by Area | Total |
|---|---|
| CAREA | 46 |
| South Alta | 9 |
| Grand Total | 55 |

**15) Provide the number of and corresponding percentage of distribution substations within your service area that are monitored by supervisory control and data acquisition (SCADA) systems. N/A**

**16) What will be incremental investment to implement smart grid technologies? N/A**

**17) What currently available metrics should be used to track DSO operating reliability, security, power quality and operating efficiency? Why?**

Outages are predominantly weather-related. Unless smart grid can stop the wind from blowing down poles and wires, it will not help with our outage situations.

Security is likely less of an issue in the current basic systems that we have now. Hacking will be more of an issue in more technologically sophisticated systems such as ‘smart grid’.

**18) What metrics and reporting methodology should be used to determine measurable benefits of implementing smart grid technology as well as assessing progress towards attaining improvements in the performance related to operating reliability, security, power quality and operating efficiency? Why?**

That is a question for those who propose to implement ‘smart grid’ (or any other) projects. Just as utilities are presently required to present their business cases to the AUC to justify building costs into the rate-base; so should that be required for all future projects- including ‘smart grid’. If the utility sees a reason to do it, then they must be able to document and justify that to the AUC, just as they do now.

## 2.0 Deploying a smart grid in Alberta

**19) What lessons can be learned from past systems engineering and implementation projects from other industries that are most applicable to smart grid design and deployment? Why?**

We agree with Mr. Cowburn that the past dictates to us that care and caution need to be exercised before tinkering with such a large and critical component of our society.

**20) What technologies are available to fulfill the expectations of a smart grid and will the choice of technology make any of the current technologies obsolete (e.g., energy storage and distributed generation / microgrids versus high voltage transmission lines)? Why?**

We concur with Mr. Cowburn’s comments here.

**21) Should the utilities be required to develop smart grid deployment plans? Why? If so, what should those plans consist of? Why?**

The term “smart grid” is, in itself, meaningless since it applies to future (unknown) technological advances. The electricity industry, no more and no less than other industries, need to be encouraged to make technological advances. However, these need not be at the expense of consumers/voters. Advances must be financially feasible for the entity that is considering making them.

We are reminded of advances in many other industries (the computer industry, for example) where research and development were financed by these companies. Government did not take any risk. Yet, the result has been a dynamic industry which provides product to consumers at a price that is both affordable to the consumer and profitable to the manufacturer. Does smart grid need to be different? We think not! Let industry do its research and when (if) they come up with useful products, they will recover their costs and make a reasonable profit through the normal workings of the marketplace.

**22) What should a utility do in order to successfully deploy smart grid technology? Why?**

We concur with Mr. Cowburn's analysis here.

**23) What milestones should be used to measure the utilities' progress toward the development of a smart grid? Why?**

Milestones need to be decided by the entity which is doing the financing. Since we believe that smart grid projects need to be financed by the industry, it is only appropriate that they make their own milestones.

**24) What, if any, are the regulatory barriers with current legislation, wholesale markets, and/or retail markets to the deployment of a smart grid? Why? Which, if any, of these barriers should the Commission address? Why?**

Barriers to any new concept are numerous and complex. However, we do not believe that, in this case, that these should be a concern of government or of the AUC. These barriers should be a concern of the private entity that is contemplating entering this market. They must be aware of the barriers and be willing to take the risk that they will be able to overcome those barriers.

One of those barriers may be, however, that where smart grid has been implemented, it has been in vertically integrated companies where generation, transmission, distribution and retail are all within one enterprise. This makes sharing the communication much easier. If smart grid is meant to transfer information between these components of the industry, how can (should??) government force different companies with different purposes to share information?

**25) What incentives do utilities have to optimize smart grid deployment and adopt mechanisms that align utility and consumer interests?**

We need to always be cognizant of the fact that utilities which are compensated by the size of their rate-base have very different objectives than do those co-operative such as REA's which have the interests of their members/customers at the forefront. Large investor-owned utilities will always favour capital-intensive projects which allow them to grow their rate-base.

We do not necessarily believe that there should be incentives. If the market place is king, then the market will dictate whether or not progress will occur. And, if benefits are not apparent to Albertans, is there any logical reason to proceed?

