

Event: Elenchus Presentation – Draft Findings of SaskPower's Capacity Reservation Service Rates

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Location: Oak Room, Hotel Saskatchewan, Regina

Scott Chomos (SaskPower – Director, Business Planning & Rate Design):

Okay. First and foremost, I'd like to welcome all of you today to hear from Elenchus and their overview of SaskPower's new Capacity Reservation Service. Before we get too far and I turn it over to John I thought we'd take a couple of minutes to do some really quick introductions around the room starting with folks from SaskPower. We've got Kory Hayko, who is our Vice-President, Transmission and Industrial Services, and Troy King, who is our Vice-President, Finance and Business Performance, and CFO. We also have a number of representatives from Finance and Key and Major Accounts. I'm not going to through all those names. We also have members of Saskatchewan Rate Review Panel. We've got Delaine Barber and Steve Kemp in attendance today. And we've got Al Johnston on the line as is Gerry Forrest who is the advisor to the Rate Review Panel.

Because this session is being recorded I've got a number of what I hope to be simple housekeeping rules. I'm just going to read off the list here that...

For those of you who are listening via call, I'd ask that you please mute your phone. If anybody in the room today has a question, the way we get this information recorded is via microphone so I'd ask that you put up your hand. We'll have somebody come out and we'll bring you the mic. If those on the line happen to have a question I think John is more than happy to take questions throughout the presentation so simply unmute, and perhaps state your name and then address your question at that time. So far so good. I'm not picking up any background noise but if for some reason we were starting to pick some up we'll give kind of a warning or note that we're picking up something just to remind everybody to mute and if that doesn't work I believe we have the option of just simply muting everybody. If that were to happen well we'll be sure to open up the lines on a number of occasions just to give an opportunity to ask any questions.

Lastly, everybody should know this, the ol' cell phone rule. Again, if you've got a phone just make sure it's on vibrate mode and that too will get picked up on the recording. I think with that I'm going to turn it over to John Todd, President of Elenchus Research Associates. I know he's got a bit of a bio within his slide deck so I'll let him cover off who he is. With that, John Todd.

John Todd (Elenchus Research Associates – President):

Good afternoon everybody. As Scott said, this is an open discussion, not a sit and listen presentation. So, as I walk through things, please feel free at any time to interrupt with a question or comment. That would be the most productive thing to hear what people think. I think everyone in the room has a handout version of the slides which are also being projected. I won't go through that second slide.

I've been here for Rate Review Panel sessions with SaskPower a couple of times now so I don't think I'm unfamiliar to people. I'm president of the company and been hanging around the regulatory world for well, if you include before rate hearings, about forty years. That's why I've got white hair. But it's there if anybody cares about looking at it more closely. So, what I want to cover today, again with your input, are the five topics. The forces disrupting the power sector. This is really background, there's some questions asked in the preliminary stakeholder session, not sure what you called it. There's some questions that were said okay so why is the CRS happening. What's going on the electricity world that SaskPower and others are going in this direction. So that's why I'm starting off with a bit of that background.

The second topic is structured, it's a way I've started structuring these discussions the last couple of years the animal kingdom of market disruption. These labels the animal kingdom comes from what I found a very interesting article which was targeted at strategic planning processes generally. And have used it within the electricity sector a few times now. So I'll be talking about the animal world in terms of white elephants, grey rhinos and black swans. We'll see what exactly that means if you're not familiar with it soon.

The highlight is that white elephants are not what I used to think of them as, is wasteful money from government projects. White elephants are a bit different in this context. Then, again, as part of really the preamble, most of this is preamble, how do you respond from a ten-year perspective. So I think it's really important to think of disruptions in this industry that we look long term. So it's the response that is I'll lead to my specific comments on CRS tariff design.

Part 5 in the topics is open discussion. That does not mean save things. That means it's more of a wrap-up discussion after dealing with specifics all the way through.

In terms of that the topics of the agenda is there anything else related or an angle that people would like to flag out front to cover?

Audience member:

(indecipherable)

Mr. Todd:

All of them as you'll see. My favorite though is the grey rhino. The grey rhino is the one where you hear the rumbling, you know something is coming but you don't know what it is. That's where I was in Coronavirus a week ago. Now I think, it's gone from being a black swan a month ago to being a grey rhino last week to being a white elephant now. So you can balance them around. The animals are very changeable.

The six forces disrupting the power sector, there's really, there are multiple trends and the essence of this discussion is things have been talking about have explicit discussion I think four Canadian jurisdictions within the last year. There are things that we've been talking about for at

least five years. So this is kind of a, a recap. Probably none of it is going to be news to you. So it's an effort to really pull together things that are happening in this industry.

Markets are transforming. Back in the 90s, I also did telecom regulation. When I started in the beginning of 1990, the telecom industry, think back, those of you who are anywhere near as old as I am, think back. The telecom sector was a pure monopoly. In the Saskatchewan telephone you had one company you could go to for all your telephone services. Ontario and Quebec, it was Bell Canada. A pure monopoly, regulated rates, completely in the traditional type of world. But their market was transformed by technology. Essentially the telephone system became a big computer. Technological change was a disruptor which has led to... ultimately to the world we have today, where the Bell Canada's, the SaskPowers, or Sask telecoms of the world are still around. In fact, the ones who, you know as part of a merger and so on, there's only a few of the former telephone telecommunications monopolies around, doing very, very well. But they look completely different. And they live in a competitive world. The market transforming, I argue, in exactly the same way in electricity.

Investments are being made in the sector that have a 20, 30, 40, 50-year life. Before those investments are totally amortized, the world could be completely different. To me, that's very important in terms of this transforming the market from a monopoly to a competitive market. And you are in the middle of that right now. It's already partially competitive. That's why the CRS rate is being introduced. It's in response to that. The transferring the markets will continue. My expectation is that by the, you know, 20 years from now, as we're 20 years down the road with telecom looking back to beginning the 90s, or I guess 30 years down, by the time we're forty or more years looking back, we'll be saying, "Oh do you remember when the electricity sector was a monopoly? Wasn't that sort of strange old days? Now we've got a completely competitive sector."

That does not mean we are going to have competitive wires. That does not mean we'll be transmitting electricity through the air like cell phone service, but what it means is that there will be competitive bypass. That price will be the only thing that matters to the wires and poles. Something else. If someone doesn't like the price of the wires, they will install perhaps a little hydrogen generator in their basement and they don't need the electric utility.

So, this is transformation, not, we're not talking about what's going to happen next year. We're talking about what's going to happen during the lifetime of the existing investments, which create a risk that that asset will become stranded before the cost's fully recovered. And in this sector you have to think about the lifetime of the assets, not next year. So that's the market transformation which sometimes, like any white elephant. Elephants look like they move slowly. I don't know if you watch nature movies or if you've been to Africa as I have and you watch the elephants. If they get upset, they can change, they can move very quickly. So can markets.

Now that market transformation of course being driven by the second bullet, technologies are advancing. Everybody is aware of solar panels, wind turbines, and so on. They know that generation is now competitive. Every jurisdiction across Canada there are non-utility generators. And that's becoming more and more common. Self-generation's just getting off the ground because of technological change. The one thing that is really slowing down the dramatic market change is the technology around storage. If there were something to disrupt the storage

side of things, ie, a very low cost storage technology, then we'd have... When that happens, or if, there will be much more rapid market transformation. These are interrelated.

Industries are converging. As I work in both the natural gas sector and electricity sector, there are gas companies that are saying when a and there is large new developments out of town. When a new development is being built, we, the gas utility, or a gas company, are a competitive alternative to electric company. We can set up a gas turbine not just for an industrial customer, we can set up a gas turbine in a residential development area that serves that residential development and you don't have to connect to the electricity company. In Ontario, I know those proposals being advanced to developers. Developers are reluctant to adopt a different technology. They are very cautious. They think about building, they don't think about, how can I be off grid. But those kinds of opportunities are being examined. The industries are converging. It's energies, not electricity, not natural gas.

Consumption patterns are changing. The customers, there's a lot of customers here, the customers are changing. Not only do they say, "Gee, I'm no longer captive to the utility", they're also saying "I want things that are different." They are looking at ways to change the profile of their load. In other jurisdictions, the difference in cost during peak demand hours, like when everyone comes home from work, first thing in the morning when people turn all the lights on, the difference between the price between those hours and the price in off-peak hours like the middle of the night is dramatically different. Not so much here but where the larger the price difference is, the larger the incentive for customers to say, "we're going to pay the real price of power and we're going to take action to change the way we consume." There are also outside electricity sector technology changes that are disrupting the consumption pattern.

I have a shall we say, on behalf on utilities, a fear of electric vehicles. Electric vehicles, if electrification of transportation happens dramatically, and I was last year I was in Norway and I said here's where it happened. They have passed the 50% mark of new vehicles, at least the beginning of last year, being sold were fully electric. Not hybrids. Fully electric. About 80% were either hybrid or electric. That's a transformation. Electric vehicles have a very different consumption pattern than all the rest of our uses. They draw power when they are plugged in, and as electric vehicle charging stations get more and more powerful, they suck a lot of juice very quickly. If there's widespread adoption in an uncontrolled way, the load on the grid particularly downstream near where people are plugging in could be huge. As I'll mention the future, that leads to new issues such as the need to plan ahead, to have smart electric vehicle charging so that it does not disrupt the grid. Again, a disruption consumption pattern, because of technological change, one of those disruptors, is part of the transformed disruptive transformation of the market.

Environmental concerns are increasing. An exactly are they changing? Not sure. What's going to happen with carbon pricing? There's been a, uh, one provincial level, supreme court decision that has put the constitutionality of the federal initiative in question. Where will that pan out? Presumably will unveil that at the Supreme court of Canada. Environmental concerns of the public are driving a lot of policy changes. Policy is not like technology. I look around at the news the last couple of days. If the public is afraid of something, Coronavirus, the way the governments respond can either be minimal as we see in some countries or can be a massive response that can be very disruptive. A political response is much more volatile than a

technological change. Part of that feeds into the whole prosumer concept. Prosumers, Professional consumers, who are getting much more sophisticated about their power consumption taking more control, wanting more control, wanting more information, it's a different marketplace for customers.

Now I want to get in the animal kingdom but any comments, reactions, anything anyone would like to say before I move on? Kay. So, I'm going to start with the white elephants.

White elephants are the known knowns. Things we know are there. So we know that they are there and we actually know or have a pretty good idea of what the impact is going to be. What intrigued me about this white elephant concept in the strategic planning articles is it was done by I forget, Harvard, or one of these like that, an academic researcher, that does strategic planning across many sectors. And the comment about white elephants, across sectors we know the challenges, the disruptions that are coming at us. We know exactly what they look like, yet typically companies are not responding to them. And, I turn to the electricity sector, and I'm not talking specifically about SaskPower, I'm not talking specifically about Saskatchewan. I work in jurisdictions across Canada but also around the world. We know that there is change coming, and what I see is very little response to prepare for that change.