## 3.0 Standards and other functionality requirements

**26) In what areas are standards and protocols needed for the deployment of a smart grid in Alberta? Why?**

We need to develop the goals of this (as yet) undefined system before we can talk about standards and protocols. As mentioned above, these standards do not yet exist and currently in the process of very slow development in the academic world.

**27) For each area that a standard and/or protocol is needed, answer the following:**

**a. <u>What is or should be the role of utilities in standards-making process? Why?</u>**

See answer above.

**b. <u>What organization should issue the standards (e.g., the National Institute of Standards and Technology, American National Standards Institute, Institute of Electrical and Electronics Engineers, and/or the Commission)? Why?</u>**

We concur with Mr. Cowburn in this regard.

**c. <u>Are there any specific standards, or type of standards, that the Commission should either consider adopting or avoid adopting in order to build a cost-effective, flexible smart grid? Why?</u>**

We concur with Mr. Cowburn in this regard.

**d. <u>Are there any requirements for technological connectivity standards to enable market participants, utilities, and/or other third parties to communicate and transact with the Alberta Electric System Operator? Why?</u>**

We concur with Mr. Cowburn in this regard.

## 4.0 Cost and benefits of a smart grid

**28) What are the benefits and costs of a smart grid? Why? Which benefits and costs can be easily quantified, and how? Which benefits and costs are difficult to quantify, and how should they be addressed?**

Since, as mentioned above, so long as the term “smart grid” is undefined, the costs and benefits are similarly undefined. The common assumption is that AMI meters are the first step of whatever other smart grid components will follow. The case ‘for’ AMI meters is that consumers will shape their demand if they get instantaneous feedback on their consumption. However, as mentioned above, residential and farm consumers represent only 20% of the market, and a 5% improvement here is only 1% of the total! The cost of implementation has yet to be studied by the DOE, but some put it as high as $2,000 in rural areas, plus the expense of maintaining highly sophisticated IT system to maintain the hourly reads. Implementation costs may be as high as $3.4 Billion dollars! The “payback” of 1% of the system balanced against the $3.4 Billion cost makes the proposal absurd!

In addition, for small providers in rural areas, the cost per service becomes prohibitive because there are fewer services over which to spread substantially the same IT costs as larger providers.

At a recent conference in Toronto, the CEO of Hydro Ottawa, Mr. Norm Fraser, said that Ottawa spent $600,000,000 to install and activate 296,000 meters. That is over $2,000 per meter in an urban area! Our estimate of $2,000 in rural Alberta may be low! (it is important to realize that the $600,000,000 would not only be for the meters, but would also include installation, related IT costs, and consumer information programs.)

If AMI metering is meant to be a ‘loss leader’ and other benefits of smart grid will compensate, then those anticipated benefits need to be brought forward and thoroughly analyzed before such an expense becomes even remotely reasonable.

As mentioned above, there may be more advantages to implementing smart-grid in the transmission sector of the industry rather than the consumer sector. This is the direction that both Manitoba and Quebec appear to be taking. Potential savings in line-loss (for example) are many times more than potential savings in consumers shifting their consumption patterns.

**29) What tools and/or materials need to be developed to estimate, calculate, and assess the benefits and costs (including the non-quantifiable benefits**

**and costs) of smart grid-related expenditures? Why? Who should pay for the development of these tools and/or materials? Why?**

We find the term "non-quantifiable benefits and costs" to be illogical. All benefits and costs need to be quantifiable before they can be given any credence.

Whatever tools are to be developed, they should not be forced on ratepayers or taxpayers without the express approval of these groups. Alberta (normally) does not follow the 'big brother knows best' syndrome. In the absence of ratepayer/taxpayer approval, then industry would need to take the lead … and the risk!

**30) What tools and/or methods should the Commission consider to estimate, calculate, and assess the benefits and costs (including the non-quantifiable benefits and costs) of smart grid-related expenditures? Why?**

Dollars and public opinion. Other possible measuring sticks (environment) would need to be run through the test of dollars and/or of public opinion.

**31) How should smart grid-related costs be divided among ratepayers, shareholders, and/or third parties? Why?**

Ratepayers should only pay if there has been an extensive and successful public educational effort, and there is substantial evidence that the majority of rate-payers (tax payers/voters) are in agreement. Otherwise, shareholders of the entities that are promoting the initiative should pay.