For example, a couple of major drivers, load loss. Every utility in Canada that I deal with and everything that I read in other jurisdictions, everybody knows load loss not only is coming but is happening today because they're experienced it already. So, this is why it's a known known or a white elephant. It's there in front of it. It's different. Most elephants are grey, it's different what we've dealt with in the past, but we know exactly what it is and we know there's no escaping it. Load loss will come with self-generation replacing grid supply.

At the present time, across the country, you've got relatively small load loss. And there's two kinds of load loss. One is you lose some power being sold to the customer. But you're still, they are still paying to be connected to the grid, they're still getting backup, they're still getting reliability to the grid and so on. It's one thing to lose people buying power. And in other jurisdictions, where the companies that generate the power than the utility that transforms, transmits and distributes it, it's the generators that are afraid of the load loss, basic load loss. Here of course SaskPower is also vulnerable to that.

The more frightening part for utilities is that grid defection. If a customer disconnects, and all this technological background is saying not will it happen. The only question is when it will happen. And my example. I've been off grid for twenty years in my cabin up in the north of Toronto. And it was strictly a matter of price. We were not near the grid, we bought this lovely little cottage, it was a boat ride away from the shore, and we said, "Oh we should have electricity." Talked to Hydro One. "yeah, we'll connect you for \$100,000.". Even twenty years ago I could build an off grid solar system that met all our needs for a lot less than \$20,000. So, I learned then competition is all about price. Nothing else. And I love it when I get into meetings with Hydro One and they say, "well people won't leave the grid because they need reliability." And I say, "you know, up where I am, twenty years I've had one planned outage to replace the batteries. All my neighbours across the lake complain about Hydro One outages about once a month. So reliability is also is actually a matter of price. It's not a safety net to say people need the grid for

reliability. It's how much are they prepared to pay for the reliability that they need in ways that doesn't have any grid. Today in most circumstances it's not economic to go off grid.

Within five years, ten years at most, at least some customers other than the extreme tails like I was, tails of distribution, some customers will find it economic to go off grid. The utilities have to be in a position to respond to that. So grid defection will happen as the cost of backup and storage goes down. Customers are diverse and have different needs. It's not as though one year everybody has to stay on the grid and the next year nobody needs the grid. It'll be a gradual transition where a larger and larger portion of customers will be looking for either utility give me something that is price competitive or I will go to the alternative, which is price competitive, but also gives me the reliability and convenience that I want and it's reassuring for senior executives retiring in five years, "ah, it's not going to happen in my career". For young people coming into the industry, I say, you know what? In the early 1990s the only job in the telecom sector was a utility. By 2000, most of the jobs were outside the utility.

On the flip side, and also little more uncertain, is electric vehicle adoption. Here we've got the potential of stranding, of stranding with loss of load. On the other hand we have the possibility of transportation being electrified, which is the largest non-electric consumption now. If there's a radical change in the transportation sector, the demand for electricity by EVs will be massively disruptors to the grid in that the load, you will not have a grid, perhaps neither in generation, is sufficient to reach that demand.

There's a lot of planning and thought to be given there, and again, it's not something that's a problem for next year. But how long does it take to reinforce the grid? If you end up with a neighbourhood that's served by a feeder and ten people buy electric vehicles and they all come home between 6 and 7 after driving all day, what is that going to do to the feeder? How much planning horizon do you need to prepare for that?

To me, more importantly, when do you need to bring the policies in place to make sure that the transformation of the transportation sector, EVs, happens in a systematic way that doesn't have people just willy-nilly putting in EV stations in their garage which, which have, every year the draw they have, the time it takes to retakes to recharge your vehicle goes down. That means the draw, the amperage of the plugin is going up. So what's that going to do to the grid? Frankly, I'm not the engineer. I was as an undergraduate but I haven't been an engineer since the year out of graduation, undergraduate, but we know it's going to be dramatic.

And there, planning is critical. If we have dumb chargers, that means they don't have a computer brain, whenever people plug them in they start drawing power. A smart charger is controlled by the utility. It looks at the overall load of the system, manages when the charging takes place for the individual vehicles. It recognizes the vehicles as being batteries, so it looks at the system and looks at this battery storage it has throughout the system and it manages charging through the day and more importantly through the night, to get off peak charging of those batteries. With everybody who has an unusual need – gee I came home, my car is still at 25%. If I've got to the morning that's fine, except I'm leaving on a driving trip to do this evening. I need my battery charged up by 10 o'clock because I'm heading off in the night to go driving. So there's a button to push or computer switch or something that says I override the standard utility control charging because I need my battery charged up. That may be a premium to have

some on-peak, if you want, charging. But you have a smart infrastructure which makes sure everybody gets the charging they need but we do it in a way that does not disrupt the power grid. If we don't get ahead of the curve and make sure we have smart charging infrastructure in place we get the rules... require that by the time we recognize the need, by the time it becomes a problem it's too late. We've got 100,000 dumb chargers out there. You can't get people to replace them overnight. So, we need to think about these things ahead and get them in place so that when the disruption comes, we are managing the impact of that disruption.

So those are the white elephants. And there's, there's more you, I'm not trying to give you an exhaustive list. I'm just trying to give examples. These are the kinds of things we know about, we can plan for and prepare for.

The grey rhinos are the unknown knowns. That's, that comes from the hunter-gatherer days where the fellow and his wife were sitting by the fire, they heard the brumbling in the woods. They said, "I don't know what that is but it's something pretty big because I can feel the ground shaking. I know a disruption's coming. I don't know exactly it is, I don't know what form it's going to take. But do I be afraid and look around to figure out what's going on and try to do something to prepare for, or do I just say it's probably fine. I'll just sit here by the fire until it comes into the light and tramples me.

So in that category I put climate change. We're having a lot of trouble figuring out what the impact of climate change will be on the grid. There's lots of different scenarios. But anybody who's not thinking of those possibilities or preparing for the most severe impacts, finding ways to mitigate those impacts. Doing what strategic planners like to call watchtowers. You have a watchtower so you can look out and see what's coming. Because you know that rhino is coming down the path. You're looking over the trees you can see it before it hits you. Don't have those preparations for climate change, you're, you're at risk.

Microgrids. These are, again, some people say there's no question there will be microgrids. Others are unsure what they look like exactly. We're not sure. It could be what I've already talked about. The, the new development outside of town where they're putting in a couple hundred houses and instead of being connected electric grid there's a local natural gas-fired generator that keeps everybody going. It could be many different things.

I mentioned Siemens by name here. Only because one of my clients is New Brunswick Power. They've been working with Siemens for several years on developing this so-called utility of the future. I looked at Siemens, a huge international German based company, They are going through working with that utility, and others, developing their knowledge of the electricity customer, the utilities, that whole system. And I'm saying this is all learning experience for them so within a couple of years they're going to, to be coming and knocking on the doors of SIECA people, customers of SaskPower, saying we've a solution for you and if SaskPower's not prepared for that Siemens will say we can be in here next year giving you a whole new way of getting your power and we'll save you some money. And there will be another one of these sessions a year later to try to react. The reaction, if it's too late, the customer buys into the plan and they're gone. Again, foresight's required. What will the microgrids look like? Well, you look at what Siemens and others are doing, and by the way, Siemens Canada has the New Brunswick

Power experiment, last time I looked anyway, featured on their website is here's the wonderful things we're doing. wonderful technologies we're developing.

Non-regulated businesses are disrupting the industry. Utilities, some utilities are getting the business of offering distributed resources to customers. Vermont, Vermont electric company, that's not the right name, working with solar panels and batteries from Tesla. Developed a program where a customer can sign up with them on essentially a rental program just like renting a hot water heater or renting a furnace from the utility. You go to the utility, you could have a self-generation unit installed inside your house and you wouldn't have to pay for it up front. Don't have to worry about insulation. Just sign on the dotted line. We have a new a rental fee which is less than the cost of the power. And you sign up with them and they take care or they take care or it's not actually the electric utility, but their partners take care of installing, maintaining, the whole system. And this is something which can evolve and improve over time.

Does that mean I'm in trouble?

So and that is what is being done as a non-regulated business because it's a competitive alternative. Other people in the market can do that as well. But it's very convenient to do that through the utility. So these are the kinds of offerings by the utility and by others will disrupt the industry. From a utility perspective, it's an opportunity to generate some net revenues that offset the inevitable loss net revenues as you lose load to self-generation.

Turning into the black swans. Well, in truth, by definition a black swan is something that is not anticipated. So by definition I can't actually give you examples of it because as soon as I give you an example, technically it makes it a black rhino. But barring that for a moment, anything that changes the game radically within the lifetime of the existing assets, would be a black swan. So, a mass of really significant breakthrough in storage, something that takes the cost of storage to half, a quarter, 10% of the current cost, would be a game-changer. Some people are predicting, which means it's not really a black swan, a breakthrough in hydrogen technology. Perhaps natural gas pipelines become hydrogen pipelines. instead of having electric vehicles we'll actually have hydrogen vehicles. There's a very strong argument that says that there will be a leap where essentially before electric vehicles really make deep inroads in North America, hydrogen will leap past them. And it won't be a transformation to electric vehicles, it will be a transformation to hydrogen. And the transportation will get rid of those fossil fuels. Huge disruptor generally but would have a significant impact on long term plans of electric utilities.

It and hydrogen and you know, small scale generation that is not dependent on the sun shining or the wind blowing, combined with still then then modest backup, becomes a game-changer for the inroads of distributed resources generally.

So that covers the animal kingdom. Any reactions, comments? So far?

Okay. I will I will take the lack of comments as being everybody has heard all of this it comes all together and we have 100% agreement that this is the future of the industry. Responding to disruption. So just very quickly, going back to those drivers we saw a few slides back, transforming the markets. Markets are changing. That's disrupting the market. The primary risk for all utilities, this is, again, I'm not speaking to SaskPower on this. I'm speaking, you know, this is what I say to utilities across the country. The primary strategy is what do you need to do to retain

your customers? You need pricing and services that make you be the preferred provider when you're faced with competition. And you can't do that as a reaction. You have to do that in anticipation. And in part, the CRS rate is SaskPower's attempt to get ahead of what they see as and, I agree with them, as a grey rhino that's headed toward the camp.

Advancing technologies. The, again, the... utilities can respond. The key problem there is pricing for electric utilities across Canada, around the world, is based on historic costs. We use cost allocation models, and I've been in front of many of you a couple of times looking at SaskPower's cost allocation model. The way rates are set for utilities, and not for anybody outside of the regulated utility sector. The way rates are set is we have a cost of service, we do what's called a fully allocated costing model, which takes those historic costs and allocate them to customer classes based on cost drivers, and however that falls out you end up with fair pricing. It's a fair way to make sure everybody pays their share based on the cost, the costs they cause. So, it's a fairness driven approach, but does not address market realities.

So, pricing in that's part of the market, pricing has to become more real to competitive environment. Again, we're talking not the next rate case. We're talking five, ten years down the road. There's got to be a transition that's hopefully not a disjointed one but a planned one and the companies have to lever their what I'll refer to competitive advantages. If I go to a company and say I'll take you off grid, I need to buy new storage assets for them, probably. Certainly, some backup facilities, so I'm... SaskPower has without spending a cent, it's got the backup capacity because it's got the grid. It's got the whole infrastructure now. So, they, they have from a market pricing perspective, which is all about future costs, not past costs, it's all about marginal costing, they have essentially very close to zero marginal cost. They can compete with anybody if they're free to move away from the traditional price setting models. They cannot do that without sort of regulatory acceptance. It's not quite regulatory in here in Saskatchewan but without the acceptance of the players in the market that we are going to start thinking about pricing differently. If there's no change in the way utilities price, the disruptions in my view, put utilities everywhere at risk.