**32) For costs allocated to ratepayers, should all consumers pay for the deployment of a smart grid? Why?**

This would be determined on a case-by-case basis after a cost-benefit analysis has been done. For example, someone running an irrigation service several miles from his home should not be expected to pay for an "in home device" for that service! Similarly, if rural consumers are determined to not have any demand flexibility- then they should not be expected to pay for any portions of 'smart grid' that are predicated upon demand response.

In determining rates for Fortis and ATCO Electric rate classes, the AUC has always said that those who cause the cost should pay for the cost. We would think that the same philosophy should apply here.

**33) How should any smart grid upgrades that are approved by the Commission be staged over a reasonable time horizon that mitigates rate impacts? Why?**

Through all this, we need to keep in mind our overall energy costs vis-à-vis other jurisdictions. It would be very dangerous for Alberta's electricity to become more expensive than other jurisdictions. Industry would relocate, causing tremendous job loss to Alberta. We need to keep overall electricity costs in mind throughout this exercise.

It is also important to remember that large utilities such as Fortis and ATCO may be able to pay for costs "up front' and recover them over a period of time from their customers. However, REA's and small community utilities do not have those kind of cash reserves and would have to pass costs onto their customers/members on a 'real time' basis.

**34) Should the Commission authorize a utility or other party deploying a smart grid system to recover in a timely manner the remaining book-value costs of any equipment rendered obsolete by the deployment of a smart grid system, based on the remaining depreciable life of the obsolete equipment?**

If the value of equipment made obsolete is to be included, then that cost needs to be built into the cost-benefit analysis of deploying the smart grid in the first place.

**35) How should smart grid programs be designed and deployed to address the following sources of risk?**

**a.** <u>**Cost risks.**</u> As mentioned above, industry should be taking the risk, therefore, how they manage it becomes their issue. However, any risk to taxpayers needs to be mitigated by tendering out any large projects in order to get the most value for the money.

**b.** <u>**Technology risk.**</u> As above, this should be industry's risk, therefore the solution needs to be theirs. If taxpayers are forced to assume some risk, then the philosophy should be not to build anything until it is absolutely necessary. At a recent conference in Toronto, Eric Mewhinney of BC Hydro said that a very large advantage of BC procrastinating for the past two years on their AMI program was that new and better technologies are available to them now than were available two years ago! That trend is likely to continue for several more years yet!

**c.** <u>**Organizational and business process risk.**</u>

If AMI is adopted, we move from one reading a month to 720 reads a month (24 reads a day x 30 days per month). This causes what one speaker (Richard Bertolo of Hydro One in Ontario) recently referred to as "data tsunami"! Mr. John O'Neil of the Canadian Standards Association says, "There is no system yet (available) to manage the overwhelming amount of data that will be developed"! Mr. Eric Mewhinney of BC Hydro says "BC Hydro doesn't currently have the skill-set to derive value from all of the data that they will collect"!

South Alta REA and Central Alberta REA do not see a value in spending millions on IT to collect data that cannot be easily transformed into "information"!

**d.** <u>**Customer risk.**</u> Customers/ratepayers/voters should only be exposed to the risk if they are the ones <u>asking</u> to take on the risk. If others are 'pushing the envelope', then those people should be the ones who are exposed to the risk.

## 5.0 Market participation in the smart grid

**36) Does the meter need to be owned by the electric distribution system owner or can the customer or a third party own the meter? Why?**

We agree with Mr. Cowburn's assessment. AMI meters reveal information about very personal and private data. In Ontario, their Information and Privacy Commissioner has developed a paper on handling private data in an AMI environment. Alberta needs to consider privacy issues in at least as much detail as has Alberta in order to avoid major problems in this area in the future.

**37) What are the minimum requirements, features, and functionality all Alberta meters should possess? Why?**

We agree with Mr. Cowburn's assessment.

**38) Should the deployment of the smart grid be undertaken using open standards-based solutions exclusively or are there segments that are more suited to proprietary technologies? Why?**

We agree with Mr. Cowburn's assessment.

**39) Who owns the home energy usage data? Why?**

We agree with Mr. Cowburn's assessment. We agree that this is a huge privacy concern. See #36 above.