Bell Canada would not be here today if when the market was opened to competition, they had to price on a cost service basis the way they did in the beginning of the 90s. They changed with the times. With the support of the regulator. And that doesn't mean that a utility will start becoming the duplicate of a competitive company. What it means is utilities have inherent advantages. Where they have them they can be exploited. Where they don't, don't have them, they can work in partnership with entrepreneurial private sector companies. So the SaskPower and other utilities advantage is not in installing solar panels. I know a couple of my clients have tried to open businesses where they're selling solar panels and they're not doing very well. They're not efficient at that. The marketplace is far better. But for providing storage backup, nobody can beat them. The converging industries. IT partners will be critically important. One of the things foreseen is the smart home. The managed electricity consumption. That's all being driven by IT. There's certainly those who are saying that the competition for utilities five years down the road, in fact, almost today, is Google. And Amazon. Not electric companies. And when I say it's competition, what they're competing for is who owns the customer. Who sends the bill to the customer? Who does the customer call when they need something. Therefore, who is someone who can respond to customer needs. The competitor for

SaskPower without some number of years will be the Googles of the world. Microsofts of the world. Not electric companies. Possibly Siemens, because Siemens is a technology company as well as a hardware type company. Hardware and the soft part of the IT. We don't know exactly but those are the kinds of competitors we will be facing in the future. The changing consumption patterns, that's a driver of disruption which can be controlled, for example, smart EV charging.

Environmental concerns. That speaks into and the emergence of prosumers speaks to the diversity of customers. I'm not close enough to SaskPower to know their mindset. What do they say. I deal with a lot of utilities across the country and they have a really hard time thinking that we have diverse customers. They talk about the customer. Maybe they talk about the residential customer and the industrial customer. They have a hard time saying like a Google, there are a lot of different kinds of people out there. We want to attract them so we have a lot of different variants of our product to meet the various market segments. The future of the electricity sector, like the telecom sector, you start thinking about the market as being full of segments of, of many different kinds of customers and you have to tailor products to meet their needs because if you don't, as the individual market segments have alternatives available to them, one segment goes to one other supplier a different goes to a different supplier, the market gets broken up with the individual suppliers meeting individual needs. And that's one of those will be environmentally-minded customers. Another group will be the prosumer group. Different requirements, different kinds of customers, but there are environmental concerns consumers and prosumers in the residential sector, in the commercial sector and the industrial sector.

That brings to an end the preamble. Now lets actually talk about the CRS rate. My comments about the CRS rate are driven in large part by the thinking that's been embedded in the discussion so far. And in the report when I started it was here's CRS rate, here's what it is, here's what I think about it. And as I tried to explain why I think and the comments I'm about to make, the why behind the comments I'm making, that led to the whole front end of the paper, which explains how the industry's changing. How there's a need to manage the disruption.

So, this is structured, the comments on the tariff design, is structured to parallel the tariff sheet. I was working from that. That's the one actually I've got the unpublished version of the straight tariff sheet. And in the tariff sheet, it starts off with applicability. Applicability it applies to power class customers requiring capacity reservation who are served through customer-owned transformation and attaining a majority of their power requirements through self-generation.

The customer-own transformation is a moot point because all of the power class customers are customer-owned transformation and have to be. So my comments there were... My reaction when put in front of me, yeah, you're reacting to a problem in the power class. But given what I've been talking about the same problem exists for all the classes. So what are you doing about the issue in the other classes. So that's not really a comment on how this tariff sheet should be changed but it's just a flag that SaskPower's aware of but everybody has to understand that this is a response which is appropriate in this class, with a couple of caveat comments I have, but the concept if not literally being a capacity reservation service, the concept is applicable across all classes. Because all classes are facing the same disruptions of potential self-generation.

A primary concern for me is the second sub-bullet in that first part. Customer, should be customers, sorry for the spelling, customers need information on their rate impact of adopting self-generation before making their investment decisions. If SaskPower or any other utility, waits until customers have started adopting a lot of self-generation and then comes in with the rate that is the right rate, but is different than the rates they have today, a customer can be caught with the rug pulled out from under them. Customers have to know what the rules of the game are going to be over the lifetime of their investment. If they're going to buy rooftop solar and batteries, and they do the economic analysis today based on the rates, they may come up with what looks like a good decision. But if those rates are going to change, that decision could be turned into a bad decision. That would be unfair to those customers, it would be unreasonable. Customers should not be disadvantaged by thinking that today's rate structure is what's going to be there forever. If the company knows they're going to be changing. What I'm saying is we should assume change is coming. Customers should know what that is. That means the sooner that these issues can be thought through and the sooner customers have information on where things are headed, it's great. I've seen other jurisdictions when things change, what tends to happen is that customers who tend to have the rug pulled out from under them get grandfathered. By definition, when you grandfather a rate, what you are saying is that well out of fairness you are going to leave a rate where it is for this guy, even though it's not the right rate. Grandfathering usually means that somebody who's receiving a subsidy, because you don't want to hurt, take the subsidy away from them, they're getting a subsidy, you let them keep it. That means all other customers have to continue to subsidize that customer.