**40) Should consumers (and their authorized third party service providers) have the right to access real-time energy usage data directly from the meter with suitable privacy protection? Why?**

We agree with Mr. Cowburn's assessment. We agree that this is a huge privacy concern. What is "suitable privacy protection"? Has Alberta even considered that aspect of AMI. The Ontario policy needs to be studied and improved upon where necessary.

**41) How should a competitive bidding process for investments in smart grid technology be structured and monitored, i.e. are existing competitive procurement processes sufficient? Why? What, if any, reporting requirements should be made? Why?**

We agree with Mr. Cowburn's assessment. We agree that this is a huge privacy concern. If public money is to be used (although we don't believe that it should be), then a very competitive bidding process should be mandatory!

**42) How should consumer education and dissemination of information about smart grid technologies, demand response programs, and alternative pricing structures be carried out? What entity or entities should be responsible for the messaging? Why?**

We strongly believe that without consumer "buy-in", failure is guaranteed! The proponents of the initiatives and those who would benefit from the initiatives need to accept the responsibility and the costs of promoting consumer buy-in. Government, on behalf of those consumers, cannot justify accepting any cost until ***after*** the buy-in has been solidified.

## 6.0 Pricing considerations

**43) To what extent could the government's smart grid objectives be met through pricing structure changes implemented using the existing network, billing system and meters? For example, can prices vary by time of year, time of day, hourly or instantaneously. Please answer for each class.**

This is a difficult question to answer because the "government's smart grid objectives" have yet to be defined! Or, if they have been defined, they have yet to be shared!

The whole 'smart grid' concept falls apart if the retail price does not mirror the wholesale price. However, the prices cannot be predicted by analyzing demand patterns in

Alberta, since (in Alberta) prices reflect supply much more than they reflect demand. So, what is a peak-price time of day today may be an off-peak price tomorrow- depending on wind conditions and depending on which generators are ‘up’ or ‘down’. In Alberta, consumers cannot plan for off-peak prices because they are not predictable. In our opinion, this fact alone defeats the main purpose of AMI metering and smart-grid.

The promising products are quick acting demand response, e.g. when wind ramps down rapidly. Fancy pricing products like that would completely break existing billing processes, and should only be allowed for competitive retailers, who can take the risk as they see fit.

Ontario sees a payback on their AMI program in 10 years. However, in Ontario a major part of that payback is the cost-savings on (hopefully) not having to build an additional nuclear power plant! In Alberta, with no such power plant on the horizon, the payback would be many, many times more than that! However, as previously stated, the government has yet to do any cost-benefit study, so the anticipated payback time here is not known.

**44) Which of the government’s smart meter objectives cannot be met fully without deploying smart grid or smart meter technology? Please answer for each customer class and explain the answer in detail.**

As above, the objectives need to be defined before this question can be answered!

**45) Are there any rate designs that can best reflect and incorporate the potential benefits of the smart grid? Would practical considerations cause your response to be different, especially for different customer classes? Why?**

We agree with Mr. Cowburn that the ONLY smart grid offering for customers is demand response… and that this does not work in Alberta as it does elsewhere (see #43 above). Yet, if you don't change something, there's no point in having the AMI meter!

> **46) Are there any pricing approaches that will not work or should be avoided with the deployment of a smart grid? Why?**

See #44 and #45 above.

> **47) What changes, if any, might be required in transmission, distribution and energy pricing str**uctures to achieve all of the benefits of a smart grid and smart meters? Why?

> As above, because the Alberta price is so dependant on supply, we do not believe that the benefits that may be achievable elsewhere are achievable in Alberta.

> **48) How can or should any changes in transmission, distribution and energy pricing structures be implemented in the current competitive retail market structure in Alberta? For example, should regulation require all retailers to employ specific pricing structures that maximize the benefits of smart grid and smart meters or should the market be relied upon to determine retail pricing structures?**

We agree with Mr. Cowburn that the market should rule!

**7.0 Other policy considerations**

> **49) What are the technology, pricing, and policy issues that must be considered to enable the creation of appropriate demand response solutions using a smart grid technology? Why?**

We believe that consumers can have access to their electricity usage, and have the information necessary to change their consumption patters without the huge expense of smart-grid or of AMI. There are currently very inexpensive displays available on the market (approximately $100.00 each) that can be put into any home in Alberta that has an AMR meter to inform the occupant of electricity consumption! AMI is NOT a pre-requisite for timely consumer information!

**50) What would be considered to be the appropriate demand response programs that a smart grid technology should accommodate (*e. g.,* automated direct load control, aggregated load response, pricing schemes)?**

Let the market decide through pricing mechanisms. Smart grid is a huge "overkill" for this purpose!

**51) What are the challenges and opportunities of integrating demand response solutions into the wholesale electric market? Are there any barriers present in the current wholesale market structure or rules that would limit the ability of demand response solutions to participate in the wholesale electric market?**

Demand-response is only rational if price can be predicted in advance, and consumers are allowed to make choices knowing, in advance, what the price will be with whatever choice they make. Yet, as we have seen, prices cannot be predicted in advance in Alberta. Therefore, this aspect of smart-grid is unworkable here! (See #43 above)

**52) What challenges and opportunities are present with the current legislation that would impact the ability of smart grid technology to achieve its full potential with respect to demand-side management solutions?**

We agree with Mr. Cowburn that the big limitation is on the customer side—there just isn't much demand response potential in the mass market, and precious little in small commercial. Look to industrials, which don't need AMI—they've had it for a decade &

more. Again, there is only 20% of the market with the potential to change, and studies in other regions show that only small percentages of the potential changes will occur.

### 7.2 Generation and energy storage options

**53) What are the technology, pricing, and policy issues that must be considered to enable energy storage solutions, including the accommodation of plug-in hybrid vehicles using a smart grid technology? Why?**

We agree with Mr. Cowburn's assessment here.

**54) What are the challenges and opportunities of integrating distributed, renewable or intermittent generation resources into the wholesale electric market? Are there any barriers present in the current wholesale market structure, operation or rules that would limit the ability of distributed, renewable or intermittent generation resources to participate in the wholesale electric market?**

The issue of distributed energy needs more cost analysis. As stated above, virtually all of it is currently subsidized through carbon credits and other government programs. We believe that distributed energy, like every other aspect of industry, needs to be economically self-sustaining.

### 7.3 Privacy and security considerations

**55) What standards and protocols are needed to ensure network security (both physical and cyber) and end-use customer privacy are protected?**

This is a hugely complex question, the answer to which has yet to be formulated. However, it is also an extremely important question. The anticipated technology will have the capability to expose personal and private information in a revolutionary way.

This is extremely dangerous; and it will be a large obstacle to consumer acceptance. See our response to # 36 above.

**56) What should be the role of legislation or of the Commission in developing these privacy and security standards, if any?**

If industry develops the standards, then customer can decide whether or not they want to participate in AMI with those standards in place. Let the market decide.

**7.4 Other considerations**

**57) How will the deployment of smart grid technology enable the Government of Alberta to achieve the desired outcomes stated in its Provincial Energy Strategy, namely clean energy production, and facilitate the proper accounting for the cumulative effects to the environment and greenhouse gas emissions from the generation and consumption of electricity?**

We are sure that smart grid will not do this!

The irony is that, if we switch consumer demand from day time to night time, we are actually turning consumers away from renewable energy and forcing them to use non-renewable energy! The sun doesn’t shine at night; and the wind seldom blows at night! Night-time energy consumption would be almost entirely from non-renewable sources!

**58) What other smart grid-related issues should the Commission address in this inquiry?**

None.

**59) Are there any current policies that need to be changed or any new policies that need to be in place before the benefits of smart grid investments can be realized?**

To ensure that the consumer and the voter get the best 'bang for their buck', we need to emphasize cost-benefit analysis, more cost- benefit analysis, and then even more cost-benefit analysis!

Alberta is in grave danger of spending billions of dollars just to follow the latest 'fad'! As stated above, the world has yet to see its first completed smart-grid project!

We see no benefit in spending billions of dollars now! It is too late to be the first. The time is only perfect to follow the blunders of other jurisdictions because the lessons to be learned from these other jurisdictions have yet to be published.

We see an advantage to waiting until some of these lessons are learned; and then to proceed cautiously based on two things:

1. The results of these lessons from other jurisdictions, and

2. The certainty that the Alberta energy market is significantly different from any other in the world and that the lessons learned in #1 may only apply indirectly to Alberta, if at all.