Bottom line is let's move this ahead before the market changes. Let's tell people what the rate impact is going to be of the changes that we foresee. I look at self-. CRS is limited in that applicability. The customer that is required to take the CRS rate is attaining the majority of their power requirement through self-generation. That, there's really no, to me, I'm assuming that means 50%. There's no difference somebody who's got 51% generation and somebody who's got 49% generation. In fact, conceptually there's no difference between 50 of 60% generation and 10% generation. The customer needs some backup. They should be paying a price that's appropriate for that backup. So, I understand that there's reasons that that 50% limit is put into place now. My belief, or my suggestion, is that 50% is a temporary measure to limit who's getting capacity reservation service that should move beyond that as soon as possible.

The problem is that that rule creates an incentive for gaming, gaming the system. The problem we have and you're not going to ask a question I'm going to ask you to respond in a moment. In past sessions with SaskPower, who understands the Bary correction?

I see some SaskPower hands going up. Have you heard of the Bary correction? Ok. Perhaps we should have an hour on the Bary correction. The report and if you're actually interested in sort of the technicalities of what's going on here, read it. The, SaskPower has a cost allocation model. It produces what are called customer-related costs, ie, costs that are caused just by having a customer. Billing is the easy thing. A customer-related cost is recovered by the monthly charge. There are also capacity-related costs. The transmission system. Doesn't matter how much power you've got going down a transmission line. The key factor of a transmission system is it's got a capacity; a limited amount of power you can push through that wire. To some extent, generation is driven by capacity restraints. We're dealing with power class customers so

distribution is not relevant here. So it's basically talk about generation and transmission there are capacity-related costs. In generation, there's energy-related costs, ie, costs that are caused in proportion to the number of kilowatt hours or megawatt hours being generated. Of course, capacity is related to the kilowatts or megawatts at a point in time.

So, and the capacity-related costs are recovered through a capacity-related charge. And energy through an energy-related charge. Except for one problem. You as customers are not billed customers with a demand charge, you're not billed on the basis of the coincident demand. The cost driver is how much power do you need in the peak hours of the year. I'm going to spread it across a few hours but a small number of hours. It's capacity, capacity costs. You're billed on the basis of your, on what's called the non-coincident peak. Your peak. Your peak may not occur at the same time as the system peak. Right? As a consequence of that, the, the total number of non-coincident peak hours that people are billed on, is more than the coincident peak hours that causes... that, so you end up with spreading across everybody with a slightly lower rate where you get the right amount of revenue by multiplying the rate by the non-coincident peak quantity of hours instead of what would be higher times the coincident peak hours.

Now, that leads to an inequity. Within a class in terms of high load factor customers and low load factor customers, the company has adopted a method which some other utilities, not a lot, some others use to correct for that inequity. That inequity is that somebody who is a load factor customer, their non-coincident peak is probably, simple thing, a 100% coincident load factor customer, their non-coincident peak is occurring at the peak. So, without the Bary correction, a high load factor customer is under-charged. They're not paying their full causal costs. The Bary correction corrects for that by moving part of the cost recovery from the demand charge to the energy charge. It says, somebody who's high load factor is using relatively high total energy through the year so it's a rough justice way of correcting for the inherent error of billing on the basis of non-coincident peak instead of coincident peak.

This technicality is driving people out of the room. I understand it. The... but the Bary correction then, creates an issue that you end up with a, with a high charge for energy that a customer that self-generates, alright, they're avoiding the energy but they still need the same capacity because they looking at backup. They see they still need the same amount of power on the peak day. But they're consuming a lot of energy through the year. So because of the Bary correction to the basic rate, you end up with a situation where a high load factor customer can save a lot of money by self-generating because they avoid the energy charge which has been loaded up, if you want, with some of the capacity costs. But the capacity costs are still being occurred by the company. So, with the capacity reservation service, what the primary thing they've done, they've removed this Bary correction. You say it doesn't exist if somebody's self-generating. That inequity doesn't exist. So that's that makes sense to get rid of that for this charge. But it's still there for the main charge which means any other, a low load, high load factor customer without it actually being economic, because of a quirk of the rate design, they've got a strong incentive to go to self-generate. It's just a quirk of the rate design, existing rate design.

That in inequity, again, you, if you read it and think about it in the paper hopefully it will be clear if it isn't from these ad hoc comments, that same incentive still exists for somebody below 50%. A

high load factor customer is going to have an incentive to, they're going to want to get on to this capacity reservation service. So, there's a couple of possibilities. One is you do what I said, which is reduce the rate, sorry, reduce that limit that it has to be 50% self-generation. They'll generate 10% in order to get the capacity reservation service. So we can't implement the removal of that lower limit right away but of course you'll still getting that bias that inequity for those who you're just sort of pushing people to get more than 50% self-generation you're making them get more generation to get the saving of the lower energy charge, in effect. So, there's got to be better alignment of SaskPower's basic rate, the E rates and the N rates. And, part of that is going to be the removal of the Bary correction across all the rate classes. Because that is causing a false price signal which is causing what I call uneconomic bypass.

So that gets a little more complicated but that's what's behind my comments here. The 50% that doesn't make sense. It should be a generalized backup service regardless of how much self-generation you have and it should be applying to all classes. That is not something which can be done by amending this tariff sheet for the CRS rate. It's got to be a review of rates more generally. And I'm going to be astounded if you don't see more suggestions to revision of the tariff sheets in general to address this inequity or there's going to be a lot of uneconomic bypass.

Part of that will involve updating the cost allocation model because you now have three new classes, they should be in the model, you do allocation, there's a number of steps to fully implement this, this change, which is part of the transition to the new world where we're responding to the competitive pressures of self-generation and distributed energy resources in general. That was a pretty quick recap of what is, I think, a very important, central part of the paper, the report. Before I move to the reservation capacity, any questions, comments?

And as you hear at the end, of course, there's going to be an opportunity following this to submit written questions. And I'm anticipating that if my report has not explained it well enough send in your questions and we'll have a more complete explanation if you don't get it from the report.

The reservation capacity. I, because of my nature I guess, because inherently I'm a cheater if it's going to help me. Something like that. Gaming of the system. I always look at something just like, like tax rules. How do I obey the rules but work around them in a way that benefits me. Gaming. It's legal. But I'm getting more out of it than it appears to be. So, I looked at this and I said, hm, there's a reservation capacity. I, if I'm a customer I nominate for the reservation capacity I need. Well, that's a no brainer. I've got to pay for the amount I nominate? I'm going to nominate 10% of what I need. And I'll pay for 10% of what I should be paying. That's easy. Now the company says you have to justify it. Well, a smart company will go to people like me and say, ok, come up with a story that justifies why we only need 10% of the nomination. And it may be we've got a former generation that it's not intermittent like solar or wind, so we're going to you know, we're going to be running all the time, we're not going to need the power. Of course, somewhere down the line we're going to have maintenance on our system on our self-generation. And we're going to shut it down to do that maintenance. The company has written into the tariff says, if you go over your nomination you essentially get ratcheted up to what you actually consumed for a year. Ok, I looked at this and said ok. That's easy. I'll nominate 10%. I'll pay for 10% until I have a shutdown. Then I'll pay for 100% of my need for a year. Then I'll re-

nominate back to 10%. And I may have to negotiate with the company because they'll say that's not credible, but it will become a negotiation of how little can I get away with.

Well, I also do a lot of work in the gas industry. There's the concept in the gas industry which is pretty much universal of a contract demand. You nominate what you need and that's all you're going to get. So, if you nominate 10%, if the rules are different from the way it's written. You nominate 10% and maintenance time comes and you shut down, you get 10% of your requirement. Not 100%. You only get what you've been paying for. And that's in you... Either you have contract demand or you have what's commonly referred to as an, an interruptible service. Ok, if we've got spare capacity we'll give you more than what you nominated. The key there is that customers have to pay for what the company has to include in its planning. If they're going to include 10% of your load in planning, ok, pay 10%. But then you can't be guaranteed to get anything more than that. Because they haven't planned for it. They haven't built the facilities to accommodate it. If you and a lot of other customers all come in and nominate 10% of their need, perhaps that next transmission upgrade or generation station doesn't get built because it's not part of the plan. So, you're probably not affected next year, but once low nominations become common, you end up with an undersized system if people have misreported their actual needs.

It's just a matter of making the system work from a planning perspective. So, we got to get nominations right. If it is interruptible service, ok, you don't, interruptible by definition, you don't include in the plan. Because if you need it, the customers, other customers who have firm service are taking all the capacity, you're out of luck.

Now of course, for planned interruptions you can probably make sure those happen in off you know, times, not heavy load on the system and you're probably going to be okay. But if you have an unplanned outage, you better hope you're not unlucky and it happens at a time of a peak demand. So, that's why I say, you know, if it's nominations that are screened by the government, by SaskPower, they have to accept it, that's where it invites controversy, so the preferred design would have no gaming incentive. So that's a strong recommendation from me.

It's either contract demand, or excess demand, invites large penalties, I've sort of said five times the standard demand charge, but, the key thing is it's got to be high enough that the customer can't save money by gaming the system. It's all about gaming.

Almost through. Billing demand is straightforward. The rates. In the E classes because of the Bary correction, the demand charges are lower than the actual causal costs and energy costs are higher in order to deal with inequity with billing on the basis of non-coincident peak demand. So, what I'm saying is that there has to be a re-run of the models, you take the cost allocation models you put the N classes in. With the N classes, the N, n for new, the new classes, I know it's not. So, you determine what are the appropriate cost-based demand and energy charges and what's interesting is the current rate structure looks at the class on average and says for the power class it's roughly 65% load factor overall. Because of the way the rates are structured, it's high load factor customers that are going to go the N rate. You remove the Bary correction and a high load factor customer, their off-peak demand is going to be essentially the same as their peak demand and that's going to lead to much higher rates. And that's what you're seeing in the tariff sheet. Although they haven't done it the way I've described. They've sort of done a

correction that approximates that. I think the model has to be updated, assumptions have to be made about the load profile of customers in the class, a new calculation is done and as long as you've got the utility charging fully allocated cost based rates, taking costs from the cost allocation model. That's what you're doing for all classes, you will drive N22, 23 and 24 rates which reflect a much higher load factor than the average to the power class. The higher load factor means a higher demand charge.

I think again, for purposes of customer information that calculation should be done and customers should be aware of it as soon as possible, even if it's where the rate's going to go in the next few years. Where companies change their approach to rate design, typically if there's significant changes that are impacting some customers, most changes there are winners and losers, the average rate doesn't change but there's a shifting some people paying more some people paying less, that has to be phased in over a period of years.

New Brunswick Power is getting rid of grandfathered classes. The transmission system for different grandfathered classes is anywhere from two to ten years. In Ontario, where they went to a fully fixed charge for transmission and distribution for residential customers was a three-year phase-in. That wasn't because, the average didn't change at all. That was just a phase in to deal with the outliers on the two sides where some people were seeing large savings and some people were seeing large increases, nobody complained about large savings. But the ones who were seeing large increases, that was disruptive to them. So, it phased in which meant the people who were saving money, the saving was phased in to offset the phase in of the higher charges. So the rates given the current utility rate setting methodology need to be updated with that and that was not done yet. That will flow through another rate case but I'm flagging as I would expect those changes would be coming and in my view the company should do those calculations and get those numbers out there. Better bring, not only what is going to be the impact in the next rate case, but if they know there's going to be multi-year impacts that should be information that is available to the general public. And with that, Q&A and discussion.

Is there any reaction other than oh my God? And if not, as I've already mentioned, and Scott will be highlighting now a process for after today questions, and I'm on standby to receive and respond to any questions that you may have. I hope I've given some flavour on where things are headed. But I will have to say this is my report. This is my thinking. SaskPower will hear from them with their thoughts, not today, I'm sure in future rate cases and so on. But what you're hearing from me today comes out of that second page of the slide, comes out of the experience that I've highlighted there. Nothing in here on the specifics on the CRS nothing in here is anything different than I've been talking about and people keep hiring me to come and talk about it in corporate strategic planning sessions across the country.

Oh, there's your microphone so make sure it gets recorded.

Audience member:

Could you comment on how common this CRS method is in Canada?

Mr. Todd:

Yes. And the report has one of the section talks about what's a cross-jurisdictional survey, which is an appendix which looks at other jurisdictions. That appendix reflects what has been done is on the public record. Beyond that, without naming companies and so on, I can say across the country everybody's struggling with this. There is no one answer. The CRS rate that you're seeing is along the line that others are looking at. On the record you'll see some utilities where they are saying we've got this problem. what we need is an exit fee. An exit fee is if a customer's leaving the system you calculate all the costs of the assets that were built "for them" that they are leaving behind, and you charge them for that. They've got to pay for it. Therefore, no other customer is going to behaving to pick up the tab for the assets they're leaving behind. That's not being recommended here. Personally, I don't recommend that, I think there is better ways to do it and I don't think it's politically sustainable once it becomes widespread. But that's you know, another one.

Other than that, what's common to be is commonly named a back up rate. And there's different ways of structuring that. And the actual dollars you put on the rate depends on the terms and conditions. So, some backup rates are based on interruptible supply. They're much lower. Others are based on firm backup. And some of that depends on if you've got an intermittent supply, then you're using the grid you know on a daily basis. It's a different kind of backup than you're there just for outages. So, I can say what you'll see if that there's not a lot of experience in other jurisdictions but within a couple of years, most utilities are looking at bringing something in. If you want more information, I think that the very best information on this is the Alberta Utility Commission is on a second kind of information gathering process. They've had a report on a distribution connected DERs. One has been complete.

Ask me the question and I'll give you the citations and the links and they're in the middle of a second process around rate design where they're trying to get their heads around what's the impact of distributed energy resources, where's the industry headed. They've invested a lot of money and resources in information collecting. The report they've done and the one that's pending are not decisions. They have not come up with policy prescriptions. The AUC, that's the Alberta Utility Commission, is simply coming up with an assessment of the challenges. That will be then be background information for looking at proposals of the companies they regulate. That will provide in a sense the front half of what my report does and they do it far better than I do because they have a lot more resources than I do.

Well you could have matched the resources for me and I would have given you a thousand page report. Does that, it will be less helpful than it should be but there's, I'd say you look at it just remember there's a lot going on that isn't reported yet.

Any other question? I look forward to receiving some written questions unless I've done such a brilliant job there's nothing left to ask. Scott you will outline that process?

Mr. Chomos:

Thanks, John for taking the time and coming out and sharing the findings of your report today. Very informative and lots of information to digest. So, you've already alluded to essentially what the next steps are. All of this information is found on our website so don't feel as though you have to write all this down but what we're looking to do is provide the audio to this session on our website as well will have the presentation and report. We're targeting a little over a week I think essentially from today through to March 6 to provide those written questions or interrogatories. On the website you'll see the email address that we would ask you to send them to. It's [CRSratereview@saskpower.com](mailto:CRSratereview@saskpower.com). We then committed to provide a written response the following week, March 9 through 13, and then kind of the last step in the process and we'll gauge this on the quantity and types of questions that come in, that if we find it necessary to have a follow up conference call, we'll look to schedule that some time the week of March 16 to 20. I will use this opportunity for one last chance to ask a question and if there's none I would just like to thank everybody in attendance today as well as folks that are joining us online for taking the time today to listen and I encourage you to take advantage of that question or interrogatory process and to express any questions or comments you might have. Thank you.

Gerry Forrest (Saskatchewan Rate Review Panel – Technical consultant):

Gerry Forrest.

Mr. Chomos:

Hi Gerry.

Mr. Forrest:

Can I ask a question?

Mr. Chomos:

Yes.

Mr. Forrest:

You have John Todd's report. The question is what is your plan at this point relative to ... (indecipherable)

Mr. Chomos:

You're breaking up a little Gerry but I'll try to respond a bit to what I think I heard you say. It's basically what's SaskPower's position on taking the information included in John's report and what are we looking at in terms of next steps?

Mr. Forrest:

Yes.

Mr. Chomos:

Good question. And this report is relatively recently received by SaskPower as well. What I can tell you is that we've been over the past number of months doing some analysis looking at the impacts of a Bary included rate vs the removal of the Bary correction. So we continue to do that analysis. Typically these adjustments coincide with when we're doing a rate application as part of the overall public process so in terms of the immediate next steps we will continue to go through that report, look at what some of the recommendations are, try to do a little bit of analytics, some number crunching on what potential impacts might be based on those recommendations might be, and we will definitely informed as we carry through on the process.

Mr. Forrest:

Thank you, Scott.

Mr. Chomos:

Alright. I think if there's no other questions, again, I'd just like to tank everybody again for joining us today and look forward to the back and forth communication over the next few weeks. Thank you.